INFORMATION AND COMMUNICATION TECHNOLOGY FOR GRAPHIC DESIGN TRAINING IN RELATION TO THE WORLD OF WORK

A Case Study of Art and Industrial Design at Kyambogo University

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DECLARATION

I, Moses Ediedu do hereby declare that this thesis entitled "*Information and Communication Technology for Graphic Design Training in relation to the world of work: A case study of Art and Industrial Design at Kyambogo University*" is an original work that has not been submitted to any university before for any award.

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DEDICATION

This thesis is dedicated to my parents, Margaret and James Emunyu, whose interest in education have inspired me produce this work. To my wife and son; Catherine Ediedu and Philip Amocha Ediedu, whose support, patience and prayers have seen me through each day of my course of study.

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LIST OF ABBREVIATIONS AND ACRONYMS

BAID	Bachelor of Art and Industrial Design
BBC	British Broadcasting Corporation
BED/BEd	Bachelor of Education
BVAD	Bachelor of Vocational Studies in Art and Design with Education
CAD	Computer Aided Design
CAPA	Commonwealth Association of Polytechnics in Africa
CD	Compact Disc
CGD	Computer Graphic Design
CIAD	Commercial Industrial Art and Design
DAID	Department of Art and Industrial Design
DVD	Digital Versatile/Video Disc
EAPTTC	East African Posts and Telecommunication Training Centre
FGD	Focus Group Discussion
FROSSE	Free, Libre and Open Source Software in Education
ICT	Information and Communication Technology
ILO	International Labour Organisation
ITEK	Institute of Teacher Education Kyambogo
KyU	Kyambogo University
Mac	Macintosh Computers
MAID	Masters in Art and Industrial Design
MVP	Masters in Vocational Pedagogy
NOMA	Norad's Programme for Master Studies
NORAD	Norwegian Agency for Development Cooperation

PC	Personal Computer
RENU	Research and Education Network for Uganda
TVET	Technical and Vocational Education Training
UICT	Uganda Institute of Information and Communications Technology
UNCST	Uganda National Council for Science and Technology
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNISE	Uganda National Institute of Special Education
UPK	Uganda Polytechnic Kyambogo

ABSTRACT

The competence of training in graphic design provided at the Department of Art and Industrial Design, Kyambogo University is still wanting in relation to the requirements in the world of work. This study investigates the use of Information and Communication Technology in graphic design training, employing descriptive research design where more of the qualitative than the quantitative approach was used to collect data through interviews, documentary review and observations. The findings indicated insufficient Information and Communication Technology tools for training, theoretical delivery of graphic design largely involving group participation in lectures and inadequate competence in the use of Information and Communication Technology tools in relation to the demands in the world of work. The study recommends increment and supplement of Information and Communication Technology tools, practical delivery of graphic design in a larger space and extended hours of hands on practice for competent development with regard to expectations in the world of work.

1: INTRODUCTION

The study focuses on the use and application of Information and Communication Technology (ICT) tools in graphic design production in relation to the world of work. The world of work refers to the workplaces such as schools, the large scale and cottage industries where graduates of graphic design work as teachers and freelance designers. This introductory chapter presents the background, statement of the problem, purpose, specific objectives, research questions, scope, significance, justification, limitations, delimitations, definition of key terms, conceptual framework and outline of the study.

1.1 Background to the study

The background of the study is broken down into three sub-sections; brief history of ICT, personal background in ICT, study background and motivation. The sequence of the background to the study was based on the cycle of the information that led to the other as illustrated in Figure 1. The summarised information in Figure 1 represents the relationship of ICT from a historic perspective, personal experience, study programme and a source of inspiration to the study.

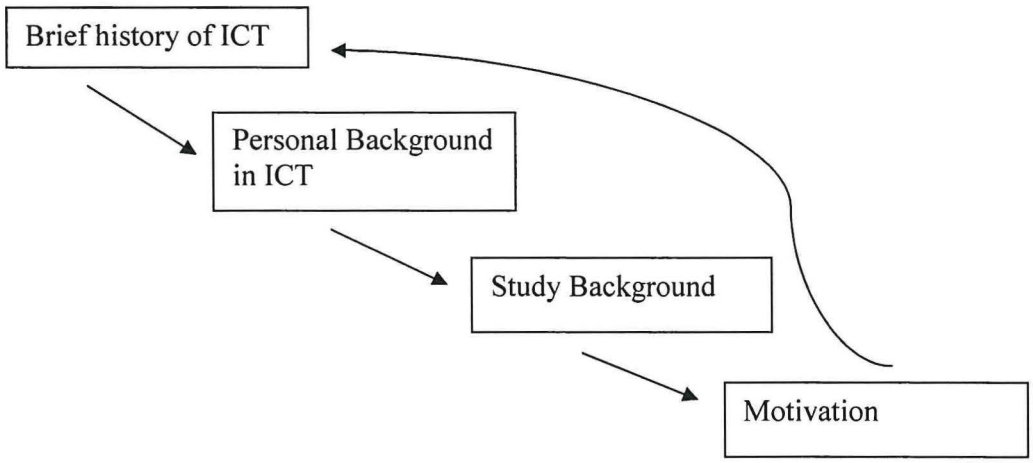


Figure 1. The cycle of the background information.

1.1.1 Brief history of ICT

This history of Information and Communication technology (ICT) focuses on the precursory and continuing trends that have shaped the theory and practice and the literature that reflects this development.

Globally, ICT tools such as cameras, radios and televisions were already in use by 1941 but computers were introduced later and used secretly as a tool for warfare communication in covert operations during World War II (BBC, 2012; Discovery World, 2012). In order to win the war against the Germans, the Colossus computers developed in 1943 helped the British code breakers to perform Boolean operations and calculations. As such, the British were able to obtain valuable military intelligence from reading volumes of encrypted high-level telegraphic messages of the Germans which shortened the war by two years (BBC, 2012; Wikipedia, 2012). After World War II in 1945, ICT tools such as computers, cameras, radios and photocopiers were first used in the war crimes tribunals using film materials, photocopies and simultaneous translations (Reiling, 2006, p. 189).

Consequently, in the 1950s, ICT was used to facilitate the coordination of information between multiple locations in Europe and later used in schools for administrative work and subsequent development of software helped to solve concepts in mathematics, science and engineering in the 1970s (Computers in Education, 2010; FROSSE, 2005, para. 5; Hermes, 2009). Furthermore, the development of Microsoft by Bill Gates in 1975 led to massive production and distribution of software programmes to improve businesses and later on computer based training with multimedia and e-learning in the 1990s (Science and Technology Communication, 2010, para. 1; Woopidoo, 2012).

In East Africa, the Uganda Institute of Information and Communications Technology (UICT) formerly the East African Posts and Telecommunications Training Centre

(EAPTTC) was set up in 1965 to train citizens in the region (UICT, 2010, para. 1). Subsequently, ICT usage has been going on in the private sector but owned by foreign companies that used them for business and training purposes. Presently in East African, Kenya and Rwanda are at the forefront of innovation and implementation of ICT in all sectors of their respective countries (Matinde, 2013, para. 2). In Uganda, there is more use ICT in all sectors of business and training but more practical in the private sector than in most government owned institutions.

As far as KyU is concerned, the academic programmes in the fields of science, technology, education, vocational studies, arts and social sciences, and special needs and rehabilitation have in-built components of ICT (KyU, 2012). Presently, I observe that the traditional method of content delivery dominated by lectures, workshops, seminars and tutorials are still prevalent (Kaije, 2011, p. 2; Tusubira, Alegu, Mondo, Kasana, Ekol, Baguma, Ndiwalana, & RENU, 2006).

However, at the Department of Art and Industrial Design (DAID), ICT skills training started in 2006 when there was a need to implement the Design and Technology course unit as anticipated in the programme for Masters in Art and Industrial Design (MAID, 2006, p. 6). In order to facilitate skills training, a professor from America volunteered to train the first student in Computer Aided Design (CAD) to help learners' carryout internet research for designs and technologies as speculated in the programme.

The current Masters in Vocational Pedagogy (MVP) programme of Kyambogo University where I am a student, emphasises the methods of teaching and learning that stresses the link between practical and theory-based learning/training on one hand, and the world of work on the other where the use of the computer and the internet is key to the programme itself (BTVET Strategic Plan 2011-2020; Mjelde, 2008).

1.1.2 Personal background in relation to ICT

I am a qualified graduate teacher in the field of Art and Design; I majored in graphic design at Kyambogo University (KyU) in the Department of Art and Industrial Design (DAID). Prior to joining KyU, I held a diploma in Commercial Industrial Art and Design (CIAD) of Nkumba University formerly Nkumba College of Commerce and Advanced Studies; I also gained a certificate in Audio-Video Production from the Uganda National Institute of Special Education (UNISE).

The programme of Bachelor of Vocational Studies in Art and Design with Education (BVAD) which I studied for three years, majoring in graphic design, offered designing experiences manually to directly create works of art to communicate particular messages without exposure to ICT which was electronic. My exposure to ICT during my undergraduate period was limited to visits to Nkrumah Road and Nasser Road (Kampala city) where self-taught, ICT-using designers provided assistance whenever I was challenged by lack of expertise and equipment and thus found it difficult to execute my work in the area of graphic design.

After graduation, I joined the world of work where the production process of magazine layouts, logos, adverts, identity cards, certificates, booklets, brochures and cards, among others, involved the use and application of modern ICT of which I had little training, knowledge or the skills that come with practice. As such, adjusting to the world of work as a graphic designer was a challenge due to this lack of knowledge and skills regarding modern production processes. Therefore, the search for employment in the area of graphic design compelled me to undertake a certificate course in ICT to learn how to use computer graphic design packages to meet the job market demand for employment

commercial work with the aid of new technologies. The use of Macintosh computers in graphic design production required new knowledge and skills to master the tool and its operations; this in turn resulted into additional ICT training in Nairobi, Kenya to increase my competence in graphic design packages to meet the changing market needs. Macintosh technology is unique in the way it allows for the display of true color, fonts and delivers faster with its operating system.

The ICT competence acquired after university widened my opportunities for employment. I worked as a graphic designer at KyU producing creative works of graphic design that include the student's identity cards, the handbook for masters students in vocational pedagogy and the programme for masters degree in vocational pedagogy (Figure 17, Appendix V) among others.

Currently, I am a student in the Masters in Vocational Pedagogy (MVP) programme of Kyambogo University. This is a programme where the method of teaching and learning is predicated upon the link between practical and theory-based learning/training on one hand, and the world of work on the other. The use of the computer and the internet is key to the programme itself. My work-related experience in graphic design was devoid of the learning opportunities that would allow me to employ ICT with the use of the "hand, mind and heart", as used in the pedagogical approach of learning, motivated this research and led me to find out the current practices in ICT at DAID in relation to the world of work.

1.1.3 Study Background

Kyambogo University, Department of Art and Industrial Design, has been training graphic design as one of the elective courses for specialization in second year of study to students of Bachelor of Vocational Studies with Education (BVAD), Bachelor of Art and

Industrial Design (BAID) and Bachelor of Education (BEd). The programmes of BAID, BVAD and BEd speculate that graphic design training will impart knowledge, skills and attitudes in preparation for the world of work.

By the end of the training, BVAD and BEd students graduate to become teachers due to the structure of professional studies at Kyambogo University that directly link them to the teaching profession. However, BVAD graduates of graphic design who prefer not to teach opt to become employed in other organisations or become freelance designers through self employment, similar to the BAID graduates. BAID and BVAD students take graphic design as an elective in their second year of study and BEd students join them as first year students of the same elective.

The methods of learning graphic design that I experienced included the manual approach of lecturing that emphasized mainly learning through theory, with minimal demonstration by the trainers. The manual technique practiced in graphic design production required considerable time beyond that laid out in the departmental timetable. Without the input of extra time it was not possible to produce quality works of art. Errors made on a piece of graphic design work resulted in re-working the entire project and it was labour intensive and limited the possibilities of mass producing artworks. If ICT had been in place, it would have reduced the amount of time required to re-design the artworks such that they were ready for mass production.

Given the foregoing, this research emphasized the importance of using ICT as a tool in graphic design training of students; it is argued that this would narrow the existing competence gap in relation to the world of work.

1.1.4 Motivation

The motivation to do this study originates from the realization of the use of ICT in the teaching and learning of graphic design as a discipline having faced a challenge of using it in producing works of art at employment after graduation. ICT needs to be linked to specific needs of learners, desisting from the "one size fits all" approach (Leach, 2005, p. 112). The MVP programme (2009) has created awareness of the importance of ICT tools in the teaching/learning process for productive research work and it reawakened my understanding of the importance of ICT in training, while at the same time, appreciating the shortcomings of investment in vocational and technical funds and tools that are needed for making a country's educational system more in tune with the demands of the labour market.

The MVP programme (2009, p. 5) is oriented towards training learners with relevant competence in one's trade, occupation and profession in relation to the world of work. Part of this process involves reflections on the methods of delivery of skills and competence such as the use of ICT in processing, writing and storing information. The internet, as a source of information for getting knowledge for the execution of projects, was also essential in implementing the learning tasks.

In addition, Mjelde (2008, p.25) observed that the overall intention of the MVP programme was to establish and formalise a two part competence, that is, collaborative work in one's own technical field of competence, as well as one's practice based vocational teacher education to produce teachers and mentors of learning who are able to embrace and demonstrate competence in the use of innovations in vocational pedagogy. Vocational pedagogy is a field of knowledge oriented towards trades, occupations and professions with the central aspect of understanding the relationship between learning in

school and learning in work life (Mjelde, 2006; Kyakulumbya, 2008). Furthermore, she points out that the programme advocates for the development of well-rounded human beings who respect the world of work – the unity of hands, minds and hearts needed in every profession.

The experience that I hold, both personal and in terms of my studies provided the inspiration to investigate the use and application of ICT tools in graphic design course at Kyambogo University. These experiences created awareness of the competence gap that existed during my training at the undergraduate level where graphic design training and practice was more manual than electronic.

1.2 Statement of the problem

Competence of training in graphic design provided at the Department of Art and Industrial Design in Kyambogo university is still wanting in relation to the requirements of the world of work. The foregoing submission was based on my training at the same department from 2003 to 2006 and thereafter joining the world of work where my ICT knowledge and skills were inadequate in graphic design. After graduation, I was unable to deal with the situation of graphic design in the world of work where electronic knowledge was a key component. Due to the inadequacy, I found it imperative to investigate the present situation at the Department of Art and Industrial Design, Kyambogo University with regard to graphic design training in relation to the world of work.

1.3 Purpose of the study

The purpose of this study was to investigate ICT usage in graphic design training at the Department of Art and Industrial Design of Kyambogo University for competence development in relation to the world of work.

1.4 Specific objectives of the study

The following specific objectives were formulated from the purpose of the study;

1.4.1 To verify the forms of ICT tools in place for graphic design training at the Department of Art and Industrial Design, Kyambogo University.

1.4.2 To establish the methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.

1.4.3 To find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

1.5 Research questions

The following research questions were formulated from the objectives to focus the study:

1.5.1 What forms of ICT tools are in place for graphic design training at the Department of Art and Industrial Design, Kyambogo University?

1.5.2 What methods of graphic design delivery are employed during training using ICT tools in the Department of Art and Industrial Design, Kyambogo University in relation to the world of work?

1.5.3 Is the ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University appropriate in relation to the world of work?

1.6 Scope of the study

1.6.1 Geographical Scope

The study was conducted at the Department of Art and Industrial Design, Kyambogo University located in Nakawa division, Kampala district (Map 1: Appendix III). The University is located approximately eight kilometers from Kampala city centre.

1.6.2 Content Scope

The purpose of this study was to investigate ICT usage in graphic design training at the Department of Art and Industrial Design, Kyambogo University for developing competence in relation to the world of work. The content of the study was therefore based on three objectives. Objective one was to provide information that identified and verified the forms of ICT tools employed for graphic design training at DAID, KyU including processing and storage forms, supportive forms and audio/visual forms and their numbers. Objective two was to gather information on the method of delivery with the use of ICT tools in graphic design training in relation to the world of work. Therefore, specific consideration was put on the individual and group approaches to graphic design training for mastery of skills in graphic design production. The third objective was to generate information on competence development realised through the combined use of ICT tools and methods employed in graphic design training in relation to the world of work.

1.6.3 Time scope

The time scope in this study addressed two aspects, namely: the researcher's own training experience, which dated back to 2003 and the actual investigation of this topic, which stretched from May to July 2012.

1.7 Significance of the study

If the findings of the study are disseminated in the newspapers, television, internet and used as scholarly literature, it is hoped that:

- Students and staff at the Department of Art and Industrial Design, Kyambogo University will realise the importance of using new technologies and adopt it during graphic design delivery in relation to the needs of the actual workplace.

- The programme of graphic design will be improved through adaptation of appropriate technologies for training lecturers and students at all levels of graphic design training.
- A strong link between the Department of Art and Industrial Design, Kyambogo University and the world of work will be established through development of programmes that directly address the labour market requirements.
- Development partners will be attracted to provide the necessary ICT tools and other related support to link the training programme to the real practices in the world of work.

1.8 Justification of the study

The study was necessary to evaluate the course of graphic design training at the Department of Art and Industrial Design as regards to the use of ICT in relation to the world of work to minimise the increasing unemployment rates amongst the graduates. When the different forms of ICT tools are used in the production of authentic graphic design projects during training, students will gain mastery of skills and tools to implementation tasks. As such, the newly acquired ICT knowledge and skills will empower students to work as competent graphic designers in industry, create own jobs or apply their skills for leisure.

The case study of DAID was necessary to evaluate the course of graphic design training in tandem with the changing technologies where electronic production of graphic design was used to supplement the traditional approaches of using labour intensive hand tools for the performance of tasks in the world of work.

The findings of this study, if further disseminated, will provoke the implementation of appropriate ICT usage in the Department of Art and Industrial Design for effective training of competent graphic designers in relation to the world of work.

1.9 Limitation and delimitation of the study

1.9.1 Limitation of the Study

It was a challenge to get students of graphic design to cooperate at the time of the study since they were preparing for their exhibition and the semester was coming to an end. To mitigate this problem, distribution of the questionnaires (Appendix 1B) was done through the studio technician and collected later.

Some respondents had busy schedules where I was forced to re-schedule my appointments for other dates; this extended data-collection beyond the planned period. Some respondents were hesitant to divulge information that I regarded necessary for this study. Therefore, results might not accurately reflect the opinions of all members of the included population, because of the failure of sample respondents to answer with sincerity.

I found it costly to move to different workplaces and locate practicing former students for inclusion in the study, and there were high telephone bills that dried my pockets.

The busy schedules of some respondents required adjustments where appointments were rescheduled especially in the workplaces and schools where respondents were busy. Appointments were rescheduled from time to time leading a lot of pressure that limited the number of interviews.

The results of the study may not be comprehensive beyond the specific population from which the sample was drawn due to the category sample that was available for the study. I ensured that the participants were connected to graphic design and respondents selected from different categories of the population sample (Appendix IV & Table 1).

Due to the length of the study, a significant number of respondents were not readily available since they had broken off for holidays in different districts outside the study area. Therefore, I ensured that most of the respondents were met during exhibition when majority of the students were present in large numbers at DAID, KyU.

1.9.2 Delimitation of the study

The study is limited to use and application of ICT tools as a modern means of graphic design production as opposed to manual methods. The respondents were limited to graphic designers in the teaching, learning or practicing positions in DAID and the world of work. This category was regarded as knowledgeable with the subject of graphic design production and processes for employment.

The literature used to back the information was mainly sourced from the internet due to the difficulty in finding local information on the subject on the use of different forms of ICT tools in graphic design production since most practicing designers obtain the information for use from DVDs.

In order to assure manageability of the collected data, the instruments used were both multiple-choice questions and those designed for open-ended responses. Due to the large number of potential participants in the study population, the population involved in the current study focused only on members located within Kampala district and Nakawa division.

1.10 Definition of key terms

The definition of key terms was arranged in the alphabetical order for simplicity and logical reading.

Competence development: In this context, competence development refers to the increase in knowledge, skills, attitude and awareness on the use of different forms of ICT tools for graphic design production.

Graphic design: Graphic design refers to a creative process undertaken to communicate message(s) to targeted audience(s).

ICT: **Information and Communication Technology.** In the context of this study, Information and Communication Technology (ICT) refers to the hardware and software tools used in graphic design training. This was categorized in three forms of ICT tools: processing and storage, supportive and audio/visual.

Methods of delivery: In the context of this study, the methods of delivery refer to the modes of teaching/learning employed by the instructors and students during graphic design training.

Training: In the context of this study, training refers to the acquisition of knowledge as a result of teaching a vocational or practical skill to graphic design trainees in relation to the world of work.

Verification of the ICT: In the context of this study, verification refers to checking the level of preparedness of graphic design training by identifying the forms of ICT tools.

World of work: As far as this study is concerned, the world of work, or the workplace, refers to schools and industry where graphic designers carryout practical tasks and display the skills gained at institutions of learning as students when self employed or at leisure application.

1.11 Conceptual Framework

A conceptual framework, according to educational researcher Smyth (2004, p. 6), is structured from a set of broad ideas and theories that help a researcher to properly identify the prevailing problem, frame their questions and find suitable literature. He adds that scholarly academic research uses a conceptual framework at the outset because it helps the researcher to clarify the research questions and aims.

In the Figure 1, the outcome of ICT competence in graphic design starts with prior knowledge at either primary, secondary or diploma level. It is necessary for the graphic design course to have input that incorporates relevant ICT programme content, uses appropriate ICT tools and integrates ICT in the methods of delivery during training within a good working environment. An appropriate timetable that provides adequate time for the learning of theory and practice with the use of ICT tools should be in place. Gunton and Day (2003, p. 15) suggest that timetables, when used, must be ''realistic''. Awareness created through practice with the ICT tools helps students to gain appropriate ICT knowledge and skills to develop the right professional attitude in graphic design production.

Given the foregoing, it is hoped that the high rates of unemployment and underemployment will be minimized amongst trainees, especially where graphic design training uses more of the ICT tools in an environment that is increasingly advancing with the use of technology. The manner in which learners, teachers and administrators deal with the current situation will influence employment in ICT related fields, determine the level of self-employment and determine the application of graphic design for leisure activity in the world of work.

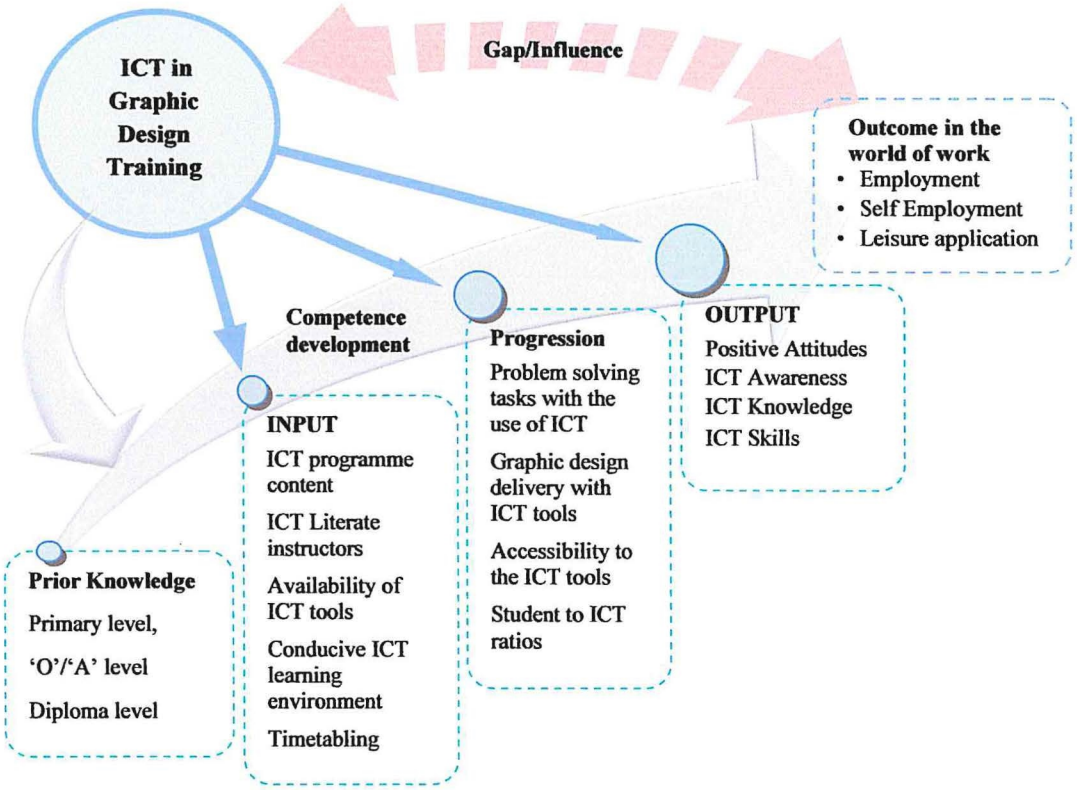


Figure 2. Conceptual Framework.

1.12 Structure of the report

The study is presented in five chapters. Chapter one is the introductory section. Chapter two handles literature review in relation to the three objectives of the study. Chapter three addressed the research methodology. Chapter four is the presentation of data analysis and interpretation. Chapter five is the discussion, conclusions and recommendations.

2: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed literature from scholars on the subject of ICT in graphic design training in relation to world of work. The review of literature was done to investigate ICT usage in graphic design training at the Department of Art and Industrial Design of Kyambogo University for competence development in relation to the world of work.

The three specific objectives of the study that guided the literature review were: to verify the forms of ICT tools in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University; to establish the methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work; and to find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

2.2 Verification of the forms of ICT tools for graphic design training at the Department of Art and Industrial Design in Kyambogo University

The provision of ICT tools in graphic design training prepares designers for the world of work. The use and application of ICT in graphic design training increases the opportunities for graphic designers to apply the electronic as opposed to manual production processes predominantly practiced in the world of work. Pacific Policy Research Center (2010, p. 1). In the pedagogy of graphic design, I presume that the use of different forms of ICT tools permits an enabling environment that gives graphic designers an opportunity for hands-on-experience to practice with hardware and software tools that are in line with those available in the world of work (Miller, 2008)

I maintain that ICT tools are a necessity for training graphic designers and should be made available in the learning environment. The basic ICT tools for hands-on- experience in graphic design production should integrate computers with the relevant software for processing works of communicative message(s). In support of this view Miller (2008, para. 2) points out that in today's design world, a computer is essential as a design tool and business tool. The major decision is what computer to get and this generally starts with deciding between a Macintosh (Mac) and Personal Computer (PC). Furthermore, Kelsall (2001, p. 6) added that one of the most useful ways to utilise digital technology is through the use of computers because digital applications give designers the means to create, erase, manipulate and experiment with design.

In addition to providing computers, I put forward that the suitable software to use for graphic design production comprises adobe photoshop, adobe illustrator, freehand, coreldraw, and indesign for creating different forms of artworks. In support of this view, Kristian (2009, para. 2) maintains that adobe photoshop allows the user to edit existing images using a wide variety of tools and features, change colors, lights, sizes to completely transform a boring photo into an award-winning print. Kelsall (2001, p. 7) adds that "designers use photoshop to create original images, although many graphic designers prefer to use Illustrator." Vector images aid the design quality by allowing the user to create original graphic design illustrations in both two dimensions (2D) and three dimensions (3D) with different effects in comparison to photographic images. Kristian (2009, para. 3) upholds that adobe illustrator as a vector-based graphic editor program is used to maintain high quality images that are not constrained to a particular size or resolution and can be enlarged without loss of quality. This software tool is used by most industrial designers who use it to create original graphics and animations.

In view of graphic design illustrations, digital cameras are essential tools to consider for graphic design training since they are helpful in creating eye-catching images needed for effective communication messages. The use of video or still cameras in graphic design training creates opportunities of exploring these tools to develop creative works of design and animation for use in the internet and print designs. Kelsall (2001, p. 7) puts it that "digital cameras, printers and scanners can be plugged into the computer to give the designer versatility and creativity. He recognises the great impact of new technology on the field of graphic design because of printers, scanners, internet and the designing software. According to Technology in Graphic Design (2008, para. 2) the invention of these ICT tools has made the designer's job simpler because they facilitate the processes of printing and scanning of images onto the computer.

The use of video recorders as a tool for documentation of graphic design training processes should benefit all trainees since this tool is fundamental in capturing the different stages and proceses of graphic design production for future use. Sife, Lwoga and Sanga (2007, p. 58) argue that both television and radio can improve teaching and learning process in different ways by showing processes and activities that may not otherwise be available to the learner. Visual images of stationary or moving objects, both live or pre-recorded, accompanied by electronically captured sound can be processed and re-displayed during training. The radio can be used to replay pre-recorded sounds previously used in training, just like the television, though without display of visual images. Meleisea (2008, p. 64) recognised the importance of video recorders in the teacher training centres for the improvement of teaching practice through self assessment and reflection. She added that the use of pre-recorded video can be translated into 'learning objects' in the modern age of computers and digital resources. Video recordings

are good electronic resources that purposefully combine digital assets such as pictures, video or audio snippets, bits of text, or smaller web-delivered applications to communicate specific concepts or messages and therewith have an explicit learning objective inscribed to it. Video recordings can be played on television sets or a computer by use of a projector in the presence of learners in a graphic design class.

I postulate that the provision of internet services for use in graphic design training is essential in this era of ICT. Its presence can be explored during the training process to help learners search for information related to graphic design training. Furthermore it provides a good platform for communication and sharing ideas over long distances besides obtaining tutorials and researched information related to the field of graphic design. Through the internet, designs can be sent to somebody in the shortest time possible and that person after a quick look could respond with advice very easily. The internet has many images that can give ideas and even some images to use in a design. The World Wide Web also provides a virtual international gallery for students' work (Loveless, 2003). With all that access, designs have got better with more people gaining interest in designing.

Baryamureeba (2006, p. 470) remarked that "internet, distance-learning opportunities, online (electronic) learning, computerized library packages and strategic databases must be brought nearer the isolated and poor." Kasozi (2003, p. 59) affirmed the acceptability of ICT as a major medium higher education and he strongly cautioned that any university that does not use modern ICT infrastructure cannot access relevant information for the delivery of quality education. Similarly, Sseremba (2009, para. 4) adds that whereas ICT courses are predominantly practical and capable of producing students who can create their own jobs, no university in Uganda has the sufficient

facilities required to train a practical-oriented ICT professional who can establish his own professional job.

2.3 Methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.

The mode of graphic design delivery with the use of ICT tools is critical for effective implementation of practical skills during training. However, there are divergent views on the use of ICT in training because of the effects it has on skills development and creativity of the users and the learners who use ICT as a tool (ILO, 2001, p. 9). Therefore, an interpretation of the most appropriate method of graphic design delivery with the use of ICT entirely depends on the knowledge and understanding of the implementers. As such, it was essential for instructors in the teaching position to posses the most effective skills and knowledge in delivering graphic design with the use of ICT tools for the benefit of the students during training. Therefore, in teachers' professional development, ICT tools are seen as essential as they have the task of preparing students for their role in modern society (Magambo, 2006, p. 10).

According to a UNESCO (2005) survey, only 35% of already trained teachers in secondary schools in Europe, Asia and Africa, have basic skills in ICT, which leaves the remaining 65% of the teaching workforce on the three continents still in need of computer skills (Zindi & Aucoin, 2006 cited in Phelps and Madison , p.10). Furthermore, Moon (2004, p. 2) affirmed that in the world of work today, it is no longer an option to learn the basic skills of ICT but rather a prerequisite for academic qualifications due to the rapid development of these new technologies coupled with the world-wide challenge to educate all children. This situation has therefore led to global reform, development of teacher

education and motivated educational institutions to redesign and restructure their teaching methods such as to enable students equip themselves for the future. Similarly, Magambo (2006, p. 8) observed that in Africa, teacher training in ICT is not uniform and this was bound to affect the method of delivery while employing ICT tools.

Additionally, UNESCO (2000, p. 77) observed that teachers, professors, technical and administrative staff must be given training that enables them to integrate new information and communication technologies into their teaching programmes, and to examine the multiplier effect with regard to their use. The Commonwealth Association of Polytechnics in Africa (CAPA, 2007) argue that although ICT and e-learning is gaining ground as an effective pedagogical tool in higher education, Technical and Vocational Education Training (TVET) institutions and polytechnics in Africa are lagging behind. The reason appears to be lack of knowledge and expertise in the use of these new technologies in the area of technical and vocational training, and the absence of institutional and country policies on the integration of ICT and e-Learning into TVET. Similarly, Saitoti (2007, p. 3) points out that the use of ICTs in education offers new ways in which the quality, effectiveness and flexibility of higher education can be improved through distance learning.

According to Miller (1997, p. 94) it appears that ICTs have made little impact in training institutions in spite of the seemingly great potential to improve teaching and learning. The lack or inadequate training of teachers is considered to be one of the major barriers for the integration of ICTs in TVET. On the contrary, Hampton (2002, p. 83) argues that the learning of practical skills is most often associated with workshops and laboratories, specialist materials and equipment, smaller class sizes and, frequently, longer blocks of time for practice and rehearsal.

I consider ICT tools application necessary in the teaching and learning process to build competence in graphic design production. The method of graphic design delivery by use of appropriate technology simplifies the process of training and develops competence through experimental learning. Nilsson (2011) mentioned that the methods of delivery that encourage trainees to learn independently or in groups should translate into the mastery of ICT tools of production. In the pedagogy of graphic design today, graphic designers need a range of knowledge and skills with excellent perceptive abilities, aesthetics and the ability to visualise work well. (Kazmierczak, 2001; Natharius, 2004, p. 223)

In the world of graphic design, practical experience is fundamental when tools and materials are fully used in the process of producing work. Competence development requires practice of the right skill by using existing tools and materials for production. Mitter (2003, para. 2) put forward that ICTs condition the extent and nature of current globalization by providing tools and networks to expand the participation of all social groups, including men and women, teachers and students, in the information-driven economy and the knowledge society. This can be achieved through an organised process in the mode of delivery where large groups of students are involved.

On the contrary, Whittemore (2013, para. 4) asserted that internship as a method of learning exposes graphic designers to the actual working environment and helps them to build relationships with other people in the business. He maintains that "With the right training, a designer will be able to work in the industry with confidence and enter into a rewarding and creative career". Trucano (2005, p. 36) adds that pedagogical practices of teachers using ICTs can range from only small enhancements of teaching practices, using what are essentially traditional methods, to more fundamental changes in their approach

to teaching. ICTs can be used to reinforce existing pedagogical practices as well as to change the way teachers and students interact. Furthermore, Hensley (2010, p. 43) mentioned that the successful integration of ICT into the classroom depends on the ability of teachers to structure their learning environments in non-traditional ways, merging technology with new pedagogies. However, Carlson (2002, p. 122) adds that even if students learnt independently how to use technology to enhance their learning and skills development, with little or no involvement from their teachers, they are highly unlikely to have those opportunities if teachers do not let them have access to technology.

Baryamureeba (2006, para. 4) asserts that professional courses in computing and ICT were almost non-existent before 2001. What was missing, and what is still missing in most African universities, are curricula that meet both national and international standards.

2.4 ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University and its appropriateness in relation to the world of work

ICT competence of graphic designers in relation to the world of work should be reflected in the programme to link vocational training to the job market requirements. This is possible where deliberate implication of the graphic design implementation is linked to activities that allow more students interaction with the ICT tools during training.

In support of my opinion, Cook (2012, para. 3) stresses that graphic designers need to have creativity and artistic sensibilities, and the technical savvy to operate complicated computer-based design programs that are in the world of work. Crossley (2012, para. 1) maintains that computer design is used in many facets of occupations and leads to more simplified accurate way to render objects. It takes some artistic and creative talent, a good

eye for color, layout, contrast and balance to create visually-appealing computer art. English (2011, para. 3) adds that graphic design programs also help one to master the necessary technology including standard industry programs such as adobe photoshop, illustrator and flash.

Additionally, Chinen (2003, p. 94) points out that teachers should consider two main skill dimensions of technical and pedagogical ICT literacy, and occupational ICT literacy. He explained that Technical and pedagogical ICT literacy refers to the technical literacy skills for the equipment being used and the specialized skills necessary in its pedagogical application. Occupational ICT literacy refers to the competencies related to the use of technology-based equipment and control systems.

Likewise, I assume that the ICT competence of students in graphic design can be improved through the use of the modern equipment during the production of communicative works of design. On the contrary, the country studies cited by the ILO (2001, p. 9) indicate that the introduction of ICTs can contribute both to up-skilling and de-skilling of workers. The report indicated that ICTs can lower skills and competence to single-task machine or improve it to multi-task work depending on the level of creativity.

Effective acquisition of competence in any area of learning for competence development should have problem solving tasks embedded with ICT; this is to aid the acquisition of the much needed knowledge and skills through practice with the ICT tools. Stevens (2001, p. 52) argues that the integration of ICT in learning is significantly realised where the content of the curricula fully integrates its use in all areas of learning. He noted that world over, the present barrier to the expansion and dissemination of more advanced systems in all parts of the world is lack of relevant, well-designed instructional content in the technical/vocational training area.

ICT competence in graphic design is achievable when learners continuously practice with the tools of trade. Mitchell (2010, para. 3) supports this view that as more tools of graphic design trade are digitized, it is important for graphic designers to keep up with new technology. Designers must constantly update their software skills and knowledge to remain relevant in the workplace.

Exposing graphic design trainees to ICT makes it possible for them to harness the value of these tools in producing different works of communicative designs. Selivanov (2004, p. 28) agrees that "opportunities offered by ICTs are much wider and can potentially become a powerful environment for creative self-actualization and project design". This potential is likely to meet the need of a creative mind to implement creative concepts via traditional material and tangible media. In order to seize these opportunities, graphic designers need to have creativity and artistic sensibilities, technical savvy to operate complicated computer-based design programs. Interpersonal communication skills as well as working with co-designers and customers. Teamwork skills are important as most design jobs are the result of collaboration.

It is my opinion that graphic designers need to have competence in the use of actual tools that are critical for producing communicative works of art if they are to obtain increased knowledge and skills in their use in DAID, KyU. For effective use of tools, Nazara (2004, p. 15) points out that the level of ICT usage in any company depends significantly on variables such as the scale and type of activity. The actual ICT tools used in a company would depend on the user.

I consider that a graphic designer needs to get prepared in relation to the world of work regardless of the size of the organisation because expectations are that one learns through tutorials, seminars, books and through apprenticeship to gain specific skills

oriented towards work. Schmidt (2012, para. 3) puts emphasis on the best graphic design programs to include instruction in principles of design, computerized design, printing techniques, web site design, multimedia and animation.

I agree that competence in graphic design can be developed in relation to the world of work through continuous training. Schmidt (ibid) supports this view that graphic designers keep themselves up to date with appropriate technology and graphic design software, either by formal courses offered through a university or on their own. Crossley (2012, para. 2) adds that graphic designers should use expertise in all aspects of layout and design to produce a computer-generated, creative final product through practice with tools and materials in various areas of graphic design.

The basic skills needed for graphic design training are varied and range from proficiency in design packages that enhance learning in the process of "interacting with the tools" to understanding the different ICT packages for manipulation of work (Nilsson, 2011). In the graphic design industry, vocational didactics is practiced in the workplace through lifelong learning experiences (Kolb, 1984). Experts in the field of graphic design are constantly learning as they interact with modern technology in the production process.

The world of work requires the use of modern skills in the implementation of graphic design tasks geared towards quality production of work and training institutions need to inculcate these ideas through the teaching and learning processes. To affirm this, Nilsson (2011) points out that both new knowledge about vocational learning and new demands and possibilities related to new technology results into new tools, materials and tasks demanded by the market in terms of products and services. Therefore, their use in training institutions of learning aids the development of relevant skills and knowledge for effective implementation of tasks in the world of work.

The social-technical model prevails in the world of work where work organisation is demarcated in social and technical systems such that the organisation structure and people are linked to tasks and technology respectively (Appelbaum, 1997, p. 458). Specialization is practiced at all levels of graphic design production with particular attention to details when performing ICT related tasks for quality delivery of graphic design.

Training courses that meet the current market needs considers available resources and tools in relation to the world of work. Walukaga (2011) points out that education that matches the technological level within a country prevents unemployment that would arise from poor choices and wrong combinations at lower levels of education. He questions the rationale of a qualified teacher working in construction industry or training to become a pilot in a country with few planes. In the 1960s, people were booked for job placement before completing training. The education systems need to think and readjust the programme to make it relevant and meaningful to the learners in this country.

The quality of teachers in training institutions should reflect the level of competence in a specific area of training where dispensation of knowledge is not questionable (BTVET Strategic Plan, 2011-2020, p. 13). The shift in production due to globalization and technological changes should be seen in the trainers if learners are to benefit in a long run. The quality of human resources is a major factor of success for all nations in the new millennium according UNESCO (2009). The move towards globalization requires a fundamental shift in thinking about the methodology of education. The importance of information, underscores the importance of adopting ICT in the education sector (UNCST, 2002, p. 35).

The competence in using different forms of ICT tools to impart practical skills in the area of graphic design is needed at DAID, KyU to equip trainees with employable

knowledge. Nuwagaba (2012, p. 29) suggests that "countries that have solved unemployment problems rapidly have built on an education that teaches nationals practical skills that is missing in Uganda's education". Manday (2012, p. 29) adds, "Uganda's education needs to be restructured to make it relevant to modern demands".

The methods of graphic design delivery with the use of modern ICT tools is significant in improving the developing the diverse skills and knowledge of the learners. Most important transformation in education and learning requires a shift from the traditional methods where one confronts many learners with a textbook to a system where students learn through the use of various media such as computers, internet, videos, radios, newspapers, entertainment and etcetera (UNCST, 2002, p. 35).

I maintain that if hands-on technology competence is to be achieved, actual application of skills in the classroom should be experienced by all learners. Obviously, the more time allocated for this training, particularly hands-on time, the greater the mastery of these basic skills will be. Carlson (2002, p. 122) points out that hands-on technology use requires the development of core technology competencies and skills and actual application of skills in the classroom.

I affirm that the skills levels of graphic designers should meet the occupational needs for application in the world of work. In view of this, Gray (2002, p. 13) commented that the competition for technical high-skill/high-wage occupations does not displace technical vocational education graduates who have the required specific occupational skills. He cited a specific example of an individual with a university degree in Art but lacked the Computer Graphic Design (CGD) skills, unable to displace a person with an associate degree in CGD. He further expressed that it was highly unlikely that college graduates will be employable in the graphics field until/unless they learn these skills.

This is a critical point because of the importance of specific technical skills; a person with more formal education will not displace an individual with less education but has technical skills.

2.5 Summary of Literature Review

In preparation of the graphic design situation at DAID, KyU, the provision of relevant hardware and software forms of ICT tools is necessary for instructors and students use during training. Therefore, the hardware forms of ICT tools for graphic design training should cater for computers, internet, printers, radios, scanners, still cameras, television, and video cameras while the software should incorporate adobe illustrator, adobe photoshop, coreldraw, indesign for graphic design production.

The use of ICT tools during graphic design delivery is dependent on the level of training of the instructors in the teaching and mentoring position who are responsible for implementing the teaching. Most instructors in African institutions of higher education lacked the knowledge and skill of using ICT tools for instruction in preference for the traditional approaches leant through their previous training experiences. The use of non-traditional teaching methods should be adopted to supplement the methods of delivery with the use of modern ICT tools, knowledge of which should be possessed by instructors in the teaching position to foster cooperative learning practices for mastery knowledge and skills in graphic design production during training.

Any form of training meant to develop relevant ICT competence for productive work should allow users to interact extensively with different forms of ICT tools for considerably longer periods of time. In addition, instructors should possess the technical and occupational skills needed for the implementation of tasks in workplaces, the skill that they posses should be transferred to trainees in preparation for the vocational practice

in the world of work. The programme of graphic design training should be linked to the practices in the world of work for mastery of ICT tools for electronic or print media production.

2.6. Evaluation of reviewed literature

During the process of conducting this study, it was a challenge to get scholarly literature on the use and application of ICT tools in graphic design training. Most of the information on the subject was kept in the software CDs and are directly used by graphic designers in the world of work to execute tasks. Furthermore, local literature on the subject was difficult to come by, scholarly literature was scant and a challenge to locate during the process of investigation. Consequently, I used the internet extensively as a source of literature to obtain most of the information needed on the subject of investigation. Owing to the scarcity of literature, it is my hope that the publication of this study will contribute to the body of knowledge and supplement existing local literature on the use of ICT in training for competence development.

3: METHODOLOGY

3.1 Introduction

This chapter presents the research design, population, sample size and sampling technique, data collection methods, instruments for collecting data, validity and reliability of the instruments, procedures of data collection and organisation of raw data. The purpose of this study was to investigate ICT usage in graphic design training at the Department of Art and Industrial Design of Kyambogo University study for competence development in relation to the world of work.

The following three specific objectives used to guide the research were based on the purpose of the study: to verify the forms of ICT tools in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University, to establish the methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work and to find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

3.2 Research Design

A descriptive design was employed in the collection, process and analysis of data using more of the qualitative than quantitative approach. Boeije (2010, p.7) states that "...the separation between quantitative and qualitative research is fading and ... the combined use of the two methods in a single project is gaining popularity".

Furthermore, Creswell (2007, p. 40) adds that "We also use qualitative research because quantitative measures in the statistical analyses simply do not fit the problem. Interactions among people...are difficult to capture with existing measures. To level all

individuals to a statistical mean overlooks the uniqueness of individuals in our studies. Qualitative approaches are simply a better fit for our research problem".

Qualitative approach enabled me to formulate open ended questions to carryout one-to-one interviews, focus group discussions and record observations in order to gather opinions and views on the three objectives of the study; the outcomes were analysed and interpreted narratively. Quantitative approach was used extensively in questionnaires (Appendices 1C and 1D) whose questions were close than opened ended and numerating the responses in the process and analysis of data on three objectives. However, the interpretations were expressed narratively.

For depth, a case study of KyU, DAID was adopted for this study which enabled me to get data on the three outlined specific objectives. However, in order to get additional views on objective three, the research was extended to the graduates of KyU in the area of graphic design who had joined the world of work.

3.3 Study area and Population

3.3.1 Study Area

The Department of Art and Industrial Design, Kyambogo University, Kampala district was the study area where those connected to graphic design as trainers and trainees provided information needed for this research on ICT competence. Also graduates who took graphic design as an elective and scattered in Kampala city, Kampala district, were sought to give needed information on the competence of knowledge acquired in relation to the world of work. Map I (Appendix III) indicates the study area and district.

3.3.2 Population

The target population was comprised of those closely connected with graphic design in DAID at Kyambogo University. The population included three lecturers, one studio technician, 68 students and six graduates of graphic design in the world of work. Documentary review is included in the population as Kakooza (2002, p.11) suggests, "...totality of all subjects under investigation including human beings, animals, schools, universities, computers among others".

3.4 Sample size and sampling technique

3.4.1 Sample Size

The sample size used in this study to gather the needed information totaled to 29 respondents which included one lecturer; one studio technician; 21 students of which nine were of BVAD (five from second year and four from third year), 10 BAID (five from second year and five from third year) and two BEd (in the second year of study); six graduates where three were secondary school teachers and three were in industry as self employed graphic designers. Documentary review included library books, internet, departmental timetable and graphic design course outline for BAID, BVAD and BEd. Table 1 represents the composition of the respondents and sample size, indicating the targeted size and those who finally responded in the study.

Table 1

Composition of respondents

Category of Population	Sample size	
	Target size	Responded
Students who elected graphic design.		
BAID Year II	5	5
Year III	5	5
BVAD Year II	5	5
Year III	5	4
BED Year II (equivalent to BVAD III)	2	2
Instructors		
Lecturers for graphic design	2	1
Technician in graphic design	1	1
Graduates of graphic design at workplaces;		
Schools	3	3
Companies	3	3
Total	31	29

3.4.2 Sampling Technique

Since all the population was linked to the study by the virtue of being connected with graphic design, the population of lecturers and studio technician were taken without sampling. The sample size of 21 students was randomly selected using the first-contact to get the required number of respondents. Graduates in the world of work were selected using the snowball sampling technique where one respondent provided information to the next and so on until the number needed was complete.

3.5 Data collection methods

In order to gather data for this study on the use and application of ICT tools in graphic design training, the following methods were employed;

- Interviews
- Observations
- Documentary Analysis

3.5.1 Interviews

The three forms of interviews used to gather needed information were; questionnaire interviews, one-to-one interviews and focus group interviews as explained below:

Questionnaires interviews: I used questionnaires to gather information on the use and application of ICT tools in graphic design production from the following respondents: Lectures and studio technician; students of BVAD, BAID and BEd; graduates in the world of work. The questionnaires were semi-structured bearing both open-ended and closed-ended questions. The open ended questions were used to give respondents an opportunity to give in-depth information that was relevant to the study. The closed ended questions were used to quantify aspects of the study for easy recording of responses. The questionnaires were filled and returned prior to the one-to-one interviews.

Focus group discussions interviews: The focus group discussion was conducted with eight students where three were from BVAD, three from BAID and two from BEd. A small group was chosen because it represented members from a mixed group of students who joined the programme at different stages; some opted for graphic design having joined the programme in their first year of study while others upgraded joining the second year. Upgrading students had prior experience as practicing graphic designers on freelance or teachers whose views were important in revealing information regarded necessary for this study on the use and application of ICT in graphic design production in relation to the world of work. The use of focus group interviews is supported by Kvale (2009, p. 150) who points out that focus group interviews are well suited for exploratory studies in a new domain, since the lively collective interaction may bring forth more spontaneous expressive and emotional views than in individual, often cognitive, interviews.

One-to-one interviews: The one-to-one interviewing was applied to lectures, studio technician and graduates of graphic design in the world of work. The interviews were useful to further probe respondents by asking oral questions which were answered in relation to the use and application of ICT tools in graphic design training for the world of work. I used interview guides Appendices 1D and 1F with open ended questions to gather information from three categories of respondents: Lecturers and studio technician; and graduates of KyU in the in the world of work respectively. The use of one-to-one interview is supported by Amin (2005, p. 158) as a method for collecting data and he supports the use of interviews as oral questionnaires where the investigator gathers data through direct verbal interaction with participants.

3.5.2 Observations

I observed the ICT tools in the computer studio, students' participation in the manual production of graphic design and the display of graphic design artworks at the end of year semester exhibition in DAID, KyU. In the workplaces, I noticed some graduates of DAID, KyU producing communicative works of graphic design using computers and available graphic design software, even as they scanned images and printed work for clients. Observation of the learning, training and production of graphic design was continuous throughout the process of conducting this research. Observations provide information on actual situations and helps in discerning what people do, know, create and use (Boeije, 2010, p. 60).

3.5.3 Documentary Analysis

Documentary analysis was carried out to obtain relevant information on the training and on the use and application of ICT tools in graphic design training in relation to the world of work. The programmes containing the courses for training, timetable for graphic

design training and student's works in the computer studio were consulted. The programme for BAID; BVAD; and BEd were checked to identify the link between the content and ICT tools application in graphic design training in relation to the study objectives. The timetable for graphic design training was studied to identify the time allocated for ICT practice and the graphic design work displayed in the computer studio (Figure 18, Appendix V) were part of documents considered for analysis in the study.

3.6 Instruments for collecting data

The instruments used to collect the needed information are discussed in line with the methods adopted for data collection such as the interviews, observations and documentary analysis.

3.6.1 Interviews

Under the interview method of collecting data, the various instruments employed to obtain the needed information involved the use of questionnaires, focus group discussions and one-to-one interviews as discussed in the subsequent paragraphs.

Questionnaire interview: In order to conduct questionnaire interview, I prepared three categories of questionnaires. Questionnaire Ka (Appendix IA) for lecturers and studio technician, directly connected with the training of learners in graphic design, contained six questions. Questions three, four and six were in connection with objective one, questions one and two sought information on objective two while question five generated information on objective three. Questions one and three (b) were unstructured. Questions two, three, four, five and six were structured.

Questionnaire Kb (Appendix 1B) for students of BAID, BVAD and BEd who elected graphic design, contained eight questions. Questions one and six were useful in collecting information on objective one. Questions two, three and five were connected to

objective two while questions four, seven and eight are linked to objective three. All questions were structured except six (b) which was unstructured.

Questionnaire Kc (Appendix 1C) for graduates of graphic design in the world of work contained six questions. Question one which was general, sought demographic information regarding location and company or school where the graduates worked. Question six provided information on objective one, question five generated responses on objective two while questions two, three and four sought information on objective three of the study. Questions two and three (a) were structured while questions three (b), four, five and six were unstructured.

Focus group discussions interview: In order to conduct a focus group discussion with students of BAID, BVAD and BEd, a guide Ke (Appendix 1E) bearing four unstructured questions was used. Question one was used to generate information on objective one, question two answered objective two while questions three and four provided information on objective three.

One-to-one interview: For one-to-one-interview, a guide Kd (Appendix 1D) for lecturers and studio technician containing four unstructured questions was used to get information for the three objectives. Question one was related to objective one, question two was connected to objective two while question three and four were related to objective three.

Besides the use of questionnaires and interview guides for data collection, a digital sound recorder was used to record the focus group discussion with students and one-to-one interviews with the lectures, studio technician and graduates in the world of work.

The information given is summarized in Table 2 indicating the questions in relation to the each objective of the study.

Table 2

Instruments in relation to each objective.

Instruments	Questions	Respondents					Objectives
		L	ST	S	G	D	
Kc (Appendix 1C)	1				✓		General questions
Ka (Appendix 1A)	3, 4, 6	✓	✓				To verify the forms of ICT tools in place for graphic design at the Department of Art and Industrial Design, Kyambogo University.
Kb (Appendix 1B)	1			✓			
Kc (Appendix 1C)	6				✓		
Kd (Appendix 1D)	1	✓	✓				
Ke (Appendix 1E)	1			✓			
Kg (Appendix G)	2					✓	
Ka (Appendix 1A)	1, 2	✓	✓				To establish the methods of graphic design delivery while employing forms of ICT tools at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.
Kb (Appendix 1B)	2, 3, 5			✓			
Kc (Appendix 1C)	5				✓		
Kd (Appendix 1D)	2	✓	✓				
Ke (Appendix 1E)	2			✓			
Kf (Appendix 1F)	2				✓		
Kg (Appendix G)	3					✓	
Ka (Appendix 1A)	5	✓	✓				To find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work
Kb (Appendix 1B)	4, 6(a,b), 7, 8			✓			
Kc (Appendix 1C)	2, 3(a,b), 4				✓		
Kd (Appendix 1D)	3, 4	✓	✓				
Ke (Appendix 1E)	3, 4			✓			
Kf (Appendix 1F)	1, 3, 4, 5				✓		
Kg (Appendix G)	4					✓	

Key:
L = Lecturers ST = Studio Technician S = Students
G = Graduates D = Documents

The instruments explained in relation to questions on each of the three objectives were summarised as shown in Table 2. The questions in the writing were in text format and the ones on the table are figuratively written. Question two, Kc (Appendix 1C) is indirectly connected with objective three, in that, it reveals the competence in relation to the years spent in school learning and at the workplace practicing graphic design. According to Nilsson (2008) vocational competence is a result of both vocational training in vocational schools for a minimum period of two years and, work and learning at workplaces.

3.6.2 Observations

In order to carry out observations, the instruments I used were my eyes, digital still camera and video camera recorder. Nilsson (2011) writes that observations can be carried out at three levels. As such, the first level of observation involved the use of my eyes to see the forms of ICT tools available in the computer studio for graphic design training at DAID, KyU, in relation to objective one of the study. The hardware and software tools used by graduates in the world of work were observed in comparison to those in DAID, KyU. Observation of the students undergoing training in the graphic design studio provided the needed information on objective two.

The second level of observation involved the use of a digital still camera to take photographs. As such, the forms of ICT tools used for graphic design training were photographed in the computer studio at DAID, KyU. Similarly, photographs of the forms of ICT tools used by graduates to produce communicative works of design for clients in the workplace of work were taken. An instructor with students of BAID, BVAD and BEd in graphic design training session was photographed in the graphic studio during a theory

lesson, including the interview sessions with the instructors in DAID, KyU and graduates of graphic design in the world of work.

The third level of observation involved the use of a video camera to record both moving pictures and sound. The video camera was exclusively used in the focus group discussion with students of BAID, BVAD and BEd in session.

According to Boeije (2010, pp. 59-61) the main participant observation research instrument is the researcher and her/his preparation for recording observations that may prove useful in coming analysis and inductive learning.

3.6.3 Documentary Analysis

In order to analyse documents, I employed the record form Kg (Appendix IG) to register information on the three objectives of the study. Item one of the record form sought the needed information on the forms of ICT tools for graphic design training at DAID, KyU. Item two helped to identify the methods of graphic design delivery while employing forms of ICT tools in training while item three provided information on the competence attained during the teaching/learning process.

The specific documents in DAID, KyU that were explored for information included the three programmes for BAID, BVAD and BEd which were helpful in identifying the element of ICT tools usage in relation to productive tasks and the competence attained at each level. The timetables for graphic design training was consulted to obtain information on the specific hours allotted to graphic design practice with the use of different forms of ICT tools for competence development. Artworks found in the computer studio (Appendix V: Figures 18 & Figure 19) were examined to identify the forms of ICT tools used in their production.

3.7 Validity and reliability of the instruments

Data quality management, which is validity and reliability, was carried out to ensure that the instruments to be used were valid and reliable to solicit the sought information to address the three objectives of this study on the use of ICT in graphic design training in relation to the world of work. This was achieved through testing the instruments on five graphic design students as well as triangulation of methods of observations, interviews and documentary analysis. Supervisors provided suggestions which were integrated.

3.8 Procedures of data collection

Prior to going to the field for primary data, my first step after a final decision on the topic for research was to search for information from the library, internet, lecture notes, newspapers, radio and television in order to improve on my study. This was done so as to come up with comprehensive support that justified the viability of the study before going to the field. All this preliminary research provided significant input for the data.

After getting an introductory letter from the Dean of Graduate School at Kyambogo University to carry out the study, I approached both the Department of Art and Industrial Design and workplaces where graduates were located. The procedure for carrying out data collection was simultaneously done to save time.

3.8.1 Department of Art and Industrial Design at Kyambogo University

With the verbal permission granted by the Head of Department, I sought audience with the respondents in DAID to conduct interviews. The first contact was made with the studio technician with whom I discussed how to carry out the interview and thereafter distributed twenty one questionnaires to students of BAID, BVAD and BEd. I received 17 answered questionnaires after one week and redistributed four to meet the required

number of 21. Thereafter, a focus group discussion with eight students of BAID, BVAD and BEd was carried out followed by interviews with the instructors.

Prior to the interviews with instructors, I made personal contact with them at different times to fix the appointments. The studio technician was contacted in the computer studio at DAID, KyU, where arrangements were made for the formal interview. The lecturers were first contacted through telephone to arrange for a meeting that was successful after several postponements due to the busy schedule. The interviews were carried out separately on the same day, starting with the lecturer followed by the studio technician who filled and returned the questionnaires before participating in the one-to-one interviews.

Observations were carried out throughout the study process where my eyes were used as the main instrument to identify and verify the forms of ICT tools in the computer studio at DAID, KyU. With the use of digital still camera, I took photographs of the existing forms of ICT tools, students participating in lectures with permission from the respondents. The video camera was used in the focus group discussion to capture the respondents' views and opinions on the use of different forms of ICT tools in graphic design training and production.

I accessed and analysed the programmes for BAID, BVAD and BEd along with the timetables for graphic design training for information on the use and application of the existing forms of ICT tools.

3.8.2 Workplaces of the graduates

In order to reach the graduates in the workplaces, I identified the first candidate who provided information on the next person to engage in the study. With the same information provided, I traced the next graduate through telephone contacts to locate their workplaces, graduates who accepted to participate in the study were taken on.

Personal contact with some graduates was achieved by sending e-mails and making several telephone calls to schedule appointments for interviews with the respondents at their respective workplaces. However, the appointments with the graduates were rescheduled many times due to the busy nature of their work which resulted into re-adjustments of some meetings to different locations from their workplaces. All the meetings with the graduates started with the distribution of the questionnaire Kc (Appendix 1C) that were filled and returned before conducting the one-to-one interviews. With the use of a digital voice recorder, the one to one interviews were recorded to get divergent views of respondents.

I observed graduates in their workplaces perform graphic design activities with the use of ICT tools. With their consent, I took photographs of the activities and collected some of the artworks produced for clients.

3.9 Organisation of raw data

The organisation of raw data, collected through the use of different instruments, involved transcription, sorting, editing and coding information in relation to each objective of this study on the use of ICT in graphic design training in relation to the world of work. For clarity and understanding, the steps involved to organise the raw data are explained in the next paragraph.

Transcription involved writing down accurate information as I listened and observed attentively and repeatedly to the words respondents mentioned and wrote them down descriptively. Throughout the process of transcription, obvious corrections were made to minimize the amount of time that would have been spent to read the whole document as a whole. *Sorting* involved the arrangement of data gathered with the use of questionnaires and interview guides according to the responses on each question in relation to each objective. *Editing* involved checking the gathered data for accuracy and relevance for each objective. During the editing, I realised that some questions were irrelevant and it was an oversight to bring it in and therefore did not use the contents therein. The editing process was continuous practice throughout the study to minimize the repetitions, omissions and grammatical errors. *Coding* involved the arrangement of the data according to responses on each objective which was generated through the use of audio and visual instruments, observations, focus group discussions, questionnaires and interview guides.

For systematic organisation of raw data, the gathered information was presented in sections 3.8.1, 3.8.2 and 3.8.3 respectively based on each objective of the study and described narratively.

3.9.1 Verification of the forms of ICT tools for graphic design training at the Department of Art and Industrial Design of Kyambogo University

This objective sought to verify the forms of ICT tools for graphic design training in DAID, KyU. In doing so, a number of procedures which included questionnaires, focus group discussion, one-to-one interviews and observations have been explained in terms of content in relation to each objective and described narratively in the next paragraphs.

Therefore, the information gathered on the availability of ICT tools for graphic design training in DAID, KyU through the use of questionnaires Ka and Kb (Appendices

1A and 1B) indicated that all the 23 responses of instructors and students recognised computers as the main tool for graphic design production. This was followed by the scanner and still camera with 10 responses each, and the printers and projectors with nine responses each. Similarly the information gathered from students during the FGD, with the use of guide Ke (Appendix 1E) indicated that all respondents identified and verified the hardware tools such as computers, printers, projectors and scanners. The software forms of ICT tools such as adobe illustrator, adobe photoshop, indesign, logo creator and microsoft word were identified in the process of discussion.

The information gathered through the one-to-one interviews with the instructors, through the use of question one on guide Kd (Appendix 1D) indicated that the ICT tools available for graphic design training include the computers, printers, projectors, scanners, DVDs/CDs, recorders, video cameras and external hard discs as hardware while the software forms of ICT tools comprised of adobe illustrator, adobe photoshop, adobe premier, archcad, coreldraw, dream weaver, fireworks, flash, indesign and internet explorer.

However, based on my observations, the hardware and software forms of ICT tools in place for graphic design training were the computers, projectors, printers, cameras, scanners and adobe photoshop, adobe illustrator, coreldraw and indesign respectively.

3.9.2 Methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Design of Kyambogo University in relation to the world of work

In order to gather the needed information on methods of delivery while employing forms of ICT tools in graphic design training, questionnaires, focus group discussion, one-to-one interviews and observations were used. The organized responses gathered from

instructors, students and through my observations were described narratively in the following paragraphs.

The information gathered through questions one and two of questionnaires Ka and Kb (Appendices 1A and 1B) indicated that the performance of ICT learning activities was carried out using the following modes; in groups, individually and in both groups and individually as illustrated by seven, six and eight responses respectively. With regard to the information gathered on the sharing of the different forms of ICT tools, the information collected through question three on questionnaire Kb (Appendix 1B) indicated that the most shared tools were; computers with 17 responses, followed by printers with 10 responses; scanner with nine responses, projectors with six responses, still cameras with five responses, DVDs/CDs with two responses, flash discs and internet with one response each. Furthermore, the information on the accessibility of the ICT tools for graphic design training was gathered from students through the use of question five on questionnaire Kb (Appendix 1B). The information indicated by seven responses of students revealed that the forms of ICT tools were accessible while 13 responses showed that there was no access to any form of ICT tool for hands-on-experience during training.

With regard to the focus group discussion the organised responses from students was gathered through question two on guide Ke (Appendix 1E) which was used to get information on the use different forms of ICT tools in graphic design training. This information was necessary to correlate the views expressed in the questionnaire. The information indicated that all the students worked in groups. There was no student who performed their work individually. In addition, responses of students indicated that the eight students shared the computer during training with the least number of four. During the one-to-one interview, the responses of the instructors on the ratio of computers to the

student generated through question three of interview guide Kd (Appendix 1D) indicated that between six and four students shared the computer during graphic design training.

With regard to my observations, there were no students in the computer studio engaged in training or learning activities with the exception of the regular lectures that took place in the graphic studio and the department quadrangle. Probably, the situation was so due to unplanned ICT related activities for students to participate in the production of communicative works of design.

3.9.3 ICT competence in graphic design at the Department of Art and Industrial Design of Kyambogo University and its appropriateness in relation to the world of work

The needed information on the suitability of ICT competence in graphic design production was gathered with the use of questionnaires, focus group discussion, one-to-one interviews and observations in DAID, KyU and the workplaces. In doing so, the data gathered from instructors, students and graduates were organised and described narratively in the following paragraphs.

With regard to questionnaires, the information on the hours of hands-on spent on the computers by students per week was obtained through question four on questionnaire Kb (Appendix 1B) which indicated varied responses. Out of four groups of 16 student respondents, each group spent one, two, five and seven hours of hands-on-practice with the computers respectively. Two groups of four student respondents spent three and four hours while one student spent six hours.

Information on the relevance of ICT competence for self employment obtained with question seven on questionnaire Kb (Appendix 1B) indicated that 14 respondents agreed, five responses were not sure while two respondents disagreed. Similarly, question eight

on questionnaire Kb (Appendix 1B) was used to get information on the relevance of ICT competence for the execution of tasks. 17 student respondents agreed, two students were not sure while two disagreed. Regarding the comparison of the forms of ICT tools used in training at DAID, KyU to those in the world of work, question five on questionnaire Ka (Appendix 1A) was used to gather the information from the instructors who agreed that the hardware and software tools were similar to those in the workplaces though some were in smaller quantities.

The information obtained from graduates using question two on questionnaire Kc (Appendix 1C) showed that the ICT competence of most graduates did not match with those in the world of work with the exception of one respondent. This was realised through the challenges graduates faced in the execution of graphic design tasks as indicated in their responses obtained through question four on questionnaire Kc (Appendix C). To mitigate the ICT challenges, graduates devised many strategies to implement their tasks in the world of work as indicated in the responses obtained through question five on questionnaire Ke (Appendix 1E). This was achieved through undertaking graphic design courses, use of internet to search for information related to graphic design production and learning through apprenticeship.

Data collected through FGD on the prospects of employment after graduation used question three on questionnaire Ke (Appendix 1E) indicated that all student respondents were confident of getting employment after graduation. On the contrary, responses of instructors obtained through one-to-one interviews using question three on guide Kd (Appendix 1D) indicated varied opinions. The lecturer disagreed that the ICT competence students acquired during training would lead to employment while the studio technician

was optimistic of the students' prospects of employment in an ICT enabled environment after training at DAID, KyU.

Concerning the ICT competence graduates acquired after training, question one on interview guide Kf (Appendix 1F) was used to obtain the needed information. All responses indicated a shortfall in practical skills for implementation of graphic design in the world of work. The training provided opportunities for basic application skills and more theoretical knowledge that were below the practical standard requirements in the industry. The information on the ICT challenges was obtained through question three on questionnaire Kf (Appendix 1F) which revealed that graduates in the workplaces were unable to use the forms of ICT tools in the world of work to produce aesthetic works of graphic design.

Through observations with the use of my eyes, graduates in the workplaces were actively involved in the production of graphic design work with different forms of ICT tools as opposed to the students in DAID, KyU. In the workplaces, graduates in industry were more engaged in practical application of knowledge than their counterparts in schools with fewer or no forms of ICT tools for training and production purposes.

4: PRESENTATION OF DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter presents data analysis and interpretation of the findings on the use of Information and Communication Technology for competence development in relation to the world of work. The three objectives upon which this study was followed sought to verify the forms of ICT tools in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University; to establish the methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work and to find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

The organised data under each objective have been presented in figures. Analysis and interpretation was simultaneously carried out for systematic flow, clarity and understanding.

4.2 Verification of the forms of ICT tools for graphic design training at the Department of Art and Industrial Design of Kyambogo University

The verification of the ICT tools in this context, sought to confirm the presence of hardware and software forms of ICT tools used for graphic design training at DAID, KyU. The verification process involved identifying the different tools and counting them to establish their actual numbers. Therefore, the organised information was summarized and presented in Figure 3 for ease of analysis and interpretation.

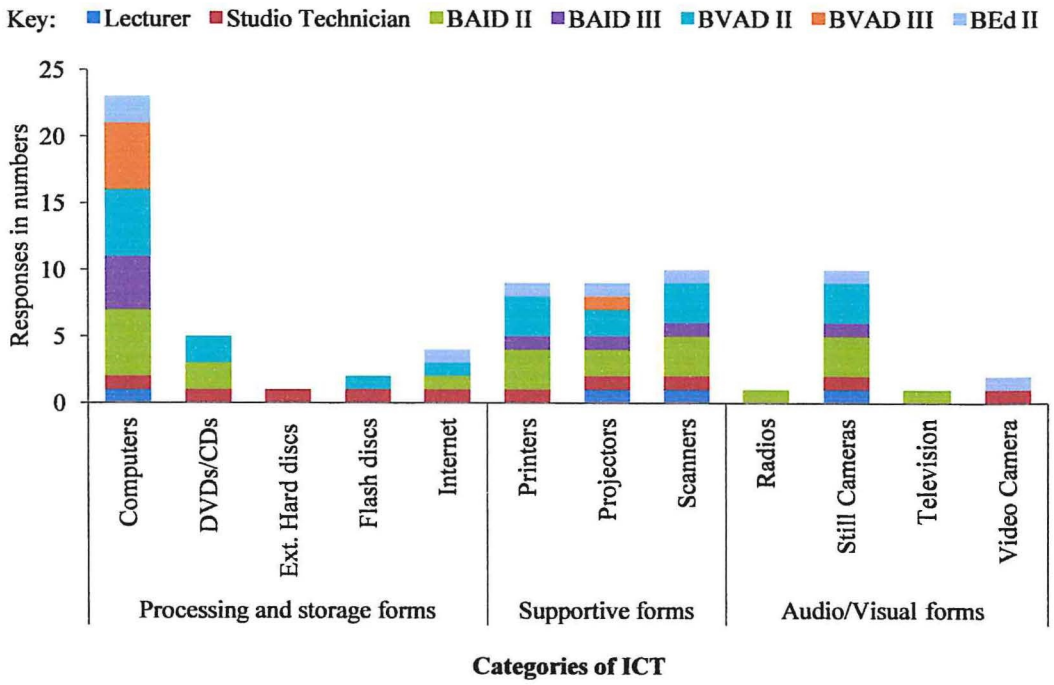


Figure 3. Forms of ICT tools verified by instructors and students in the Department of Art and Industrial Design, Kyambogo University.

Processing and storage forms of ICT

The delivery of information was not equally known to all respondents concerning the availability of ICT tools in graphic design training at DAID, KyU. The forms of ICT tools identified by respondents of instructors and students include the computers, DVDs/CDs, External Hard Discs, Flash Discs and the internet. Computers were the most recognised processing and storage forms of ICT tools acknowledged by all the 23 respondents of instructors and students who responded to having used them for training. DVDs/CDs were identified by one instructor and four students of BVAD II (2) and BEd II (2) as opposed to External Hard Disc by one instructor. Flash discs were recognised by one instructor and a student of BVAD II (1). One instructor and three students of BAID II (1), BVAD II (1) & BEd II (1) identified the internet.

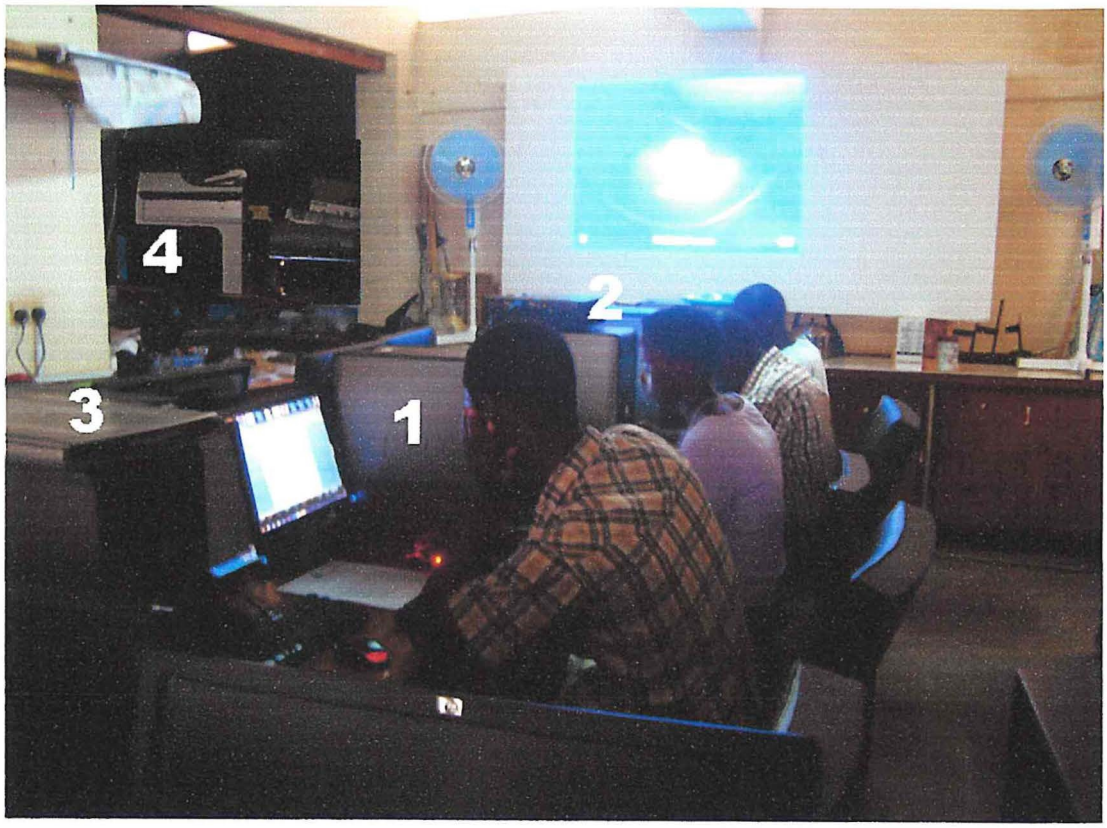
Supportive forms of ICT

The information on the supportive forms of ICT tools was uneven and inconsistent as indicated in Figure 3. The forms of ICT tools include the printers, projectors and scanners. Nine respondents of one instructor and eight students of BAID II (3), BAID III (1), BVAD II (3) & BED II (1) identified the printers. Nine respondents of two instructors and seven students of BAID II(2), BAID III (1), BVAD III (2) & BED II(1) identified the projectors while 10 respondents of two instructors and eight students of BAID II (3), BAID III (1), BVAD II (3) & BED II (1) identified the scanners.

ICT audio/visual forms

Similarly, the information on the audio/visual forms of ICT tools was not provided equally to all respondents as illustrated in Figure 3. These forms of ICT tools include the radios, still camera, television and video cameras. One student of BAID II (1) identified the radio, 10 respondents of two instructors and eight students of BAID II (3), BAID II (1), BVAD II (3) & BEd II (1) identified the still cameras and one respondent of BAID II two identified the television while two respondents of one instructor and one student of BEd II (1) identified the video camera.

However, amongst the forms of ICT tools identified and verified for use by respondents of instructors and students, the most visible were computers, projector, scanner and printer that were available for use in the computer studio at DAID, KyU as illustrated in Figure 4.



Key: **1.** *Computers (15)* **2.** *Projector (1)* **3.** *Scanner (1)* **4.** *Printer (1)*

Figure 4. Forms of ICT tools in the Department of Art and Industrial Design, Kyambogo University.

It was shocking to note that the forms of ICT tools across all the three categories illustrated in Figure 4 were not enough to cater for the number of students in DAID, KyU during training. Given the large numbers of students taking graphic design, the presence of these tools was insufficient to cater for the desired ratios. As such, the feasibility of instructors and students using the processing and storage forms of ICT tools was constrained by 15 computers that were installed with adobe illustrator, photoshop, indesign and coreldraw application software for graphic design production. Additionally, the minimal use of the internet implied that instructors and students will not be able to

explore its use to search for relevant information needed in graphic design given the fact that there was no internet connectivity.

With regards to supportive forms of ICT tools, instructors and students will comfortably use the projector to display the information on a whiteboard during the teaching and learning processes. The only printer was capable of producing work in black and white yet the display of colour was significant for graphic design production; this will make it difficult for most students to gain the knowledge in the use of colour because there was no colour printer in place for training purposes. However, these forms of ICT tools were equally fewer in number and could not meet the training needs of the instructors and students.

The information on the audio/visual forms of ICT tools identified by respondents implied that instructors and few students were capable of using the still cameras and video camera during training though they were not readily available for use. The verified forms and numbers of ICT tools at DAID, KyU are insufficient to meet the training needs of instructors and students. Therefore, students will not gain familiarity skills with their use to gain the level of competence needed in relation to the world of work.

4.3 Methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.

The methods of graphic design delivery while employing forms of ICT tools explored individual and group approaches to teaching and learning practical knowledge, the forms of ICT tools shared and their accessibility to students during graphic design training. For ease of presentation of data analysis and interpretation, the information was summarised and presented in Figure 4, Figure 5 and Figure 6 respectively.

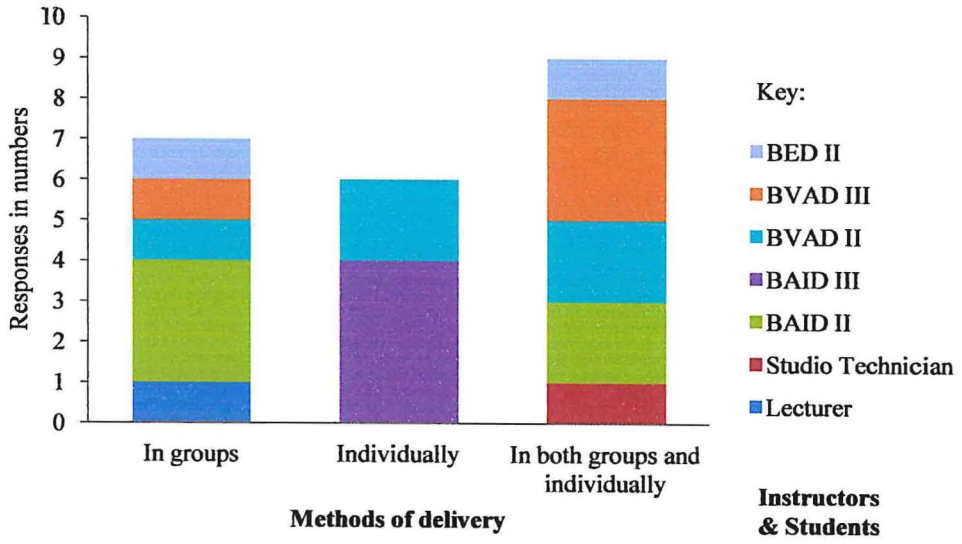


Figure 5. Methods of performing ICT learning activities during graphic design training in the Department of Art and Industrial Design, Kyambogo University.

The information on the methods of graphic design delivery using the ICT tools in DAID, KyU was not equalized to all respondents as indicated in Figure 5. Nine respondents of one instructor and eight students of BAID II (2), BVAD II (2), BVAD III (4) & BEd II (1) performed ICT learning activities in both groups and individually. This was followed by seven respondents of one instructor and seven students of BAID II (1), BVAD III (1) & BEd II (1) who participated in groups while six students of BAID III (4) & BVAD II (2) worked individually when performing graphic design activities.

This finding shows that the majority of students performed graphic design activities in groups. The implication was that instructors and students participated in graphic design production following the apprenticeship model of training, collaborative learning through teamwork and learning by doing in simulation of the world of work practices. However, efforts to observe instructors and students engaged in graphic design production while employing forms of ICT tools was futile since students were engaged in theory classes

outside the computer studio as illustrated in Figure 6. The implication was that the students were more theoretically oriented and incapable of getting familiarity skills with the forms of ICT tools at DAID, KyU.

However, during the one-one interview with respondents of instructors and graduates, industrial training was identified to be used in the recess term at DAID, KyU when students were fewer in number, a situation that this study recognised though it was not a subject for analysis.

Figure 6. Students attending graphic design lecture in the graphic studio in the Department of Art and Industrial Design, Kyambogo University.

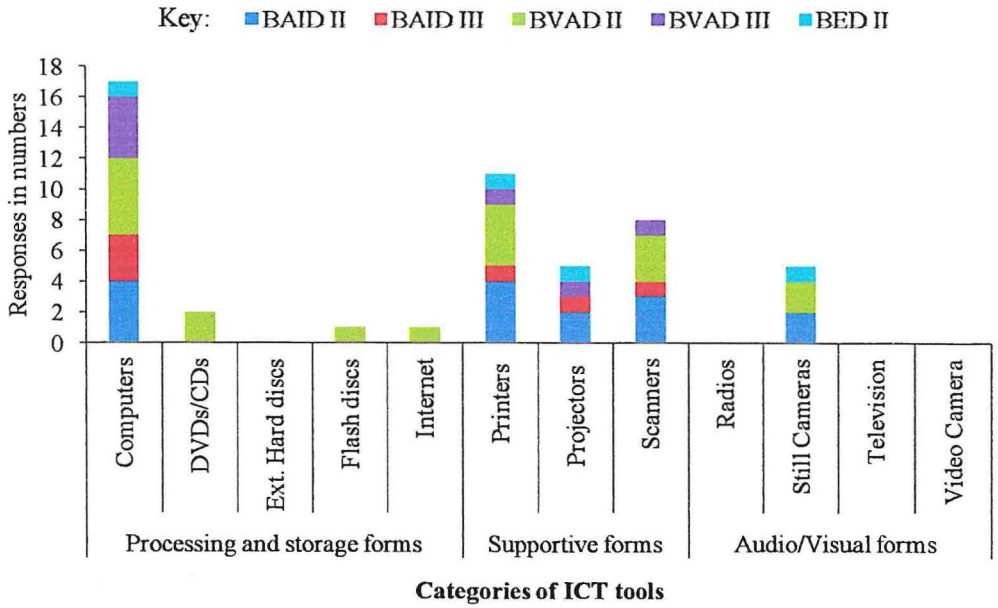


Figure 7. Forms of ICT tools shared by students during graphic design training in the Department of Art and Industrial Design, Kyambogo University.

The dissemination of information on the forms of ICT tools shared during training was uneven and inconsistent as indicated in Figure 7. Computers were the most shared of the processing and storage forms of ICT tools during training as indicated by 17 respondents of students of BAID II (4), BAID III (3), BVAD II (5), BVAD II (4) and BEd II (1). DVDs/CDs, flash discs and the internet was shared amongst students of BVAD II. The implication was that most of the students were well suited to learn and explore the computers in the production of graphic design during training. However, the majority of the students were not able to use the internet since there was no connectivity.

The supportive forms of ICT tools that include the printers, projectors and scanners were considerably shared by many respondents as illustrated by 11 students of BAID II (4) BAID III (1), BVAD II (4), BVAD III (1) and BEd II (1) who used the printer. Five students of BAID II (2), BAID III (1), BVAD III (1) and BEd II (1) shared the projectors

while eight students of BAID II (3), BAID III (1), BVAD (3) & BVAD III (1) shared scanners. The implication was that an average number of students who shared the supportive forms of ICT tools gained practical knowledge on the use of input and output devices to print graphic design work, display images on the whiteboard and import illustrations into the computer for further enhancement of the designs.

The audio/visual forms of ICT tools; which include radios, still cameras, television and video cameras were the least shared by students during training. Five students of BAID II (2), BVAD II (2) and BEd (1) shared the still cameras while the others were not shared at all. The implication was that most students were not capable of using these forms of ICT tools to keep record of their work for possible evaluation of their progress.

However, I observed that, there was neither sharing nor individual use of any form of ICT tools in the computer studio during graphic design training throughout the entire period of this study. Instead, students were engaged in the manual production of graphic design work outside the computer studio as illustrated in Figure 8.

Figure 8. Students producing graphic design work at the Department of Art and Industrial Design, Kyambogo University.

As illustrated in Figure 8, the possibilities of these students using ICT tools for graphic design creation was relegated to manual use of tools such as the brushes, designer's colour, paper and water.

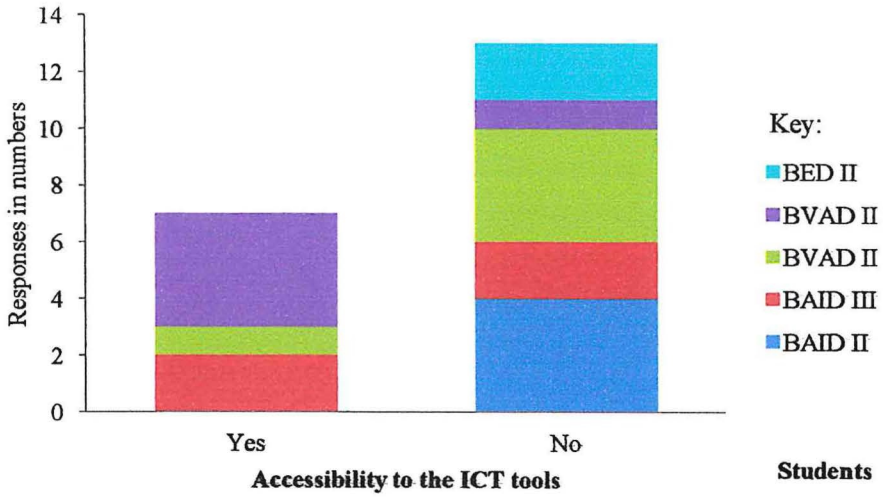


Figure 9. Accessibility of ICT tools to students for graphic design training in the Department of Art and Industrial Design, Kyambogo University.

The dissemination of information on accessibility of the ICT tools during training was not equalized to all respondents of students as indicated in Figure 9. Seven students of BAID III (2), BVAD II (1) and BVAD III (4) agreed that access to the ICT tools was always possible while 13 respondents of BAID II (4), BAID III (2), BVAD II (4), BVAD III (1) and BEd II (2) disagreed that the ICT tools were accessible for graphic design training. The implication is that fewer students were able to gain the needed skills in graphic design production with the existing forms of ICT tools at their disposal. However, most of the students did not benefit from experiential learning opportunities that is realised through unlimited interaction with the forms of ICT tools in the computer studio. The implication was that students would face difficulties in the world of work where accessibility to varied forms of ICT tools was not restrained as in DAID, KyU.

4.4 ICT competence in graphic design at the Department of Art and Industrial Design of Kyambogo University and its appropriateness in relation to the world of work.

This objective sought to find out whether the ICT competence in the use of the existing forms of ICT tools was suitable for graphic design practice in relation to the world of work. The information covered the hours of hands on practice with the computers, relevance of the ICT competence for self-employment, relevance of the ICT competence for execution of tasks, perception on students' prospects of employment in an ICT related environment and the ICT challenges faced by graduates after training. For systematic presentation of data analysis and interpretation, the organised information was summarised and presented in Figures; 8, 9, 10, 11 and 12 respectively.

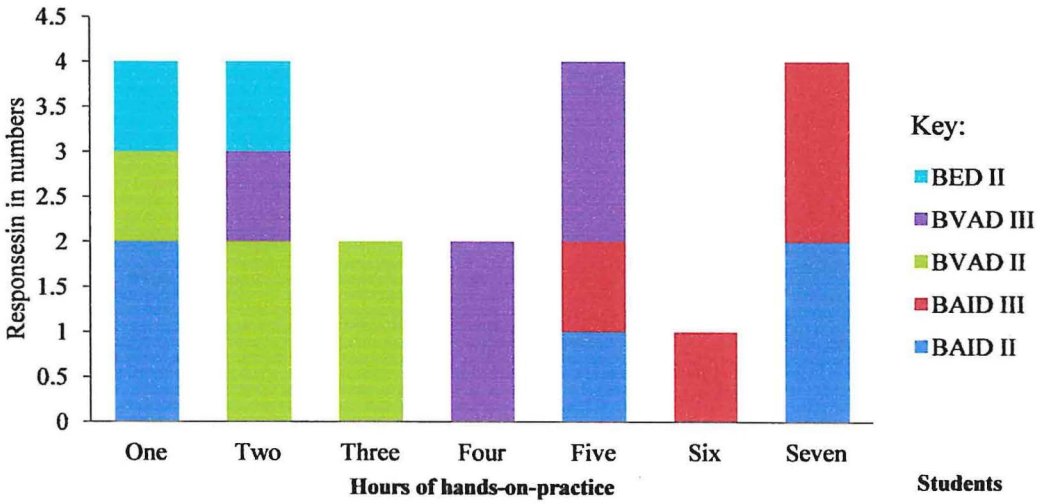


Figure 10. Hours of hands-on spent on the computers by students in a week.

The dissemination of information on the hours of hands-on-practice with the computer during training for ICT competence development in relation to the world of work was uneven and inconsistent among the respondents as indicated in Figure 10. 12 students of

BAID II (2), BVAD II (5), BVAD III (3) and BED II (2) spent less than five hours of hands on practice with the computers while nine respondents of BAID II(3), BAID III (3) and BVAD III (2) spent more than five hours of hands on with the computers during graphic design training. It was surprising to note that most students (12) interacted with ICT tools for fewer hours than the five to six hours allotted by DAID, KyU, in the course outline.

The implication was that even by availing themselves of the full complement of allotted time, the student learners would still at the end of their course of studies not be able to handle the graphic design situation in the world of work that demanded a developed competence that normally involved a minimum of 40 hours of interaction with the ICT tools in a week. As a result, students, even with five or six hours of ICT practical experience would not perform graphic design tasks effectively.

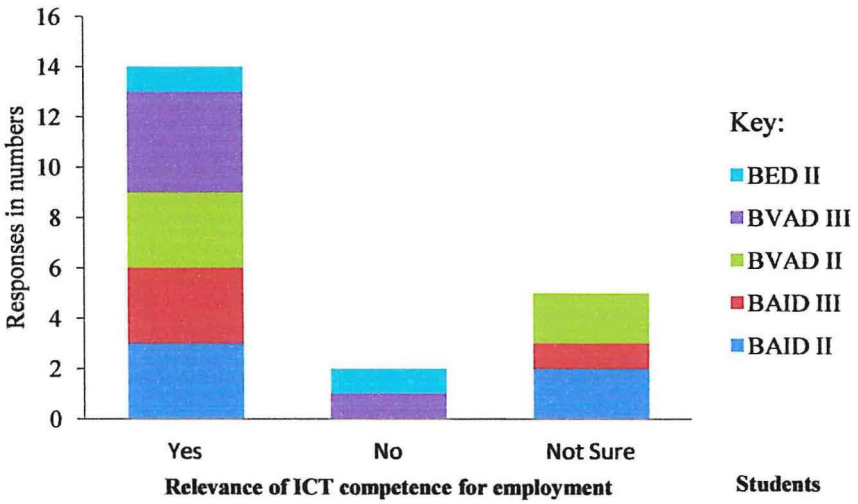


Figure 11. Relevance of ICT competence training for self employment.

The information on relevance of the ICT competence in graphic design training for self-employment was not equalised to all respondents as indicate in Figure 11. The majority of the 14 students of BAID (II), BAID III (4), BVAD II (2) and BED (I) admitted that the

ICT competence acquired during training was relevant for self-employment. However, six responses of BAID II (2), BAID III (1) and BVAD II (2) were not sure while two respondents of BVAD II (1) and BED II (1) strongly disagreed that the ICT competence acquired during training was relevant for self-employment.

Much as respondents confessed having obtained employable skills during training, it was more theoretical and limited to basic application of ICT. But even theoretically strong students would not fit comfortably in the world of work that requires people with relevant practical skills in the implementation of graphic design with modern technology. The shortcomings in instruction of graphic design for ICT competence development was partly attributed to the training background of the instructors, "...people learn from friends but not the lectures we get", FGD.

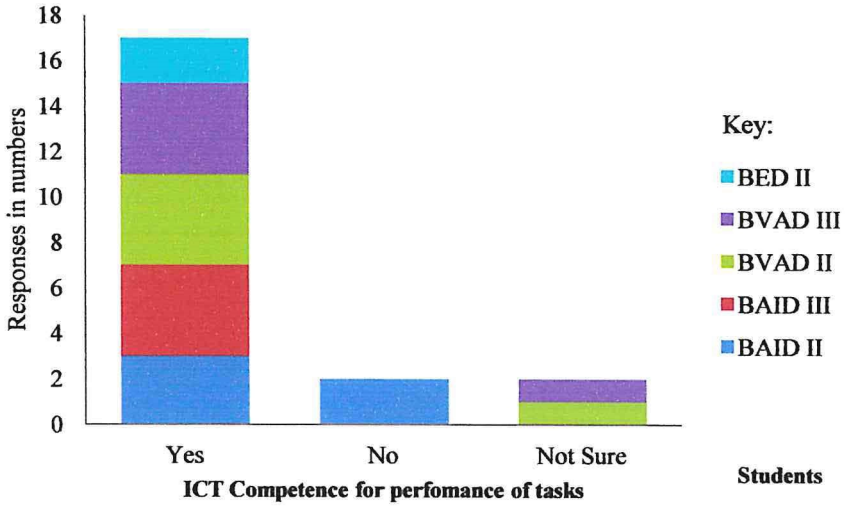


Figure 12. Relevance of the ICT competence in executing tasks at the workplace.

The information on the relevance of ICT competence in graphic design training for execution of tasks at the workplace was uneven and inconsistent to all respondents as indicate in Figure 12. The majority of the 17 students of BAID II (3), BAID III (4), BVAD II (4), BVAD III (4) and BED II (2) opposed that the ICT competence they

acquired in graphic design training was relevant for the execution of tasks at the workplaces. Two students of BAID were not confident of their ICT competence while two respondents of BVAD II (1) and BVAD III (1) totally disagreed that they had acquired relevant ICT competence to execute tasks.

The information suggests that most students had acquired practical skills and were therefore capable of using existing forms of ICT tools to perform tasks similar to those in the world of work. Some of the communicative works of design displayed (Figure 18. Appendix V) in the computer studio show the creative outcome of using different forms of ICT tools for producing works of graphic design comparable to the standard qualities needed in the world of work.

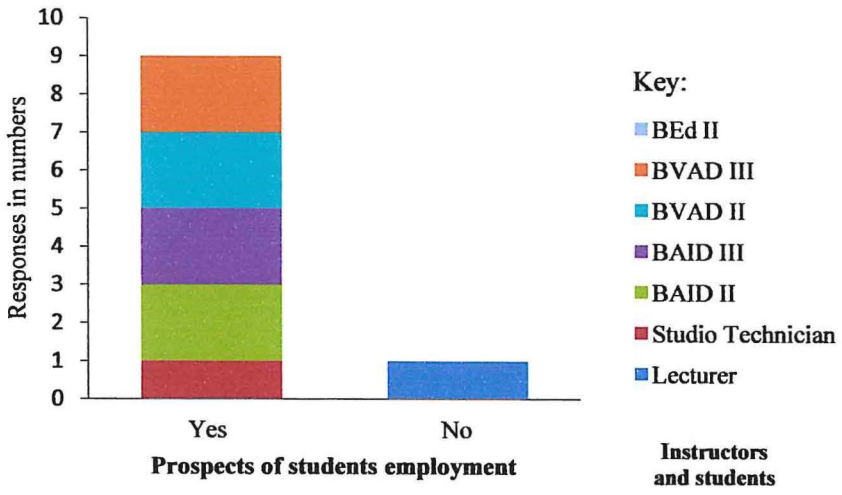


Figure 13. Students' prospects of getting employment after graphic design training.

The information regarding the prospects of students getting employment in an ICT related environment was varied across all responses as indicated in Figure 13. All the 22 respondents of one instructor and 21 students were positive of the outcome of the ICT competence attained at DAID, KyU. Only one instructor disagreed that the student's

prospects of getting employment was high based on the numerous interaction with the students during training.

The information indicates that students possessed relevant practical knowledge to creatively use the existing forms of ICT tools for the production of communicative works of design and would therefore perfectly fit in the world of work by the end of their study. However, prospects of getting employment were cautionary as expressed by one student, "Yes you can get jobs after getting the skills in graphic design specifically." FGD. The instructor's objection to the students' prospects of getting jobs after training is reflected in Figure 16. (Appendix VI). It further points out the fear of technology as a salient issue affecting the instructor's possibility of using them due to lack of knowledge.

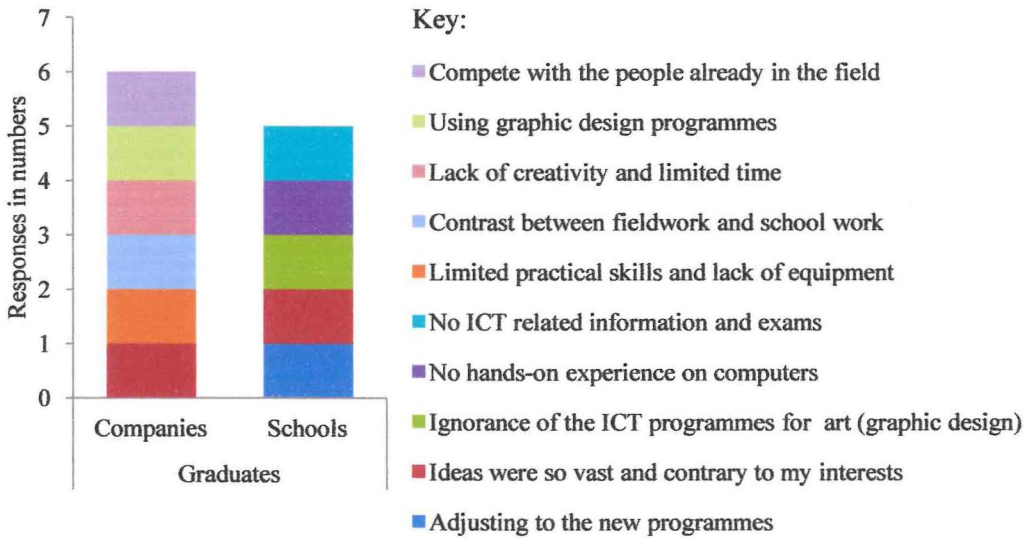


Figure 14. ICT competence challenges faced by graduates in workplaces after training at the Department of Art and Industrial Design, Kyambogo University.

The information on the ICT competence challenges indicated that all graduates lacked the needed skills to operate different forms of ICT tools in graphic design in the world of work as illustrated in Figure 14. Graduates in companies faced more difficulties in

handling the graphic design situation due to limitations in the training at DAID, KyU as opposed to their counterparts in schools (Figure 21, Appendix V). However, after retraining, graduates gained practical skills to implement tasks as illustrated in Figure 15.

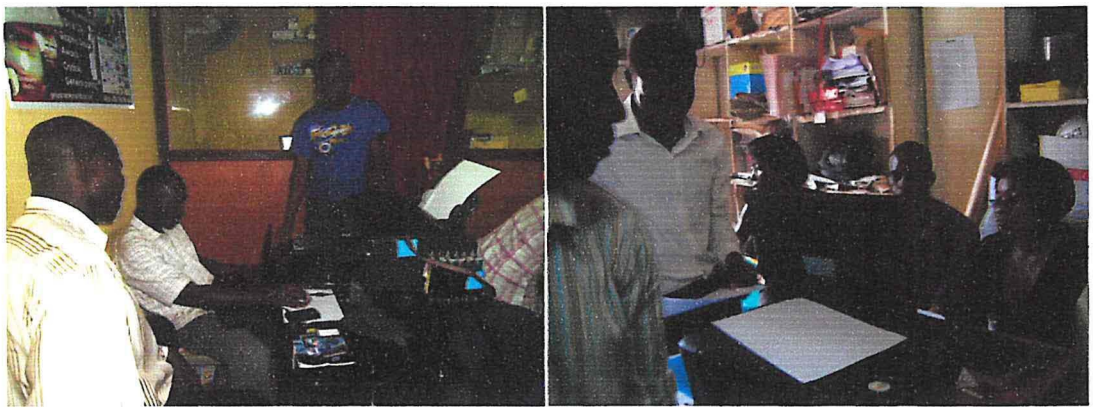


Figure 15. Some KyU graduates in workplaces using ICT tools to train and produce graphic design work for clients.

5: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the findings revealed in chapter four of this study with the purpose of investigating the use of Information and Communication Technology in graphic design training at the Department of Art and Industrial Design of Kyambogo University for competence development in relation to the world of work. The objectives were to verify the forms of ICT tools in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University, to establish the methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work and to find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

The corroboration in support of the findings is presented, and the reasons for occurrence of the findings are provided on the basis of all the data including that which might not have been summarised in chapter four. The discussion also provides opportunity for evaluating the findings of this study with those of other scholars to establish a standpoint for the study. The discussion of the findings further creates a ground upon which conclusions are drawn and recommendations to policy makers and implementers are made. It is also used to provide recommendations for the improvement of vocational practice at DAID, KyU in relation to the world of work and provision of guidance to future researchers.

For systematic flow of information and ease of reading, this chapter is organised in three sub-sections that consist of the discussion, conclusions and recommendations respectively.

5.2 Verification of the forms of ICT tools for graphic design training at the Department of Art and Industrial Design of Kyambogo University

The most visible form of ICT tools for graphic design training in DAID, KyU were the desktop computers grouped under the processing and supportive forms as illustrated in Figure 3 and Figure 4. These computers were installed with internationally recognised software to help instructors and students access and apply them for graphic design production during training. The provision of the supportive forms of ICT tools, especially the computer, indicates the deliberate efforts the university has put in place to ensure that students attained ICT competence in the use of these tools in relation to the world of work. However, it was found that not only were these resources under-utlised, but also the competence of the instructors and students was limited to the forms of ICT tools that were available in DAID, KyU. Wherever these are neither increased nor supplemented, it is unlikely that the students will gain more knowledge and skills of the new tools they are bound to use in the world of work, especially where Macintosh computers are widely regarded as the graphic designers tool in the production of communicative works of design (Apilado, 2012, para 2; Miller, 2008, para . 3).

This is so because of the Macintosh computers used in large organisations in Uganda and world over, are preferred for their abilities to display true colour for printing; they are simplified in terms of the operating system and have a variety of portable font types for graphic design production. Therefore, the absence of Macintosh computers for training puts students at a disadvantage. It immediately limits their potential of using Mac tools since they lacked the necessary access to the same, and thus, the necessary competence. Kelsall (2001) writes that one of the most useful ways to utilise digital technology is through the use of computers because digital applications give designers the means to

5.3 Methods of graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work

The finding on the method of graphic design delivery with the use of ICT tools indicated that graphic design training was theoretical as illustrated in Figure 6: no training activity in the computer studio; the traditional method of lecturing was used to teach students as it was feasible economically, requiring fewer staff hours and less ICT equipment. This was attributed to the limitation of the tasks related to accomplishment of graphic design with the use of ICT tools on the one hand, and limited skills and knowledge of the instructors on the use of these tools.

In order to use the ICT tools effectively during graphic design training, students used an "integrated approach" where both individual and group methods of learning were employed. This approach engaged the students into working groups that shared the laptops and personal computers for the production of work outside DAID, KyU. Within the same group, the laptop (Figure 21, Appendix V) was given to the individuals in the groups to do their work, especially those interested in learning the operation of specific software in doing their work. This approach to learning was facilitated by fellow students whose knowledge and skills on the operation of the ICT tools, especially the computer, was higher. "Not everyone gets the ICT knowledge; it is like people learn from friends and not the lectures we get." FGD.

The theoretic approach to teaching graphic design was in contrast with practices in the world of work where designers work as team, learning from each other as they accomplished tasks with the use of ICT tools through apprenticeship. The teamwork aspect of training applied in the world of work was not observed at DIAD, KyU. The

instructor's failure to use the available ICT tools to aid graphic design training indicated lack of practical skills as a salient issue influencing the choice of method of graphic design delivery.

The shortfall is reflected in CAPA (2007) that although ICT and e-learning is gaining ground as an effective pedagogical tool in higher education, TVET institutions and polytechnics in Africa are lagging behind. The reason appears to be lack of knowledge and expertise in the use of these new technologies in the area of technical and vocational training, and the absence of institutional and country policies on the integration of ICT and e-Learning into TVET.

In addition, Hattie (2009, p. 223) associates the minimal use of ICT by instructors to the teachers training experiences prior to joining the teaching profession. He argues that many of today's teachers were taught in schools where ICT was not common and many were taught in the teachers' colleges by lecturers who were even more distanced from the use of computers in their teaching and learning. Therefore, implementing their use in graphic design training, as is the case in the world of work, would require deliberate practice and increased time on problem solving tasks through drill and practice to master learning in collaboration with others. Furthermore, some of the instructors have no prior experiences with practices in the world of work and found it challenging to integrate work related experiences with the forms of ICT tools other than what was taught to them in the teacher training colleges and this has resulted into applying the lecture method of teaching . A student wondered "how can a blind man lead another?" FGD.

Nevertheless, an equally sizeable number of respondents participated in group work activities in the theory classes where instruction was delivered without the use of ICT tools despite their availability. Furthermore, the lack of ICT skills amongst these students

prevented them from accessing these tools in the computer studio for individualised training. Rather, they were engaged in the manual production of graphic design work with the use of traditional tools such as the brushes, paste and water colours as illustrated in Figure 8. Ayoo (2003, p.13) writes that it was unlikely for individuals with low or no ICT skills to use the technology even if it was available to them and therefore need basic computing and ICT skills before they can make use of access initiatives. In addition, the computer studio that is meant to accommodate 30 students can comfortably handle only 15. Where the numbers were in excess, students were congested and this gave no room for them to manipulate the different forms of ICT tools whenever the computers were used to demonstrate certain aspects of the learning tasks. This had greatly impacted the potential of students gaining ICT competence in conformity with the world of work practices. A student mentioned that "when you are congested in the computer studio you just become spectators because very many students are crowded on a single computer." FGD.

This finding is contradictory to Hampton (2002, p. 83) who argues that the teaching of practical skills requires special consideration that was different from teaching knowledge or theory. She adds that when teaching practical skills, particular aspects of the learning environment should be conducive in terms of specialist materials and equipment within a workshop for a small number of students to practice within an educational institution.

5.4 ICT Competence in graphic design at the Department of Art and Industrial Design of Kyambogo University and its appropriateness in relation to the world of work

The findings on the suitability of the ICT competence in relation to the world work indicated that the ICT competence of students in DAID, KyU was not suitable. Most students spent an average of five and half hours of learning by doing with ICT tools every week contrary to six practical hours (BAID) and five hours (BVAD & BEd) as indicated in the Degree Programmes of DAID (2006). To compound the problem, the specific time for electronic and manual application of tools is not demarcated, making students depend on the instructors to determine the number of hours to use these facilities.

This finding contradicts Hampton's (2002, p. 83) opinion that the learning of practical skills is more associated with longer blocks of time for practice and rehearsal for development of competence in a particular vocation. However, students who dedicated more time to practice with the ICT tools are more likely to gain the ICT competence needed for graphic design production as supported by Nilsson (2011). Furthermore, Nilsson observed that vocational competence is attainable through many years of practice; consequently, students should possess different types of knowledge, exercise professional ethics in the execution of tasks, progress through school experiences of atleast two years and obtain a legitimate certificate. The world of work requires graphic designers with ICT skills to produce communicative works of design, lack of which would render graduates jobless after training.

This could be achieved through team work where instructors and students are learning together and expanding the hours that the computers are available, with those having more knowledge, teaching those with less, as the aim is to graduate teachers and

skilled practitioners and not to simply reinforce current hierarchies of teacher and student. Lave and Wenger (1991).

Despite the limited hours of practice during graphic design training in DAID, KyU most students were optimistic about the relevance of ICT competence for employment and performance of tasks. This category of respondents elected graphic design with prior knowledge and skills in the operation of different forms of ICT tools before joining the programme and have continued to practice within and outside DAID, KyU. However, CAPA (2007, p. 3) writes that around the world, gaining employment increasingly depends on a person's ability to effectively and efficiently use ICT.

This was so because some of the respondents owned computers and laptops and continued to practice with them to complete assignments as well as produce works of design for interested members of the community including fellow students as illustrated in Figure 17. The teaching of vocational theory to this category of students helped them to acquire more concepts to supplement the practical knowledge gained through the use of different forms ICT tools. However, the teaching of theory by some instructors was associated to the lack of knowledge and skills in the operation of ICT tools for graphic design delivery given their areas of specialisation. Ayoo (2003, p.13) argues that individuals with low or no ICT skills are unable to use the technology even if it was available to them. Therefore, the occupational ICT literacy skills associated to the learning of related theory and practice of their chosen occupation was more emphasised than the application of ICT.

The ICT competence of instructors in DAID, KyU was contrary to UNESCO's analytical survey on the use of ICTs in technical and vocational training where Chinen (2003, p. 94) points out the need for technical, vocational and occupational ICT literacy

amongst teachers in view of merging technology today. The technical and pedagogical ICT literacy can be achieved when graphic design training is guided by design theory and aesthetics, which the lecturers know better, they can lead the students in learning ICT, as they themselves learn it, to bring about more effectively, what they know in theory and aesthetically about design during the process of interaction. As such, students will be able to gain occupational ICT literacy skills to use technology based equipment and control systems in the graphic design industry.

Furthermore, the students affirmed that some of the ICT tools in place at the DAID, KyU matched with those in the world of work. Deliberate provision of these tools indicates that the graphic design programme has thoughtfully created an ICT learning environment that would facilitate learning experiences similar to those in the world of work once they are utilised. The under-utilisation of existing ICT was a main finding in this study to facilitation of further learning, exploration of these existing forms of ICT tools and their software, and doing so in teams, would equip both instructors and students with technical knowledge and skills of operation in the face of new technological changes. In light of vocational education and training, the presence of modern ICT tools shows an improvement in training provision for competence development.

This finding is supported by the UNCST (2002, p. 35) that the most important transformation in education and learning requires a shift from the traditional methods where one confronts many learners with a textbook to a system where students learn through the use of various media such as computers, the internet, videos, radios and newspapers amongst others.

5.5 Conclusions

The ICT tools were in place, they were too few in number; they were insufficient and not of the type generally used in the private sector, thus not meeting the training needs of the world of work.

The method of graphic design delivery with the use of the ICT tools was not effectively applied in the computer studio; instead, lectures were conducted outside the computer studio during practical lessons where students were in attendance as a conventional lecture group.

The amount of time provided to students for practical skills application with the ICT tools was inadequate for vocational practice and rehearsal, making it more difficult for students to gain ICT competence through the mastery of the tools in graphic design production during training. To compound the problem, there was no free access to the ICT tools in the computer studio outside the specified periods in the graphic design timetable to facilitate long term practice and familiarity - skills experience needed for access to the world of work and its standard practices.

5.6 Recommendations

ICT tools should be increased and supplemented to widen instructors and students opportunities of exploring and learning with these tools during training; Macintosh computers for graphic design production should be provided to supplement PCs. In addition, professional video cameras and television sets should be provided so that students can work with the possibilities of using them in the world of work. Internet connectivity should be made available for use and application for long-life learning experiences of the instructors and students.

The delivery of graphic design should be practiced in an enlarged computer studio, rather than in a lecture hall (Figure 20, Appendix V). The didactical model of group learning in vocational pedagogy should be adopted for effective delivery of graphic design while using the existing forms of ICT tools. Here students and mentors should be able to work together practically, to explore the different forms of ICT tools in smaller manageable groups under the supervision of the instructors, but in an atmosphere of free exchange of ICT knowledge, where whoever knows a procedure teaches those who do not know. It is of course assumed that the instructors, who have the greater experience and knowledge of the theory will usually, but not always, be the ones to instruct.

The number of hours allotted for graphic design training with the use of different forms of ICT tools should be increased so that students can gain sufficient knowledge and skills through longer hours of practice and rehearsal. These hours could be extended through access to the private graphic design shops/practitioners for a few days of 'field' learning experience so that instructors and students can observe the real graphic design situation in the world of work to increase their knowledge. This will help students to learn from the periphery through observation of the masters or instructors as apprentices; through this process, practical skills are learnt as the students gain mastery of the forms of ICT tools used. Lave and Wenger (1991).

5.7 Further researches/investigations

In order to enrich the use of ICT in higher institutions of learning, I suggest that more studies should be carried out if the unemployment situation of graduates is to be improved in Uganda. As such, the areas for further investigations are summarised and described in the subsequent paragraphs.

There is need to carryout research on gender use of ICT as internet resources for teaching and learning in higher institutions of learning in order to equal access to knowledge and skills of the instructors and learners during training. Furthermore, this experience will empower gender exploration of new knowledge available in the digital libraries for research, development work, self sustainability and community development.

The attitude of the instructors and learners towards the use of digital technology during training should be investigated in preparation for the world of work practices and expectations for life learning. Consequently, this investigation will instill the right attitudes towards work, especially where pedagogical approaches to teaching and learning are implemented during training in line with contemporary technological opportunities.

There is need to investigate the challenges of using ICT for collaborative learning given the fact that the budgetary allocation for the improvement of ICT in training is inadequate to attain the one-child-one-computer possibilities. This investigation will be significant in addressing the prevalent digital training needs brought about by inadequate access to the existing forms of ICT tools at the Department of Art and Industrial Design of Kyambogo University for training.

Additional research should be carried out on the impact of ICT on the creativity of the instructors and students for productive work in all areas of learning at the Department of Art and Industrial Design of Kyambogo University. Much as the invention of digital technology has simplified work, its effect on creativity has hampered critical thinking skills of the users. Devising solutions to the through informed research would empower the instructors and learners enhance rather than abandon their potential to explore technology and develop new software to improve on their creative abilities.

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APPENDICES

APPENDIX 1A: Questionnaire Ka for graphic design lecturers and studio technician

Dear Sir/Madam,

I am Moses Ediedu from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on *"Information and Communication Technology for graphic design training in relation to the world of work in Uganda: A case study of Kyambogo University"* I humbly request you to provide honest information that will be used to improve vocational education and training in Uganda. The information given will not be used for any other purpose other than academics and will be treated with utmost confidentiality.

Instructions: Please (tick a box) ☑ or state … where appropriate

1. What ICT approaches/methods do you use in delivering the content to graphic design?
   .....
   .....

2. Are there enough tools to aid the training process in graphic design?
   Yes ☐ No ☐
   .....

3. What type of ICT tools do you use during graphic design training?

Computers	☐	Projectors	☐	Scanners	☐
Still Cameras	☐	Video Cameras	☐	Internet	☐
Printers	☐	Television	☐	Radios	☐
DVDs, CDs	☐	Ext Hard Disc	☐		

   Others (*Please list them*).....
   .....

4. Are the ICT tools efficient for use by students of graphic design in relation to the world of work?
   Yes ☐ No ☐
5. Do the ICT tools used in training graphic design students' measure to those in the world of work?
   Yes ☐ No ☐ Not sure ☐
6. Who are the major providers of ICT tools in the Department of Art and Industrial Design? Students ☐ Lecturers ☐ Department ☐

APPENDIX 1B: Questionnaire Kb for BAID, BVAD & BED students of year II & III (Elective)

Dear Student,

I am Moses Ediedu pursuing a Masters Degree in Vocational Pedagogy from Kyambogo University. I am carrying out a study that seeks to know about graphic design training in the department of art and industrial design. I humbly request you to provide honest information that will be treated with utmost confidentiality.
Instructions: Please (tick a box) ☑ or state ... where appropriate.

1. What type of ICT tools do you use during graphic design training?
   Computers ☐ Projectors ☐ Scanners ☐ Printers ☐
   Still Cameras ☐ Video Cameras ☐ Internet ☐ Radios ☐
   Television ☐ DVDs, CDs ☐ Ext. HDs ☐
   Others (*Please list them*).....
   .....
2. How do you perform the ICT learning activities?
   In groups (A) ☐ Individually (B) ☐ Both (A) & (B) ☐
3. What type of tools do you share?
   Computers ☐ Projectors ☐ Scanners ☐ Printers ☐
   Still Cameras ☐ Video Cameras ☐ Internet ☐ Radios ☐
   Television ☐ DVDs, CDs ☐ Ext. HDs ☐
   Others (*Please list them*).....
   .....
4. How many hours of hands-on do you spend on the computers per week?
   1hr ☐ 2hrs ☐ 3hrs ☐ 4hrs ☐ 5hrs ☐ 6hrs ☐ 7hrs ☐
5. Are ICT tools easily accessible in graphic design training in relation to the world of work?
   Yes ☐ No ☐
6. Are ICT tools efficient for use?
   Yes ☐ No ☐
   b) Give reason for your answer.....
7. Is the ICT competence acquired during training relevant for self employment?
   Yes ☐ No ☐ Not Sure ☐
8. Is the ICT competence acquired during training relevant for executing tasks at the workplace?
   Yes ☐ No ☐ Not Sure ☐

Thank you for your cooperation.

APPENDIX 1C: Questionnaire Kc for graphic design graduates

Dear Graduate,

I am Moses Ediedu from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study entitled on *"Information and communication technology for graphic design training in relation to the world of work in Uganda: A case study of Kyambogo university"* I humbly request you to provide honest information that will be used to improve vocational education and training in Uganda. The information given will not be used for any other purpose other than academics and will be treated with utmost confidentiality.

Instructions: Please (tick a box) ☑ or state … where appropriate

1. Identification of work place

   Workplace (Company/School) Company ☐ School ☐

   Location/Physical address……

2. When did you complete your studies in graphic design?

   Less than 1 yr ☐ 1 – 3 yrs ☐ 3 – 5 yrs ☐ More than 5 yrs ☐

3. Does the ICT competence you acquired in graphic design match with those in the world of work?

   Yes ☐ No ☐ Partly ☐

   Give reason for your answer

   ……
   ……
   ……

4. What ICT challenges did you face in executing graphic design works after graduation?

   ……
   ……

5. How did you overcome these challenges mentioned?

   .....

   .....

   .....

6. What do you suggest to improve graphic design training in DAID, KyU?

   .....

   .....

   .....

APPENDIX ID: Interview guide Kd for lecturers and studio technician

Dear Sir/Madam,

I am Moses Ediedu from Kyambogo University pursuing a Masters Degree in Vocational Pedagogy. I am carrying out a study on *"Information and Communication Technology for graphic design training in relation to the world of work: A case study of Kyambogo University"* I humbly request you to provide honest information that will be used to improve vocational education and training in Uganda. The information given will not be used for any other purpose other than academics and will be treated with utmost confidentiality.

The specific objectives for this study are to:

i. To verify the forms of ICT tools are in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University.
ii. To establish the methods graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.
iii. To find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

Questions

1. What ICT tools are used to train learners in relation to the world of work?
2. What is the ratio of students to ICT tools in graphic design training?
3. Do you think students get jobs after training? (give reasons for your response.)
4. How many credit units are allocated to ICT in graphic design? *(hours of ICT in a week to get the general credit units per semester*)
   How many hours (credit units) are allocated to ICT in Graphic design?

Thank you for your cooperation.

APPENDIX IE: Focus Group Discussion guide Ke for BAID & BVAD students years II & III (Elective)

Dear student,

I am Moses Ediedu pursuing a Masters Degree in Vocational Pedagogy from Kyambogo University. I am carrying out a study that seeks to know about graphic design training in the department of art and industrial design. I humbly request you to provide honest information that will be treated with utmost confidentiality.

The specific objectives for this study are to:

i. To verify the forms of ICT tools are in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University.
ii. To establish the methods graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.
iii. To find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

Questions

1. What ICT tools do you use for graphic design? Are they enough? Give reason for your answer.
2. How do you use these tools? (what is the ratio of student to computer?)
3. Do you think you can get jobs after training? (give reasons for your response.)
4. How many practical hours per week do you spend on graphic design training? (No. of theory and practical hours)

Thank you for your cooperation.

APPENDIX IF: Interview guide Kf for Graduate of Design (Elective)

Dear graduate,

I am Moses Ediedu pursuing a Masters Degree in Vocational Pedagogy from Kyambogo University. I am carrying out a study that seeks to know about graphic design training in the department of art and industrial design. I humbly request you to provide honest information that will be treated with utmost confidentiality.

The specific objectives for this study are to:

i. To verify the forms of ICT tools are in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University.
ii. To establish the methods graphic design delivery while employing forms of ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.
iii. To find out whether ICT competence in graphic design at the Department of Art and Industrial Design, Kyambogo University are appropriate in relation to the world of work.

Questions

1. What ICT competence did you acquire during your training as a student of graphic design of Kyambogo University?
2. What are the challenges you met in the field after training at Kyambogo University?
3. What are some of the things you did to get the skills level you have now?

Thank you for your cooperation.

APPENDIX 1G: Record form Kg for research objectives one, two and three

1. Specifications Book/Website

   Title of book / Website visited:.....

   Year of publication / Date and time website visited:.....

   Author (if applicable):.....

   City (If applicable):.....

2. To verify the forms of ICT tools are in place to train graphic designers at the Department of Art and Industrial Design, Kyambogo University.
   .....
   .....
   .....
3. To establish the methods of graphic design delivery using ICT tools in training at the Department of Art and Industrial Design of Kyambogo University in relation to the world of work.
   .....
   .....
   .....
4. To find out whether ICT competence in graphic design at Kyambogo University Department of Art and Industrial Design are appropriate to the world of work
   .....
   .....
   .....

APPENDIX II: Introductory Letter

KYAMBOGO UNIVERSITY

P. O. BOX 1 KYAMBOGO
Phone: 041-285001/2 Fax: 041-220464, Kampala
Website: www.kyambogo.ac.ug
Kyambogo University Graduate School

Date: .....

To:

.....
.....
.....

RE: LETTER OF INTRODUCTION

This is to introduce .....
Registration No. ..... who is a student of Kyambogo University pursuing a Masters Degree in Vocational Pedagogy.
He/She intends to carry out a research on:

.....
.....
.....

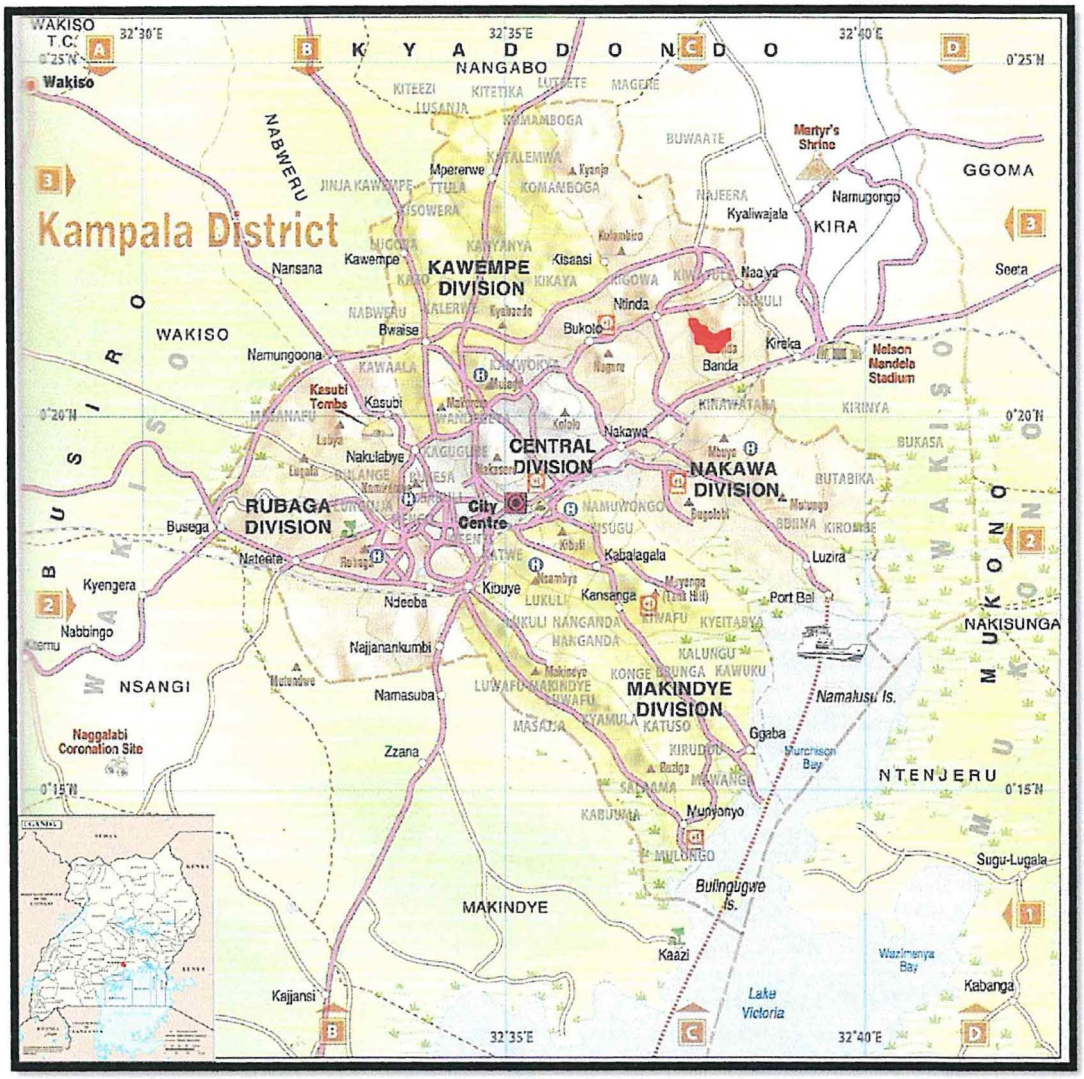
as partial fulfillment of the requirements for the award of the Degree in Masters of Vocational Pedagogy.

We therefore kindly request you to grant him/her permission to carry out this study in your organisation. Any assistance accorded to him/her shall be highly appreciated.

Thank you.

Yours Faithfully,
Nakiwala
23 APR 2012
St. Dr. F. Nakiwala
AG. DEAN, KYAMBOGO UNIVERSITY GRADUATE SCHOOL

APPENDIX III: Map 1: Kyambogo University in Nakawa Division, Kampala District



Key:

- Kyambogo University
- Boundary of Kampala District
- Boundary of Divisions
- Road Networks
- Railway line
- Water body
- Swamp

APPENDIX IV: List of students electing Graphic Design

List for students of BVAD 11 offering Graphic design as an elective

	Name	Reg. No
1.	Agaba Davis	10/U/384/VAD/PD
2.	Alyabu Emmanuel	10/U/142010/VAD/PD
3.	Ariole Ernest	10/U/141991/VAD/PD
4.	Kabali Ivan	10/U/387/VAD/PD
5.	Karungi Beatrice	10/U/141990/VAD/PD
6.	Kigozi Swaleh	10/U/142008/VAD/PD
7.	Lukwago Benon	10/U/1305/VAD/PD
8.	Lule Ivan	10/U/141946/VAD/PD
9.	Male Ivan	10/U/142004/VAD/PD
10.	Mucurezi Jackline	10/U/142044/VAD/PD
11.	Mutegeki Brian Martin	10/U/142001/VAD/PD
12.	Nabwire Juliet	10/U/142041/VAD/PD
13.	Nakiboneka Esther	10/U/143427/VAD/PD
14.	NanserekoMoureen	10/U/142026/VAD/PD

List for students of BVAD 111 offering Graphic design as an elective

1.	Baganya Salama	09/U/377/VAD/PD
2.	Kizito Jackson	09/U/10386/VAD/PD
3.	Komuhangi Proscovia	09/U/10387/VAD/PD
4.	Kulussen Hussein	09/U/2052/VAD/PD
5.	Kyoshaba Nancv	09/U/12087/VAD/PD
6.	Mooka Jonah Solomon	09/U/2088/VAD/PD
7.	Mugarura Duncan	09/U/12085/VAD/PD
8.	Mwebaza Peninah	09/U/10395/VAD/PD
9.	Naddya Caroline	09/U/10396/VAD/PD
10.	Nakabubi Aisha Serume	09/U/385/VAD/PD
11.	Nakamanya Oliver	09/U/10397/VAD/PD
12.	Nakawalya Stella	09/U/10398/VAD/PD
13.	Nakivumbi Lydia	09/U/10399/VAD/PD
14.	Tamale John Paul	09/U/1552/VAD/PD
15.	Wakaisuka Ronald	09/U/10412/VAD/PD
16.	Wamala Asuman	09/U/10414/VAD/PD
17.	Zirimenya Godfrey	09/U/10416/VAD/PD

List for students of BAID 11 offering Graphic design as an elective

1.	Aciro Anna Jane	10/U/142260/AID/PD
2.	Arinaitwe Irene	10/U/142349/AID/PD
3.	Mwongyeire Ohad	10/U/142229/AID/PD
4.	Baraka Hope	10/U/142303/AID/PD
5.	Basalidde Ivan	10/U/42496/AID/PD
6.	Bawobe Robert	10/U/13738/AID/PD
7.	Birungi Gloria	10/U/142228/ AID/PD
8.	Galabuzi Ben	10/U/28/ AID/PD

9.	Kakebe Wayne	10/U/142327/AID/PD
10.	Makwa Peter K.	10/U/21/AID/GV
11.	Mbaziira Francisxavier	10/U/144203/AID/PD
12.	Mugisa Moses	10/U/142319/AID/PD
13.	Munana Samuel	10/U/701/AID/GV
14.	Musinguzi John	10/U/142263/AID/PD
15.	Namulindwa Peninnah	10/U/27/AID/GV
16.	Ocen Hassan	10/U/142233/AID/PD
17.	Okiria Allen Mccolvin	10/U/2355/AID/PD
18.	Kwang Hillary	10/U/142310/AID/PD
19.	Olei Brenda	10/U/142300/AID/PD
20.	Remo Abraham Weleya	10/U/142308/AID/PD
21.	Seguya Ronald	10/U/30/AID/GV
22.	Suuna Joseph Paul	10/U/142357/AID/PD

List for students of BAID 111 offering Graphic design as an elective

1.	Katongole Solomon James	09/U/243/AID/PD
2.	Nanteza Mariam	09/U/36/AID/PD
3.	Nkonge Isaac	09/U/2857/AID/PD
4.	Obua Sydney Odongo	09/U/29/AID/PD
5.	Tumukunde Brenda	09/U/26/AID/PD
6.	Tumukunde Claire	09/U/32/AID/PD
7.	Zalwango Lydia	09/U/31/AID/PD
8.	Zawedde Joanita	09/U/30/AID/PD
9.	Male Ivan	09/U/142004/AID/PD
10.	Mucurezi Jackline	09/U/142044/AID/PD
11.	Mutegeki Brian Martin	09/U/142001/AID/PD
12.	Nabwire Juliet	09/U/142041/AID/PD
13.	Nakiboneka Esther	09/U/143427/AID/PD
14.	Nansereko Moureen	09/U/142026/AID/PD
15.	Nakivumbi Lydia	09/U/10399/AID/PD

List for students of BED offering Graphic design as an elective

1.	Agwai Tonny	10/U/1930/BED/PD
2.	Kanyike Emmanuel	10/U/1940/BED/PD
3.	Kiranda Samuel M	10/U/1931/BED/PD
4.	Kiryowa John B Moses	10/U/1944/BED/PD
5.	Lawino Beatrice	10/U/1942/BED/PD
6.	Mugira Yeko Kako	10/U/529/BED/PD
7.	Ssonko Aminah	10/U/1935/BED/PD
8.	Wajokerana Yonah Kule	10/U/1939/BED/PD

APPENDIX V: Figures

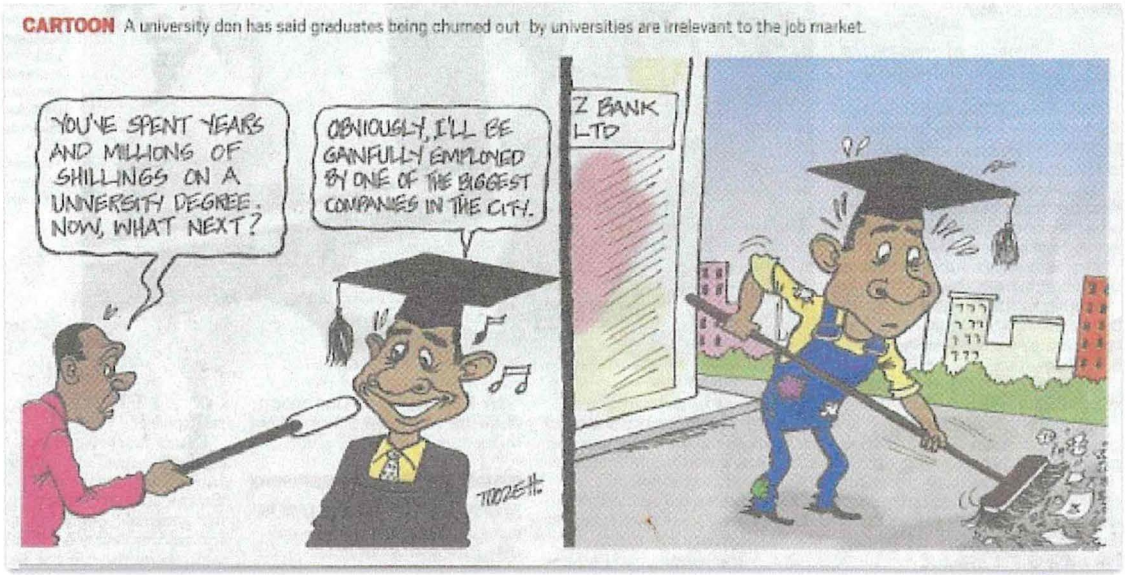


Figure 16. A graduate sweeping the floor after graduation.

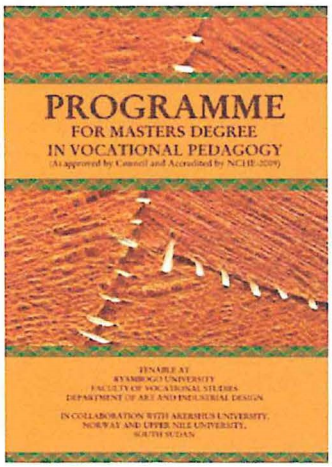


Figure 17. Handbook for MVP.

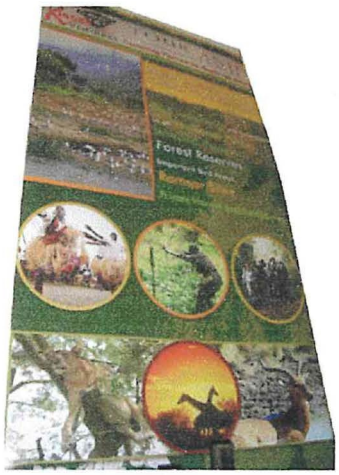


Figure 18. A banner in the computer studio.

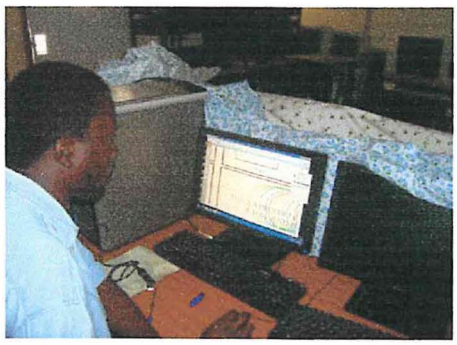


Figure 19. Inspection of designed artworks in the computer studio

Figure 20. Students attending a lecture in the Graphics Studio.

Figure 21. A student using a laptop in the lecture room.

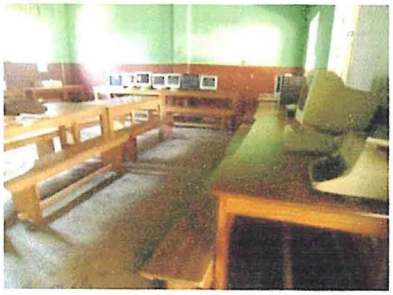


Figure 22. State of the ICT tools in schools.