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## Application of ICT/Cad in the Visual Art Education Lecture Hall

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*Abstract:*
*Evidence of research findings overt the numerous gains derived from technology enhanced teaching and learning in higher education. This paper accounts on a study of 18 lecturers from the Art Education Department of the University of Education Winneba Ghana and divulges panoptic variety among individual lecturers' educational, artistic and social values, attitudes and beliefs about the use of ICT/CAD in traditional face-to-face lecture room environment to enhance teaching and learning of the visual arts in the university education. This has resulted in various approaches to both their personal and professional use of technology. The paper searches a considerable number of issues viz. the dissension of technology and the visual arts education; whether lecturers believe the importance of technology enhanced teaching and learning as well as in practice as artists; the part technology plays currently in and out of the lecture room. The research proved that improvement on ICT/CAD enhanced teaching and learning should consider lecturers belief perception and values with regards to specific technology usage and the availability of the needed resources.*

**Keywords:** *ICT/CAD, visual art, technology enhanced teaching, designing process*

## 1. Introduction

Currently, in any discussion of educational methods and techniques, the influence of technology is ever present. While the impact and perseverance of mainstream methods have still maintained their hold on many in the educational realm, it is without a doubt that technology is now an important component of the teaching and learning in the 21st century. The concept of "teaching with technology" is now an accepted part of the educational literature (Hsu, 2009). These concerns revolve around issues relating to staff access to ICT/CAD resources, staff ICT/CAD training, and the encouragement of staff ICT/CAD confidence and competence. Conventional wisdom suggests that high access to ICT/CAD and high ability with ICT/CAD must lead to high use of ICT/CAD. That is, "ICT/CAD Access + ICT/CAD Ability = ICT/CAD Use". (O'Mahony, 2005) As higher education institutions strive to embrace societal changes in the use of technology and a range of other influences on how they operate, it is important to recognize what factors affect the use of technology for teaching and learning and what may be done about supporting and improving the practices of academic staff.

In 1987 when the Education Reform Programme was introduced one of the cardinal goals stressed was the acquisition of appropriate skills leading to vocationalization. The shift towards the vocationalization policy has since achieved some results. Records available from schools and examination bodies have indicated a shift towards vocational skills. Visual Arts have been identified as one of the (vocational skills) areas that are popular among students. On 14th May, 2004 the University of Education Act, Act 672 was enacted to upgrade the status of the University College of Education of Winneba to the status of a full University. The university's mission is to train competent professional teachers for all levels of education as well as conduct research, disseminate knowledge and contribute to educational policy and development. Its mandate is to produce professional educators to spearhead a new national vision of education aimed at providing higher education and fostering a systematic advancement of the science and the art of teacher education, training tutors for the colleges of education and other tertiary institutions, foster links between the schools and the community in order to ensure the holistic training of teachers and ultimately redirecting Ghana's efforts along the path of rapid economic and social development. (University of Education, 2018) The Visual Art Education Department in the University of Education Winneba, Winneba campus is one of the major tertiary institutions in Ghana that trains students to acquire skills in the visual Art disciplines for self- employment
and to be employed as art teachers in the educational institutions, government and private agencies as well as non-governmental organizations scattered in the country.

In this article, the integration of ICT/CAD in the visual art lecture room will be interrogated. How does the ICT/CAD integration enrich their pedagogy or enhances students' learning experience, particularly by enabling greater flexibility and widening opportunities? How will technology enhance teaching and learning better the craftsmanship of both lecturers and students in their practice as artists? To investigate these questions, the researcher considered the perception of some visual art lecturers on the use of ICT/CAD. In her book Career Coach: Managing your Career in the Art Industry, Field (2009), made a thorough deliberation on the careers in the visual arts. She begun with the question; when you think of a career in art, what professions come to mind? Most people first think of fine artists like painters, sculptors,

and illustrators. And while fine artists are prominent in the field, the industry embraces a wide variety of career options, both in the creative segment of the industry as well as on the business side. She continued to enlighten that options are available for fine artists, commercial artists, multimedia artists and animators, graphic artists, designers, and crafts people, among others. There are food stylists, teachers, writers, photographers, and the list goes on. There are also opportunities for curators, exhibit designers, exhibit developers, educators, conservationists, and more. The business side of the industry offers a wide array of options, including agents, publicists, managers, and more. Some choose to work in galleries, while others work in museums. Some work in schools, while others work in art shops and crafts stores. Many take part in crafts shows and arts shows. Some work for television shows or magazines or a variety of corporate businesses. Others are self-employed. (Field, 2009)

*1.1. The Setting of This Research*

As at the time of this research study, the Visual Art programmes in the Art Education Department of the University of Education Winneba, Winneba campus offers four-year degree programmes in Bachelor of Arts (Art Education), and Bachelor of Art in Fashion /Textiles Education studies. The department also runs two-year Sandwich Diploma programme in Art. The courses in the Art education programme are grouped into two major areas namely; three- dimensional (3D) courses comprising Basketry, Ceramics, Jewelry and Sculpture then the two-dimensional (2D) courses also comprising Graphic Design, Picture making and Textiles. As a requirement, it is obligatory for every student to major in one of the two-dimensional and one of the three-dimensional courses where related courses under each is studied by the students in each semester's list of courses. In addition, the curriculum demands that drawing and educational courses are studied compulsorily for each semester up to the third year. ICT for the first semester of the first year and History of Art in both first and second semesters of the first year. A typical example of a first semester list of courses for first year student of Art Education, studying Textiles as a two-dimensional (2D) course and Basketry as a three-dimensional (3D) course is shown in Table 1 below.

| Course Code | Title | Credits |
|---|---|---|
| ARD111 | Basic Drawing I | 3 |
| ARF111 | History of Art I | 3 |
| ARF 113 | Basic Design | 3 |
| ATX 111 | Foundation Studies in Textiles | 3 |
| ARB 111 | Foundation Studies in Basketry | 3 |
| EDC 111Dar | Philosophy of Education, School curriculum, Social Change and National Development | 3 |
| GPDU 113t | Introduction to Information and communication Technology | 3 |

*Table 1:  List of Courses for First Semester First Year*

The student population of the department as at the time of this study was 1,142 comprising 887 male and 255 female students. The total number of lecturers in the department was 30. Lecturers in the department are assigned courses strictly according to their area of specialization in the visual art disciplines. The researcher has been teaching courses in Computer Aided Designing (CAD) application in the visual arts at the undergraduate level over many years. An observation and an interview with the students prove that about 50 percent of the students only use a CAD software at the first semesters compulsory ICT course of the four-year degree programme and occasionally used some few CAD software for designing of their assigned artifact before production. While some lecturers see a high need for CAD and technology integration into their teaching and practices, on the other hand, some consider it a little need for teaching and practice as artists. All the lecturers used in this study have qualifications in different areas of the visual arts and practice on commercial bases as well. The study was inspired by the observations made to ascertain whether there are impediments militating against the full inclusion of ICT /CAD in the teaching and learning of most of the lecturers in the Art Education Department of the University and their own technical know-how in the use of ICT/CAD for the dissemination of knowledge in their various visual art specialty.

*1.2. Literature on Lecturers' use of ICT/CAD*

There is much hope and promise that accompanies the use of technologies for teaching and learning in higher education, but it is challenging to consider what the best possible uses of technology might be in the design of student learning. University teachers' views of technology have a fundamental relationship with how they use them and what they consider to be a successful use (Price, 2013) A significant contribution to Computer-based instructional simulations was made by Lee (1999) and opines that modern computer technology has made a new rich learning environment for instance in instructional simulation, students learn by actually performing activities to be learned in a context that is similar to the real world. He aptly writes that technologies such as computer–based simulations have the potential to be catalysts for more efficient and/or more profound student learning**.** (Lee, 1999). Although computer-based instructional simulation might reduce the explicit amount of factual knowledge presented, conceptual learning can be enhanced. Use of simulations may also help promote interaction and communication and facilitating teamwork and collaborative learning (Ncube, 2010) .As students use computer-based instructional simulation for practice, instructors can concentrate on clarifying important concepts, exploring new methods of teaching, and attending to individual students' needs in class

activities, because students have already practiced necessary skills and knowledge using computer-based instructional simulation (Percoco, 2000). From the perspective of West and Graham (2005) technology can enhance the teaching and learning in higher education through five powerful means which can be epitomized as: the use of technology should assist students visually to grasp the theory behind a technique, students should be active partakers of the activities rather than onlookers, the use of technology to provide and enhance quality and quantity practice opportunities, technology allow students the chance to establish a good interaction with the instructor and the students themselves, and finally technology as a springboard for substantive reflective practice ( West and Graham , 2005) . A comprehensive study conducted by Baume (2007) on e-portfolio emphasizes its importance for students and writes, the e-portfolio provides many opportunities for online reflective writing to document the process of learning and to showcase their achievements with respect to the intended outcomes. He is also of the opinion that in producing a portfolio, the student assembles smaller pieces of work into a large whole; makes connections among the items of work they have done; and gives a critical overview of their work and learning. In marking a portfolio, the lecturer sees a coherent and reflective picture of the student's work and development.' (Baume, 2018). (Hutchings, 1998; Lyons, 1998; Lyons et al., 2002) cited in Klenowski et al (2006) explains the use of portfolios for the purposes of developing teaching skills and reflective practice from pre-service teaching through to teaching at postgraduate level. In using portfolios to assist professional development, learning and teaching requires instructors and tutors to understand some key assessment concepts such as the link between learning objectives and success criteria, the use of rich questioning and the role of feedback in a pedagogy focused on learning, self- and peer-assessment. Klenowski et al (2006) Early in her book Towards Discursive Education: Philosophy, Technology and Mordern Education Erneling (2010), grouped the main functions of lecturers in universities and polytechnics into three functions: teaching, research, and management. She explains effective teaching as an intellectually demanding in that it requires the teacher to know, in a deep sense, the subject being taught. Erneling discusses further that to teach effectively you need to be able to think and have a problem-solving ability, to analyze a topic, to reflect upon what is an appropriate approach, to select key strategies and materials, and to organize and structure ideas, information, and tasks for students. None of these activities occurs in a vacuum. Effective teaching is socially challenging in that it takes place in the context of a department and institution which may have unexamined traditions and conflicting goals and values. Most important of all, she emphasizes that effective teaching requires the teacher to consider what the students know, to communicate clearly to them, and to stimulate them to learn, think, communicate, and perhaps in their turn, to stimulate their teachers. In short, to teach effectively you must know your subject, know how your students learn, and how to teach. (Erneling, 2010). Conventional classroom lecturing often focuses more on factual (declarative) knowledge than on procedural (applied) knowledge. By using well-designed computer-based instructional simulation for teaching, improve student's understanding of content knowledge and instructors may more easily avoid becoming simply didactic knowledge providers (Orrill, 2001). From the perspective of Wilson (2005), well-established research shows that students learn best when they are actively engaged rather than being passive observers, He opines that there are three avenues an institution can promote to foster active student learning. First, certain teaching methodologies, such as problem-based learning, promote active student involvement. Second, the classroom furnishings can either enhance or hinder active student learning. Thus, tables and moveable chairs enhance while fixed-row seating hinders active learning. Finally, technologies which require student initiative, such as interactive video-discs, promote active learning. (Wilson, 2005) The actual use of computers in schools has increased rapidly during the last forty years, yet problems of implementation and reception remain. In fact, the obstacles to the use of computers in schools seem in many respects to be of the same kind as those that faced other technologies during the last century (e.g., film, radio, television), that is, a lack of resources, time, access, and expertise. Bilalis (2000) provided a comprehensive overview on the use of ICT/CAD and writes; Computer Aided Design (CAD) is defined as the use of information technology (IT) in the design process. A CAD system consists of IT hardware (H/W), specialized software (S/W) (depending on the particular area of application) and peripherals, which in certain applications are quite specialized. The core of a CAD system is the S/W, which makes use of graphics for product representation; databases for storing the product model and drives the peripherals for product presentation. Its use does not change the nature of the design process but as the name states it aids the product designer. As further explained by Bilalis, the designer is the main actor in the process, in all phases from problem identification to the implementation phase. The role of the CAD is in aiding him/her by providing: Effective use of digital technology by university and college staff is vital in providing a compelling student experience and in realizing a good return on investment in digital technology." Perfectly generated and easily modifiable graphical representation of the product. The user can nearly view the actual product on screen, make any modifications to it, and present his/her ideas on screen without any prototype, especially during the early stages of the design process. Perform complex design analysis in short time. Implementing Finite Elements Analysis methods, the user can perform: Static, Dynamic and Natural Frequency analysis, Heat transfer analysis, Plastic analysis, Fluid flow analysis, Motion analysis, Tolerance analysis, Design optimization. Record and recall information with consistency and speed. In particular the use of Product Data Management (PDM) systems can store the whole design and processing history of a certain product, for future reuse and upgrade. (Bilalis, 2000) CAD stands for Computer Aided Design. Most CAD programs now permit creation of three-dimensional models, which may be viewed from any angle. State-of-the-art solid modelling CAD programs are a design that helps architects, engineers, and designers in virtual reality for machine design activities. Its special-purpose hardware, involves both software and CAD is essentially an automated system for the design, drafting, and display of graphically oriented information. Furthermore, CAD is used in the manufacturing process for layouts. (Dwivedi, 2013) In Stroescu's (2009) comprehensive study, she emphasized that technology has aided designers and manufacturers to meet the current business environment's challenges. Because technology is a broad term and in order

to clarify the discussion of this phenomenon, she categorized types of technology into two categories: Process technology and information technology. She defines Process Technology as hardware and/or software that facilitate the actual physical development of the product. This category can be further sub-divided into computer aided design, computer aided patternmaking, computer aided manufacturing and 3-D Body scanning/mass customization. In addition, she writes that Computer Aided design encompasses programs that facilitate creative sketching, presentation boards, technical design, and textile design. Software programs used for these purposes include Adobe Photoshop and Illustrator, Point-Career, In-Design, and Lectra Kaliedo. Computer Aided Patternmaking includes digitizing existing patterns for grading and pre- production preparation, creating patterns from existing slopes, digitizing draped muslins for completion on the computer, and customizing patterns for made-to-measure clients. Taking the process another step further, technological development has led to 3-D virtual assembly of the pattern then evaluating the pattern on a virtual model complete with animation to see the virtual model walk, thus enabling changing of colour, pattern, proportion and details of the design before realizing it in actual fabric. Computer aided manufacturing includes cutting a large quantity of garments in a paperless environment, using automated spreading and cutting, and for a few segments of the industry going all the way to automated assembly. Computer-aided manufacturing also includes supply-chain technology such as software for Product Data Management and Product Lifecycle Management, both in local networks and on the Internet.

She defines Information Technology as the many methods that one can communicate ideas, words, and images both locally and over the World Wide Web. It includes all of the previously-mentioned Internet-based information dissemination methods: e-zines, podcasts, myspace.com, youtube.com, secondlife.com, and blogs (both by industry professionals and by consumers). In addition, Information Technology includes web-based trend forecasting agencies; both subscription-based such as wgsn.com, and those with free access, competitor's websites as well as a myriad of options with public access such as style.com, elle.com, infomat.com, and cottoninc.com. (Stroescu, 2009) The use of technology has aided designers and manufacturers to meet the current business environment's challenges. Because technology is a broad term and in order to clarify the discussion of this phenomenon, types of technology were divided into two categories: Process technology and information technology. From the perspective of Ruppert- Stroescu (2009), Information Technology refers to the many methods that one can communicate ideas, words, and images both locally and over the World Wide Web. For the purpose of this study, it includes all of the previously- mentioned Internet-based information dissemination methods: e-zines, podcasts, myspace.com, youtube.com, secondlife.com, and blogs (both by industry professionals and by consumers). In addition, Information Technology includes web-based trend forecasting agencies; both subscription-based such as wgsn.com, and those with free access, competitor's websites as well as a myriad of options with public access such as style.com, elle.com, infomat.com, and cottoninc.com. (Ruppert-Stroescu, 2009) Gordon (2014), in his report established that one impact of the Internet has been a changing notion of the individual. Online interactions can become different and distinct from face-to-face interactions, with people adopting different personalities and personas, or even different genders or races, when within a virtual world. This offers opportunities as well as challenges for education. An example of both is whether students think of themselves as learners in a virtual world, and what the implications and responses might be if they do and if they don't. He further emphasized that ensuring responsible and professional attitudes and behaviours can be problematic, especially when individuals adopt uncharacteristic conduct when feeling secure behind the apparent anonymity of the Internet. Requiring students to sign up to professional codes of conduct such as learning contracts, and ensuring that identities are real or easily traced to real accounts can reduce this, but the audit and permanence of computer-mediated communications is still ignored by many students. Increasing students' (and teachers') digital literacies may help, but where courses move to majority or entirely online provision the chance to explore digital conduct outside the digital environment is lost: the only version of an individual's personality is the online one (Gordon, 2014). The researcher Margarita Pavlova (2009), a leading scholar in the field of technology and vocational education, argues a convincing case in support of the importance of technology education as a key contributor to vocational education. Pavlova believes that the inclusion of technology education in courses of vocational education, particularly at the secondary school level, can be a major facilitator of student empowerment both within the immediate learning environment and beyond. She also argues that technology education has much to contribute to education for sustainable development (ESD). Traditionally, direct preparation for work was the main goal of vocational education. It was perceived as providing specific training that was reproductive and based on teachers' instruction, with the intention to develop understanding of a particular industry, comprising the specific skills or tricks of the trade. The flexibility and adaptability that is required by industry is not developed by current vocational education courses in schools. The introduction of vocational courses in secondary schooling has not been able to meet the needs of vocationalisation: to provide students with a better preparation for their vocational life. As the limited role of Vocational courses in the vocationalization of secondary education has been recognized internationally, broader approaches to vocationalization have been trialed around the globe. (Pavlova, 2009)

## 2. Methodology

A qualitative interpretive approach was primarily used for the study in order to explore in some depth the range of issues related to lecturer's usage, attitudes, beliefs and values of ICT/CAD inclusion in teaching. The study involved a face to face interview conducted with 18 lecturers from the Art Education Department, involving two lecturers each of the following visual art disciplines namely, Drawing, Basketry, Ceramics, Graphic design, Jewelry, leatherworks, Picture Making, Sculpture, and Textiles/Fashion. Interviews were conducted to ascertain the following:

- Their various visual Art disciplines and backgrounds.
- The use of ICT/CAD as lecturers in their disciplines (professionally and personally)

- Their technical know- how in the use of specific ICT/CAD software and peripherals.
- Their perception of the importance of technology enhanced teaching and in practice as artists.
- Inclusion and impact of technology enhanced learning at the part of university students
- How supportive is the university authorities in the use of technology enhanced teaching and learning.
- To what extent are lecturers enriching their professional and personal skills on the use of technology enhanced teaching, learning and assessment through workshops and training.

*2.1. Interviewees Used and Their Profile*

The participants for the study include 18 lecturers out of which were two females and sixteen males, their ages ranged from 30s to late 50s with the most in their late 40s and early 50s. As at the time of this research, two of them were serving post retirement contracts and the rest have taught as lecturers for at least 5years and above up to 20years. Most had taught courses and subjects in various visual art disciplines at secondary schools and other institutions both governmental and non-governmental before becoming full time university lecturers. Table 2 clearly outlines the various backgrounds of the interviewees. Most admitted they currently practice their specialized areas but depending on how frequent they are commissioned. All the 18 lecturers make use of Microsoft word and the internet in typing and data collection respectively. 15 of them at times use PowerPoint for teaching. 5 of them uses specific design software such as The Adobe suit, CorelDraw, weave point and Edraw. 10 of the lecturers make use of the projector for teaching in the lecture rooms.

| Anonym | Number of Years as a Lecturer | Specialized Area | Outline of Technology (ICT/CAD) Enhanced Usage |
|---|---|---|---|
| Dave | 15 | Ceramics | Applies computer almost daily for personal research and lectures. Uses only PowerPoint for some of his lecture projections, and no CAD software for teaching |
| Salu | 20 | Ceramics | Applies Microsoft word for few personal typing but no technology nor any CAD software for Teaching |
| Panda | 7 | Basketry | Uses Microsoft word and PowerPoint but no CAD software for teaching |
| Skeen | 18 | Basketry | Uses Microsoft word and PowerPoint but no CAD software for teaching |
| Ollan | 8 | Graphic Design | Uses Microsoft word and PowerPoint but no CAD software for teaching |
| Kink | 6 | Graphic Design | Applies the computer and other peripherals with CAD software such as Adobe Illustrator, Photoshop, InDesign, and Corel Draw |
| Lucy | 15 | Jewelry | Uses Microsoft word and PowerPoint personally but no CAD software for teaching. |
| Jones | 22 | Jewelry | Hardly uses computer for personal and professional work and does not use ICT/CAD for teaching. |
| Gad | 7 | Picture Making | Uses PowerPoint but no specific CAD software for teaching |
| Nathan | 20 | Picture Making | Uses the computer and ICT for his personal research but not for Teaching. |
| Ken | 15 | Sculpture | Uses computer personally but not frequent. Sometimes applies PowerPoint in teaching but without a specific CAD software |
| Rita | 9 | Sculpture | Frequent personal computer uses and frequent integration of ICT in teaching at times falls on a resourced person to teach Rhino 3D CAD software for. |
| Felix | 8 | Textiles/Fashion | Very confident with ICT/CAD usage for commercial purposes and for teaching. He uses CAD software such as Adobe Photoshop, Illustrator, Edraw, and Weave point. |
| Gordon | 8 | Textiles/Fashion | Frequently uses ICT personally and for teaching but does not include any specific CAD software. |
| Jude | 7 | Leather | Very frequent and confident in the use of ICT personally and professionally. Uses PowerPoint for teaching with no specific CAD software. |
| Mark | 15 | Leather | Frequent in the use of ICT for teaching but does not use any CAD software for teaching nor for any commercial assignment. |
| Davis | 8 | Drawing | Uses ICT personally but not for teaching and uses no CAD software. |
| Paul | 7 | Drawing | Does not use ICT/CAD for teaching. |

*Table 2: Lecturers and Their Profile*

It is observed that all lecturers owned a computer. All of them uses the internet for research and other related activities. All lectures use Microsoft word for typing and other related functions and fourteen uses PowerPoint frequently in their lecturing activities. Eight lecturers' uses specific CAD software as part of their own Art Practice they include CorelDraw, Weave Point, Adobe Photoshop, Illustrator, In Design, Page maker.

## 2.2. Inquiring the Issues

The main issues discussed in this study include the following:
The perception of lecturers on the use of technology in Visual Art Education

- Do Visual Art lecturers believe in the necessity for integrating technology (ICT/CAD) in their lecturing activities?
- Currently, what is the importance of technology (ICT/CAD) in the visual Art Education lecture hall?
- Challenges faced by lecturers in integrating technology in their lecturing practice.
- What is the perception of lecturers on their personal upgrade in the use of technology (ICT/CAD)?

## 2.3. The Perception of Lecturers on the Use of Technology in Visual Art Education

Almost all the lecturers interviewed perceived the use of ICT/CAD in the Visual Arts Education as an area of great concern and importance most especially in this modern computer era. Most especially for learners who will intend practice their practically acquired skills to serve the nation. Most of the interviewees expressed similar views in the case of practicing artists for a more refined artistic impression through the use of specific CAD software and as university teachers as well. Several lecturers expressed the need for originality and innovation when ICT and CAD is integrated in their teaching mostly with the lecturers themselves which can be transferred to the students they teach. Four of the lecturers perceived ICT/CAD usage as a zest on creativity and with the artist's routine activities. Salu Opines that the main important thing is to master the use of the tools and materials used in a specific area of specialization which can promote versatility in the production processes. Five of the lecturers perceive the use of CAD in pedagogy as somehow tedious, and time consuming to learn a software for a specialized visual art area for teaching in the university. Hence, rather encourage students to be self-taught. Four other lecturers expressed the use of CAD as a very vital aspect in today's designing processes and an integral part of the artist's role in answering the questions he seeks to satisfy a client. They identified some advantages in the use of ICT/CAD as avoidance of excessive delays in meeting deadlines, making easy corrections and modifications on samples, simulation of movements and 3D effects, elimination of human errors during production most especially coupling CAD and CAM systems.

## 2.4. Do Visual Art Lecturers Believe in the Necessity for Integrating Technology (ICT/CAD) in Their Lecturing Activities?

Most of the lecturers interviewed believes it is very necessary to integrate ICT in lecturing since it somehow reduces the cumbersome nature of the traditional face to face lecture especially when presentations of lecture notes are done with PowerPoint where lengthy contents are simplified. In addition, three of the interviewees expressed the challenging nature of teaching the use of a CAD software for designing in the visual arts. Since the visual art Education results in mastering a specialty such as graphic design, sculpture, leather as a vocation, it is prudent to spice up the creative and designing processes with CAD for better results. Four interviewees believe CAD integration into our practices as Visual Artists and teachers is not so vital since it is challenging to acquire and master a specific CAD software for the visual art specialties. They stressed further that mastering the use of handy tools, some equipment and the characteristics of the needed material in the Visual Arts learning should be the most paramount thing. In addition, the university graduates are trained specifically to teach students in the second cycle and lower levels of education in the country and with reference to their setting, ICT/CAD is not the focal point.

Felix believes that the integration of ICT/CAD in the teaching of the Visual Arts in the university elevates pedagogy into a more modernized and interesting way of knowledge dissemination that broadens the creative ability of students in their specialized area of the Visual Arts. Three other lecturers were of the view that today's computer age with easy access to the internet enables the use of computer and other peripherals to be leisurely and hence the very serious people can learn ICT/CAD through our effort.

## 2.5. Currently, What Is The Importance of Technology (ICT/CAD) in the Visual Art Education Lecture Hall?

Five of the lecturers expressed the importance of technology (ICA/CAD) as a more refined way of broadening the knowledge of the university lecturer in organizing and dissemination of information to students in a more refined form eliminating unnecessary adornments. Students are able to browse the internet for information to further enlighten them in the courses they offer. Four lecturers explained the importance of ICT/CAD with reference to the use of computer peripherals for example the digital camera which functions as a view finder to capture landscape, seascape and other scenes in motion and in pictures to be reproduced in a different artist medium. The use of the digital camera reduces the stressful means of sitting down to reproduce sketches and drawings in stillife.

Felix and Gordon were of the view that sampling, sourcing, and application of colour, textures and other elements for textile and other surface designing techniques becomes simplified in the lecture room example by the use of Adobe Photoshop and Corel Draw or Adobe illustrator. Poses of different models and run way shows can be captured with a camera and reproduced later with a drawing medium or for discussion. This they added that it doesn't induce so much pressure on the students, reduce intuitiveness as they draw and relieving the model as well.

Three of the lecturers compared the tedious and risky travelling from the school to factories and industries to the

easy means of achieving the same aims by projecting videos of production processes on a screen in the lecture hall. Here the motion can be paused at specific vital operations necessary for explanation and emphasis. Audio visual tutorials can be very helpful in teaching hands-on CAD software. Ollan and Nathan pointed out the need of ICT/CAD in the lecture hall for demonstrating how to upload information on produced artifacts of students through online exhibitions and portfolios building on the internet to be made known to the world.

## 2.6. Challenges Faced by Lecturers in Integrating Technology in Their Lecturing Practice

Four of the interviewees stressed on the larger number of students admitted into the visual arts education as a major impediment especially if a lecturer wants to teach with a hands-on activity at a computer lab. Notably, the computer lab at the department is not adequately equipped with the standardized computers with the needed CAD software for teaching. Coupled with no internet connectivity and a limited space. Lecturers who are compelled to teach with a CAD software accounts that they only demonstrate the needed steps at a lecture session on a projector screen then assign students to practice on their personal computers after the lecture. Rita commented that most of the students who are admitted into the university are novice when it comes to the application of computer in general so it becomes challenging to teach a software programme.

Paul raised the issue that the time allotted on the departmental time table was not enough for the use of CAD in the lecture hall. "The conditions in the lecture halls are not favourable enough for the large number of students so it becomes uncomfortable to prolong face to face lectures" (Nathan). Some lectures acknowledged the fact that it is expensive to purchase CAD software in their areas of specialization for teaching. Most of the interview lectures admitted that resourcing the departmental computer lab with adequate resources for smooth teaching is a challenging task for the school authorities. Gad and Davis observed that most students become very reliant on the computer for everything without their own creativity which they think is not so helpful since majority of them will end up in the classroom to teach art related subjects. They commented on the overreliance on the internet for all information for every assignment and does not allow students to read from books and other printed materials.

## 2.7. What Is The Perception of Lecturers on Their Personal Upgrade in the Use of Technology (ICT/CAD)?

One of the main objectives for this study is to investigate the professional development and learning approaches used by visual art lecturers with regards to ICT/CAD, their perception values and believes as well as the usefulness of ICT/CAD in their pedagogical practices. Most of the lecturers expressed concerns about the need to advance in knowledge in the use of ICT/CAD. Salu expressed a strong interest to learn and upgrade his knowledge most especially in the use of CAD in his area of the visual arts but he is serving a post retirement contract and have a very limited time to service. Ken made it clear that most of the students show a high interest in the application of ICT/CAD in their visual art specialties and hence it is prudent to allow for self-teaching. Jones was of the view that it is demanding and intriguing in studying a software for the visual arts. Dave expressed the fear of making a lot of mistakes and eventually losing everything if the technology fails but a manual designing tool will not fail.

Gordon expressed a feel of rigidity and stiffness when CAD is used in fashion and textile rendering. He compared the easy manipulation of a simple drawing tools such as pens and pencils to the control of the mouse with a design software. The university periodically organizes seminars on the use of modules but not on visual Art CAD usage (salu). Rita occasionally resort to resources personnel who demonstrates the use of Rhino 3D for rendering in sculpture. She learns alongside with the students. Felix and Kink has been embarking on their personal learning through Audio visual tutorials in the use of the Adobe Photoshop, Adobe Illustrator, In Design and CorelDraw within their visual art specialty. Numerous factors were outlined as the other factors that influence lecturers' approach to learning and application of ICT/CAD in their teaching practice. Overtly, time constraint was a major factor of most of the interviewed lectures complained of their busy schedules in the course of the semester. Jones complained of how expensive it is to acquire the required CAD software in his area, making it difficult for the easy access. Three of the interviewees who saw themselves as self-taught admitted getting tutorials from some of their students who are knowledgeable in the use of ICT/CAD programmes. Notably, majority of the interviewed lectures are not engaged in any form of personal upgrade in the use of CAD in the Visual Arts.

## 3. Discussion

Face to face interview with 18 lecturers who teach various specialties in the visual arts is a clear evidence of divergent views and perceptions and believes in the integration of ICT/CAD in their Pedagogical activities as university teachers. Among the interviewed lecturers, there was a clear dissension between the advantages of ICT/CAD usage and the traditional designing processes with simple designing tools relatively with their core mandate as teacher trainers in the visual Arts. A considerable number of the interviewed lecturers admitted that there are numerous advantages in the integration of ICT/CAD in teaching practices but several impediments overshadow their interest in mastering and demonstration of CAD in designing processes especially in the lecture hall. Alongside, others see the use of ICT/CAD as obligatory to somewhat spice their teaching processes with few PowerPoint deliveries. Many of the interviewed lectures who practice on commercial bases expressed concerns of time-consuming nature in the CAD application during the designing process since they are not so much conversant in the CAD usage and hence perceive the traditional designing approach as a little relieving in the preliminary designing and production stages. Few of the lecturers expressed the versatility in CAD usage for teaching and practice as artists. This they explained by citing an example in the case of simulating effects and other specifications of clients in their designing processes for recommendations and varieties. A

substantial number of the lecturers admitted that the university is not assisting the department enough in the acquisition of the needed computers with suitable CAD programmes and other peripherals for teaching in the lecture Halls. Notably majority of the lecturers interviewed accepted the fact that in the contemporary Visual Art teaching and practice, the use of ICT/CAD is an integral part and hence its need. Some admitted resorting to resource persons for demonstrations and assistances. Other self-taught lecturers depend on audio visual tutorials from the internet to enhance their knowledge in the ICT/CAD application. The university authorities periodically organize training for lecturers on assessment and other modules but not on CAD software for the visual artist. As been emphasized in other studies the department can engage in discussions concerning ways to improve the use of ICT/CAD in the department to best encourage lecturers to learn programs in their specialized areas. The divergent views of some of the lecturers are clear evidences of the fact that lecturer should be optimistic with strong values and attitudes to help support the integration of ICT/CAD through initiatives

## 4. Conclusion

The study indicates acceptance of the numerous advantages of ICT/CAD by the interviewed lecturers in teaching and in practice as visual artist. Most of the interviewed lecturers admitted that in today's teaching, learning and the practice of the visual arts, the use of ICT/CAD is integral. In terms of ability, it is evident from this research that most staff perceived that they have the fundamental knowledge in ICT applications, and were seeking to extend their abilities to a higher level. In addition, the university in one way or the other is making an effort to encourage lecturers in the use of ICT/CAD in their pedagogy by organizing periodic seminars on muddles and ICT usage.

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