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THE SKILL GAP BETWEEN PRINTING EDUCATION AND PRINTING INDUSTRY IN GHANA

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ABSTRACT: *One of the objectives of Polytechnic Education (Technical University Education) in Ghana is the promotion of technical and vocational education and training, technology transfer and skills development to enhance the socio-economic development of the country. Polytechnic education plays a significant role in human resource development of a country by employing skilled manpower, enhancing industrial productivity and improving the status quo (quality of life). The main aim of the study was to identify and to address the gap between printing education and printing industry at Takoradi Polytechnic; so as to restructure the curriculum to reflect what is being done in the printing industry across the country. The literature review has been organized together with sub-headings as contained in the subsequent pages and have been reviewed in line with the views of scholars to help readers have an in-depth knowledge and understanding of the topic.The main respondents for the study included students and lecturers in the Department of Graphic Design Technology, Takoradi Polytechnic on one side and working staff of the selected printing firms in the Accra Metropolis. The researchers implemented the use of open and close type of questionnaires, semi-structured interviews and full-participant observational method in gathering data for the study. The study revealed that the Polytechnic Printing programme should be revised by the Polytechnic and the Department of Graphic Design to help produce skilled trained Graphic Designers to fit into the trending Digital Printing Industry. The study exposed that issues that are affecting the Polytechnic students in acquiring the necessary training and skills to march up to the Printing industry is the curriculum. If the Polytechnic curriculum is revised and students are provided with enough practical skills it is believed that the gap between the Printing Education and Printing Industry for the Polytechnic objectives will be achieved.*

KEYWORDS: polytechnic (technical university), skills, education, training, industralisation, printing industry

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INTRODUCTION

"Those who pursue Polytechnic Education have better prospects of becoming productive, self-reliant and to attain the highest academic qualifications" (Sakyi 2015). According to Kutsanedzie, Achio & Mensah (2016), "many commentators, employers and captains of industries have made a categorical statement to the effect that polytechnics have lost their focus and vision for which they have been established and are training just like the universities. In this context, one may say that, there are large discrepancies between the formal training and employer demands in the printing industry which is considerable the gap between what is learned in the lecture hall and the world of work in the printing industry".

According to Ayogyam et al. (2012), "employers have complained over the years that, the students are knowledgeable; they lack practical skills and appropriate equipment hence, they becoming less useful to the industry. Even though polytechnics have been churning out graduates into World of work ever since their establishment, this pertinent role is becoming illusive because, there seems to be no distinctive practical traits exhibited by the polytechnic graduates to distinguish them from the traditional university-trained graduates". Most of the Graduates from the Polytechnic are not self-reliant and also not skills base as stated by Sekyi (2015) as to those who pursue the Polytechnic Education has to bear. The researchers observed that students pursuing Graphic Design course in Takoradi Polytechnic acquire certain skills and abilities that is not demanded by the Printing Industry. Students in the Graphic design department who are being taught Printing study some course that is of no relevance to the Printing Industry due to technological advancement and this makes it difficult for them to fit into the Printing industry.

This anticipates that the Polytechnic training is causing threat to students who visit the industry and gearing towards the wrong course of which it was mandated. There is a need to examine the system to identify the gap created; to champion its cause, a step in the right direction and recommend ways to achieve their mandate of producing practical-based graduates in the Printing Industry to aid the country's industrialization process or agenda.

In 1992, Takoradi Polytechnic (Graphic Design Department) with other five similar institutions were updated by the Polytechnic Law (PNDCL 321 of 1992) to become part of the Ghana Tertiary education and; with the core mandate of all Polytechnics according to Ghana Legal (2013) as dictated by the Polytechnics Law Act 745 of Ghana 2007 is teaching of students, and secondly conducting applied research – aimed at facilitating the industrialization of the country. The Polytechnics are to provide skills development, conduct and publish industry driven research findings. An important feature of the Polytechnic is the strong emphasis placed on practice-based learning. The Polytechnic collaboration with the industry to enhance hands on training as part of its curriculum poses more advancement of knowledge to the students.

Ablakwa (2016) has described Polytechnic education in Ghana as one that has lost focus. Based on the above statement, it is presumed that the Polytechnic graduates should be skills-based

graduate who will gradually help solve the problem of national development. But observations made by the researchers were that some of the graduates from Takoradi Polytechnic especially the Graphics Department find it difficult to fit themselves into the industry after employment due to the fact that the skill they have acquired is not enough to fit them into the printing industry. This occurs because some of the courses that are being taught in the department especially the printing curriculum does not meet the demand expectations of the printing industry in most parts of the country in recent times. This shows that there is a wide skill gap between the printing education in the polytechnic and the printing industry.

Research Objectives

a.The aim of this research is to critically examine the training of the Polytechnic students in the light to identifying gaps that do exist in the printing training process that makes it inept for students to acquire adequate practical skills that would match up to the printing industry.

b. To identify the sources of this gap and their causes as an important step toward finding a solution to facilitate the drive to industrialization.

c. To make constructive recommendations geared towards equipping Polytechnic trained students with the requisite practical skills.

LITERATURE/THEORETICAL UNDERPINNINGS

Definition of Printing

"Printing is a process for reproducing text and image, typically with ink on paper using a printing press. It is often carried out as a large-scale industrial process, and is an essential part of publishing and transaction printing" according to Absoluteastronomy.com. In the words of Kipphan (2001: p.29), "printing is the production of multiple copies of Graphical images. In addition, Kippan described printing as the process of transferring ink unto paper (or other substrate) via a printing plate". According to Eyiah (2012) printing is defined as "any several techniques for producing texts and illustration in colour on many substrates and in a desired number of identical copies" plays an important role in the economic, political, educational, scientific and technological affairs of human beings and the world over. However, Acquah Djan (2011) defines Printing, "traditionally, as the stage that the acquired, edited and ready for production information is reproduced. Printing is putting the information on paper or another substrate for the targeted audience to access it.

According to the definition of printing given by Absoluteastronomy.com, emphasis was laid on text, image, ink, paper and printing press and this key terms in the definition coincide with the second and third definition of printing by Kipphan (2001) and Eyiah (2012) respectively and this shows that without this terms that emphasis is been laid on, in the definitions of printing, then printing cannot take place. The forth definition of printing by Acquah Djan (2011) was quite contrary to what the first three definitions of printing stated, the fourth definition had its emphasis on any information that is prepared and produced on paper and other substrates.

Moreover, the second definition by Kipphan (2001) stressed on the transfer of ink onto a substrate with a plate, so from this definition they just took into consideration only the plate printing machines. Nonetheless, due to the advancement in technology there are printing machines that do not require the use of a printing plate to make impressions on a substrate or paper. This means that when the researchers project only the definition of Kipphan into consideration, then the plate printing machines process and outcome is not printing. Based on the above definition of printing by the authors, printing can be said to be a process of producing images, text and graphical illustrations by the use of printing inks via a printing plate or a plate less printing machine.

Printing therefore involves some elements such as an ink, a substrate, press (machine), the information to be transferred and finally the machine minder. Printing production processes involve areas such the prepress, press and the post-press. Pre-press includes preparing digital and traditional material for the press, according to the specifications of the print buyer. The Press is the machine and printing systems required for a work to be done. Post Press involves the collation and binding of printed sheets to the finishing operations such drilling, embossing, laminating, and then packaging for the final product for the print buyer. For the purposes of this research, the word printing is defined as all methods of reproducing an image; to support areas of the industry (Example, the paper and ink industries); aspects of the industry referred to as graphic communication, visual communication, and any other word suitably contrived to reflect the concepts and intension of the word printing.

Definition of Training

"Training has been defined as the systematic acquisition of the knowledge, skills and attitudes (KSA's) necessary for effective performance in work environments" (Goldstein & Ford (2002). According to Annex (2003), generally, training involves the development or strengthening of three main aspects: knowledge, skills and attitudes. Usually these three aspects have to be taken together. All of them need to be addressed, if a person is to develop him or herself to contribute effectively to a group or organization to which she or he belongs. Consequently, training is about enabling people to gain knowledge, to practice their skills and to shape their attitudes.

Training is the acquisition of skills, concepts or attitudes that result in improved performance in an on-the-job situation (Goldstein, 1980). Essentially, training is concerned with the learning or acquisition of new skills. An activity undergone as a result of gaining correct knowledge, sharpening of skills and the right attitude towards achieving the needed required approach to solve and improve situations in a classified environment can be said to be training. However, the proper approach toward this exercise makes it effective to improve upon situations. From Goldstein, Ford, Annex definition of training respectively made mention of the outcome of the training and training can be said to have completely taken place when there is an acquisition of knowledge, skills and attitude.

Education

Smith (2015), explores the meaning of education, "as the wise, hopeful and respectful cultivation of learning undertaken in the belief that all should have the chance in life". Dewey (1916) puts it,

as a social process- a process of living and not a preparation for future living. Education in general term is simply seen as a form of learning in which the knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, or research. According to Yaday (2004) education is vital for the growth of any country. It takes ages to make a nation into a developed country and a prosperous one; this cannot be achieved without education. Again, Smith (2015) & Dewey (1916) gave importance to education based on learning which further explains it as a systematic way in acquiring an opportunity from another in life. On the other hand, Yaday (2004) contributes to the fact that education takes an important role in building up a nation. Moreover, Nsiah Gyabaah (2009) also contributes to the fact that, there has never really been any argument over the link between education and development because education helps to apply science and technology to social and economic problems. Based on the above statements made by the various authors, education can be said to be a daily life activity one acquires in order to improve upon living and the nation as a whole. A necessity of life that cannot be ignored but must be acquired to benefit all. It can be stated that education leads to improving quality of knowledge acquired and that students are to acquire this knowledge to make an impact on industrialization as well as developing their skills.

The Printing Industry

According to Torella Raynold (1974), the printing industry was referred to as the enterprises comprising all publishing, packaging, commercial printing, special printing, etc., and needed support areas committed to supplying the requirements of these businesses. Today's printing industry is referred to either as the Graphic Communications or Graphic Arts Industry or The Printing and Graphic Arts Industry as it is a combination of print media and visual communication. With developments in digital technology, the industry has been further transformed. (Chee Yew &Tan 2005).

The researchers realized from Torella Reynold (1974) that the printing industry is no longer referred to what it stated above that makes it bear to light from (Chee Yew &Tan 2005) that with developments in digital technology, the industry has been further been transformed and know referred to as Graphic Communication. This means that the printing industry do not only produce print outs, though it deals with other aspects such as designing, packaging, commercial printing, special printing and others to the expectation of its targeted audience. It is now a combination of print media and visual communication where new technological tools and equipment are functioning in the Industry. The question the researchers want to bring to bear is that is the Polytechnic aware of this technological advancement, if that is so, and then its teaching and learning is as what the Printing industry is today?

The Role of the Printing Industry in Education

According to Staliff (2000), "industrial exposure gives the academic a chance to seek inputs and feedback from practicing professionals who can provide valuable insight into the skills and abilities students would need in their career". The printing industry presents limitless job roles and career opportunities because of its diverse nature. Bharti (2008), "printing, being part of the mass communication process involves several skills that attract job opportunities in a wide range of

areas like publishing, commercial printing, digital imaging, advertising and public relations, packaging, electronic publishing, colour management, security printing, marketing and management, research and development and government establishments".

More so, in the words of Staliff (2000), the printing industry plays a significant role in education to bring out the actual work done in the industry and needed feedback to develop the skills and abilities of students in order to provide a vast range of career opportunities for students to choose from, reduce unemployment rate in the country and also establish the interest of student into the industry which examples were given by Bharti (2008). That is to say, printing has many ways of providing students the opportunity in picking up printing profession in many diverse ways that will be a benefit to the industry.

In view of the above quotations given the researcher is of the opinion that the Printing industry helps the academic discussion, in a way of opening several platforms for students to study practically to sharpen skills and abilities of students in taking up career opportunities in the Industry.

The Role of the Polytechnic (Technical University) in Education

According to Amaniampong (2014) Polytechnic education plays a vital role in human development of a country by creating skilled manpower, enhancing industrial production and improving the quality of life. The main objective of technical education is the promotion of technical and vocational education and training, technology transfer and skills development to enhance the socio-economic development of the country. Technical University education plays a significant role in human resource development of a country by employing skilled manpower, enhancing industrial productivity and improving the status quo (quality of life).

According to Seden (2016), after more than a decade of the Polytechnic education in Ghana, there was an absence of a clear mandate and common understanding of the role of polytechnic in national development. Indeed, technical and vocational education is a major agent for individual development as well as for social progress of the country. According to Nsiah Gyabaah (2009), there has never really been any argument over the link between education and development because education helps to build national capacity to apply science and technology to solve social and economic problems. That makes the researcher to understand the important role polytechnic education plays, due to the fact that students that come out as graduates are to have employable practical skills to be self-reliant and not to sit down after schools as unemployed graduates but to work with these skills to improve a living.

According to Graphic online (2014), the main objective of the polytechnic education is the promotion of technical and vocational education and training, technology transfer and skills development to enhance socio-economic development of the country. The researcher also realized that more skilled developed people are needed in the growth of a nation and that the polytechnic education is to give hands-on experience within a dynamic and progressive learning environment.

The Aims and Objectives of HND Graphic Design Programme

According to Benning (2011), the department has the main aim of preparing students for employment in the artistic industries such as Publishing, Advertising and Printing as well as making students self-employable in line with current national policy. The objectives of the programme are:

a) To foster and promote creativity by helping students to think, act and feel creatively through a variety of art activities using tools and materials.
b) To provide students with theoretical knowledge, practical skills and visual thinking in art which are termed as cognitive, psychomotor and affective modes of development.
c) To inculcate in students the need to appreciate the value of their own art so as to arouse their pride and patriotism.
d) To encourage skills in the development of local materials and resources in promoting self and small-scale industries.
e) To let students, acquire perceptual and analytical skills through art experiences as well as self-expression and communication skills through response to art.
f) To develop in the student subjective qualities in harmonizing opposing ideas, contradictions and inconsistencies so as to cope with healthy human relationships.
g) To help students use their creative abilities, knowledge, skills and attitudes in the production of artifacts‟ such as communication design, printing, packaging, etc.

By this the researcher agrees to the fact that the HND Graphics design programme (printing) will never achieve it main aim and objectives of preparing students for employment and to be self – employable if there is no laid down, constantly revise curriculum due to technological advancement, effective practical skills, the right attitude towards training and learning and a smooth working environment for students to access to equipment and machines available in the industry.

Technical and Vocational Education Training

The polytechnic educational system in Ghana took its root from the TVET which aim is to equip people with the technical and professional skills needed for socio-economic and industrial development of the country. The emphasis is on training people for self- employment. (Ansah 2012).According to Dale (2011), The initiative aimed to influence and encourage schools to adopt a more vocationally oriented curriculum through a system of financial and other incentives operated through ‘categorical funding’ (i.e. a funding regime conducted under well-defined guidelines). According to Waseem (2004), the education that concerns with the professionalism is called Vocational Education. The Technical Education comes under the branch of Vocational Education which deals practically in the field of trade, commerce, agriculture, medicine &Engineering. According to Badu Smith (2005) indeed, technical and vocational education is a major agent for industrial development as well as social progress of any country.

Ansah (2012) emphasis on TVET in training people (student) for self-employment to become technically and professionally skilled which is adequate to what the Industry demands. Contrarily,

Dale (2011) emphasis more on vocationally oriented curriculum under a well-designed course of action. Waseem (2004), brings inline views of Ansah & Dale that Technical education is a branch of an education that concerns with professionalism (Vocational education) which is based on practicality, knowledgeable in what one is doing and exhibiting it on the field of work.

In the words of Badu Smith (2005), technical and vocational education is a major agent for industrial development as well as social progress of any country. Without skilled technical manpower produced by the polytechnic institutes for the industry, commerce, agricultural, national development would virtually grind to stand still. According to Min (1995), the economic competitiveness of a country depends on the skills of its work force. The skills and competencies of the work force, in turn, are dependent upon the quality of the country's education and training systems. Vocational education is perceived as one of the crucial elements in enhancing economic productivity.

However, the Technical and Vocational Education Training in the Polytechnic education initiative aimed to influence and encourage adopting a more vocationally orientated curriculum and preparing students for the job market.

Competency Based Training

Introduction of Competency Based Training (CBT) at the polytechnics which aims at providing graduates with the employable skills is therefore welcoming news and must be cherished and sustained by all. CBT is the acquisition of appropriate knowledge, attitudes, personal traits and skills to efficiently perform work place roles in industry, commerce, management and administration. According to Wolny (1999) **"**Competency Based Training is therefore a way of approaching (vocational) training that places primary emphasis on what a person can do as a result of training (the product), and as such represents a shift away from the emphasis on the process involved in training (the inputs). It is concerned with training to industry specific standards rather than an individual's achievement relative to others in the group".

In the words of Nyarko (2011), in Ghana today, one of the key issues of polytechnic and vocational education is the introduction of competency-based training (CBT).

The success of any CBT programme depends on the following:

1. New approach to curriculum and teaching materials development;
2. Re-orientation of teaching staff;
3. Purposeful staff recruitment and development;
4. Equipping the training institutions with the basic teaching tools; and
5. Instituting a framework for quality assurance (Agodzo and Songsore, 2005).

According to (Gasper, 2005) the herald of Competency Based Training (CBT) into the polytechnic educational system will provide the necessary skills and competencies in graduates for sustainable development. The Polytechnics have been mandated to train graduates for industry, commerce, business and administration. This is indeed a challenge to our educational system. It can be concluded by the researcher with some recommendations that the concept and principle of CBT in

the educational paradigm could be connected to the 3Rs: learn what is relevant; learn far more rapidly; and learn for redistribution to gain the needed skills for self-employment in the Industry.

METHODOLOGY

The research information is to address the gap between the printing education and printing industry. Consequently, the students and lecturers of the Department of Graphic Design Technology, Faculty of Applied Arts, Takoradi (Polytechnic) Technical University and selected presses within the Sekondi/Takoradi Metropolis were used as the target respondents for the study in order to improve students' knowledge on Competency Based Training.

In an attempt to discover the skill gap between Printing Education and Printing Industry the researchers made use of Qualitative research method, emphasizing on Descriptive and Survey methods. The method enabled the researchers identified and described the kind of training students gained in the Department of Graphic Design Technology, Takoradi Polytechnic. It was used to ascertain facts, opinions, beliefs, comments and suggestions from respondents through interviews, questionnaire, and observations. And because the researchers themselves are teachers it was prudent to employ the use of full-participant observation method to examine the contents teaching and learning that exist in the said department and that of the printing industry via vigorous industrial attachment. However, it must be noted that, the researchers as much as possible avoided any conflict of interest that could have potentially harmful to the research data result. Just like Symthe and Munay (2000) put it "conflicts of interest generally arise from the potentially conflicting role that the researchers can find themselves when they also are involved with their participants in some capacity outside of the research such as in therapy or in their personal issues" .

However, in the case of gathering data from the printing firms the researchers used the participant-as-observer method at the respective respondents' location in gathering the vital data for the study. As Plowright (2010 p.67) puts it as regards participant-as-observer research, 'the researcher would take a more participatory role in the organisation's activities. The survey method was used to identify, assess and evaluate the data collected in order to draw logical conclusions and recommendations.

According to Polit and Hungler (1999:37) population refers to an aggregate or totality of all the objects, subjects or members that conforms to a set of specifications propounded by the researchers. The population was divided into two (2) main groups namely: (a) Lecturers of the Graphic Design department and (b) working staff in the Printing Industry. The researchers randomly selected a sample of 100 and 10 respondents from groups A and B respectively to represent the total population to yield efficient and quality information. Data collection, according to Burns and Grove (1999:43), is the accurate and systematic gathering of information relevant to the specific objectives and questions of a study.

The study variables were measured using a variety of techniques such as observation, interviews or questionnaires. They were used to collect data from the above stated population to establish the skills, knowledge and attitudes gap.

The rate of respondents' response to this data makes it valid for analysis. According to Enninful, Boakye-Amponsah, Osei-Poku (2015) Printing is an important aspect of Publishing Industry in Ghana. However, most of the printing industries are located in the nation's two most industrial cities (Accra and Kumasi) with the minority of the printing industries found in other regional capitals of the Country. This is due to the fact that the research target was the Lecturers of the Graphic Design Department of Takoradi Polytechnic and the Printing Industries in the Greater Accra Metropolis. Again, respondents answered questionnaires willing without being forced to when the questionnaire was administered. The target audience for the research who were given the questionnaires had knowledge on the study. Out of ninety (90) questionnaires administered to the Printing Industry seventy-six (76) of them were retrieved and out of nine (9) questionnaires administered to the Printing lecturers (7) were retrieved making the information gathered very useful to the study.

The raw data collected from the respondents was edited and cleaned by checking for any inconsistencies. Pre-coding had already been done for the closed-ended questions whereas coding for the open-ended questions was done after data collection. The coded data was then entered into spreadsheets and analysed systematically using the Statistical Package for Social Sciences (SPSS) and Microsoft excel was the data 0 analysis instrument used by the researchers in the data analysis of the collected responses from the respondents. Moreover, the small number of questionnaires were analysed manually. In addition, to describe the skill gap between the printing industry and the printing education in the Takoradi Polytechnic, so as to restructure the curriculum to reflect what is been done in the industry, descriptive statistics such as percentages and frequencies were used to describe the data while few tables were used to present the results as shown in the results and discussion section.

RESULTS AND DISCUSSION OF FINDINGS

Overview

The study examined in detail the data obtained relating to the skill Gap between the Printing Education and the Printing Industry on Graphic Design students of the Takoradi Polytechnic. The aim of the research is to critically examine the training of the Polytechnic students in the light to identifying gaps that do exist in the printing training process that make it unable for the students to acquire adequate practical skills that would match up to the printing industry. It was also to ascertain whether the sources of this gap and their causes have an important step toward finding a solution to facilitate the drive to industrialization.

Demographic Characteristics of Lecturers

Age, Gender, Current Position and Educational Qualification

With respective to the age of respondents, the data indicated that, 57.1% represent 4 respondents are between the ages of 35- 44 and 28.6% represent 2 respondents are between the ages of 45-55 and 14.3% represent 1 respondent of 55 years and beyond. Again, none of the respondents are between the ages of 25-34. It can be concluded that, most of the respondents are between the ages of 35-44. Moreover, in the case of the gender of respondents the data gathered indicates that, out of the seven (7) responses, 100% are males and none of them are female lecturers. In this context, a conclusion can be drawn that, The Printing lecturers are all male. However, with regard to the current position of respondents the data showed that, out of the seven (7) responses, 42.9% are currently Senior Lecturers while 57.1% of the respondents currently are Lecturers. None of the respondents currently hold the position as Associate Professor or Professor. In addition, the Educational Qualification of respondents from the data also showed the highlights on the level of educational qualification of respondents. Out of the seven (7) responses 42.9% of 3 respondents have educational qualification in Master's Degree Graphics/ Publishing, 2(28.6%) of each 2 respondents have educational qualification in Bachelor Degree-Others (Specify) and PhD-Graphics/ Publishing.

Perception of Printing Education

The Printing Curriculum in the HND Graphics Programme relevant and useful to the printing industry. The data available, out of the seven (7) responses 57.1% representing 4 respondents stated that the HND Printing Programme is Very Relevant, 28.6% representing 3 respondents stated that the HND Printing Programme is Relevant and 14.3% representing as partially relevant. None of the response stated the HND Printing Programme not relevant. This is an indication that indeed the printing curriculum is relevant in the department of graphic design technology.

Important Skills and abilities

The Importance of Skills and Abilities for Graphic Students in the Printing Industry. As regard this item the data revealed that, 4 (57.1%) of respondents state the importance of an eye for an excellent design and colour as skills and abilities that are Very important, 3 (42.9%) of respondents stated the importance of an eye for an excellent design and colour as skills and abilities that are Important. None of the respondents stated it to fairly important or non-important.

Table 1: Important Skills and Abilities

Skills and Abilities	Very Important Frequency/ Percentage	Important Frequency/ Percentage	Fairly Important Frequency/Percentage	Not Important Frequency/ Percentage	Total
1.An Eye for Excellent Design and colour.	4(57.1 %)	3(42.9 %)	0	0	7 (100%)
2.Understanding the current trends and styles.	4(57.1 %)	3(42.9 %)	0	0	7 (100%)
4.Ability to run a business.	4(57.1 %)	3(42.9 %)	0	0	7 (100%)
5.Trimming and folding.	0	3(42.9 %)	4(57.1%)	0	7 (100%)

Source: Authors' Field Work (February, 2020)

From the data in the Table 1 above, it could be observed that, 4(57.1%) of respondents agreed the importance understanding of current trends and style as skills and abilities that are Very important, 3(42.9%) of respondents stated the importance of understanding of current trends and style as Important. None of the respondents stated it to fairly important or non-important. Furthermore, 4(57.1%) of the respondents indicated an ability to run a business as Very important, 3(42.9%) of the total respondents of seven (7) indicated an ability to run a business as important. None indicated an ability to run a business as fairly important or not important. Table 1 shows that 1(14.3%) agreed that trimming and folding is Very important and 3(42.9%) of the total respondents of seven (7) agree that trimming and folding is Important, 4(57.1%) of the total respondents of seven (7) agreed that trimming and folding is Fairly Important. None of the respondents agree to information and technology as fairly important or not important.

Three Skills and Abilities Perceived to be most important:

In the data gathered it suggests that three Skill and Abilities perceived as most important. The Table indicates that, out of the twenty seven (27) variables 18.4% representing 14 respondents suggest an eye for excellent design and colour as an important skill and ability,11.8% representing 9 respondents suggest quality control checks on print run as an important skill and ability, 9.2% representing 7 respondents suggest creativity and imagination as an important skill and ability and

7.6% representing 6 respondents suggest an ability to run a business as important ability while 3(3.6%) respondents gave no suggestion on the three most important skills and ability.

Other Skills and Abilities not shown among the variables.
Other Skills and abilities that are suggested to be of importance by the lecturers included
1. Time management 2. Safety at Press, 3. Ability to use the grid took in their computers to align their works and 4. Ability to use the hand

The Importance of the Printing Course at the Polytechnic:
As indicated in the Table 2 below, 4(57.1%) of the respondents indicated that colour separation is extremely important in the Printing curriculum, 3(4.29%) of the respondents indicated that colour separation is important in the Printing curriculum.

Table 2: Importance of the Printing Course at Takoradi Polytechnic

Printing Course at the Polytechnic	**Colour Separation**	**Offset/Lithographic Printing**	**Roller Printing**	**Mono Printing**
Extremely Important	4(57.1%)	4(57.1%)	0	0
Important	3(42.9%)	3(42.9%)	4(57.1%)	4(57.1%)
Neutral	0	0	2(28.6%)	2(28.6%)
Unimportant	0	0	1(14.3%)	1(14.3%)
Total	**7(100%)**	**7(100%)**	**7(100%)**	**7(100%)**

Source: Authors' Field Work (February, 2020)

Table 2 further shows that 4(57.1%) of the respondents indicated that Offset/Lithographic Printing is extremely important in the Printing curriculum, 3(4.29%) of the respondents indicated that Offset/Lithographic Printing is important in the Printing curriculum. Furthermore, the data in the table indicates that 3(4.29%) of the respondents indicated that roller Printing is important in the Printing curriculum, 2(28.6%) of the respondents indicated that roller Printing is neutral in the Printing curriculum, 1(14.3%) of the respondents indicated that roller Printing is unimportant in the Printing curriculum.

From Table 2 above, 3(4.29%) of the respondents indicated that mono Printing is important in the Printing curriculum, 2(28.6%) of the respondents indicated that mono Printing is neutral in the Printing curriculum, 1(14.3%) of the respondents indicated that mono Printing is unimportant in the Printing curriculum.

The most Important Skills and Abilities:

Table 3: The most Importance Skills and Abilities

Skills and Ability	Frequency	Percentage (%)
Computer skills	48	63.2
Colour Separation	10	13.2
Creativity and Imagination	9	11.8
Total	**67**	**100**

Source: Authors' Field Work (February, 2020)

The Table 3 above shows the suggestions on the three (3) most important skills and abilities that will be as a working guide for the students. It indicates that each 10 of the respondents suggested that computer skills and colour separation are essential skills and abilities that needs to be acquired, each 9 respondents also suggested that written skills and creativity and imagination as most important skills and abilities that needs to be acquired to perform well in the Printing industry.

Other Skills and Abilities

Other Skills and abilities that was suggested to be most important by the lecturers, but was not included in the list of questions are Job estimation, Digital Printing, Skills to detect Printing errors during and after printing, Skills in Printing Plate exposure and Skills in Fixing Plates on the Printing rollers.

Demographic Characteristics of Respondents in the Printing Industry

Age, Gender, Area of Specialisation, Working Experience and Current Position of the respondents in the Printing Industry

The data on the age of the respondents in the printing industry depicts that 61.8% of the respondents are between the ages of 18-34, 19.7% are between the ages of 35- 44 and 7.9 % are between the ages of 45-55 and 10.5% of the respondents are 55 and above. It can be concluded that, most of the respondents in the printing industry are energetic and vibrant in performing their task. More so, the gender of respondents indicates that, out of the seventy-six (76) responses, 75% representing 57 respondents are males and 22.4% representing 17 respondents are female and 2.6% representing 2 respondents was not known so was rendered as incomplete. The rate of the gender female in the printing industry is quite little and most at times hold positions as administrators in the Printing industry.

Nevertheless, as regards the Area of Specialization the data portrays that, out of the seventy-six (76) responses, 51.3% have a specialty in pre-press or press or finishing,14.4%, have a specialty in Press or Finishing, 9.2%, have a specialty in Pre-Press, 6.6%, have a specialty in Pre -press or Finishing and 17.1%, have a specialty in Finishing whiles 1.3% were incomplete. In this context, a conclusion can be drawn that, The Printing Industry has more specialty in Pre-press or Press or Finishing. Additionally, as regards the number of years as working experience of respondents.

21(22.6%) of the respondents have 0-4 years of working experience 32(42.1%) of the respondents have 5-10years working experience, and 22(28.9%) of the respondents have more than10 years working experience. 1(1.3%) of the respondents did not respond to it so was rendered as incomplete. It can be concluded that, most of the respondents from the Printing Industry have working experience between the ages of 5-10. Eventually, the Current Position of Respondents in the industry showed that are affiliated to the following departments. It can be said that, 20(26.3%) of the respondents are currently Managers, 9(13.2%) of the respondents are currently Production managers , 1(1.3%) of respondent is currently the Procurement manager , 3(3.9%) of the respondents are Chief Executive Officers,1(1.3%) of the respondents is currently a Departmental head 8 (10.9%) of the respondents are currently Supervisors, 9(11.8%) of the respondents are currently Machine Minders, 20(26.3%) are currently Graphic Designers, 2(2.6%) the respondent are currently assistant Administration Managers 2(,2.6%) of the respondent are currently Printing Managers and 1(1.3%) of the respondents is currently a Finisher. In the case of the Educational Qualification of Respondents the data available to the researchers indicates that, 3 of respondents representing 3.9% have attained education in Junior high school ,2 of the respondents representing 6% have attained N.V.T.I education , 11 of the respondents representing 14.5% have attained Secondary Education, 20 of the respondents representing 26.3% have attained Diploma Graphics education, 9 respondents representing 11.8% have attained Diploma or Others education, 8 of the respondents representing 10.5% have attained Bachelor Degree- Graphics education, 5 of the respondents representing 6.6% have attained Bachelor Degree- Publishing education, 7 of the respondents representing 9.2% are having Bachelor Degree- Others education, , 3 of the respondents representing 3.9% have attained Master's Degree- Graphics or Publishing education 8 of the respondents representing 10.5% have attained Master's Degree- Graphics or Other education. This implies that majority of the respondents have at least attained Diploma in Graphics education and in the printing industry. Some of them have also had intensive on-the- job training which has kept them in the printing industry.

Perception of Printing Education

With respect to the data gathered, regarding the Printing industry existence in operation, it indicated that, less than 10% of the employees in the Printing Industry are Graphic or Printing Graduates of 32.9%, 6.6% fall within 10%- 20%,19.7% fall within 20%- 30%,13.2% fall within 30%- 40%,11.8% fall within 40%-50%,15.8% fall within 50% +

Table 4: Printing Curriculum in the HND Graphics Programme relevant and useful to the industry

The relevant of the HND Printing Programme	Frequency	Percentage (%)
Very Relevant	52	68.4
Relevant	18	23.7
Partially Relevant	4	5.3
Not Relevant	2	2.6
Total	**76**	**100**

Source: Authors' Field Work (February, 2020)

Information from Table 4 suggests that, (77) 53% of the respondents are of the view that placement of students to the course of study is extremely relevant, (61) 42% of respondents also view that placement of student to the course of study is relevant and (8) 5% of the respondent are of the view that placement of student to the course of study is not relevant.

Important Skills and Abilities as described by the Industry Based Personnel

Table 4.28 indicates that 65(85.5%) of the respondents indicates that attention to details is Very important, 10(13.2%) of the respondents indicates that attention to details is important, 1(1.3%) of the respondents indicates that attention to details is Not important.

Table 5:

	Attention to details	**An eye for excellent design and colour**	**Hand binding small number of books**	**Using specialized hand tools to bind and to sew**	**Wiliness to work alone for a long time**
Very Important	65(85.5%)	64(84.2%)	29(38.2%)	35(46.1%)	33(43.4%)
Important	10(13.2%)	12(15.8%)	25(32.9%)	10(13.2%)	29(38.2%)
Fairly Important	0	0	16(21.1%)	0	11(14.5%)
Not Important	1(1.3%)	0	6(7.9%)	3(3.9%)	3(3.9%)
Total	**76(100%)**	**76(100%)**	**76(100%)**	**76(100%)**	**76(100%)**

Source: Authors' Field Work (February, 2020)

With respect to the Table 5 above, 64 (84.2%) opted for an eye for excellent design and colour as Very Important, 12 (15.8%) stated an eye for excellent design and colour as Important. None of the respondents stated fairly important or not important. Moreover, the data in the table indicates that, 35(46.1%) of the respondents suggest the need of using specialized hand tools to move binding and sewing as very important, 10(13.2%) of the respondents suggest the need of using specialized hand tools to move binding and sew as important and 3(3.9%) of the respondent suggest the need of using specialized hand tools to move binding as not important.

Assessment of Employee skills and abilities

Table 6: Rate performance of skills and abilities

	Attention to details	**Ability to work as a team and alone**	**Good practical skills**	**Communication skills**	**Quality checks during print run**
Excellent	45(59.2%)	44(57.9%)	43(56.6%)	42(55.3%)	40(52.6%)
Very Good	18(23.7%)	18(23.7%)	18(23.7%)	20(26.3%)	24(31.6%)
Good	0	10(13.2%)	12(15.8%)	12(15.8%)	10(13.2%)
Fair	11(14.5%)	2(2.6%)	1(1.3%)	1(1.3%)	1(1.3%)
Poor	1(1.3%)	1(1.3%)	2(2.6%)	1(1.3%)	0
Total	**76(100%)**	**76(100%)**	**76(100%)**	**76(100%)**	**76(100%)**

Source: Authors' Field Work (February, 2020)

As regards Table 6 above indicates 45(59.2) of the respondents stated that attention to details is Excellent, 18(23.7%) of the respondents stated that attention to details is Very good, 11(14.5%) of the respondents stated that attention to details is Fair and 1(1.3%) of the respondents rendered it as incomplete. In addition, the data in the Table 6 shows 44(57.9%) of the respondents stated that ability to work as a team is Excellent , 18(23.7%) of the respondents stated that ability to work as a team is Very good, 10(13.2%) of the respondents stated that ability to work as a team is Good , 2(2.6%) of the respondents stated that ability to work as a team is Fair and 1(1.3%) of the respondents stated that ability to work as a team is Poor.

Furthermore, information from Table 6 suggests that, (43) 56.6% of the respondents state that good practical skills is excellent, (18) 23.7% of respondent state that good practical skills is Very good, (12) 15.8% of the respondent state that good practical skills is Good, 1(1.3%) of the respondent state that good practical skills is Fair, 1(1.3%) of the respondent state that good practical skills is Poor. More so, the Table 6 above, it can be indicated that 40(52.6%) of respondents think that quality checks during print run is excellent, 24(31.6%) of the respondents think that quality checks during print run is Very Good,10(13.2%) of the respondents think that quality checks during print run is fair.

Three Most Important Skills

From Table 6, above shows that 40(52.6%) of the respondents indicated an eye for design and colour the three most important skills and abilities, 25 (32%) of the respondents indicated quality control as the three most important skills and abilities, 16 (21%) of the respondents indicated identifying problems and fixing them as the three most important skills and abilities, 15(19.7%) was rendered as incomplete. In addition, the researchers sought to enquire other skills and abilities employees had. They included Ability to embrace modern Technology and machinery, Ability to

use more software, Job experience, Attitude to work, Package, Proof reading, Pricing and Intelligence

Importance of Printing Curriculum being run at the Polytechnic

With respect to Table 6 above, 45 (59.2 %) of the respondents indicated that computer skills is computer skills is extremely important in the Printing curriculum,21(27.6 %) of the respondents indicated that computer skills is important in the Printing curriculum, 3(3.9% of the respondents indicated that computer skills is neutral in the Printing curriculum, 2(2.6%)of the respondents indicated that computer skills is computer skills is unimportant in the Printing curriculum, 3(3.9%) of the respondents indicated that computer skills is extremely unimportant in the Printing curriculum and 2(2.6%) was rendered as incomplete.

Nonetheless, 41(53.9%) of the respondents indicated that Intaglio or gravure is extremely important in the Printing curriculum, 24(31.6%) of the respondents indicated that Intaglio or gravure is important in the Printing curriculum, 3(3.9%) of the respondents indicated that Intaglio or gravure is neutral in the Printing curriculum,1(1.3%) of the respondents indicated that Intaglio or gravure is unimportant in the Printing curriculum, 5(6.6%) of the respondents indicated that Intaglio or gravure is unimportant in the Printing curriculum, 2(2.6%) are incomplete. Additionally, respondents indicated that, 28(36.8%) of the respondents indicated that Intaglio or gravure
is extremely important in the Printing curriculum, 23(30.3%) of the respondents indicated that Intaglio or gravure is important in the Printing curriculum,4(5.3%)of the respondents indicated that Intaglio or gravure is neutral in the Printing curriculum, 7(9.2%) of the respondents indicated that Intaglio or gravure is unimportant in the Printing curriculum, 10(13.2%), of the respondents indicated that Intaglio or gravure is unimportant in the Printing curriculum, 4(5.3%) are incomplete.

The data further revealed that 2(2.6%) of the respondents indicated that single section sowing is Extremely Important to the Printing curriculum, 23(30.3%) of the respondents indicated that single section sowing is Important to the Printing curriculum, 30(39.5%) of the respondents indicated that single section sowing is neutral to the Printing curriculum,8(10.5%) of the respondents indicated that single section sowing is unimportant to the Printing curriculum,5(6.6%) of the respondents indicated that single section sowing is Extremely Not Important in the Printing curriculum and 5(6.6%) rendered as incomplete.

Also, 9(11.8%) of the respondents indicated that mono printing is Extremely Important to the Printing curriculum, 13(17.1%) of the respondents indicated that mono printing is Important to the Printing curriculum, 24(31.6%) of the respondents indicated that mono printing is neutral to the Printing curriculum,19(25%) of the respondents indicated that mono printing is unimportant to the Printing curriculum, 8(10.5%) of the respondents indicated that mono printing is Extremely Not Important in the Printing curriculum and 5(6.6%) rendered as incomplete.

In addition, 9(11.8%) of the respondents indicated that frottage printing in the Printing curriculum is extremely important,17(22.4%) of the respondents indicated that frottage printing is important,24(31.6%) of the respondents indicated that is neutral in the Printing curriculum,25(32.9%) of the respondents indicated that frottage printing is in the Printing curriculum Unimportant,9(11.8%) of the respondents indicated that frottage printing is in the Printing curriculum extremely Unimportant and 4(5.3%) rendered as incomplete.

The data revealed that 5(6.6) of the respondents indicated that letter press in the Printing curriculum is extremely important,18(23.7%) of the respondents indicated that letter press is important,14(18.4%) of the respondents indicated that letter press is neutral in the Printing curriculum,25(32.9%) of the respondents indicated that letter press is in the Printing curriculum Unimportant,11(14.5) of the respondents indicated that letter press is in the Printing curriculum extremely Unimportant and 3(3.9%) rendered as incomplete.

As regards the data gathered from the field 12(15.8%) of the respondents indicated that collotype is extremely important in the Printing curriculum, 12(15.8%) of the respondents indicated that indicated that collotype is important in the Printing curriculum, 21(27.6%) of the respondents indicated that collotype is neutral in the Printing curriculum,22(28.9%) of the respondents indicated that collotype is unimportant in the Printing curriculum 5(6.6%) of the respondents indicated that collotype is extremely unimportant in the Printing curriculum and 4(5.3%) was rendered unimportant.

Three Most Important Skills and Abilities

Table 7: The Three Most Important Skills and Abilities

The Three Most Important Skills and Abilities	Frequency	Percentage (%)
An eye for design and colour	31	40.7
Creativity and imagination	29	38.2
Colour Separation	16	21.1
Total	**76**	**100**

Source: Authors' Field Work (February, 2020)

From Table 7 above shows that 31(40.7%) of the respondents indicated an eye for design and colour the three most important skills and abilities, 29(38.2%) of the respondents indicated Creativity and imagination as the three most important skills and abilities, 20 (26.3%) of the respondents indicated Colour Separation as the three most important skills and abilities, 54(70%) was rendered as incomplete. In furtherance to the above data, Other Skills and Abilities were sought in respective to the above data. They included Digital printing, Packaging, Ability to follow instructions, Quality Control skills, Computer to plate imaging and Editing.

DISCUSSION ON FINDINGS

The discussion of the findings was proven on the study which was to determine the skills gap between Printing Education and Printing Industry on Graphic design students in the then Takoradi (Polytechnic) Technical University. With relation to the study; analysis was made on data collected through the administering of questionnaires on to the Printing Lecturers in the above-mentioned institution and the managers or machine minders of the various Printing Companies in the Greater Accra Metropolis. Printing Education in Takoradi Polytechnic has become an issue of great concern, these days. This issue has been given maximum attention in the industry and it becoming a worry. The discussions of the study were made based on the outcome of the questionnaires that was administered to the respondents (lecturers and industry), to bridge the skills gab between the Printing Education and Printing Industry, the practicality of the Printing programme, student and industry attitude on the working field and the challenges of the Programme. The discussions for the study was made basically on the objectives of the study and since the objectives are three the discussion will be in three section and that is: the training of the polytechnic student, the skill gap between the printing education and the printing industry and bridging of the gap between the printing education and the printing industry.

The Training of Polytechnic Students

This section of the discussion critically analyzes the way the Polytechnic (Technical University) students are trained in the institution especially students from the Department of Graphic Design Technology of the Faculty of Applied Arts Technology.

According to Ayogyam et al. (2012), "employers have complained over the years that, the students are knowledgeable; they lack practical skills and appropriate equipment hence, they becoming less useful to the industry.

Most of the Graduates from the Technical University are not self-reliant and also not skills base as stated by (Sekyi 2015) as to those who pursue the polytechnic education has to bear. Base on the statement made by Sekyi (2015) a graduate from the polytechnic should bear certain skills and abilities that will distinguish them from other graduates but the statement made by Ayogyam et al. (2012) shows a fall in the expectation of the industry from the polytechnic graduate and this makes it difficult for the graduate to be self-reliant as well as fit in to the industry. This means that gradually the polytechnic education is losing its focus and vision for which it is established for as stated by Kutsanedzie, Achio & Mensah (2016).

Data on …… shows the response of respondents on how useful the Polytechnic HND printing curriculum is to the printing industry, while the data ……. shows how relevant the HND printing programme is to the printing industry. 4 (57.1%) said that HND printing programme is very useful, 3 (42.9%) said that it is useful. This is indication that the HND printing curriculum is crucial in the graphic design programme and need to be sustained in the department. On the other hand, 54% said that the HND printing curriculum is very useful, 33% said that the curriculum is useful, 9% said that the curriculum is partially useful and lastly 1% of the respondents said that the curriculum is not useful. 2% of the response was rendered incomplete by the researcher.

Also, from table 6, out of 7 respondents 57% said that the graphics programme is very relevant, 28.6% said it is relevant, 1.3% said it is partially relevant to the printing industry. And table 26, out of 76 respondents 66% said that the graphics programme is very relevant, 24% said it is relevant, 5% said it is partially relevant, 2.6% said that it is not relevant and 2.6% of the response was rendered incomplete. The findings from the tables show that indeed the HND graphics programme and the printing curriculum is very useful and relevant to the printing industry.

To get a true reflection of how the Polytechnic (Technical Education) students are trained specifically with regard to the graphics student, the curriculum of the printing programme will be taken into consideration. For the sake of this study a few of the items on the HND printing curriculum will be discussed in this section of the study. Since the Polytechnic is a skill-oriented training institution meant to develop hands-on with critical thinking abilities, some of the items on the curriculum are strictly practical. Some of the items in the curriculum are printing systems this section educates students on how some of the printing presses works and also the principles the machines operate on, team work skills. This course is not taught as a programme on its own but some mid and end of semester examination; as well as assignments are given in groups which help students to develop their team work skills. Nevertheless, computer skills has been included in every level of the students study at the Polytechnic (Technical Education), choosing the most suitable material and style this is not taught as a course on its own but well students are given practical works that deals with substrates the lecturer does not restrict the students but rather make the students decide the right substrate and style that will suit the job at hand. Another course worth mentioning in the Graphic Design Programme is offset lithography. This is a topic that is been taught at the institution. Students are exposed to the nature of the offset machines and how they are operated through video tutorials, serigraphy this course students are taught how to prepare a screen which is all practical oriented and lastly single section sewing this course teaches students how to bind books and also work with adhesives. In a nut shell the polytechnic students are trained for the acquisition of skills and knowledge so after a day's teaching and learning students are then assigned to work on what is been taught in class to test their understanding.

The Skill Gap between the Printing Education and the Printing Industry

It was observed that even though the polytechnic training or education is mostly meant for the acquisition of skills and abilities yet still students graduate from the polytechnic without achieving the necessary skills and abilities which makes it very difficult for the graduates to fit in to the job market conveniently.

This section of the study discusses the skill gap between the printing education and the printing industry, this can be correctly understood when the word gap is taken in to consideration. The word gap simply means a vacant space between two things and the gap can be checked when the original nature of something is compared to the current state of that same thing. For the sake of this study, the skill gap between the printing education and the printing industry can be identified through the comparative of the HND printing curriculum with the skills and abilities that are needed in the printing industry. For the sake of the study nine of the items listed on the printing

curriculum to be able to know the skill gap that exists between the printing industry and the printing education include Computer Skills, Printing systems, Intaglio, Digital Printing, Single section Binding, Mono printing, Lithography, Frottage Printing, Colour Separation and Roller Printing. Besides, important elements such as colour separation and lithographic printing in the Polytechnic education is to be given hands-on experience within a dynamic and progressive learning environment due to the fact that colour separation leads to the preparation of printing plates for a full colour job before the lithographic printing process takes place.

This is seen as the area fetching jobs for the printing industry hence to the disadvantage of the students there is no press within the learning environment therefore the printing industry poses them as less useful. Whereas mono printing and roller printing taught as part of the Printing programme is not quite useful within the industry hence creating a gap between the printing education and the Printing industry. From the explanations from the tables earlier represents two categories of respondents. The first represents the responses of the lecturers as the respondents and the latter as indicated earlier shows the responses of the managers and machine minders of the various press houses in Accra as the respondents.

From the lecturers' responses it was revealed that the most important items on the curriculum of the printing education are colour separation, offset lithography, roller printing and mono printing and from observations some of these items are very important to the printing industry. The remaining tables represents the response of the managers and the machine minders of the press houses in Accra metropolis, it was realized that the most important things that are studied in the polytechnic are computer skills, printing system, intaglio or gravure and from the same respondents said that single section sewing and mono printing are not very important to the printing industry in the 21st century due to the advancement in technology and the demand for quality printout especially in the digital prints sector.

Consequently, the data revealed that in the current important skills and abilities urgently needed in the printing education of the curriculum is to enable graduates from the department get jobs in the printing industry included an eye for excellent design and colour, understanding current trends style of printing in the industry, ability to set up and run self-employed business, trimming and folding techniques and attention to details. Per one of the objectives of the Technical University education practically training students to acquire these will equip and facilitate the drive to industrialization, whereas working with adhesive and trimming and folding is fairly important for the students to be employed in the printing industry to the fact that there is now automated way of doing them due to the advancement of technology. Hence, students' need to be taught on how to use those machineries. Digital printing, Packaging, Ability to follow instructions, Quality Control skills, Computer to plate imaging and Editing are some of the other skills and abilities that were stated by the respondents.

From the analyses that was made on the important skills and abilities that are required in the industry it was realized that the important skills needed at the press firms/houses are attention to details, an eye for excellent design and colour, understanding current trends and styles, ability to

run a business, trimming and folding and lastly had binding small number of books. This skills and abilities that were stated can only be achieved when there is constant practicing within a conducive atmosphere or environment. For the sake of the acquisition of skills and abilities the only environment that has the needed facilities and such facilities include printing press and other machines. But in Takoradi polytechnic currently lack a printing press and other machines needed to make the teaching and learning process very easy and interesting. In addition, because of the fact that the polytechnic lack the necessary tools and machines, most of the students are trained to be knowledgeable about the skills and abilities but have not really acquired the skills. Base on the above reason graduates find it difficult to fit in to the job market and also be self-reliant as stated by Ayogyam et al. (2012).

Bridging the Gap

This section of the discussion brings to lime light some of the things that led to the skill gap between the Printing Education and the Printing Industry and so provide suggestions on how to bridge the gap between the Printing Education and Printing Industry. According to Nyarko (2010) the current syllabus that is used for teaching at Takoradi Polytechnic was prepared in 1993 under the National Board of Profession and Technical Examination (NAPTEX). Indeed, it does not address the new changes in the system, thus placing the students at a disadvantage. Therefore, it can be deduced from the above that the Polytechnic syllabus for the Printing course at the Graphic Design Department has not been reviewed for the pass twenty-seven years and this could be the cause of the skill gap between the Printing Education and the Printing Industry. In addition, it was observed that the Polytechnic needs a conducive atmosphere for the practice of the theory being taught in class: nevertheless, the cause of a skill gap between the printing education and printing industry. Moreover, the study revealed that instead of the Polytechnic being in collaboration with the Industry experts to enhance hands on training as part of its curriculum structure and pose more advancement of knowledge and technology to students, the curriculum is rather generated by people who mostly do not know and are not up to speed with the latest modern trends in the Printing Industry.

However, it must be noted that the researchers gathered that, almost all the five printing firms via which the data were collected from for the study indicated that the managers, supervisors and machine minders, designers, et cetera vehemently refused to allow students on long vacation internship or semester out internship training to have direct access to the printing machines, computers and other stuffs for fear that the said students will either break down a machine or damage a computer which worldwide are very costly in the industry.

CONCLUSION

There were both positive and negative impacts of the printing programme but the positive impact outweighed the negatives so it could be suggested that the programme is making much impact on students in the acquisition of skills and development in their study areas. But lack the requisite knowledge in industry. the However, more needs to be done by the Graphic Department Technology on the Printing Curriculum to enable a very effective, practical based training with

modern trends of knowledge and skills impacted unto the students to enable them fit well in the industry.

In conclusion, the industrial attachment programme organized for both students and lecturers sends on supervision annually needs to be restructured to enable the said students derive the maximum benefits from the internship.

Recommendations

From the above observations the researchers realized are the cause of the skill gap and the only way to bridge this gap is by employing the following recommendations:

- the Polytechnic need to get the required tools, equipment and machines to make the acquisition of skills easier and faster. Lecturers in the Graphics Department of the Faculty of Applied Arts within the Takoradi Polytechnic have to see to it that the printing curriculum or syllabus should be revised to meet the modern advancement in the printing industry. There should be a proper and adequate information communication between the institution and the industry to ensure that there will be a collaboration during the revision of the printing syllabus.
- However, it is recommended that the current Department of Graphic Design Printing programme should be revised to help produce skilled trained Graphic Designers who will be much more valuable in the emerging Digital Printing Industry which is the key to sustainable development and to be more useful in the Printing Industry of Ghana.
- Students are to be trained in the new emerging trends in the Printing industry.

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