

Assessing Student-Teachers' Prior-Knowledge as predictors to their End of Semester Exam Performance in Visual Arts Specialism at Bagabaga College of Education

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ABSTRACT; *The study aimed at correlating the pre-knowledge of student-teachers to their exam performance in Visual Arts Specialism at Bagabaga College of Education. The main purpose of the study is to use its findings to inform decisions that will guide subsequent admission criteria in admitting students to study the Visual Arts specialism in the College. Mixed Method approach in the form of survey, narrative and descriptive analyses were employed. Data was collected using online questionnaires and Ddocumentary Analysis Guide. Findings of the study revealed that students' pre-knowledge of subjects did not match with their College exam grades and that the student teachers' self-motivation and mindset were the main determinants of their success in the end of College semester exams. The study, therefore, recommended stakeholders of the College to ensure that students who have the zeal to pursue the Visual Arts Specialism irrespective of their background knowledge should be offered admission into the program.*

KEYWORDS: Pre-knowledge, Student teachers, Visual Arts Specialism, Summative Assessment, Grades, End of Semester Exams.

INTRODUCTION

Upgrading teacher training in Ghana from producing generalist teachers (Opoku-Asare et al, 2016) to specialist teachers with first degree awards came to light in the 2018/2019 academic year (T-TEL, 2020; Newman, 2013). As a result, Bagabaga College of Education admits students from pre-tertiary schools and institutions to offer the Visual Arts specialism, as the College is one of the Technical Vocational Colleges in Ghana (T-TEL, 2019; UEW, 2018).

According to Anane et al (2020), the entry requirements for admitting students into most of the public tertiary institutions in Ghana today are based on the entry aggregate (cut-off aggregate). In most of the traditional universities such as in the technical universities, students are admitted into programs with the requisite background grades with the hope of influencing effective training and graduation (Accra Technical University, 2022).

However, the story in most of the Technical Vocational Colleges of Education is a bit different. The 2018/2019 academic year admissions in Bagabaga College of Education in particular saw students with different backgrounds of prior knowledge admitted to offer the Visual Arts specialism (Fusheini et al, 2021). The hope is to train all students equitably to offer them basic theoretical and practical knowledge of the subjects (T-TEL, 2019).

However, the conception of most researchers is that students' background knowledge and the requisite entry requirements influence their academic performance positively (Sulphey et al, 2018; Adamu, 2018; Aidoo-Buameh & Ayagre, 2013). This is why Sulphey et al (2018) simply concluded that students with pre-knowledge of the subjects they offer in institutions do better than students without pre-knowledge of the subjects. This notwithstanding, it is therefore necessary for this study to examine five end of semester exams performance of the 2018/2019 academic year student-teachers admitted to offer the Visual specialism in the College.

The intention of this assessment of five end of semester exams performance of the student-teachers is to inform decisions with regard to the calibre of students to be admitted into the Visual Arts specialism in Bagabaga College of Education, Tamale.

Objectives

1. To identify the gender and prior-knowledge information of the 2018/2019 academic year student-teachers offering the Visual Arts Specialism.
2. To assess five end of semester exams performance of the 2018/2019 academic student-teachers offering the Visual Arts Specialism.

RELATED RESEARCH WORK

Assessment

It is known in the colleges that assessment should be both formative (comprising both assessment for learning and assessment as learning) and summative assessment which is described as assessment of learning (T-TEL, 2017; Tomas, 2020; Kennedy et al, 2008). Standard tests are usually conducted for student-teachers because, test items are not categorised by the ability levels of student-teachers offering any program. This demands that all student-teachers are tested equally with uniform test items, and scoring as rightly posited by Kang (2021) and Clay and Root (2001). End of Semester Exams in particular are standardised across all colleges in Ghana but, internal assessment test items and projects differ from college to college.

Student-teachers are assessed both internally and externally by the Colleges of Education and the mentor Universities respectively (Bekoe et al, 2013). Student-teachers are assessed formatively by their tutors in the college coupled with external quizzes organised by the mentor universities. With the University of Cape Coast, this constitutes 40% of 100 marks for each subject area. Formative Assessment is meant to assess student-teachers' progress in their subject areas, and it takes the form of quizzes, written and practical assignments, field research report, seminar presentations and jury (Introduction to Textile Design, 2021, p. 5, NTS, 2017, p. 30-31) whilst Summative Assessment comes at the end of each semester. The Summative Assessment on the other hand takes the form of written examinations, project works, write-ups (evidence of study), and aesthetic appreciation.

Similarly, in the Visual Arts courses, the assessment criteria are both formative and summative. However, there are external projects given by the Institute of Education, University of Cape Coast for student-teachers to execute at the college level (Introduction to Textiles Design, 2021). These projects are sometimes marked by various tutors and scores submitted to the Institute. In other cases too, coordinators of the Institute will visit all Colleges to assess the practical works and moderate the marks given by the tutors. Artists' statement is a major component of project works which is a write-up describing the art piece produced by the student-teachers.

Prior Knowledge vs Academic Performance

The influence of prior knowledge on learning and academic performance is a major concern for educators. Many researchers have deduced that students' prior knowledge greatly influences how they learn, and this consequently shapes the success of their academic achievements (Adamu, 2016; Seery, 2009; Binder et al, 2019; Adjei, 2007). As a result, research in Cognitive Psychology postulates that students with pre-existing knowledge about a course or program stand a better chance to understand and remember more than students with little or no pre-existing knowledge. They further elaborate that it is even more evidenced in practical courses or programs where due to students' previous practical knowledge and skills, they do have upper hand over their counterparts who have no prior practical skills for the new program.

Contrary to the finding that students with pre-existing knowledge perform better than students without pre-existing knowledge, Better Policies for Better Lives, (n.d) and Abd Rahman et al, (2010) indicate that the teacher's pedagogical knowledge level in delivering lessons for diverse of students with different ability levels can make all students learn equally and equitably. It is further argued that when prior knowledge is defective or inaccurate, students tend to suffer thereby making them become freshers altogether in the class and will need to start afresh. In other instances, these students may tend to be defensive for their inaccurate prior knowledge in teachers' attempts to offer them accurate information in their new environment (Seery, 2009). Better still, Dochy et al., 1999 as cited in Seery, 2009, p. 11) arguably stressed that students with defective prior knowledge still stand in better position of learning effectively than students without prior knowledge as the latter has no relevant previous knowledge frameworks upon which to scrutinise new information for use.

METHODOLOGY

The study used mixed method approach. Thus, the descriptive, content analysis and documentary guide analysis were used for data analysis. The study population consisted 36 student-teachers offering the Visual Arts specialism from which males were 26 and females were 10. The population also consisted 19 student-teachers who had no prior knowledge in Visual Arts and 17 student-teachers with prior knowledge in Visual Arts. As the population was smaller, the Census Approach sampling technique was adopted in an attempt of using all the members present in the population as the sample of the study. Hence, 34 student-teachers were used as the sample of the study after a simple random sampling was used to strike out 2 extra student-teachers in the group of the students who had no prior-knowledge in Visual Arts. The 2 student-teachers were removed purposively to make the number of student-teachers with prior knowledge in Visual Arts equal to those without prior knowledge in Visual Arts. Therefore, each category of students was 17 respectively making the total sample of the study to be 34.

All the 34 student-teachers were given online google forms to fill and submit. Due to the observation of COVID-19 protocols as at 2019 when the researcher was gathering the information on the respondents' demographics, the online survey forms were deemed very

appropriate for promoting good COVID-19 practices with the sample of the study. The use of the online survey forms was also necessitated by the fact that student-teachers were frequently vacated for the practice of distance learning at home than in school. Therefore, the researcher could easily reach out to the student-teachers through online survey forms.

The questionnaires were designed under themes to answer the research questions, and student-teachers were asked to answer all the sections if applicable. A time frame of one month was stipulated for answering online google questionnaires and the design was made flexible for student-teachers to edit their responses before submission. At the end, 30 student-teachers answered the online questionnaires and the remaining 4 student-teachers could not answer because they did not have smart phones to access the internet. However, as it was key to identify the number of student-teachers' pre-tertiary educational backgrounds, hard copies of the questionnaires were printed for the 4 student-teachers to answer. Their responses were coded and the statistics calculated and added to those who answered through online.

Documentary analysis was also done to acquire data on student-teachers' end of semester grades. Hard and soft copies of semester exam results were looked at and data were taken on their grades from both soft and hard copies of broadsheets containing end of semester results. The results for both student-teachers with and without prior knowledge in Visual Arts from their pre-tertiary schools and institutions were recorded and analysed.

RESULTS

Objective One: To identify the gender and prior-knowledge information of the 2018/2019 academic year student-teachers offering the Visual Arts Specialism.

Demographic information of respondents

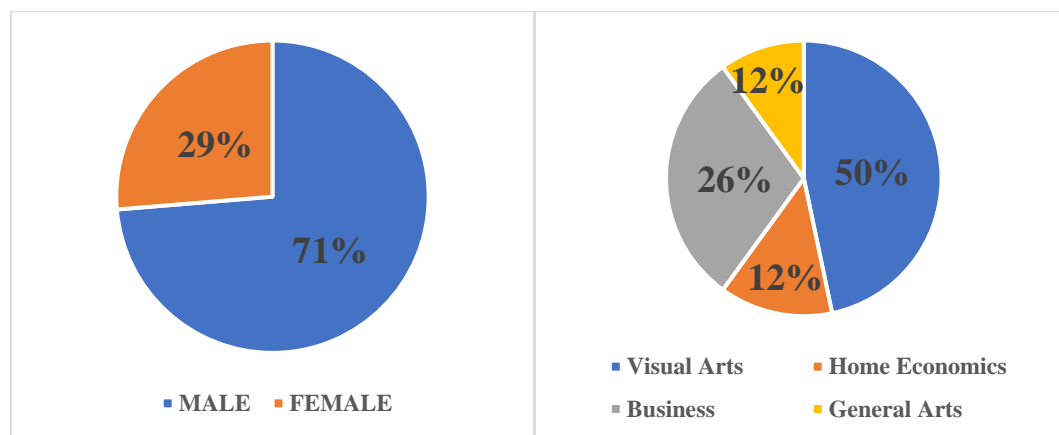


Figure 1: Gender of respondents schools

Source: Fieldwork, (2022)

Figure 2: Courses offered at pre-tertiary schools

Source: Fieldwork (2022)

1. **Objective Two:** To assess five end of semester exam performance of the 2018/2019 academic student-teachers offering the Visual Arts Specialism.

Student-teachers' overall performance in five end of semester exams**Table 1: Student-teachers' exam performance among the 12 subjects studied within five semesters.**

Source: Fieldwork, (2022)

<i>Interpretation</i>	Student-teachers with prior-knowledge in Visual Arts		Student-teachers without prior-knowledge in Visual Arts	
	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
Excellent (A)	74	51	70	49
Very good (B+)	57	43	75	57
Good (B)	25	40	38	60
Satisfactory (C+)	13	33	27	67
Satisfactory (C)	-	-	-	-
Pass (D+)			1	100
Pass (D)			1	100
Fail	-	-	-	-

Table 2: Summarised results of student-teachers in all the 4 content subjects studied within five semesters.

<i>Interpretation</i>	Student-teachers with prior-knowledge in Visual Arts		Student-teachers without prior-knowledge in Visual Arts	
	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
Excellent (A)	26	51	25	49
Very good (B+)	17	41	24	59
Good (B)	8	36	14	64
Satisfactory (C+ and C)	7	50	7	50
Pass (D+ and D)	3	60	2	40
Fail (E)	-		-	
Excellent to Satisfactory	(A-C) 58	45	(A-C) 70	55

Student-teachers' semester performance in eight (8) methodological subjects studied within five semesters.

These subjects are those which are practical-based and sometimes referred to as studio-research subjects. Table 3 presents the summarised grades and interpretations of student-teachers with and without prior-knowledge in Visual Arts respectively.

Table 3: Summarised grades of student-teachers in eight (8) methodological subjects studied within five semesters

<i>Interpretation</i>	Student-teachers with prior-knowledge in Visual Arts		Student-teachers without prior-knowledge in Visual Arts	
	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
Excellent (A)	58	54	50	46
Very good (B+)	38	49	39	51
Good (B)	12	35	22	65
Satisfactory (C+ and C)	4	17	19	83
Pass (D+ and D)	-	-	-	-
Fail (E)	-	-	-	-
Excellent to Satisfactory	(A-C) 112	46	(A-C) 130	54

Table 4: Pass, fail and absence remarks of student-teachers within five semesters

<i>Interpretation</i>	Student-teachers with prior-knowledge in Visual Arts		Student-teachers without prior-knowledge in Visual Arts	
	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
Pass (D+ and D)	3	60	2	40
Fail (E)	-	-	-	-
Absent (ABS)	5	83	1	17

DISCUSSIONS

Objective One: To identify the gender and prior-knowledge information of the 2018/2019 academic year student-teachers offering the Visual Arts Specialism.

Gender of Respondents

In Figure 1, it shows that 70% were males, forming the majority of student-teachers offering Visual Arts in the College. In most Visual Arts programs, boys are mostly more than girls (Nimoh, 2019) and Fusheini (2020) attribute this to societal perceptions that the subject is difficult and involves physicality which normally attract males to patronise the subject than females. In the contrary, Stina (2003) and Aidoo (2018) indicate in their studies conducted in the Western world that there are more females in Art schools than females because of the increase of STEM education where the boys feel stronger and steadfast in pursuing Science and Maths education. However, one challenging factor identified to have brought the inequality of gender in Art programs is the generalist teachers' incompetency in handling Art subjects at the basic schools as indicated by Opoku-Asare and Siaw (2016). They further expounded that achieving effective teaching and learning is far-fetched so long as the generalist teachers have little or no content and pedagogical knowledge of the subjects.

Despite the fact that female students have low patronage of Visual Arts courses, 26.7% of the students were females offering the Visual Arts in the college. This implies that there is more room for encouraging female students into Visual Arts courses if Art teachers exhibit good and effective teaching in the colleges. In support to this, Fusheini and Adams (2021) emphasized

that the ability of teachers to diagnose learners' abilities and needs is to equip teachers to understand their learners and use differentiation methods to make all learners learn effectively.

Student-teacher previous knowledge

The background knowledge or previous knowledge of the respondents in Visual Arts before acquiring admission into the Visual Arts specialism in the college indicates that student-teachers have variety of background knowledge in other subject areas besides Visual Arts. The inclusion of students with diversified subject backgrounds other than Visual Arts into the Visual Arts specialism in the college shows that there is laxity for any student to be admitted into Visual Arts programs irrespective of their previous knowledge. It also boils down to the fact that educational programs offered in the Colleges of Education is flexible for any type of student to be trained to acquire the teaching profession in the specialism he or she has applied for. Similarly, universities in Ghana also admit students with qualified results to study certain programs irrespective of their backgrounds, and graduate them in the programs they have studied in the Universities. However, Lydia (n.d, p. 14) holds a divergent view that the background knowledge of students plays a very crucial roles in achieving good academic performance when they continue in their areas of specialities than in analogous programs in subsequent institutions.

In Figure 2, 53.3% of student-teachers form the majority who did not offer Visual Arts at their previous schools before they were admitted into the Visual Arts specialism in the College. It is a clear indication that these student-teachers chose the Visual Arts for reasons of being entrepreneurs in Visual Arts domains so that they can be creative and innovative in society for better living conditions. This view is further supported by Christina's (2012, p. 113) argument that Vocational Education should be given much more attention in this era of technology and industrialisation so that students will grow up to be productive in the societies than remaining unemployed after graduating from universities. In a similar view, Anamuah-Mensah (2004, p. 1) purports that Technical and Vocational Education has remained a catalyst of wealth creation for countries in the world, and there is therefore the need to foster TVET programs in Ghanaian institutions.

3. **Objective Two:** To assess five end of semester exams performance of the 2018/2019 academic student-teachers offering the Visual Arts Specialism.

Students' performance in content subjects

The end of semester examinations during five semester duration remains a key contest between student-teachers with and without prior-knowledge in Visual Arts in the content subjects as seen in Table 1. However, the student-teachers without prior-knowledge in Visual Arts have performed marvellously above their counterparts as they obtained 70 grades in Excellence to Satisfactory as against 58 grades for the student-teachers with prior-knowledge in Visual Arts. This clearly indicates that the student-teachers without prior-knowledge in Visual Arts took lessons in the content subjects more seriously than their counterparts, for the fact that they needed to lay good foundations to match up with their counterparts who were already having foundational knowledge in Visual Arts subjects (Nyaaba M, personal communication, June 11, 2022). This is one of the reasons why Fusheini (2022) ascribes fresh-students' performance in examination to be influenced by factors such as the quest to lay good foundations, and laziness on the part of students who claim to have previous knowledge in the courses they are pursuing.

On the other hand, Acheta et al (2021) and Fadelelmoula (2018) associate students' excellent grades in exams to class attendance and teachers' mode of delivering lessons as well as the teachers' competent level. Contrary, Kim (2005) view students' participation in class to be more pertinent for achieving excellent academic performance than mere class attendance. In another contrary view, Fusheini and Musah (2017) claim that students who are punctual to class and do not take what the teacher teaches seriously will not perform well in assessments in spite of the fact that the teacher had done good and effective teaching. Also, the perception of some Ghanaian caretakers that education is about earning salaries has pushed some students to manoeuvre their ways of attaining good grades than skills for creativity and problem solving in society (McCoy et al, 2014). As a result, Adjei (2007), mentioned that the syndrome of 'chew and pour' is fuelled in Ghanaian schools by the intention of students to pass for jobs than to gain competent professional skills and as problem solvers. Findings of the study also support Kara's view that students' level of attention in class helps them to achieve well, as it is found that both student-teachers with and without prior-knowledge in Visual Arts did not record 'IC' meaning incomplete marks which was due to absenteeism in taking part in class exercises and quizzes or in the external exams.

Another contention is that the good performance of student-teachers without prior-knowledge in Visual Arts in the content subjects is attributed to the fact that these subjects are foundational subjects hence, they are basic and not practically comprehensive. This is supported by the view that the first year courses are for beginning teachers which are to provide solid foundations for the transition from pre-tertiary schools to College and recognises that the student-teachers have come from different schools with different background knowledge, values and attitudes (UEW, 2018). Therefore, the student-teachers are only introduced to key principles and practices of subjects and learning areas as well as engaging them in supported teaching in schools within the wider curriculum so that at the end, each student-teacher can locate their specialism.

However, the impression that the beginning teachers are only taught in foundational subjects does not merit the argument that the academic performance of students are influenced by the basic nature of the subjects learnt in first year. On the contrary, Kara (2009) argues that though students' previous knowledge in a subject area as well as the nature of course could contribute positively to their performance, lack of self-motivation and poor attitude toward learning can turn the tables round for even students with sound pre-knowledge in subjects to achieve bad results.

Students' performance in methodology (practical-based) subjects

In the 8 subjects of methodology as seen in Tables 3 where students have done practical projects, the number of student-teachers without prior-knowledge in Visual Arts who obtained 'excellence' are 50 as against 58 for the student-teachers with prior-knowledge in Visual Arts. There is however a very marginal gap of 'excellence' between former and the later and the credit goes to the student-teachers without prior-knowledge in Visual Arts for such a great contest. In the view of Binder et al (2019), students' previous knowledge in a subject area contributes to their positive performance and Ozaydin et al, (2017) see special needs students like the student-teachers without prior-knowledge to depict that there is equity and inclusiveness in the teachers' modes of delivery their lessons. Olivia et al, (2009) also rest all students' academic success in class on effective teachers' ability to use diverse resources to plan and structure engaging learning opportunities for all learners in the class.

As a result, the student-teachers without prior-knowledge have achieved better grades from satisfactory to very good than those with prior-knowledge in Visual Arts as seen in Table 3. The study found that teachers' knowledge of inclusive lesson delivery has contributed to the achievement of the student-teachers without prior-knowledge in studio activities. This is evidenced in Fusheini and Adam's (2020) prior studies conducted on face-to-face and online teaching strategies to be adopted in teaching to ensure inclusiveness and equity among Visual Arts tutors in the department.

Also, students who are pursuing Vocational programs need to be motivated with the constant exposure to hands-on activities. Through this, all calibre of students in the class learn equitably together to achieve their aspirations, and it remains one of the strongest antidote to students' laziness and absenteeism in class. According to Fusheini et al (2021), exposing students to work-based learning strategies make students compete very effectively in achieving their educational goals. Likewise, Lydia (2020) expounds that involving learners on hands-on learning activities create the opportunity for learners to take active participation in class and also perform well at the end of learning.

On the other hand, McCoy and Wolf (2014) see students' mindset to be a great influence over their academic achievements regardless of the teacher's effort to do good and effective teaching. When students have individual goals to achieve for pursuing a program other than the goals of the program, their minds are twisted to the direction of their whims and caprices and this has effect on their future careers. In this regard, some researchers debunk the claim by some students that their previous knowledge in a subject will impact positively for achieving excellent grades. The researchers rather stressed that students' achievement in subjects that they have no or little prior knowledge is a matter of self-motivation (Atkinson, 2009; Watkins, 2003; McCoy and Wolf, 2014; Kara, 2009).

Likewise, the student-teachers without prior-knowledge in the Visual Arts courses have obtained less grades as 'pass' in the content subjects than those with prior-knowledge in Visual Arts as seen in Table 4. Despite the fact that student-teachers with prior-knowledge in Visual Arts seemed to have upper hand over those without prior-knowledge, the story rather reflected negative results against the former. This is an indication that students' exam performance is not only based on their prior knowledge in the subjects being assessed but also rely on individual student's zeal and self-motivation in a program of pursuit (Kara, 2009; Marburger, 2001; Cohn & Johnson, 2006). More so, both student-teachers with and without prior-knowledge in Visual Arts did not fail any subject in the 5 semesters' exams and this can be concluded that there was a keen contest between both students but the student-teachers without prior-knowledge in Visual Arts students still stood tall in matters of congratulations. This is because, they had no prior knowledge to all subjects studied in the Visual Arts B.Ed. program, yet they have not recorded any fail. In a similar applauds and appreciation, Fusheini (2022) attaches students' summative assessment achievement to self-motivation, effective teaching and good parental guidance.

CONCLUSIONS

Gender disparity in admission of students into vocational programmes at the College is still a major challenge. The findings indicated that there were more males than females in the 2018/2019 academic batch of student-teachers offering the Visual Arts specialism. This is due to poor interest of girls in offering Visual Arts as a programme in particular as well as lack of career guidance in the educational system within the region.

The study confirmed that both students with and without prior-knowledge in Visual Arts were admitted into the Visual Arts specialism in Bagabaga College of Education. Both students took end of semester same exams in both the content and methodology and their results were very competitive. This is because, both category of students competed for pass marks without recording failures. In the content subjects, the student-teachers without prior-knowledge in Visual Arts performed better than their counterparts as the results of self-motivation syndrome in the students. Also, the content subjects were noted to be all foundational courses which paved ways for both category of students to excel based on their self-motivation levels. Besides, the student-teachers without prior-knowledge performed well in the content subjects as the result of their conscious efforts to lay good foundation towards in the Visual Arts specialism.

In the methodology subjects which were purely practical-based examination, the overall performance in terms of good grades from excellence to satisfactory came from the student-teachers without prior-knowledge in Visual Arts again. It was seen that the tutors' modes of facilitation was purely multiple-disciplinary approaches such as the use of differentiated learning and universal design methodologies. A cursory look at the lesson plans of the Visual Arts tutors showed that they laid emphasis on ensuring equity and inclusivity. On the other hand, the student-teachers with prior-knowledge in Visual Arts rested much of their aspirations for good grades on their background knowledge at the expense of learning harder for good performance. As a result, they ended up not performing well as compared to student-teachers without prior-knowledge in the courses.

RECOMMENDATIONS

The number of students admitted into the Visual Arts specialism in Bagabaga College of Education keeps dwindling as the expectations are on only to admit those who truly apply for it and have the requisite prior-knowledge. Per the findings of the study, the College Management should admit any student interested in the Visual Arts program irrespective of their backgrounds in the Visual Arts. The study found that the 2018/2019 batch who have been used for this study had more students without prior-knowledge in Visual Arts than those with prior-knowledge in the course. Therefore, the admission committee of the College should admit some students without prior-knowledge in Visual Arts such as students with qualified grades in Business, General Arts, Home Economics and even the pure Sciences to pursue the Visual Arts program.

Also, lack of a well-furnished studio and other facilities contribute to the woes of the Visual Arts Unit for effective training of student-teachers. The provision of these facilities by College Management, the Government and other benevolent institutions will attract more students with different subject backgrounds to apply to offer the Visual Arts program. Meanwhile, Visual Arts tutors as well as other departmental members should mount outreach programs, with the assistance of the College, to sensitise second cycle students on the study of Visual Arts specialism in Bagabaga College of Education. More so, the College Head of Department for Vocational and Technical Department in collaboration with the College Management should design adverts to advertise on social media platforms about admissions to the various programs run in the College.

The Partnership Department of the College should assist the Visual Arts Unit to link up with international institutions and organisations that can assist to furnish the Department with the necessary materials and equipment for training student-teachers effectively. The mentor universities should be reached out to by stakeholders of the College to crave their indulgence

Publication of the European Centre for Research Training and Development-UK

in playing a role in assisting the Vocational and Technical Education Department acquire good facilities for effective teaching, learning and assessment.

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