

Verifying High School Accounting Curriculum Objectives: An Indirect Assessment of Students Learning Experiences, Outcomes and Gaps

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Abstract The assessment of educational plans and outcomes for verification and validation purposes is an integral part of the teaching and learning process in accounting education. This study is an outcome verification study which seeks to find out the extent to which high school accounting module content, learning materials and learning objectives are encountered by graduates of Ghanaian Senior High School (SHS) accounting curriculum. The target population consist of all High School who completed the high school accounting curriculum in 2015. Out of this, those who gained admission into the BSc. Accounting Education program of the University of Education, Winneba, in 2015 is the sample of this study. The instruments used for collecting data is questionnaire on students' ability to perform the tasks embedded in the SHS accounting curriculum learning objectives. The findings indicate that on average three-quarters of the learning objectives are attained by SHS accounting graduates. It is established that majority of the students have learning gaps in 'Information Technology in Accounting', 'Accounting for VAT', 'Public Sector Accounting', 'Company Accounts', 'Accounting Ratios', and 'Cash Flow Statement' content areas. The learning outcomes (attained learning or learning gap) are independent of gender of students. It is found that these content areas are rarely taught in schools and this is most probably because these topics are hardly examined by examination bodies. The findings show that teachers rarely recommend the suggested learning materials to their students and hence most of the students rarely use the suggested learning materials. This may be due to unavailability of the recommended learning materials. It is recommended that policy makers should ensure access to recommended reading materials and other requisite learning materials and examination bodies should spread their test items to cover the content areas identified to be a learning gap.

Keywords Accounting Curriculum, Learning Gap, Learning Outcomes, Indirect Assessment

1. Introduction

In Ghana, potential accounting academics and professionals encounter accounting as a field of study and career path for the first time at the Senior High School (SHS) level where financial accounting is one of the modules of the SHS Business Program. Accounting competencies acquired by students at the SHS level is therefore the foundation for their professional and academic advancement in accounting education and training.

Effective implementation of innovative changes in the SHS accounting curriculum is consequently crucial to accounting education at all levels in Ghana. A continuous monitoring and control of the SHS accounting module is

necessary for two main reasons: (1) innovative changes to ensure that the curriculum is up to date - provides the necessary accounting experiences and competencies (2) effective implementation of the curriculum to ensure that the graduates of the accounting module acquire the intended competencies.

However, effective monitoring and control of the implementation of the SHS accounting module require reliable and relevant information of which assessment and evaluation are the tools. The evaluation of educational plans and assessment of learning outcomes are critical and of great interest to accounting educators (Calderon, Green, & Harkness, 2004 [8]). B. D. Gannod, Gannod, and Henderson (2005 [14]) observed that continuous improvement of an educational system requires verification and validation of the curriculum involve. Verification of a curriculum is about answering the question "*are students learning outcomes as intended?*" and validation is about answering the question "*are the intended learning outcomes appropriate?*" (Gannod et al, 2005 [14]). Thus, verification is the assessment of students learning outcomes. According to

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(Coles, 2006 [9]), depending on the tool of assessment, assessment of learning outcomes may involve measuring the extent of achievement of all module learning objectives or measuring the level of achievement of a fraction of the course learning objectives.

Generally, students learning outcomes of the SHS accounting module in Ghana are assessed and evaluated using end of course exams conducted by West African Examination Council (WAEC). The purpose of this form of assessment is usually to measure students learning for certification and usually provide little information for addressing issues of effectiveness of curriculum strategy or determining the level of achievement of the module learning objectives (Porter and Smithson, 2001 [27]). Besides, such form of assessment usually do not cover all the learning objectives of the curriculum, and lack details that links the student exams performance to specific intended learning objectives.

However, linking student learning outcomes to learning objectives provide vital information to support monitoring, and control for innovative change in the module goals, content and implementation strategies. In this context, Porter and Smithson (2001 [27]) asserted that to be useful for monitoring and control, indicator measures of the learned curriculum should describe the content that has been learned as well as the level of proficiency of the learner embedded in the test score. They also opined that the assessed student learning outcomes should be capable of being mapped to the intended curriculum to provide information on which aspect of the intended curriculum is achieved by most learners and which aspects require much attention.

A plethora of research exist on students learning outcomes in accounting education as measured by the end of course exams or test, especially the issue of poor performance in exams or test and how to improve students' performance in exams (see Ganyaupfu, 2013 [15]; Hoves et al, 2011 [20]; Lynn & Robinson-Backmon, 2006 [22]). Few studies exist on the assessment of the level of achievement of accounting modules learning objectives and competencies neither to talk of other related issues such as how to improve the level of achievement of specific learning objectives of a module in accounting education. The few studies on achievement of accounting education objectives are on achievement of accounting program objectives and not on accounting as a module or subject (see Hill, Perry, & Stein, 1998 [19]; Stivers et al., 2000 [32]). Besides, the existing studies focus on the overall success of the accounting program with no emphasis on achievements of specified knowledge, skills, attitudes and performance of specific task embedded in the goals and objectives of an accounting curriculum.

Since the end of course exams and test approach used in assessing the SHS accounting curriculum learning outcomes is purposely for grading students, a holistic assessment of the extent of achievement of all the learning objectives is necessary to find answers to questions such as "*What proportion of learning objectives is achieved by majority of*

students?" "*Which learning objectives are not achieved by majority of student?*" "*Which content areas are rarely taught in schools?*" Answers to these questions is necessary for strategic management of students learning in accounting education at the SHS level and for further research in accounting education.

To serve as a humble contribution to the literature on students learning achievements in accounting education in general and accounting education at Senior High School in Ghana in particular, this paper assesses the extent to which students encounter the content, materials and attain the learning objectives of Senior High School accounting module.

1.1. Research Questions of the Study

1. To what extent do students encounter the suggested content and learning materials of the SHS accounting module?
2. What proportion of the SHS accounting model learning objectives constitute attained learning and learning gap to majority of the students?
3. Which of the SHS accounting module content areas and learning objectives constitute leaning gaps to majority of the students?
4. Does gender have any association with SHS accounting students' learning outcomes?

2. Learning Objectives, Outcomes, and Related Terms

Learning is an intangible concept and can best be described as a variable in terms of meaning. Merriam and Caffarella (1999 [24]), from the constructivist point of view, asserted that learning is how people make sense of their experience through reflection. Kolb (1984 [21]) conceived learning as a process grounded in experience and tested out of experience. According to Adamson, Becerro, Cullen, González-Vega, Sobrino, & Ryan (2010 [2]), learning is a process by which a sustainable change in learners' knowledge, skill, attitude or competence occurs. This definition is quite suitable in the context of this paper.

Students' learning may be described as a learning outcome when it occur, a learning achievement when it is measured, a learning objective when it is in a learning plan, or learning success when it is viewed as an intersection of learning outcome and learning objective (Adamson et al, 2010 [2]; Euler and Hahn, 2004 [12]; European Centre for the Development of Vocational Training [CEDEFOP], 2010 [13]).

Learning outcomes in the context of education and training, as defined by EQF 7, are "*..... statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined as knowledge, skills and competences*" (European Parliament and Council of the EU, 2008, Annex I). Major variations in

the understanding, use and interpretation of learning outcomes and related terminologies however exist in the literature and a comprehensive conceptualization of learning outcomes and the related concepts is crucial for curving a framework for this study. CEDEFOP (2010 [13]) observed that depending on the level and context in which learning outcomes are defined, they may fulfill different functions such as recognition of prior learning, award of credit, quality indicator, learning plans, key competences for life, credibility for employers and for modernizing the governance of education and training.

Learning outcomes is most often confused with (considered synonymous) to concepts such as competency, learning objectives, learning output and others (CEDEFOP, 2010 [13]). While competency is a context based learning outcome, learning outcomes are more comprehensive and encompasses competences and other non-contextual outcomes (Markowitsch & Luomi-Messerer, 2008 [23]). Regarding the link between learning outcomes and learning objectives, Adam (2004 [1]) maintains that learning outcomes are the achievements of the learner rather than the intentions of a curriculum package, course, a teacher or a program and that learning outcomes might encompass unintended learning outcomes as well. Learning objectives are learning outcomes prescribed before the beginning of the learning process and are learning outcomes expected of learners (CEDEFOP, 2010 [13]).

In the same vein, Adamson et al (2010 [2]) described three types of learning outcomes: intended learning outcomes, expected learning outcomes, or actual learning outcomes. According to them, intended learning outcomes refer to the educational and instructional goals and objectives of a curriculum or a teacher that learners are to attain. Adamson et al (2010 [2]) observed that if the curriculum is effective and its goals achieved, the actual learning outcomes must meet at least the minimum intended learning outcomes requirements and that the actual learning outcomes may include additional outcomes which were unintended. They described expected learning outcomes as the amount of learning expected to be achieved before a particular qualification is earned and they indicated that expected learning outcomes are usually the concern of qualifications frameworks and professional standards.

Euler and Hahn (2004 [12]), in their conceptualization of learning outcome as a concept, distinguished between learning outcomes, learning objectives and learning success. They described learning objectives as the knowledge, skills and competences the teacher expects learners to attain after going through the learning process. Learning outcomes on the other hand are described as all competences, knowledge and skills attained by the learner through the learning process whether intended or not. They termed the achieved learning objectives as learning success. Figure 1 below shows Euler and Hahn (2004 [12]) conceptual model of the concept of learning objectives and learning outcomes.

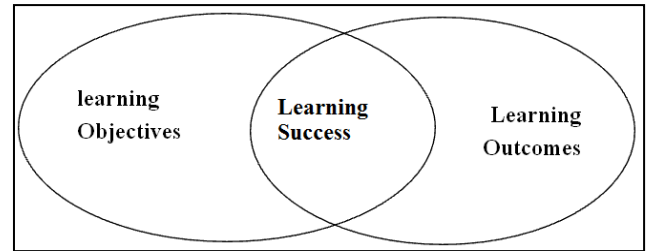


Figure 1. Difference between Learning Objectives, Learning Outcomes and Learning Success (Adopted from Cedefop, 2010 p. 25)

In the light of the above review, it is apparent that despite the misuse of the concept of learning outcomes and learning objectives in the literature, the two concepts are clearly related but surely different.

The conceptualization of learning outcomes and objectives by Euler and Hahn (2004 [12]) is quite useful in understanding the concept of learning objective and learning outcome. However, it fails to include other related concepts such as learning gap, unattained learning objectives and unintended learning among others. To fill this gap, the following framework in Figure 2 is proposed.

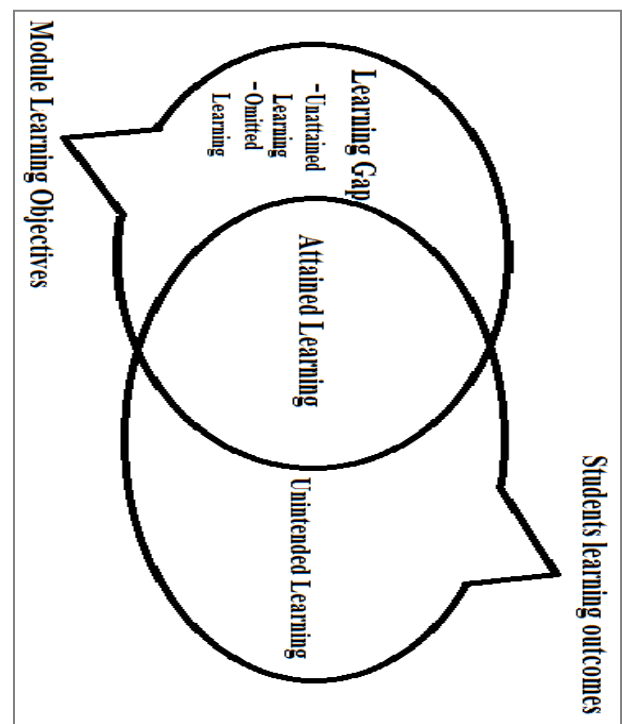


Figure 2. The Framework of Learning Objectives, Learning Outcomes and Related Concepts

As depicted in Figure 2, the concept of learning objectives and learning outcome is illustrated with three key related concepts and these are learning gap, attained learning objectives and unintended learning outcome. These concepts are discussed below.

Learning Gap

Learning gap is the variance between actual students learning experiences and the intended learning experiences. Learning gap therefore acknowledges the fact that a significant discrepancies may exist between teachers and educational systems' expectations of students learning experiences and the actual students learning experiences (Michael, 2007 [25]). It is the discrepancies between actual learning experiences of a student and what the student was expected to learn at, a certain point in the learning process such as at a particular grade level or at the end of a given curriculum. In the context of this paper learning gap refers to the learning objectives that do not form part of students learning outcomes as measured by students' self-assessment of their learning. Learning gap in this paper is also viewed to have two facets and these are *unattained learning objectives* and *omitted learning objectives*. The unattained learning refers to the learning objectives that schools and teachers covered in the teaching and learning process but for some reasons students did not learn what was expected. The omitted learning refers to the expected learning specified in the curriculum guides which schools and teachers did not cover in the teaching and learning process and students did not attain upon completion of the curriculum.

Attained learning

Attained learning basically refers to the learning outcomes described as learning success by Euler and Hahn (2004 [12]). Attained learning in this case is the achieved intended learning. In the context of this paper, attained learning is the learning objectives for which students are able perform the task embedded in the learning objectives.

Unintended learning

All other learning outcomes either than the attained learning is what is referred to as unintended learning outcomes. Unintended learning reflects that students may learn more than required or expected. Usually this component of learning outcomes are less relevant to educators and hence attract less attention.

2.1. Methods of Verifying Learning Outcomes

According to Gentry et al (1998 [16]), measuring learning achievement is a necessary complement of the process of learning. Stake holders of the learning process will want to know if learners are actually learning or have actually learned what was intended or expected and hence determine the effectiveness of the strategies implemented.

Gannod et al, (2005 [14]) identified two main purpose of assessment. They noted that the assessment of students' actual learning experiences serve the purpose of curriculum verification. On the other hand they stated that skills gaps assessment and needs assessment for identification of the required and demanded outcomes of a learning process serves the purpose of curriculum validation.

Students learning is mostly measured through direct

assessment but could also be measured through indirect assessment. Gentry et al (1998 [16]) described learning measured through direct assessment as objective learning and learning measured using indirect assessment is perceived learning. Allen (2004 [4]), in the same vein, asserted that direct measures of learning assess actual learning and the indirect methods assess perception of learning. Objective learning as an indicator of students learning is reliable but lacks details while perceived learning as an indicator of students learning is less reliable but with variety of details to support monitoring and control (Allen, 2004 [4]; Alberta Education, 2011 [3]).

Direct assessment or measurement of learning outcomes assesses students' level of mastery of content or skills and the indirect assessment of learning outcomes assesses students' perceptions of their own learning experience and achievement (Price & Rardall, 2008 [28]). Direct assessment of student learning provide visible evidence exactly what students have learned (Suskie, 2009 [33]).

Indirect assessment of students learning is student self-assessment of their learning achievement. Andrade and Du (2007 [5]) indicated that during self-assessment students are engage in reflecting on the quality of learning and the extent to which the learning reflects clearly stated objectives. Self-reported measures of student learning assume that students' perception of the extent to which they achieved a course objective is indicative of students' actual learning achievement.

Rose (2006 [30]) observed that teachers and for that matter stakeholders in educational assessment doubt the value and accuracy of self-assessment despite its widespread use both for classroom evaluation and research. Rose asserted that the weakness of self-assessment can be enhanced though training of students on self-assessment. Allen (2004 [4]) questioned the construct validity of indirect measures as indicators of student learning and describes them as inaccurate in indicating students learning. Calderon (2013 [8]) concluded from his findings that students perceived learning may not actually reflect their ability to demonstrate mastery of content and skills but a separate construct reflecting student's satisfaction with their experience in the learning process.

Despite the criticism against perceived learning as an indicator of learning, it is commonly used in the literature as the indicator of students learning (Beaumie, Williams & Dattilo, 2000 [6]). Duke, (2002 [11]; Gosen & Washbush, 1999 [19]; Rocha, 2000 [30]) noted that one of the techniques of assessing institution-specific learning outcomes is assessment of the perceptions of a critical stakeholder group and there is arguably no critical stakeholder in students learning than the students.

The proponents of the indirect measures of students learning argue that self-assessment provide some benefits that direct assessment is unable to provide. Opportunity for students to reflect on their learning, more detail learning achievement information, students learning that is directly

linked to curriculum and learning objectives are among some of the identified benefits of students' self-assessment (Alberta Education, 2011 [3]; Spiller, 2012 [31]) observed that self-assessment fits the current shift from focus on teacher performance to an emphasis on student learning. Stivers et al. (2000 [32]) indicated that the indirect measures such as surveys of students' perception of their learning and students self-assessment enable academic institutions and managers to collect data related to specific aspects intended learning outcomes. Similarly, Hill et al. (1998 [19]) asserts that students self-assessment of their learning is useful in determining whether students actually learned the skills they were exposed to.

Surveys of student perceptions of their learning achievement, according to (Glynn et al., 1993 [17]) have a degree of validity because graduates of a program are assumed to have a reasonable comprehension of the program. Sutton (2005), cited in Alberta Education (2011 [3]), argued that learners are those who know what they know, and what they don't know. Graduates should not dependent on others to know the level of competency they have attained in the learning process (Costa & Kallack, 2003 [10]). Hill et al., (1998 [19]) observed that students are in a unique position to assess their measure and evaluate their own skills.

3. Research Methodology

This study is a curriculum verification study that seeks to verify students' knowledge, skills and competency to make judgment on whether course content is delivered and course objectives are achieved. Descriptive design is a more suitable research design in this case. Thus, in terms of design this study is a descriptive study executed through the survey approach. Descriptive Studies observe the current state of a situation and report accordingly (Olds, Moskal, & Miller, 2005 [26]). Olds, Moskal, and Miller (2005 [26]) indicated that current studies on measurement and evaluation of learning outcomes are descriptive or experimental in design.

The population of the study is all SHS graduates in the year 2015 who studied financial accounting and gained admission into the Universities to pursue advance studies in accounting. However, for this study all SHS graduates who graduated in 2015 and were admitted to pursue a BSc. Accounting Education program of the University of Education, Winneba, in Ghana for the 2015/ 2016 academic year, were selected.

A self-assessment survey items was designed and administered to the sample of the study. The survey asked respondents to indicate the extent to which they are able to perform the task involve in each of the 183 learning objective of the SHS accounting curriculum on a six point Likert scale of 0(not covered), 1(not at all) to 6(to a very large extent).

The data is analyzed using statistical measures such as mean, and frequency distributions. Specifically, the data was first coded in excel, mean responses computed and categorized into three categories which are termed: omitted

learning objectives (0), unattained learning objectives (1, 2, 3), attained learning (4, 5, 6). These categories are further classified into measured learning outcomes (attained learning) and learning gap (omitted learning, unattained learning). Attained learning represents achieved of learning and learning gap represents unachieved learning. Figure 3 shows the framework of the data analysis.

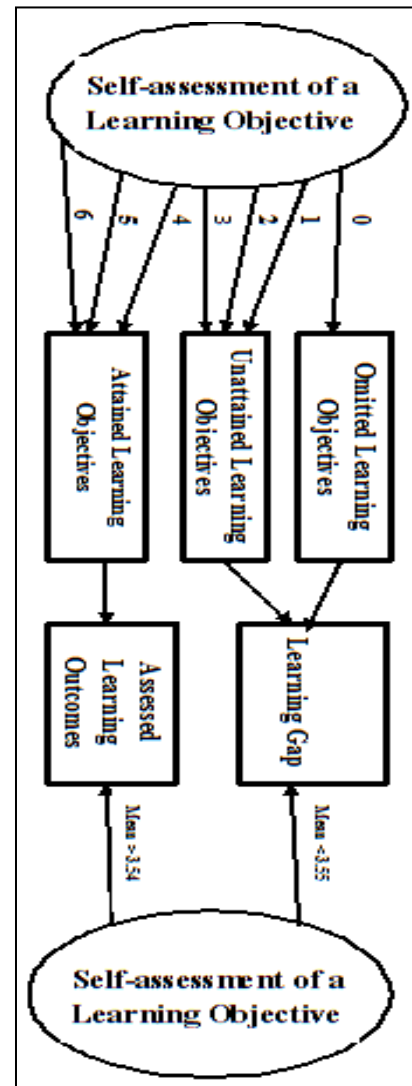


Figure 3. Framework for Data Analysis

4. Results and Discussion

Out of 426 questionnaires administered, 319(74.9%) were returned. Out of the 319 questionnaire received, 251(78.7%) were validated and used in this study. The rest of the received questionnaires were significantly incomplete and hence not considered in the data analysis. About 85% of the students involved in the study scored grade 'A1' or 'B2' in the WASSCE accounting paper, 10% scored grade 'B3' and 5% scored grade 'C4'. The results of the data analysis is presented and discussed below. In terms of gender, 37% are females and 63% are males.

4.1. Students Learning Experiences

One of the questions this study aimed to answer is “what proportion of the SHS accounting graduates encountered the various content areas (topics) and learning materials (recommended books) specified in the SHS accounting module guide?” Table 1 shows the bar chat of the topics of the SHS accounting curriculum guide and the percentage of students who encountered or covered those topics in school, and Figure 4 shows the bar chat of the suggested learning materials and the percentage of students who used them as well as those to whom the learning materials were recommended by their accounting teachers or schools.

Table 1. Extent to which Students Encounter SHS Accounting Content

Content Areas	% Students*
Nature and functions of Accounting.	99.6
The Accounting Equation	99.6
The Books of Accounts	99.6
Accounting concepts and Policies	96.4
Final accounts of a Sole Proprietorship	98
Provisions and Reserves	88.8
Correction of Errors and Suspense Accounts.	97.18
Bank Reconciliation Statement	98.39
Self-Balancing Ledgers (Control Account)	97.58
Single Entry and Incomplete Records	91.165
Accounts of Clubs and Societies	85.14
Accounts of Manufacturing Concerns	95.2
Partnership Accounts	94.38
Company Accounts	74.70
Departmental and Branch Accounts	86
Public Sector Accounting	56
Accounting for Value Added Tax.	47.39
Information Technology in Accounting	32.53

* % of students who encountered the content in school

It is observed from Table 1 that more than 95% of the students encountered the nature and functions of accounting, the accounting equation, the books of accounts, accounting concepts and policies, final accounts of sole traders, correction of errors and suspense, bank reconciliation statement, self-balancing ledgers, single entry and incomplete records, accounting for manufacturing concerns, and partnership accounting content areas. In respect of the rest of the content areas, 88.8% covered provisions and reserves, 86% covered departmental and branch accounts, 85.1% covered accounting for clubs and societies, 74.6% covered company accounts, 56% covered public sector accounting, 47.4% covered accounting for VAT and 32.5% covered information technology in accounting.

From Table 1, the content areas that are most likely not encountered by students in schools are Information Technology in Accounting, Accounting for VAT and Public Sector Accounting. The rest of the content areas are most likely encountered by students at school.

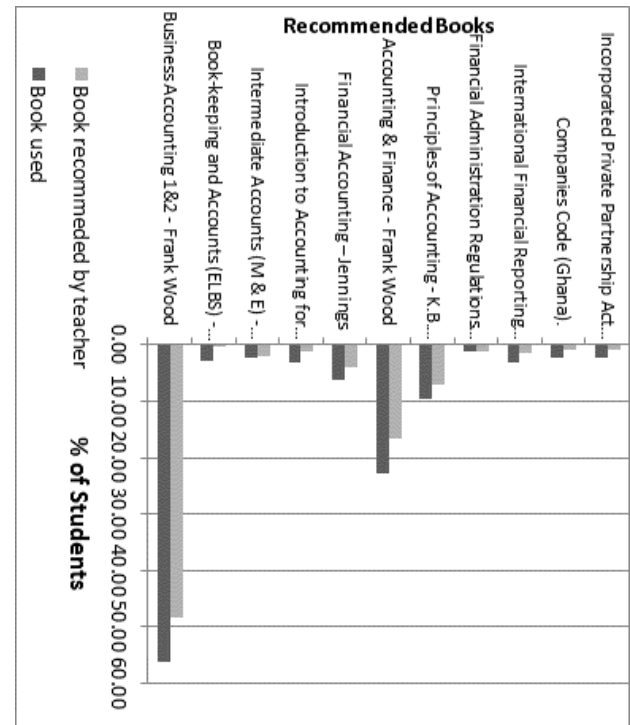


Figure 4. Learning Material Recommended and Used by Students

From Figure 4, 48.2% of teachers recommended Business Accounting 1&2 (Frank Wood), 16.7% recommended Accounting and Finance (Frank Wood) and less than 4% recommended the rest of the suggested learning materials. With regard to usage of the suggested learning materials, 56.2% of the students used Business Accounting 1&2 (Frank Wood), 22.7% of the students used Accounting and Finance (Frank Wood), 9.6% of students used Principles of Accounting (K. B. Appiah Mensah), 6.4% of the students used Financial Accounting (Jennings) and less than 4% of the students used any of the rest of the suggested learning materials.

The findings suggest that schools and teachers may recommend any of the suggested learning materials to their students and less than 60% of the students used any of the suggested learning materials. Less than 4% of teachers recommended and less than 4% of students used Financial Administration Regulations 2004, International Financial Reporting Standards, Companies Code (Ghana), Incorporated Private Partnership Act 1962 Act 152 and Value Added Tax (VAT) Guide for Facilitators.

4.2. Extent of SHS Accounting Graduates Learning Outcomes

The SHS accounting curriculum has 183 learning objectives which are stated with 23 precise action verbs. The key concern of this study is to establish the extent to which the learning objectives of the SHS accounting module is attained by students who have gone through the accounting module. The summary of the data collected in this respect is presented in Table 2, Figure 5, Table 3a and Table 3b below.

Table 2. Learning Outcomes of SHS Accounting Learning Objectives

Learning outcomes	Number of objectives	Percentage
Learning Gap	43	23.24324
Attained learning	142	76.75676
Totals	185	100

It is observed from Table 2 that on average students are able to perform the task required in 142 (77%) of 183 SHS accounting learning objectives and 23% of the learning objectives are learning gaps.

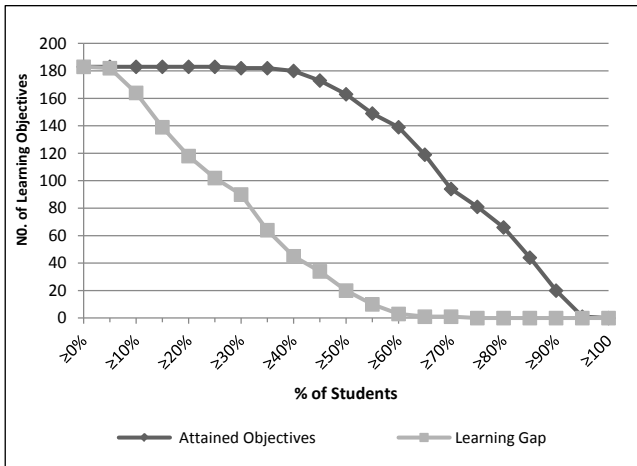
**Figure 5.** Number of Attained Learning and Learning Gap of SHS Accounting Learning Objectives per Proportion of Students

Figure 5 shows that a quarter of the students are able to perform the task involved in all the 183 learning objectives. Half of the students are able to perform the task involved in 163(89%) of the learning objectives and 60% of the students are able to perform the task required in three-quarters (139) of the learning objectives. The task embedded in half of the objectives (94) could be performed by 70% of the students and three-quarters of the students are able to perform the task required in 81(44.26%) of the learning objectives while 90% of the students are able to perform 20 (11%) of the learning objectives. Only one learning objective (“write the accounting equation”) could be performed by 95% of the students and the rest of the learning objectives could be performed by less than 95% of the students. For a student to get grade A in the SHS final exams the student must score not less than 80% and in this case that is 80% of the objectives. In this context, 55% of the students are able to perform the task involve in about 80% of the learning objectives.

It is also observed that 5% of students are not able to perform 182(99.5%) of the learning objectives, 10% of the students are not able to perform 164(89.6%) of the learning objectives, 20% of the student are not able to perform 118(64.5%) of the learning objectives, a quarter of the students are not able to perform 102(55.7%) of the learning objectives, 30% of the students are not able to perform about half of the objectives and half of the students are not able to perform about 20(11%) of the learning objectives.

4.3. Scope of SHS Accounting Learning Success and Gap

It is not enough to know the proportion of learning objectives attained or not attained by majority of learners. It is even more important to identify the objectives that are attained and the objectives that are learning gaps. Table 1 shows the summary of learning gaps of the SHS accounting module. Specifically, Table 3a and Table 3b shows the learning objectives that were not achieved by at least half of the SHS accounting graduates, the percentage of students who did not achieve each of these learning objective, the percentage of males and females who did not achieve these objectives and chi-square statistics of the association between gender and the learning outcomes of the students. Specifically, Table 3a shows the learning objectives not achieved by about half or more of the students and the ID number assigned to each of these objectives. Table 3b shows the identification number of the learning objectives and the rest of the details mentioned above.

Table 3a. List of Objectives that are not Attained by at Least Half of Students

Learning Objective	ID #*
Use an accounting software to prepare financial statements	1
State types of account records that may be computerize	2
Identify the type of books in manual data processing	3
Define computerized account ting system	4
State and explain the components of the cash flow statement.	5
Prepare the cash flow statement using the indirect method only.	6
Prepare simple accounts for Public Sector Organization.	7
Prepare VAT returns	8
Compute flat rate of 3% VAT for retail traders	9
Prepare a VAT account	10
Treat inter-branch transactions correctly	11
Compute input VAT	12
State the uses of cash flow statements.	13
Explain the nature and purpose of government accounting.	14
State the merits and demerits of computerized accounting data processing system.	15
List the processes involved in data processing.	16
State the limitations of ratios	17
State reasons for the use of accounting ratios in interpreting accounts.	18
State types of public sector organizations	19
Identity the merits and demerits of manual accounting data processing system	20
State the conditions under which goodwill is valued.	21
Explain and prepare the revaluation account.	22
State the requirements for registration laid down in the Companies Code 1963 (ACT	23
State accounts to prepare where accounting records of the branch are kept at the head office.	24

*ID #: Identification Number of a Learning Objective

In Table 3b each of the learning objectives is assigned an ID number or reference number. This reference number is used to represent the learning objective in Table 3b. Thus, the ID number links the learning objectives to the results presented in Table 3b.

Table 3b. Scope and Content of Learning Gap and Gender Effect

Objective ID Number	% of Students ^a	% of male ^b	% of female ^c	χ^2	df	P value
1	73	72.3	68.2	0.126	1	0.723
2	64	55.3	63.6	0.425	1	0.528
3	63	59.6	54.5	0.156	1	0.693
4	60	55.3	45.5	0.584	1	0.445
5	60	46.8	40.9	0.211	1	0.646
6	60	53.2	46.5	0.359	1	0.549
7	56	53.2	45.5	0.359	1	0.549
8	56	42.6	45.5	0.051	1	0.821
9	55	46.8	40.9	0.211	1	0.646
10	55	44.7	36.4	0.425	1	0.514
11	55	38.3	43.5	1.610	1	0.208
12	54	40.4	45.5	0.156	1	0.693
13	54	42.6	40.9	0.017	1	0.897
14	54	53.2	40.9	0.904	1	0.342
15	54	51.1	49.3	0.189	1	0.664
16	53	46.8	47.6	0.004	1	0.951
17	52	36.2	36.4	0.001	1	0.988
18	51	40.4	36.4	0.104	1	0.748
19	51	48.9	36.4	0.956	1	0.328
20	50	53.2	50	0.061	1	0.805
21	49	38.3	40.9	0.043	1	0.836
22	49	36.2	50	1.189	1	0.276
23	49	40.4	45.5	0.156	1	0.693
24	49	34	36	0.036	1	0.850

^a: % of students: percentage of students, irrespective of gender, who did not attain the learning objective

^b: % of male: percentage of male students who did not attain the learning objective

^c: % of female: percentage of female students who did not attain the learning objective

The results presented in Table 3b addresses two key issues of this study and these issues are: scope and content of the learning gap and effect of gender on the learning gap. The results in Table 3b are therefore discussed below under these two issues.

Scope and Content of the Learning Gap

From Table 3b it is observed that the learning objective that was not achieved by most students (about 73%) is 'Using an accounting software to prepare financial statements'. It is also observed that the top four objectives with the highest rate of not being attained (between 60% and

73%) are all learning objectives of 'IT in accounting' content area. Almost all the learning objectives of this content area (IT in accounting) was not attained by at least half of the students. This corroborates the earlier finding in this study that IT in accounting content area is seldom covered in schools and learned by students.

Table 3b shows that majority (about 54% to 60%) of the students did not achieve three learning objectives in the content area of 'cash flow'. These objectives involves explaining the components of cash flow statement, preparation of cash flow statement and uses of cash flow statement. It is seen that most of the students (about 54% to 56%) did not achieve four learning objectives in 'VAT accounts' content area. The tasks involved in these learning objectives are preparation of VAT account, calculation of VAT charge, preparation of vat returns and computation of input and output VAT.

It is observed the tasks of preparing simple accounts of public sector organizations, explaining the nature and purpose of public sector accounting, and identification of the types of public sector organizations which are some of the learning objectives of 'Public sector accounting' content area could not be performed by about 51% to 56% of the students. Similarly, majority of the students (about 52%) could not perform the task of stating the limitations of accounting ratios and the relevance of accounting ratios embedded in two learning objectives of 'Accounting ratios' content area.

Table 3b also indicates that almost half of the students are unable to perform the task embedded in three learning objectives in the area of 'partnership accounting' and accounting records of branch at head office in the area of 'Branch and departmental accounts'.

The results in Table 3a and Table 3b generally corroborate with our earlier finding that IT in accounting, accounting for VAT and Public sector accounting are the content areas that are most likely not to be covered in schools and hence may not be learned by students. In addition, the results discussed in this section identified the specific tasks, embedded in the high school accounting module, students are unable to perform as required. These specific task students are unable to perform constitute learning gap as well as schematic learning needs of the students in advance studies in accounting.

Effect of Gender on the Learning Gap

It is observed from Table 3b that the proportions of males and females that may not attain an objective is contingent on the objective and there is no clear cut trend of learning gap or attained learning on base on gender. The P values of the χ^2 test of the association of learning gap and gender are indicates no significant difference of the learning gap and attained learning of males and females at either 0.05 or 0.1 significant level. Thus, the learning gap or attained learning of student is independent of gender.

5. Implications and Conclusions

The results of the study suggest that, among the topic of the SHS accounting curriculum, 'information technology in accounting' is more likely not be covered in schools than any of the other topic followed by 'accounting for VAT', 'public sector accounting' and 'company accounts'.

The findings suggest that schools and teachers are most likely not to recommend any of the suggested learning materials to their students and students rarely use the suggested learning materials. The recommended learning material that schools and teachers may not recommend to students and students may never get the opportunity to use are Financial Administration Regulations 2004, International Financial Reporting Standards, Companies Code (Ghana), Incorporated Private Partnership Act 1962 Act 152 and Value Added Tax (VAT) Guide for Facilitators.

The study revealed that on average majority of the learning objectives are attained by the SHS accounting graduates though on average a quarter of the learning objectives are learning gap. None of the learning objectives was achieved by all the students involved in this study. It also obvious that some of the learning objectives was not covered given that some content areas were not covered. To some students (a fifth percentile) almost all the learning objectives (182 out of 183) are learning gaps.

The findings indicates that learning gaps, in the High school accounting module, are more prevalent in IT accounting, accounting for VAT, Public sector accounting, company accounting, accounting ratios and cash flow statements. These learning gaps are independent of gender of the students and hence both males and females have similar learning gaps experiences. The fact that this learning gap is identified with respect to students who scored not less than grade B in the WASSCE exams points to how wide it may be if students who scored lower than grade B were surveyed. Plausible unempirical reasons base on observations are that (1) this content areas are mostly not examined by WAEC (2) unavailability of resources such as computers and requisite software and (3) teachers may not have the requisite knowledge and skills in these content areas.

These findings implies that, majority of the students who are enrolled in the accounting degree programs may lack most of the requisite accounting competencies for the program despite the fact that they graduate with grade A, B+ or B in accounting at the WASSCE. The situation may be worst in the case of students who attained grades lower than grade B. A significant proportion of the learning objectives are not achieved and hence constitute learning gap. Whiles coverage is an issue, students inability to perform task involve in the learning objectives covered in school is even much greater an issue. These problems may be attributed to a host of factors yet to be investigated. Going forward, more research is needed to find out empirical explanation to these findings.

The single most prominent suggestion to eliminate the learning gap identified is for WAEC to extend exam

questions to these content areas. This will motivate both teachers and students to give much attention to these areas. Provision of learning materials such the recommended text books and resources may also help reduce the learning gap.

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