

SENIOR HIGH SCHOOL STUDENTS' LEARNING STYLES IN COST ACCOUNTING IN GHANA

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ABSTRACT

Purpose – The purpose of this classroom-action research is to improve the learning styles of our students in the study of cost accounting in a private Senior High School in Ghana.

Design/methodology/approach – All the 15 students in the class took part in the study because they all lacked the requisite learning skills. We gave assignments and tests to the students and provided them with feedback. Students took part in the planning of lessons. They assessed themselves and they commented on our evaluation of their learning. In addition, they used the SQ5R learning method to improve their reading skills. We used observation, interview guides, and questionnaires to collect data. We presented the results in tables and used percentages to analyse the findings.

Findings – Pre-intervention results showed that most of the students were auditory learners, followed by visual students. A few of the students did not fall into any specific group. However, post-intervention results showed that most of the students preferred kinaesthetic and visual learning styles. The least preferred learning style was independent learning or reflection. In spite of these findings, we can conclude that our students were diverse groups of learners who can be successful and effective if they adopt good study habits.

Originality/value –The study is the first of its kind that sought to determine the learning styles of business students in a Ghanaian Senior High School.

Article Type – Research paper.

Keyword(s) – Business students, classroom-action research, intervention strategies, learning styles, senior high school

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1. Introduction

According to Easton, Barshis, and Ginsberg (as cited in Cortina & Elder, 2010), successful and effective students know how to set goals for themselves, motivate themselves, and manage their study time. In addition, they think about their learning style (Cortina & Elder, 2010). How do our students do these things? How can we help them to do these things?

As teachers, we observed that most of our students did not motivate themselves to learn. In addition, some did not concentrate on main ideas or supporting details when they read assignments. Furthermore, some of them did not plan by making study schedules for themselves. Yet still, many of them did not assess their own strengths and weaknesses based on our comments in class or evaluations of their homework. Finally, some of them did not pay attention in class, take notes, and take part in class discussions. Thus, the problem we faced was how to improve the learning styles or study skills of our students.

The rest of the study is organised as follows: Section 2 reviews the literature related to the theoretical and empirical basis of the study; Section 3 is about the methodology; and Section 4 presents and discusses the results of the study. The last section is the conclusion and recommendations.

2. Literature Review

The literature review covers the theoretical framework of the study and the empirical basis of the study.

1.1. Theoretical Framework of the Study

This study dwells on the constructivist learning and experiential learning theories. Constructivist learning theory asserts that students construct knowledge by making sense of experiences in terms of what they already know (Brandt, 1997).

According to constructivists, learning is a process of sense making (Taber, 2006) and a social process (Aggrawal, 2008). In addition, students learn best when they are active participants rather than passive listeners in the lesson (Santrock, 2008; Taber, 2006). Thus, students add and synthesise new information within existing knowledge structures. They also adjust prior understandings to new experiences. As a result, the personal understandings, beliefs, and values of the students shape their experience. Further, students engage others in sharing, comparing, and reformulating ideas. Through a collaborative process, students work in groups in order to know, understand, learn with and from each other, and restructure new understandings.

Constructivist learning also relies on the insight of students because of their intrinsic motivation (Taber, 2006). In addition, the focus is the student rather than the teacher. The student interacts with objects and events and thereby gains an understanding of the features held by such objects or events. Taber also pointed out that in constructivist classrooms the context, beliefs, and attitudes of the student affect the way students learn. Students therefore construct their own concepts and solutions to problems. In addition, teachers accept and encourage student autonomy and initiative.

The focus of experiential learning theory is personal experience (Ausburn & Brown, 2006). According to Baker, Jensen, & Kolb (2002), learners construct and transform their knowledge and reflect on their own experiences through the experiential learning process. The process involves concrete experience, abstract conceptualisation, reflective observation, and active experimentation. In concrete experience, individuals learn by doing, acting, sensing, and feeling. They put their experiences into practice. Reflective observers learn by watching others. They objectively analyse the outcome based on their own concrete experiences. In abstract conceptualisation, individuals form theories and review their conceptual understandings. Finally, in active experimentation, learners apply theories to discover things for themselves or find solutions to problems.

There are four learning styles based on the preferences for one of concrete experience, abstract conceptualisation, reflective observation, and active experimentation. These are: (a) converging, (b) diverging, (c) assimilating and (d) accommodating (Evans, Forney & Guido-Dibrito, 1998). Students with a converging learning style can solve problems and will use their learning to find solutions to practical issues. They prefer technical tasks, and are less concerned with interpersonal issues. They like to experiment with new ideas, to simulate, and to work with practical applications. They like decision-making, problem solving, and the practical application of ideas.

Divergent students look at things from different perspectives. They are sensitive. They adapt by observation rather than by action. They are interested in students and tend to be feeling-oriented. They like such activities as cooperative groups and brainstorming. They prefer to listen with an open mind and to receive personal feedback.

Assimilators prefer a concise, logical approach for doing things. Ideas and concepts are very important to them. They pull a number of different observations and thoughts into an

integrated whole. They like to reason inductively and create models and theories. They also like to design projects and experiments. These students require good clear explanation rather than practical opportunity. In formal learning situations, students with this style prefer readings, lectures, exploring analytical models, and having time to think things through.

The accommodating learning style is 'hands-on', and relies on intuition rather than logic. Accommodators use trial and error rather than thought and reflection. They are good at adapting to changing circumstances; solve problems in an intuitive, trial-and-error manner, such as discovery learning. They also tend to be at ease with students. Students with an accommodating learning style prefer to work in teams to complete tasks. They set targets and actively work in the field trying different ways to achieve an objective.

2.2. Empirical Basis of the Study

Dobson (2009) conducted a study on 901 undergraduate physiology students to determine the relationship between their preferred learning style, gender, and course scores. The results indicated that though there were differences in the preferred learning styles of female and male students, the most preferred learning style was visual leaning and the least preferred learning style was kinaesthetic learning. In another study, Threeton and Walter (2009) found that all learning styles were represented among their 188 automotive technology students. However, the accommodating style was most highly represented (39.8%), while the assimilating was the least (16.5%).

Lujan and DiCarlo (2006) administered the VARK questionnaire to 166 first-year medical students. The results showed that only 36.1% of the students preferred a single mode of information presentation. Among these students, 5.4% were visual learners (learning from graphs, charts, and flow diagrams), 4.8% were auditory learners (learning from speech), 7.8% preferred printed words (learning from reading and writing), and 18.1% preferred using all their senses (kinaesthetic: learning from touch, hearing, smell, taste, and sight). In contrast, most students (63.8%) preferred multiple modes.

Agbi (2006) studied the learning styles of the 25 students in her class. The results showed that majority of the class preferred group work and pair work as learning strategies. The least preferred learning strategies were the teacher controlling the learning situation and working alone. In addition, about 50% of the class preferred a combination of strategies while another 50% hated a combination of strategies. On homework, nearly 90% of the class completed and

submitted their assignments. Some were doing extra work outside class time. About 80% of them found it useful as a consolidation of class learning. Those who did homework wanted to avoid boredom while those who did not do it considered it as an extra burden on them or because the teacher did not place emphasis on it.

Crews, Stitt-Gohdes, and McCannon, (2000) studied the preferred learning styles of 232 secondary business education students using the Canfield Instructional Styles Inventory. The results showed that 18% of the students' preferred learning style was independent. The preferred learning styles of other students were: (1) applied (15%); (2) independent/applied (13%); (3) conceptual (13%); (4) social/applied (10%); (5) neutral (10%); (6) social/conceptual (9%); (7) social (6%); and (8) independent/conceptual (6%).

Using the Gregorc Style Delineator, Orr, Park, Thompson, and Thompson (1999) determined the predominant learning style of business education, health occupations, and trade and industrial students enrolled in postsecondary technical education institutes in Arkansas. The results showed that the concrete sequential style was the predominant learning style in the overall group. In the case of the business students, the mean scores in each learning style in rank order were concrete sequential (26.9), abstract random (25.8), abstract sequential (23.9), and concrete random (23.4).

Several factors affect learning. Ramayah, Nasrijal, Leong, Sivanandan, and Letchumanan (2011) studied 406 business students to determine the factors that affect the learning style of business students. They used the VARK questionnaire to collect data and the t-test and Pearson r to analyse the results. The study found that peers influenced all four types of learning styles. In contrast, technology in the classroom only influenced the Read-Write learning style. On the other hand, cultural background influenced the Visual, Aural and Kinaesthetic learning styles of the students.

According to Traylor (2010) and Wood (2010), the level of poverty or affluence of parents and weak or strong family structures can affect the way students learn. In addition, the personality of students can affect the way they learn visually or audibly. Wood also asserts that student's learning suffers when a student is an introvert, shy, extrovert or talkative. In addition, a student's disability and language barriers can affect the student's learning style.

3. Design/methodology/approach

The study was a classroom action research. Our aim was to improve the learning styles or study habits of our cost accounting students. According to Sagor (2005), teachers generally conduct research to identify concerns about teaching and learning. In addition, they plan new actions (e.g., teaching approaches) that may improve teaching and learning and, then, carry out the new actions. Finally, they again, conduct research to determine the effectiveness of their actions. We followed the suggestions of Hopkins (2008), Mertler (2013), and Mills (2013) to conduct this study. These included: (1) identify an area of concern, (2) collect data, (3) organise data, (4) analyse and interpret data, and (5) take action. This made us to reflect more deeply and systematically on our teaching practices. It also enabled us to evaluate the effect of our actions and practices on our students' learning and to seek opportunities to improve our teaching.

All our 15 first year cost accounting students took part in the study because they needed help so that we can improve our classroom practices. They were 9 boys and 6 girls. Their average age was 16 years.

We used observation, interviews and questionnaires to collect data. All the three instruments are appropriate tools for collecting data in classroom research (Hopkins, 2008). We observed our students to determine their learning styles. We prepared an observation schedule to study the skills students used to learn cost accounting. We observed their way of asking and answering questions in class. We also observed them when we asked them to do group work or individual class exercises and assignments.

We used a semi-structured, in-depth interview to collect information from the students about their study habits. In addition, we used two questionnaires to get an idea of trends in the ways our students learn. The first questionnaire was a structured, pre-intervention questionnaire. It contained eleven items. The items were on students' attitude to learning cost accounting and homework. In addition, the items dealt with the students' preferred learning strategies, students' awareness of their concentration levels, the things that helped or disrupted the students, and the ways the students behaved when they did not understand something. Based on their responses, we changed the physical structure of our classroom and adjusted our teaching to suit the students' learning styles. The second questionnaire was a structured, post intervention questionnaire. It sought to find out from the students the progress they made after the

intervention. It contained eleven items. We triangulated our data sources to make the interview schedule and questionnaire valid and reliable.

We used many strategies to improve the learning styles of our students. They included the following: (a) creating a positive atmosphere, (b) involving students in the planning of lessons, (c) using learning styles effectively in class, and (d) avoiding demeaning comments. The rest were helping students to use the SQ5R learning method, asking students to assess themselves, providing students with feedback, and asking students to comment on our evaluation.

We interviewed the students on three occasions. On each occasion, we interviewed them after class hours. Each interview lasted 20 minutes. We used our mobile phones to record some of the responses. We wrote down the rest of the responses because we did not want to miss or get students' answers mixed up. We personally administered the questionnaires to the students in the afternoon after class hours. We explained the question items to the students any time we administered the questionnaires to them. We administered the questionnaires to the students on three different occasions, each taking approximately 20 minutes to complete.

We followed the advice of McNiff and Whitehead (2011) in addressing ethical issues in the study. Before we collected data for the study, we informed the co-researcher's mentor and the headmaster to obtain approval. In addition, we sought the consent of the students. We made them aware of the purpose of the study, including how they could contribute to the study. Again, we assured them of the anonymity and confidentiality of the information they gave. Lastly, we told them that they had the right to withdraw from the research.

4. Results and Discussions

We present both the pre-intervention and post-intervention results of the study in this section

4.1. Pre-intervention Results

Table 1 shows the learning styles of the students before our intervention.

Table 1. Learning Styles of Students before Intervention

Learning Styles	Frequency	%
Visual learners	4	26.67
Auditory learners	6	40.00
Kinaesthetic learners	2	13.33

Print-oriented learners	2	13.33
Others	1	6.67
Total	15	100.00

Table 1 shows that majority of the students were auditory learners, followed by visual learners. These findings provide partial support for Dobson (2009). Dobson found that the most preferred learning style of the students was visual leaning and the least preferred learning style was kinaesthetic learning. However, the results in Table 1 contrast with other findings that showed that most business students have converging, tactile/kinaesthetic, or concrete sequential learning styles (Crews, Stitt-Gohdes, & McCannon, 2000; Orr, Park, Thompson, & Thompson, 1999). Overall, the results in Table 1 support the popular view that in traditional classrooms, students mainly listen, watch, and mimic what the teacher tells them. Learning is therefore teacher-centred and students are passive learners (Allan, 2004; Huba & Freed, 2000).

We also found that about 30% of the students completed and submitted their assignments to us for marking. The remaining students did not do and submit their exercises and homework because they claimed they did not have enough time or they did not understand the work. In addition, 40% of the students had timetables for their private studies while the remaining ones did not have timetables. Those who did not have study schedules explained that they did not know how to schedule their time for learning. Also, about 67% of the students did not evaluate themselves after learning. Their reason was that they did not know how to assess themselves.

Our pre-intervention results also showed that the most important factor that affected the learning style of the students was lack of encouragement. The least important factor was the students' inability to ask questions in class.

4.2. Post-intervention Results

Table 2 shows the learning styles of the students after our intervention.

Table 2. Learning Styles of Students after Intervention

Learning Style	Frequency	%
I learn best by reviewing notes regularly	2	13.33
I study with charts, graphs, diagrams, tables, pictures	3	20.00
I learn by experimenting and having hands on experience	5	33.33

I study well when in a group	4	26.67
I learn alone	1	6.67
Total	15	100.00

Table 2 shows that majority of the students (about 33%) were convergers, active experimenters, or kinaesthetic learners. These students enjoyed experimenting and hands-on learning. These findings provide further support for the view that most business students have converging, tactile/kinaesthetic, or concrete sequential learning styles (Crews, Stitt-Gohdes, & McCannon, 2000; Orr, Park, Thompson, & Thompson, 1999).

Furthermore, Table 2 shows that about 33% of the students enjoyed studying with tables and figures or reviewing notes. These students are the assimilators or visual learners (Felder & Silverman, 1988; Felder & Soloman, 2004). They get more information from visual images such as pictures, diagrams, graphs, flow charts, demonstrations, written and spoken explanations. This finding sharply contrasts those of Threton and Walter (2009). They found the accommodating style as most highly represented (39.8%) and the assimilating style as the least represented (16.5%) in their study.

Table 2 also shows that about 27% of the students engaged in group or collaborative learning with each other. These findings align with the constructivist and facilitation theories of learning (Aggrawal, 2008; Santrock, 2008; Taber, 2006). Thus, we became facilitators who moulded the behaviour of our student because of our intervention strategies (Santrock, 2008).

Another finding in Table 2 is that the least preferred learning style of the students was independent learning or studying alone. This finding is similar to those of Agbi (2006), Crews, Stitt-Gohdes, and McCannon (2000), and Orr, Park, Thompson, and Thompson (1999). However, it contrasts with the findings of Dobson (2009). Dobson found that the most preferred learning style of the students was visual leaning and the least preferred learning style was kinaesthetic learning. Our finding means that cost accounting students need help in understanding costing concepts and solving costing problems, hence they study in groups.

Our intervention activities had tremendous effects on student learning. Many of the students became active participants in class (33%), used more than one learning style (26%), or were able to assess themselves (26%). About 13% of the students were able to solve difficult questions because of the intervention.

We also found that three factors influenced student learning. These are: (a) group work, (b) student self-assessment, and (c) teacher behaviour. About 90% of the students indicated that the group activities helped them to work with friends rather than alone. They explained that group work helped them to improve their listening skills. They also indicated that the organisation of the class into groups helped them to work with friends rather than alone. The students also said that they liked group work because it enabled them to avoid the humiliation of exposing their ignorance to the class. Those students who did not find group work helpful (10%) indicated that there were many distractions from group members: they talked too much and wasted time on group activities. Collaboration with peers during the teaching and learning process therefore had a great influence on the learning styles of the students. This finding gives support to the work of Agbi (2006) and Ramayah, Nasrijal, Leong, Sivanandan, and Letchumanan (2011) whose studies found that peers influenced all four types of learning styles.

The concentration of the students in class increased tremendously. Majority concentrated for about 85-90% of the class. Only two students concentrated for 65% of the class. Students attributed the increase in their level of concentration to their interest in learning cost accounting and the fact that they paid more attention in class. Students also indicated that the feedback we provided to them by way of our comments affected their learning strategies. They also indicated that the SQ5R technique that we introduced into the teaching and learning process enabled them to improve their reading skills.

Our students also grew in their awareness of the learning process in which they were engaged learners. Because of students evaluating themselves and reflecting on their learning styles, they changed their opinions on their preferred learning strategies. These results support those of Agbi (2006) where students indicated that reflecting on the learning process and the keeping of the learning journal helped them to validate their efforts, achievements, and failures. They also helped them to boost their confidence and helped them to focus attention on what was difficult to learn.

The group work, the introduction of the SQ5R technique, students' evaluation of their work, and our comments enabled the students to engage in self-regulatory learning (Randi, 2009). The students improved their comprehension while reading. They became more organised writers. They learnt how to put plans into action and monitor outcomes. They also learnt how to

work in teams. These findings supported the results of Agbi (2006), where the students indicated that the teacher's comments in the evaluation forms motivated them to learn harder.

5. Conclusion

Classroom-based research is a very personal approach to research. This placed us at the centre of the research. It compelled us to reflect honestly on things that happened in our classroom, on their flaws, and the actions we took to try to improve conditions in the classroom. In other words, we took full responsibility for our actions. We systematically investigated them (McNiff, Lomax & Whitehead, 2003) and reflected upon action and acted upon reflection (Dadds, 2001). It allowed us the freedom to make mistakes and changed them as we sought to enhance our practice. If a plan did not work, we tried another. This is the value of experiential learning (Kolb & Kolb, 2005b).

Traditional teaching and learning philosophies assume that teachers are receptacles of knowledge and students are "empty vessels" (Jonassen, 1991). This study shows that it is possible to change the classroom environment from being teacher-centred to student-centred. In addition, it is possible to change passive learners into active, engaged learners. Our relationship with the students improved because they were more successful and more interested in learning. Instead of relying on us to do the thinking for them, they took responsibility for thinking and learning themselves. Learning then became more than the rote memorisation of a series of facts.

Based on the results of this study, we suggest that teachers take the following actions to help students cultivate good study habits:

1. Teachers must actively engage students in learning by giving them tasks to complete. The assignments teachers give to students must be interesting and challenging. It must stimulate their curiosity. Though assignments must be challenging, they should not overwhelm the students.
2. Teachers must encourage students to solve problems actively and engage in reflection
3. Teachers must help students to set challenging but realistic goals. In addition, teachers must provide feedback to their students following success or failure at a task.
4. Teachers must attend to how students learn by including authentic assessment in their classes, in which they ask for students' opinion on how things have worked well, what might be changed, and what has failed to work.

5. Teachers must try to get students to document their perceptions of learning and achievement in learning journals.
6. Teachers must view themselves as helpers of learning. The fundamental reason for teaching is to help the student to learn something.
7. Teachers should use innovative methods of teaching where teaching strategies align with learning strategies.
8. Teachers must employ multi-sensorial teaching and learning materials that appeal to all the senses of the student and cater for individual differences.
9. Teachers must also see students as partners in the teaching and learning process.
10. Learning styles will change over time. Therefore, students should learn new styles and expand the range of learning experiences in which they are comfortable.
11. Students should work on improving less preferred learning styles rather than making choices that increase their exposure to preferred learning styles and decrease their practice of less preferred learning styles.

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Authors' contributions

VM conceptualised and planned the project under the guidance of BM. VM gathered the data and prepared the initial manuscript. BM reviewed the literature, analysed the data and made critical revisions to the manuscript. All authors read and approved the final manuscript.