

## Factors that Influence Learning Strategy Use among Senior High School Economics Students in Ghana: A Quantitative Approach

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**Abstract.** The purpose of this study was to investigate factors that influence Senior High School (SHS) economics students' use of learning strategies. We conducted the study using 668 final year economics students drawn from 24 public and private SHSs in the Central Region of Ghana. A questionnaire was used to collect data, which was analyzed using multiple regression analysis. The results showed that learning style and teaching method influence students' choice of cognitive learning strategies. Also, learning styles, teaching method, motivation to study the subject, and student-status significantly influence students' use of metacognitive strategies. Finally, the study showed that learning style, teaching method, motivation, student-status, and school-type significantly explain variability in resource management learning strategies of Economics students. The study, therefore, suggested that teachers should adopt practices that actively engage students in a class. Also, teachers, heads, and parents of students should motivate students to develop an interest in studying economics. Also, the study recommended that government and school authorities should formulate and implement policies that provide similar learning opportunities for day and boarding students since all students irrespective of their status, require equal opportunities to unearth their learning potentials. Finally, based on the findings, a conceptual model was developed to enhance learner autonomy through the use of metacognitive strategies.

**Keywords:** teaching method; learning styles; motivation; student-status; school-type; learning strategies

### 1. Introduction

Studies aimed at discovering factors that determine the learning strategy preference of students are critical, not only to the learning success of students but

also to the teaching effectiveness of teachers. As a fact, school learning success is not solely dependent on the kind of teaching that takes place in the classroom, but mostly dependent on the dominant strategies that students use to cope with the enormous demands of learning. The term learning strategies, as used in this work, refers to practices that students use to learn (Krish, Zubaidah & Pakrudin, 2019). There are three types of learning strategies (cognitive, metacognitive, and resource management learning strategies), which this study used. The purpose of using cognitive strategies is often to achieve a particular goal, whereas metacognitive strategy use aims to ensure that the cognitive goal has been reached. Cognitive strategies use helps learners to recall information easily and successfully. These include repetition, organising, summarising meaning, guessing meaning from context, using imagery for memorisation. In contrast, metacognitive strategies occur either before or after cognitive strategies and are sometimes termed to as “learning to learn” While students use cognitive strategies on the materials they learn, metacognitive strategies use the knowledge of cognitive procedures to adjust the learning process (Saks & Leijen, 2018). Metacognitive strategies involve processes like planning for learning, monitoring, self-directing evaluating how well one is achieving their learning objective. People have described metacognitive strategies as things which allow learners to control their own cognition by coordinating the learning process through arranging, planning, and evaluating. Metacognitive strategies are important for successful learning.

Certain defined factors influence students’ use of these learning strategies. Studies on learning strategies have shown that students are more successful in accomplishing academic tasks when they acknowledge and use higher-order metacognitive learning strategies (Dunlosky, Katherine, Marsh, Mitchell & Willingham, 2013). Metacognitive learning strategies have proven to have a high positive effect on learning (Säälük, 2015; Tuncer & Kaysi, 2013). Learning strategies enable students to gather new information and retain their existing knowledge (Khamkhien, 2010). Research has shown that inappropriate use of learning strategies account for low performance among students (Alimirzaloo, 2016). Also, learning strategy use explains students’ performance discrepancies (e.g. Khonbi & Mohammadi, 2015; Säälük, 2015). Very related to learning strategies is the concept of self-regulated learning (Gambo & Shakir, 2019), which has been under robust investigation culminating in the development of various constructs or models and theories (Usher & Schunk, 2017). Students use a repertoire of learning strategies to regulate their learning. But the big question is, ‘what factors predispose students to the use of a particular learning strategy? Few researchers have researched in this area in a bid to understand the issues therein (Hsiao, & Oxford, 2002). For instance, Bergin (2019) found learning background, as a factor tied to self-regulation, motivation, and the use of learning strategies. A year later, Oxford (1989) in a correlation study, found a robust association between an individual’s use of learning strategies and their individual and school factors. Tamada (1996) on his part, in a correlation study found that the teaching method, proficiency level, gender, learning styles, and motivation to learn influenced learning strategy use among the students. In a recent study to investigate variations in the use of strategies, Alnujaidi (2017) and Wang (2014) found that internal factors (that is learners’ age, intelligence, personality and cognitive style)

and external factors (teachers' teaching approaches and materials) are factors that influenced learners' use of language learning strategies. These studies, which researchers conducted outside Ghana in language education, excluded factors such as student-status, and school-type, which are critical variables that could influence students' learning strategy choice. The extent to which these factors might apply in the Ghanaian background was the focus of the current study.

The purpose of this study was, therefore to examine, using a quantitative approach, the factors that influence learning strategy use among SHS economics students in Ghana. The aim was to determine how individual student factors (sex, learning style), motivation, and school factors (teaching method, school-type, and student-status) predict a particular learning strategy use to developing a framework, to enhance the teaching and learning of SHS economics, given its important role in the socio-economic transformation of countries. Effective teaching of economics at the SHS level guarantees students' ability to apply economic concepts and principles to everyday life thus, ensuring the nurturing of responsible citizens that work to fulfil their civic responsibilities (Owusu, 2018).

## **2. Conceptual Framework**

The Biggs (1985) model of meta learning underpins the study. Biggs established the connection between the learning environment and student learning in a presage, procedure, and the production stage. He denoted prior learning, as a presage factor, which he explained as reflecting the entry characteristics of students in the learning situation. Some of these factors include prior knowledge, capabilities, favourite ways of learning with hopes of accomplishment. The process stage emerges initially due to the interface between teaching and learning, producing the development of students' preconceptions, notions, and anticipations. Their discernments give focus to their reactions at this stage. The product stage denotes the consequences of student learning as a result of their learning approaches (Karatas, 2017; Raoofi et al., 2012). In effect, the model sought to explain the student and the teaching background (school) factors that mediate the learning process. The model was not, however explicit on the learning approaches at the product level. This study adapted the model and included only teaching method in the school factors, thus, excluding the curriculum, the classroom climate and assessment. In place of these, this study added student-status and school-type, which are related to boarding/day school education in Ghana. Also, the student factors in this study were student learning styles, motivation, and sex (Zhang, 2018). We maintained the three stages of the model but denoted the first and second stages as input and through-put instead of the presage and process in the original model. Figures 1 and 2 respectively present diagrammatic representation of the original Biggs (1985) model and the model authors adapted for the study.

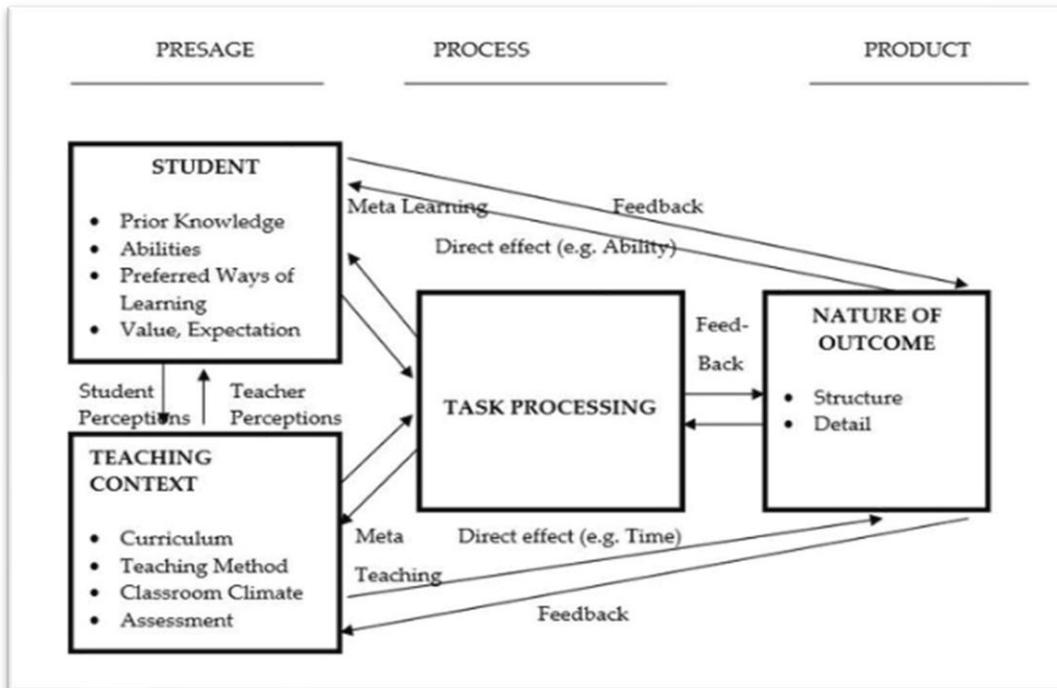


Figure 1: A model of meta learning (Biggs, 1985, p. 192).

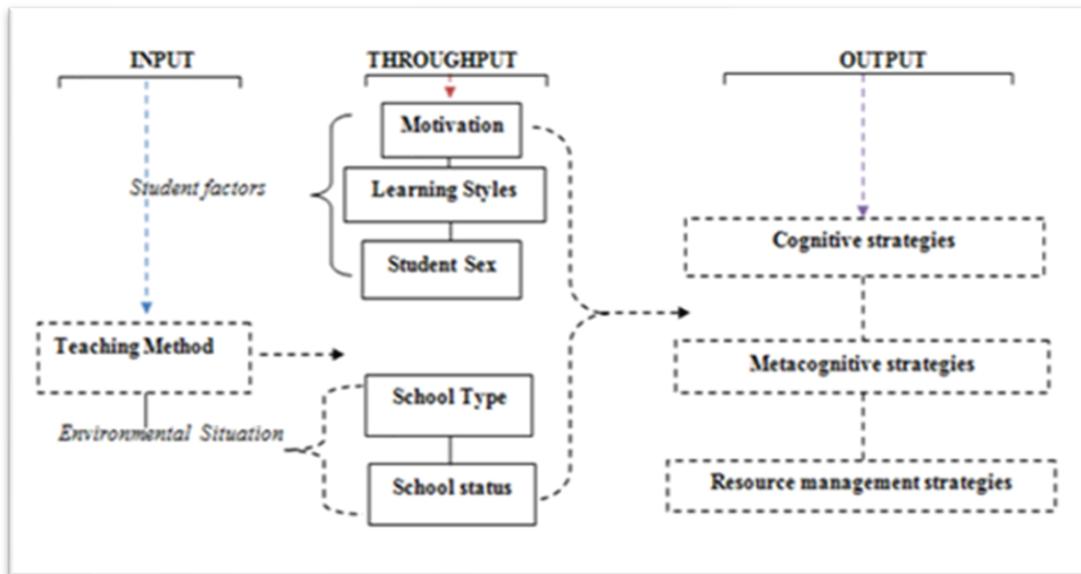


Figure 2: A hypothesised conceptual framework of the study (Authors' Adapted Construct, 2018)

### Research hypothesis

The study sought to test these theories:

1. H<sub>0</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of cognitive learning strategy.  
H<sub>i</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of cognitive learning strategy.
2. H<sub>0</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of metacognitive learning strategy.  
H<sub>i</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of metacognitive learning strategy.
3. H<sub>0</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of resource management learning strategy.  
H<sub>i</sub>: student factors (sex, learning style, motivation) and school factors (teaching method, school-type, and student status) do not significantly predispose economics students to the use of resource management learning strategy.

### Mathematical Model Specification

$$LS_i = \beta_0 + \beta_1 X_i + \varepsilon_i \quad (1)$$

Where  $LS_i$  is the learning strategy, measured in terms of learning strategy adjusted for error;  $X_i$  the determinant of learning strategy of an economics student  $i$ , measured, as their out-of-the-class way of learning;  $\varepsilon_i$  is the error term, measured as other factors that determine learning strategy. Mathematically,  $\beta_0$  and  $\beta_1$  are the coefficients of elasticity for determinants. For this study, determinant ( $X_i$ ) is a function of teaching method.

$$LS_i = \beta_0 + \beta_1 \text{Teachme}_i + \beta_2 \text{Mot}_i + \beta_3 \text{Lstyle}_i + \beta_4 \text{Stdsex}_i + \beta_5 \text{Schtype}_i + \beta_6 \text{Studentstatus}_i + \varepsilon_i \quad (2)$$

Where  $\text{Teahme}_i$  represents teaching method of economics teachers as an economics student  $i$  experiences in the classroom. Teaching method variable is measured as a dummy with 1 representing teacher-centred method and 0 representing student-centred method. Again,  $\text{Mot}_i$  from the function represents motivation to study economics by an economics student  $i$ . We measured motivation also as a dummy variable. We coded 1 for extrinsic and coded 0 for intrinsic motivation.  $\text{Lstyle}_i$ , from the function, represents the learning styles of an economics student  $i$ . We measured them as a dummy variable with 0 coding for visual learner; 1 for auditory; and 2 for kinaesthetic learner. We nominated  $\text{Studentsex}_i$  to be sex of an economics student  $i$ , and we gave code 1 to female while we gave code 0 to male. From the function,  $\text{Schtype}_i$  represented the school type, which was a categorical variable. We gave 1 coding to private school whereas 0 coding denoted public school. Lastly, we represented student-status of an economics student  $i$  with  $\text{Studentstatus}_i$ . We gave code 1 to day students while

code 0 symbolised boarder/hosteller). The  $LS_i$  (learning strategy) had a normal distribution. There, there was no need to take the logarithm of the LS to make the residuals normal. The model posits that teachers' teaching practices (methods) influence the learning strategies students adopt. Also, their motivation to study economics, the learning styles they choose in learning, their sex the school-type, and the school status influence the learning strategies they use. The linear function describes the relationship between the explanatory and criterion variables in the form  $y = c + MX$  where M is the slope or the gradient of the line telling us the rate of change of the endogenous variable y per unit change of the exogenous variable x. The constant c gives the value of y if x is assumed zero (y-intercept).

### 3. Methods

The study sought to examine the school and individual student factors that influence learning strategy choice among SHS economics students. The study used the descriptive survey design, as the most appropriate plan. The questionnaire is available in the Appendix. In a survey, the investigator selects a group of respondents, collects data, and then analyses the data to test theories (Loeb, Dynarski, McFarland, Morris, Reardon & Reber, 2017). The choice of the plan enabled the researchers to test the hypotheses on how individual student and school factors influence students' learning strategy use among economics students. The project also provided the researchers with an opportunity to investigate the phenomenon of learning strategy use, giving background data about the issue in question, as well as providing clarifications. Besides, it allowed the researchers to gather and analyse large volumes of data for purposes of establishing patterns and finding the relationships between and among variables (Boone & Noltemeyer, 2017).

The target population for the study comprised 6,911 final (third) year SHS Economics students for the 2017/2018 academic year from both government and private schools in the Central Region. We chose final year students because we deemed them to have had enough experiences in economics education. Of the number, we sampled 688 using a multi-stage sampling procedure. First, we divided the population of schools into two groups (public = 53 schools and private = 19 schools). Second, we selected 34% of the public and private schools in each group. As a result, we obtained 18 public and six (6) private schools from the proportionate sampling procedure. Third, the researchers used a stratified random sampling technique based on sex (male/female) to select 30 students in each participating school (15 boys and 15 girls). The sampling procedure helped us to obtain an equal number of boys and girls for the study.

### 4. Results and Discussions

The study sought to test three theories on how school and individual student factors influence cognitive, metacognitive, and resource management learning strategy. For this reason, the researchers ran a regression analysis. However, to avoid erroneous interpretations and conclusions, researchers ran post-estimation tests to meet all the regression requirements.

### Normality Test

We conducted a normality test on student learning strategies using the Kolmogorov-Smirnov and Shapiro-Wilk test for normality to check if it met the underlying assumption for multiple regression analysis. The test showed:  $D(95) = 0.06$ ,  $p = 0.341 > 0.05$  for cognitive strategy;  $D(95) = 0.08$ ,  $p = 0.217 > 0.05$  for metacognitive strategy; and  $D(95) = 0.80$ ,  $p = 0.192 > 0.05$  for resource management strategy. Since in all three outcome variables, the  $p$  values were greater than the chosen alpha level (0.05) researchers failed to reject the null hypothesis (that the explanatory variables did not influence the criterion variable). We concluded that the data was normally distributed. Table 1 shows the results on the Kolmogorov-Smirnov and the Shapiro-Wilk tests of normality for learning strategy choice of economics students.

**Table 1: The Kolmogorov-Smirnov and Shapiro-Wilk test for normality of student learning strategies**

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
COGNITIVE	.25	95	.246	.062	95	.341
METACOGNITIVE	.091	95	.102	.082	95	.217
RESOURCE MGT.	.006	95	.432	.75	95	.192

Prior to running a multiple regression test, the researchers ran post estimation tests on the heteroskedasticity, multicollinearity, and the model specification. These tests did not violate the assumptions for running multiple regression test. The results from Table 2 shows that the data is homoscedastic and that, the variance of the dependent variable (either cognitive, metacognitive, or resource management strategy) is not dependent on the independent variables (sex, learning styles, teaching method etc.). Also, Table 2 shows that there is no multicollinearity among independent variables. The assurance with this result is that the correlations between the independent variables are not too high to lose their predictive power in variations of the dependent variables. We provided separate explanations relating to each of the models in Table 2.

**Table 2: The homoskedasticity, model specification, and multicollinearity assumptions for multiple regression**

MODEL	Homoskedasticity	Model Specification	Multicollinearity
<b>Model 1</b>	chi2(1) = 3.75 Prob > chi2 = .0529	F(3, 657) = 1.21 Prob > F = 0.3054	Mean VIF = 1.17
<b>Model 2</b>	chi2(1) = 1.75 Prob > chi2 = .1860	F(3, 657) = 3.82 Prob > F = 0.0098	Mean VIF = 1.17
<b>Model 3</b>	chi2(1) = 3.1 Prob > chi2 = .075	F(3, 655) = 2.01 Prob > F = 0.1107	Mean VIF = 1.20

Table 2 shows the results on the homoskedasticity test for the three models. We used the Breusch-Pagan / Cook-Weisberg test for heteroskedasticity under the null hypothesis that there is a constant variance. We obtained a p-value of  $0.0529 > 0.05$  for model 1, showing homoscedasticity. We used the same procedure for model 2 and 3, which also yielded p-values of  $0.1860 > 0.05$  and  $0.075 > 0.05$  respectively, showing the homoscedasticity data. Again, we ran the Ramsey reset

test of the fitted values and model 1 showed,  $\text{Prob} > F = 0.3054$ . By this, the test gave an assurance that the model was well specified. So, researchers concluded on the null hypothesis that there is no problem of omitted variable bias. We followed the same procedure to obtain values for models 2 and 3, which also showed  $\text{Prob} > F = 0.0098$  and  $\text{Prob} > F = 0.1107$  respectively, giving the assurance that the models were well specified. Lastly, we ran the multicollinearity test using the Variance Inflation Factor (VIF) on the three models. Model 1 showed that the Mean-Variance Inflation Factor (Mean VIF=1.17)  $< 10$ , therefore, model 1 was devoid of multicollinearity. We used the same procedure for models 2 and 3, which yielded mean VIF of 1.17 ( $< 10$ ) and Mean VIF of 1.20 ( $< 10$ ) respectively, suggesting that the models were devoid of multicollinearity. Table 3 shows the results on the regression analyses.

**Table 3: Regression analysis on how the predictor variables influence the criterion**

Explanatory Vari	Cognitive	Metacognitive	Resource Mgt
<b>Learning styles (base=auditory)</b>			
Visual	0.309*** (0.000)	0.418*** (0.000)	0.253*** (0.000)
Kinaesthetic	0.222*** (0.000)	0.178*** (0.006)	0.169*** (0.005)
<b>Teaching method (base=student-centred)</b>			
Teacher-centred	0.018*** (0.000)	-0.008** (0.025)	0.112** (0.020)
<b>Motivation (base=extrinsic)</b>			
Intrinsic Motiv.	0.096 (0.175)	0.213*** (0.002)	0.192*** (0.008)
<b>Sex (base=male)</b>			
Female	0.033 (0.452)	0.071 (0.140)	-0.048 (0.281)
<b>Student-status (base=boarding/hosteller)</b>			
Day student	0.014 (0.766)	-0.119** (0.017)	-0.144*** (0.002)
<b>School-type (base=public)</b>			
Private school	-0.020 (0.642)	-0.073 (0.129)	-0.129*** (0.005)
_cons	2.282*** (0.000)	2.241*** (0.000)	1.882*** (0.000)
Number of obs =	668	668	668
F( 9, 658) =	11.84	8.37	9.34
Prob > F =	0.0000	0.0000	0.0000
R-squared =	0.0816	0.0901	0.1393
Adj R-squared =	0.0718	0.0804	0.1276
n =	668	668	668

*P*-values in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; where: **Vari** = Variable; **Mgt** = Management; **Moti** = Motivation; **Adj R-squared** = Adjusted R-squared; **n** = Sample size; **Obs** = Observations; **cons** = Constant.

### **Factors Influencing the use of Cognitive Learning Strategies**

The aim of this study is to investigate how the explanatory variables predispose or influence students' use of cognitive learning strategies. Some of the cognitive learning strategies include repeating learnt materials, taking verbatim notes, commit to memory learnt stuff, among others. Others involve students reciting learnt concepts, solving past questions, outlining of economics materials, and categorising economics materials from different sources to make learning easier. The rest include relating learnt materials to real-life and arranging thoughts and thinking about possible alternatives to solving economics problems. From Table 3, it is clear that a visual learner's use of cognitive learning strategy increases by 0.309 more than auditory learners, *ceteris paribus* meaning that visual learners use cognitive learning strategies more than auditory learners. The result is statistically significant at one percent, indicating the relevance of this variation. From Table 3, we can observe that compared to an auditory learner, a kinaesthetic learner's use of cognitive learning strategy increased more by 0.222, significant at one percent.

Regarding teaching method, when the teacher uses the student-centred method, students' use of cognitive learning strategy increases by 0.018 (all other things being equal) compared to a case where the teacher uses teacher-centred approach. This outcome was statistically significant at one percent, indicating the relevance of the variation. This outcome supports a suggestion by Pennell (2018) and McGoldrick (2011) that teachers should use cooperative learning exercises (the student-centred method) to allow less capable learners learn from their more skilful counterparts. Also, the result shows that teachers' teaching practice plays a vital role in nurturing students' cognitive learning strategy use (Omer, 2019). Students' tactical action also connects to the teachers' methods by which they promote students' use of a particular learning strategy in different situations.

On motivation, when students are intrinsically motivated, their use of cognitive learning strategy increases by 0.096 more compared to when they are extrinsically motivated, but this is not statistically significant. Shim and Ryan (2019) suggest that in motivation, the environmental issues that affect students' learning goals could relate broadly to households, peers, community, culture, ethnic, among others. Again, compared to a male student, a female student's cognitive learning strategy increases more by 0.033, but this is not statistically significant. Though the result is not significant, the positive correlation coefficient shows that females are by accident predisposed to use of more cognitive learning strategies than males.

Lastly, it is clear that compared to a boarder/hosteller (student-status), a day student's use of cognitive learning strategy increased by 0.014 higher than their counterpart in the boarding or hostel, *ceteris paribus*. However, this is not statistically significant. The result, however, not substantial, seems to contrast one of the three ideologies fundamental to Vygotsky's social development theory, which Wink and Putney (2002) echoed. Day students do not usually have people to interact with and to consult for help. To overcome this challenge; they increase their cognitive strategy use.

Also, compared to a student in a government school, (type of school) a private school student's use of cognitive learning strategies was lower by 0.020 than a student in the government school, *ceteris paribus*. However, the result is not statistically significant. By inference, students in government schools are more predisposed to using cognitive learning strategies than their counterparts in private schools. This result lends credence to the fact that learning background is a critical factor linked to self-regulation, motivation, and learning strategy use (Bergin, 2019). From the analysis, it is clear that learning styles and teaching practices explain differences in students' cognitive learning strategy use. The adjusted *r* square score of 0.0718 shows that teaching practices and learning styles account for nearly 7% variation in students' use of cognitive learning strategies.

### **Factors Influencing the Use of Metacognitive Learning Strategies**

In Table 3, it is evident that a visual learner's use of metacognitive learning strategy increased by 0.418 higher than an auditory learner, holding constant, all other factors in the model significant at one percent. Again, a kinaesthetic learner's use of metacognitive strategy increased by 0.178 compared to an auditory learner, and this variation is statistically significant at one percent. The inference is that both the visual and the kinaesthetic learners use more metacognitive learning strategies than auditory learners.

Further, students' use of metacognitive learning strategy increased more by 0.008 when the teacher used the student-centred method than when he/she used the teacher-centred method. By implication, for teachers to develop metacognitive learning strategies in students; they have to use the student-centred practices in teaching economics for the simple reason that this method predisposes students to the use of metacognitive learning strategies. The finding concurs with what Owusu (2018) said concerning the suggestion Vygotsky suggestion made that teachers should use cooperative learning exercises to allow able learners to help less able ones. Also, the finding shows that, teachers have several ways to enhance metacognitive self-regulation and use of cognitive learning strategies (Omer, 2019). Through the classroom demonstrations, support, and the use of coaching, Jucks and Brummernhenrich, (2016) stated that teachers can help students develop cognitive self-regulation.

Again, intrinsically motivated students increased their metacognitive learning strategy use more by 0.213 than extrinsically motivated students at one percent statistical significance. By inference, intrinsically motivated students are predisposed to using more metacognitive learning strategies than extrinsically motivated students. Again, a female student will increase her use of metacognitive learning strategy by 0.071 more than a male counterpart, all things being equal though this outcome is not statistically significant. The correlation coefficient shows that females use more metacognitive learning strategies than males though this result is due to chance. Lastly, it is clear that compared to a boarder/hosteller, a day student's use of metacognitive learning strategy decreased by 0.119 lower than their boarding or hostel counterpart, *ceteris paribus*, statistically significant at five percent. By inference, boarding/hostel students are predisposed to using metacognitive learning strategies than their day-student counterparts. Perhaps, this is naturally so because boarding/hostellers

understand the need to take advantage of their learning environment, work extra hard to 'out-perform' their perceived less privileged colleague day students. Also, compared to students in public schools, private school students decreased their use of metacognitive learning strategy by 0.073 than students in government schools, '*ceteris paribus*' though this was not statistically significant. By inference, students in government schools were more likely to be predisposed to using metacognitive learning strategies than students in private schools. From the results, it is clear that learning styles, teaching practices, motivation, and student-status substantially explain about 8% variations in students' cognitive learning strategy use.

### **Factors Influencing the use of Resource Management Learning Strategies**

From Table 3, it is clear that a visual learner's use of resource management learning strategy increased by 0.253 higher than an auditory learner. These are all statistically significant, implying that the differences between the two groups are relevant. Furthermore, a kinaesthetic learner's use of resource management strategy increased more by 0.169 compared to an auditory learner and this is also statistically significant at one percent. By deduction, both the visual and the kinaesthetic learners were more predisposed to using resource management learning strategies than auditory learners. Also, students' use of resource management strategies increased more by 0.112 when the teacher uses the student-centred method compared to when the teacher uses the teacher-centred method. The result is also significant at five percent, indicating the relevance of the variation. By inference, teachers could develop a taste to use resource management learning strategies in students when they adopt the student-centred method of teaching. From the previous results, it is evident that four explanatory variables (learning styles, teaching practices, motivation, and student-status) account for about 9% variations in students' use of metacognitive learning strategies.

Further, an intrinsically motivated student's use of resource management learning strategies increased by 0.192 more, '*ceteris paribus*' compared to an extrinsically motivated student, and this result is statistically significant. However, compared to a male, a female student's use of resource management strategy decreased by 0.048, implying that male students were more predisposed to using resource management learning strategies than female students. However, the result was not statistically significant. Lastly, compared to a boarder/hosteller, a day student's use of resource management learning strategy increased by 0.144 higher than their boarding or hostel counterpart, '*ceteris paribus*' and this is statistically significant at one percent. However, compared to a student in a government school, a student in a private school decreased their use of resource management learning strategy by 0.129 than a student in a government school, '*ceteris paribus*', statistically substantial at one percent. By inference, students in government schools are more predisposed to using resource management learning strategies than their counterparts in private schools. Learning styles, teaching practices, motivation, student-status, and school-type explain almost 13% variations in students' use of resource management learning strategies. From the findings, we developed a conceptual model that we intend to use to train autonomous SHS Economics students, as shown in Figure 3.

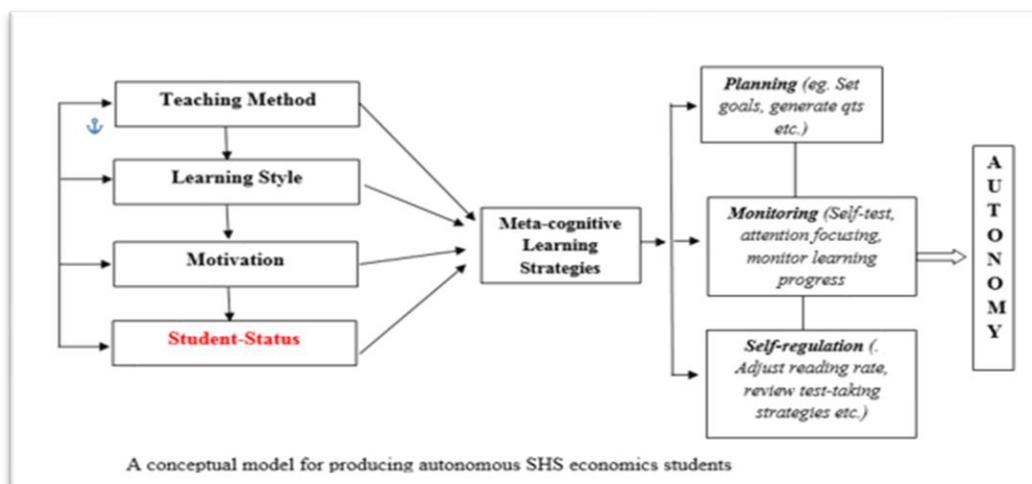


Figure 3: A model towards the training of autonomous SHS economics students.  
Source: Authors, 2019

### Explanations of the Model

The model seeks to explain that for a country to produce autonomous, self-directed economics teachers must use the existing student-centred methods in line with student learning styles, to maintain a supportive relationship in the class. When this is achieved, students will be intrinsically motivated to study using metacognitive strategies, thereby nullifying the adverse effects of their status (either as a day-student, a boarding student or a hosteller). Consequently, when students use metacognitive strategies, they will master the learning skills of planning, monitoring, and self-regulation, which are necessary for achieving learning autonomy.

### 5. Conclusion

The focus of this research was to establish factors that stimulate students' use of a particular learning strategy. Studies have found several factors to affect the learning strategy use of students. These factors, the current study has shown, are from individual student ones (sex, learning styles, and motivation) and environmental ones (teaching method, school-type, and student-status). Leveraging on these factors through apt teaching and learning policies and programmes will enhance the learning of economics. The teaching method that teachers use is crucial for learning success because it contributes positively to students' use of cognitive, metacognitive, and resource management learning strategies. However, as the literature has shown, teachers and school authorities may succeed in their bid to enhance learning if they focus on the factors that stimulate the use of metacognitive strategies. These critical factors include teaching methods, learning styles, and student motivation Shih (n.d.). Additionally, teaching methods, learning styles, student motivation, student status, and school-type encourage students' use of resource management learning strategies. Leveraging on the factors predisposing students to the use of metacognitive learning strategies through the formulation of appropriate policies and programmes enhance the learning of economics and ensure that instruction in the subject produces self-directed, autonomous learners.

### **Recommendations for Policy**

1. The study has shown that teacher-centred practices increase students' cognitive learning strategy use. Therefore, government policy should make teacher participation in In-service Training and Workshops mandatory and tied to promotions so that teachers understand the need to continually update their teaching skills and understand the need to use the student-centred ways.
2. The government should address the infrastructural challenges of schools. It should work to provide appropriate instructional materials for teachers to help them adopt proper teaching practices.
3. The government of Ghana should, through the Ghana Education Service, provide instructional support (IS) for schools. The personnel to ensure the instructional support, should have backgrounds in counseling, social work, and psychology so that to provide career, socio-emotional support and other counselling services to SHS students in the various schools across the country. The personnel could give guidance services to students on their learning style, thereby improving their academic well-being.
4. Since motivation predisposes students to the use of metacognitive learning strategies, the government of Ghana should commence a national debate on actions schools, parents, and communities can take to motivate students to learn, persevere, and succeed in school and even after school.
5. The study showed that student-status influenced the use of resource management learning strategy. Therefore, government policy on day and boarding schools must ensure that there is parity and fairness in the resource distribution to boarding and day students.
6. School-type influenced resource management learning strategies, which has implications for policies on the establishment of schools. Government policy should press for enforcement of laws concerning the establishment of private schools to ensure that these schools have the minimum infrastructure to run. The Ministry of Education should resource the Ghana Education Service (GES) well to clamp down on unlicensed private schools whose owners operate with repugnant school infrastructure and without authorization.

### **Recommendations for Practice**

1. Teachers should attend seminars/ workshops on modern teaching practices to apprise themselves with the skills of actively engaging students in the class.
2. Teachers should use the student-centred learning practices such as collaborative practices to keep students actively involved during lessons since the teacher-centred methods only lead to learning by rote.
3. Teachers must make efforts to know their students and their learning styles. The teacher should leverage this data (in the classroom) to adopt teaching practices that are harmonious with students' learning styles.
4. Teachers should trust the capabilities and competences of their students. They should lay stress on effort over innate ability and praise students when they master new skills or knowledge. For instance, kinaesthetic learners best understand concepts and data through tactile representations. Therefore, the teacher must provide them with opportunities for hands-on activities.
5. The recommendations have cost implications for teachers and schools. Therefore, government must resource teachers and the various senior high schools to enable them deliver on their mandate.

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### SECTION 3 STUDENTS' LEARNING STYLES

Students learn in many different ways. For example, some students learn mainly with their eyes (visual learners) or with their ears (auditory learners); some others prefer to learn by experience and/or by "hands-on" tasks (kinaesthetic learners). This questionnaire has been designed to help you identify the way(s) in which you learn best. Read the statement and indicate whether you agree or disagree with it by circling the appropriate number using the key provided below.

<b>Strongly Agree [4]</b>	<b>Agree [3]</b>	<b>Undecided [2]</b>	<b>Disagree [1]</b>	<b>Strongly Disagree [0]</b>
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- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 1. I learn better by reading what the teacher writes on the Board          | 4 | 3 | 2 | 1 | 0 |
| 2. When I read instructions, I remember them better                        | 4 | 3 | 2 | 1 | 0 |
| 3. I learn more by reading textbooks than by listening to Lectures         | 4 | 3 | 2 | 1 | 0 |
| 4. When the teacher gives me instructions, I understand better             | 4 | 3 | 2 | 1 | 0 |
| 5. I remember things I hear in class better than things I read             | 4 | 3 | 2 | 1 | 0 |
| 6. I learn better in class when the teacher gives a lecture                | 4 | 3 | 2 | 1 | 0 |
| 7. I learn better in class when I listen to someone                        | 4 | 3 | 2 | 1 | 0 |
| 8. When I do things in class, I learn better                               | 4 | 3 | 2 | 1 | 0 |
| 9. I enjoy learning in class by doing experiments                          | 4 | 3 | 2 | 1 | 0 |
| 10. I understand things better in class when I participate in role-playing | 4 | 3 | 2 | 1 | 0 |
| 11. I learn best in class when I can participate in related activities     | 4 | 3 | 2 | 1 | 0 |

Now, carefully read the statements and indicate by ticking the appropriate **AGREE** box to show your preferred (dominant) learning style. Ticking a box implies that you agree with the statements indicated.

<b>Learning styles</b>	<b>Agree</b>
1. I learn better by reading what the teacher writes on the board.	<input type="checkbox"/>
2. When I read instructions, I remember them better.	<input type="checkbox"/>
3. I learn more by reading textbooks than by listening to lectures.	<input type="checkbox"/>
4. When the teacher gives me instructions I understand better.	<input type="checkbox"/>
5. I remember things I hear in class better than things I read.	<input type="checkbox"/>
6. I learn better in class when the teacher gives a lecture.	<input type="checkbox"/>
7. I learn better in class when I listen to someone.	<input type="checkbox"/>
8. When I do things in class, I learn better.	<input type="checkbox"/>
9. I enjoy learning in class by doing experiments.	<input type="checkbox"/>
10. I understand things better in class when I participate in role-playing.	<input type="checkbox"/>
11. I learn best in class when I can participate in related activities.	<input type="checkbox"/>

#### SECTION 4 LEARNING STRATEGIES

Kindly indicate by choosing one of the options how true the following statements are about you. The items are measured on a five-point scale ranging from 'Very true of me =4 to Never true of me =0 and you are expected to choose only one option under each question. The key for measuring the items are provided below:

Very true of me [4]	sometimes of me [3]	Neutral [2]	Rarely true of me [1]	Never true of me [0]
---------------------	---------------------	-------------	-----------------------	----------------------

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 1. I often repeat materials I have learnt aloud   | 4 | 3 | 2 | 1 | 0 |
| 2. I copy every learnt material in economics and selectively take verbatim notes when learning  | 4 | 3 | 2 | 1 | 0 |
| 3. I memorise key words to remind me of important concepts learnt   | 4 | 3 | 2 | 1 | 0 |
| 4. In learning, I underline most important parts of concepts  | 4 | 3 | 2 | 1 | 0 |
| 5. I recite items learnt in economics in order to activate information in my working memory   | 4 | 3 | 2 | 1 | 0 |
| 6. In studying economics, I pull together information from different sources, such as textbook readings and discussions                   | 4 | 3 | 2 | 1 | 0 |
| 7. I try to relate ideas in economics to those in Math and other subjects whenever possible to better learn economics                     | 4 | 3 | 2 | 1 | 0 |
| 8. I relate economics materials learnt to what I already know   | 4 | 3 | 2 | 1 | 0 |
| 9. As a tactics for learning economics, I paraphrase and summarise main ideas   | 4 | 3 | 2 | 1 | 0 |
| 10. To enhance what I learn in economics, I answer a lot of past questions  | 4 | 3 | 2 | 1 | 0 |
| 11. In studying economics, I deliberately outline the materials to help me organise my thoughts in order to build connections             | 4 | 3 | 2 | 1 | 0 |
| 12. I make use of simple charts, tables, and diagrams in order to organise my thoughts better in economics                                | 4 | 3 | 2 | 1 | 0 |
| 13. I select the main ideas in economics materials consciously connect them through summary through charts and diagrams                   | 4 | 3 | 2 | 1 | 0 |
| 14. Whenever I read or hear an assertion or conclusion in an economics class, I organise my thought and think about possible alternatives | 4 | 3 | 2 | 1 | 0 |
| 15. I set learning goals in learning economics  | 4 | 3 | 2 | 1 | 0 |
| 16. I quickly read all materials learnt and out of it, I generate questions on my own   | 4 | 3 | 2 | 1 | 0 |
| 17. During each term, I develop study plan to which I follow religiously  | 4 | 3 | 2 | 1 | 0 |
| 18. I have a well defined schedule for learning economics   | 4 | 3 | 2 | 1 | 0 |
| 19. I intentionally always check myself to ensure that I have comprehended every concept in economics                                     | 4 | 3 | 2 | 1 | 0 |

20. I track my attention rate as I learn materials in economics	4	3	2	1	0
21. I self-test the questions I am able to generate on my own as a devise of learning economics	4	3	2	1	0
22. I usually use test-taking strategies in learning economics	4	3	2	1	0
23. I review my test-taking tactics often to ensure learning progress in economics	4	3	2	1	0
24. I seek out information in economics on my own when there is a need to do so	4	3	2	1	0
25. I persist at difficult concepts ( such as national income computation) and tasks and devise strategies to master them I am able regulate my thoughts, feelings, and actions and manage these to learning of economics	4	3	2	1	0
26. I draw on my previous learning experiences to build a range of beliefs that aid my learning	4	3	2	1	0
27. I study in line with the economics syllabus requirements	4	3	2	1	0
28. I make good use of my study time for economics	4	3	2	1	0
29. I find it hard to stick to a study schedule	4	3	2	1	0
30. I find that I don't spend very much time on economics because of other activities	4	3	2	1	0
31. I keep designated learning outlets clean and pleasant for learning	4	3	2	1	0
32. I entreat my colleagues not to create nuisance at learning centres	4	3	2	1	0
33. I prefer to study in a quiet atmosphere than in a noisy one	4	3	2	1	0
34. I put in my best to realize the desire to accomplish my study goals	4	3	2	1	0
35. I feel so lazy or bored when I am studying for economics such that I quit before I finish what I planned to do I learn hard to do well in economics even if I do not like the topics we are taught	4	3	2	1	0
36. When some topics prove difficult, I give up and only study the easy parts	4	3	2	1	0
37. Even economics materials to be learnt become	4	3	2	1	0
38. uninteresting, I still manage to keep learning it till mastery is attained	4	3	2	1	0
39. In studying economics, I try to explain concepts to a colleague or a friend as way of retaining the facts	4	3	2	1	0
40. I study economics through group discussions of learning experiences with other colleagues in my class	4	3	2	1	0
41. Even if I have trouble grasping some economic concepts, I do not seek help from any one	4	3	2	1	0
42. I regularly ask my teacher to or a colleague (out of the class) to clarify concepts I do not understand well	4	3	2	1	0
43. I feel shy approaching a colleague of the opposite sex to help clarify complex economics concepts to me	4	3	2	1	0

**Thank you for your cooperation.**