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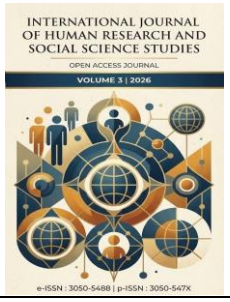

Edrawmax-Based Concept Mapping Impact on Student's Verbal Ability for Enhancing Students' Motivation and Performance in Photosynthesis, A Concept in Biology

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ABSTRACT: The influence of students' language communication skills and fluency on their reading and understanding towards their learning has been an interesting focus of many researchers these days. It affects students' academic achievement scores and their motivation development towards the instructional process in all stages of their academic struggles and progress in life, which continues to be a major concern to many researchers, both social and experimental scientists alike. It plays a significant role in the general success and total development of the learner, even at their advancement to the next level in their academic growth. The aim of this quasi-experimental study was to examine the effect of using an EdrawMax-based concept mapping approach as a mediation strategy on the development of students' verbal communication ability and fluency for enhancing their motivation and performance in biology. A total of one hundred and twenty students from two dissimilar mixed Senior High Schools in the Ashanti Region of Ghana were selected for the study. Three instruments, namely students' verbal ability test items and motivation questionnaire, as well as students' performance test were used for the data collection and the results were analyzed using One-way ANOVA, Pearson product-moment correlation and multiple regression analysis of SPSS version 21. The outcomes of the study shown that effective regular use of EdrawMax-based concept mapping teaching and learning approach has a strong and positive effect on students' verbal ability and fluency development which improves their inducement of motivation to learn the concepts of photosynthesis and thus enhances their performance in biology.

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Concept mapping, verbal ability, academic performance, intrinsic motivation, extrinsic motivation

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INTRODUCTION

The importance of verbal communication fluency and language usage competence on students' motivation and performance in learning and teaching has been a key area of prime attention that motivate many language scholars and experimental researchers alike. It has been identified to have much impact on individual academic pursuit and endeavors. It's truly important for their in-depth influence on learning, but the premeditated paradigm is how it can be improved and developed using the most appropriate innovative and interactive teaching and learning intervention. Many studies have supported and provided adequate empirical and pragmatic data in support of their efficacy on students' academic performance and their accomplishment at the various institutional levels of learning and skill training Adejimi, Nzabalirwa, & Shivoga, (2020). The extent to which learners affirm their trust that they can excel to enhance their learning outcome, in educational context for enhancing their performance in science education programmes depends on their ability to read and

motivation held towards that particular instructional subject. This also largely depends on how learners can meaningfully participate in all instruction processes and activities using appropriate language for communicating in groups and interacting in all forms of knowledge and ideas sharing, through discussion, interpretation, recording and communicating findings of ideas investigated. Research studies have emphasized that students' verbal communication ability development has been allied with planned effort to use the language regularly in speaking, writing and speaking. It is also a philosophy that is based on perseverance in managing and handling challenging vocabulary exercises and conscious effort in its usage to bring understanding in learning and teaching situations. The practice to develop one's verbal communication ability for enhancing academic performance, as well as participation in science learning, and coping with innovative methods in learning and teaching as interventional strategies may help to deal with learning challenges, which are positive step for improving science education. Although many related studies Okere, (2019) have shown that students' verbal communication ability has an influence on students' interest and performance in any of their learning tasks, unfortunately, most of these studies have not been able to discuss the relationship between students' verbal ability on their learning motivation and academic performance in biology effectively using photosynthesis as a concept.

In addition, not many studies have investigated the effect of verbal ability across groups of students in different institutions and settings, especially how to enhance the development of less efficacious and poorly motivated students using appropriate interventions like the EdrawMax-based concept mapping strategy. The study aimed to investigate if any significant change exists in the relationship between students' verbal ability, academic performance, and motivation development after EdrawMax-based concept mapping exposure, and finally, to determine which component of the students' motivation influences their performances in biology the most.

The effect of verbal communication ability on motivation and academic performance

Educational research studies on how the concept of one's level of language acquisition and fluency have influenced and enhanced students' performance and success in learning and teaching can largely be traced and abstracted within Rudasill, Rimm-Kaufman, Justice, & Pence (2006) concept of language and verbal communication ability theories.

Students' verbal communication ability is seen as a significant component of human life for survival and academic progress for change. This is because all human elements are social beings that interact with themselves and other members of the society in either the spoken or written language of the society (Okere, 2019).. The individual needs to communicate and interact with other people in the community, often with a fellow human, to exchange ideas during learning and knowledge that explains concepts and phenomena in society. Language is seen as the channel of communication and interaction through which individual understanding, moods and opinions are communicated, and actions that need to be taken are executed for the safety of an individual. It is also important for individual learning to be understood by others, to use verbal communication and be fluent to present their ideas and facts. This serves to confer to Okere (2019) discussions that a student's verbal communication ability and proficiency are a requirement if a learning child is to start formal study in school. From the related findings of Adejimi, Nzabalirwa, & Shivoga (2020) explained and suggested that students' level of deficit in language usage and better control of the knowledge of speaking language is an antecedent to educational failure in that this lack leads to a simple learning difficulty, which grows and remains throughout the students' schooling life.

The concept of verbal ability is the expressive decisions about a child's proficiency in communication and reading skills. The features of verbal communication ability as expressed by Adejimi, Nzabalirwa, & Shivoga (2022), indicate not only the ownership of a strong engaged vocabulary, but also possessing the appropriate diction to convey information to a selected audience, with the intended capacity to establish needed words coherently and being eloquent. The report indicated by Odiaka, 2002 and Adejimi, Nzabalirwa, & Shivoga (2022) showed a significant relationship between students' verbal ability and performance of students in the general ability test. According to Adejimi, Nzabalirwa & Shivoga, 2020 in their reviewed study on the importance of language impact, it was reported strongly that the significant impact of the association between students' performance in science and verbal ability was found to be predominant among all ability levels of students. All of these analyses determined that students' achievement improves regardless of the subject when they have strong verbal ability and effective communication skills.

In addition to relevant concepts like students self-efficacy belief, verbal communication ability and attitudes effect on students' performance in learning, research has indicated that motivation needs to be promoted among learners, especially towards learning of sciences if effective performance is the target of our most discussions. According to research by Pintrich and Schunk (2003), the concept of academic motivation is explained as "a process for goal-directed activity that is instigated and sustained" (p. 5). It is therefore explained that students are motivated to learn and achieve when they believe that their effort expenditure on their learning activities in an instructional process is satisfactory. In context, this means that the students' beliefs about their academic capabilities play an important role in their motivation to achieve success in learning and motivation is seen as a fundamental aspect of learning. Thus, to be motivated means to be moved beyond assumed effort to do the extraordinary. As explained in related studies, components of motivation can be excitement, interest and enthusiasm towards learning (Goldberg & Cornell, 1998). It is argued by the self-determination theory that

motivation is of a type based on the purpose or reason made for any action. The most distinction made is the difference between intrinsic and extrinsic motivation according to the self-determination theory. The concept of extrinsic motivation is the undertaking of any responsibility that the individual find it interesting and enjoyable (Goldberg & Cornell, 1998). Intrinsically, individuals demonstrate efficient effort and are highly organized to learn from their inaccuracy. They are quick to learn and integrate their existing knowledge from their previous experience to form a deeper understanding of the new concept of existing knowledge. From related literature, intrinsic motivation generates deep understanding, while extrinsic motivation provides surface and low impact learning and intrinsically motivated persons are able to concentrate better and longer on academic tasks. They develop the best ability to use a series of integrated strategies to face challenges in their learning. Moreover, it is discussed that students who are intrinsically motivated are better at exercising self-regulation and work hard with concentration for achieving the goal of mastery in learning. In addition to these motivational dimensions explained above, Deci and Ryan (2000) added the amotivation dimension, which is explained as the individual concerned being unwilling to perform a particular learning task. It shows how learners express their in-built dissatisfaction towards events. Notwithstanding, the relevant literature did not include any studies which were specifically based on academic motivation for learning biology; rather, studies were mainly about students' general academic motivation. This study will therefore contribute to the field of biology education in this respect. It aims to analyze the relationship between senior high school students' verbal ability and self-motivational development, for stimulating self-directed learning skills for improving academic performance in learning about photosynthesis, a concept in biology.

EdrawMax-based Concept mapping usage in biology instruction

The EdrawMax is an interactive, stimulated concept mapping software that is a package built on dedicated technological software for visualizing ideas and concepts in two-dimensional technical programming and the Visio-drawing process. It offers abundant template illustrations, materials and simulations for creating professional learning charts and graphics in meaningful animation packages. It offers beneficial templates, shapes, and drawing tools to create various graphics and charts in a more intuitive and visual office style. It also has a rich built-in graphics template library of over 26,000 learning course symbols, to make professional intuitive concepts relation drawing easier (Churches, 2008). In classroom tutorials and presentations, it provides comprehensive diagramming software which enables compatibility with Windows/Mac/Linux/web browsers and supports importing and exporting of Visio formats. In recent developments with the use of Artificial Intelligence-powered exploitations, EdrawMax software users can generate mind maps and meaningful flowcharts automatically, and then, with a oneclick, drawn notes and links can be used to beautify their animations on their slides for demonstrations, greatly improving work efficiency (Xingeng & Jianxiang, 2012).

This learning interaction process of multi-faceted dimensional programming and Visio-drawing process supports and assists learners to represent their cognitive understanding in concept maps (Novak & Gowin, 1984), which has been very useful for enhancing performance in sciences, especially biology education. This learning technique has been supported in many biological research studies in education (Ajaja, 2011, & Ameyaw, 2012). The process leads to supporting learners to draw concept maps, assisting them to understand and the relationships between different ideas. Concepts of biology require an understanding of abstraction of concrete, semi-concrete or abstract experiences of students. Representation and organization of these biological ideas or relations are important, and most students have challenges in developing relational and conceptual understanding. Engaging in meaningful learning requires the use of relevant prior knowledge application, the use of meaningful material, and the choice of the students in question. Concept maps help students to relate newly learned ideas. It also helps students match new ideas to old concepts (Ajaja, 2011 & Ameyaw, 2012).

The application of concept mapping has its theoretical foundations in the principles of Piaget and Ausubel. Newly learned concepts and knowledge cause the disequilibrium with old concepts, and then go through mental negotiation and adjustment until students finally reach a cognitive equilibrium by assimilation or accommodation. The students then reach cognitive equilibrium by means of forming new cognitive or conceptual organizations. Concept maps guide students to organize their conceptual schema and represent their cognitive ideas in a peculiar way (Roth & Roychoudhury, 1992, p. 357). This organization gives instructors and students the opportunity to assess progress in instructional delivery and learning respectively. Misconceptions and alternate concepts may be revealed during concept mapping activities and due to remediation effected.

Concept maps are dynamic, and students add new components based on their experiences. Since biological ideas and concepts consist of complicated and complex forms of relations, especially in photosynthesis, the students gain more insight; they develop complicated and integrated concept maps. Concept maps were constructed mostly at the end of an instructional period and/or subject, but it is most appropriate to be ongoing to reorganize students' ideas and make connections between the smaller elemental components within the subject instructional process. It is very effective in promoting students' understanding and retention of concepts taught, especially during the analysis of students' achievement, as well as for the positive development of students' affective

domain towards science instruction. The teacher assists students to note and understand the main concept to be learned, using an interactive constructivist approach to guide learners in critical thinking to discover related concepts and sub-concepts connected to the major topic under study. This approach assists learners to use nodes and links with the discovered concepts in a hierarchical pattern and relationship for criticism and justification until final submission, portraying meaningful conceptual understanding. Although many studies reviewed indicate concept mapping as effective for promoting students' performance and results, little is said about its usage for developing students' verbal communication ability and motivation for enhancing academic performance, especially among low and less motivated achievers in biology. This provides a good justification and a gap in the literature for more studies in these areas. To effectively measure this aim, the study addressed the following research questions: 1. What is the impact of EdrawMax-based concept mapping intervention on students' verbal ability and motivation development for enhancing their performance in photosynthesis? 2. What is the difference in photosynthesis performance among the students after the intervention administration? 3. What is the influence of the various developed motivational dimensions on students' performance in photosynthesis after the intervention?

METHODOLOGY

The study employed one hundred and twenty (120) students in different classes of two mixed Senior High Schools, with less motivated and low-achieving classes of poor speaking skills in English language contributed to this study. They were guided on how to fill in the verbal ability test items and motivation questionnaire items under the supervision of the researcher. Each class from the two Schools was divided into three ability groups for the administration of the intervention using the concept mapping for teaching photosynthesis. The learners' grades were used as academic performance scores for the analysis. The verbal ability test items and motivation questionnaire consisted of 17 and 28 items, respectively. The motivation items were adapted from Solmaz (2016) and modified. The researcher developed students' verbal ability test items from within the context of academic performance in biology for use in this study.

All the questionnaires used a 5-point Likert scale (ranging from 1 (strongly disagree) to 5 (strongly agree) to rank the students' level of verbal ability test items and motivation development. They were piloted to check their reliability and validity to avoid any element of ambiguity and other related challenges in the main study implementation.

Using Cronbach's alpha, the reliability estimates of the two questionnaires were determined to be 0.76 and 0.75, which were reasonably acceptable indices of reliability coefficient. The students' motivation consists of four main parts: the first, second and third parts focused on students' positive responses, intrinsic (item 1-8), extrinsic-career (items 9-13), and the third part, extrinsic-social (items 14-19). The fourth part seeks out information on the negativities of students towards biology (20-28). In order to examine the validity of the researchers self-developed self-efficacy items, experts were made to scrutinize it, and some were modified and others were deleted based on the positive comments for their amendment from them. Factor analysis was performed to identify how the questionnaires functioned, if they actually load into the four components, with a communality of each component higher than 0.31. The overall factorability of the data was done prior to factor analysis, and the result indicated that factor analysis was appropriate and could result in reliable information during its administration.

The process of this study was carried out in May 2019 using pre-intervention, intervention and post-intervention stages of data collection activities. A careful explanation was made to the biology students on how they were expected to complete the questionnaire items, only assign codes and their class identifications, and were expected to complete the questionnaires for the purpose of matching their performance scores accordingly, and assurance of confidentiality was given.

Thereafter, the pre-intervention motivation and verbal ability questionnaires were distributed among them to complete. After they had completed filling the questionnaires, the data were collected, and the students were divided into two groups, based on their level of verbal ability. The poor-achieving students of low verbal ability and poorly motivated in pre-intervention stage were taught the concept of photosynthesis for a period of four weeks using closeness indices as a regular assessment tool. After the tutorial classes, the students were made to fill out the students' post-intervention verbal ability and motivation questionnaires, and their achievement scores in photosynthesis form were collected from their class teachers. The data were analyzed using SPSS version 21 software.

Experimental results and findings

The study discussed three research questions: the first research question examines the relationship between students' verbal ability and students' motivation and academic performance. Pearson product-moment correlation was performed on students' verbal ability, students' performance and motivation responses. It was again performed on the students' verbal ability and each dimension of the students' motivation responses. Table 1 indicates the result of the correlation coefficient on students' responses:

The result of the correlation coefficient on students' responses:

Table 1: The pre-intervention relationship between students' Verbal Ability, motivation and performance

Verbal ability 1			Performance 1	Motivation 1
Verbal ability 1	Pearson correlation	1	.133	-.028
	Sig. (2-tailed)		.142	.753
	N	120	120	120
Performance	Pearson correlation	1	.997**	.992**
	Sig. (2-tailed)		.000	.000
	N	120	120	120

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 1, a significantly positive correlation coefficient exists between developed Verbal ability and students' motivation and performance. Therefore, it can be concluded that the higher the development of students' verbal ability, the higher the students' motivation as well as their performance. Table 2 also indicates a significant relationship between the results of the correlation coefficient on students' responses:

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Table 2: The relationship between student Verbal ability and different dimensions of the students' motivation

	Performance	M -society	M-career	Amotivation	Intrinsic
Verbal ability Pearson correlation	.996**	.984**	.997**	.293**	.994**
Sig. (2-tailed)	.000	.000	.000	.001	.000
N	120	120	120	120	120

As the table above indicates, there is a highly significant positive correlation between students' verbal ability and the different dimensions of students' motivation; however, for the correlation between students' verbal ability and the students' amotivation dimension, the result seems interesting: the more the verbal communication ability of the students, the less the amotivation of the

students' predicted.

The second objective of this study was to again examine if there exists any significant difference between students' biology photosynthesis performance based on their developed level of verbal ability. An inferential statistical analysis was performed using one-way ANOVA to critically examine if there are any significant differences in students' biology performance in different ability groups that contributed to this study, so that meaningful comparisons can be made based on their developed level of verbal ability. The results indicated no significant differences among the groups as seen in the ANOVA results (i.e. Table 3) despite their slight mean differences realized among them as (83.32, 82.77, and 82.88).

Table 3: **One-way ANOVA results on students' biology performance between the groups**

Sum of squares		Df	Mean square	F	Sig.
Between groups	7.421	2	3.711	.146	.862
Within groups	2952.443	117	25.234		
Total	2959.866	119			

Research question three also investigated the influence of the various motivational dimensions on academic performance in photosynthesis; the result with multiple regression analysis are shown in Tables 4, 5 and 6.

Table 4: **Descriptive analysis and inter-correlation between variables**

Variable	N	Mean	SD	Perfor-Mance	M-Society	M-Career	Intrinsic	A-moti-Vation
Performance	120	83.03	4.987	1.000				
M-society	120	26.17	4.925	.974	1.000			
M-Career	120	31.07	4.946	.996	.986	1.000		
Intrinsic	120	37.95	7.647	.997	970	.994	1.000	
Amotivation	120	15.10	1.647	.293	.290	.295	.282	1.000

Table 5: **Analysis of variance of** the **joint significant effect of independent variables**

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	2956.736	4	739.183	27151.441	.000b
Residual	3.130	114	.027		
Total	2959.866	118			

Multiple R (adjusted) =.998
Multiple R^2 (adjusted) =.998
Standard error of estimate =.165

Table 6: **Effect and significance of the independent variables**

	Unstandardized coefficients		Standardized coefficients		
Model	B	Std. Error	Beta	T	Sig.
(constant)	52.769	.330		159.733	.000
M-society	-.220	.026	-.215	-8.412	.000
M-career	.861	.060	.853	14.311	.000
Amotivation	.008	.010	.003	.849	.398
Intrinsic	.241	.026	.358	9.112	.000

Table 4 indicates that biology performance using photosynthesis, and it significantly correlated with (1) M-social (r=a.974; p<0.05), (a2) M-career(r=.996; p<.05) and (3) Intrinsic (r=997; p<.05) and (4) Amotivation (r=.293; p<.05).There were also significant correlations among the various motivational dimensions. Table 5 shows that all the motivational dimensions have a jointly significant effect on photosynthesis performance in biology, except Amotivation. This means that the capacity of the three dimensions to predict photosynthesis performance could not have happened by chance. The coefficient of determination (R2) of 0.997 implied that almost 100% of the variation in biology performance achievement scores is explained by the M-society, M- career and Intrinsic dimensions. Table 6 also shows how each of the dimensions positively affects photosynthesis achievement scores in biology academic performance, and in terms of magnitude of effect, M-career has the most significant effect (beta=853:t=14.311; p<.05), followed by Intrinsic (beta=358: t=9.112; p<.05) and then M-social (beta=215; t=8,412; p<.05).

CONCLUSIONS

The research study examined the difference and association between student verbal ability development influence on students' motivation towards the learning of the subject biology and academic performance in photosynthesis as a concept in Biology. Notwithstanding, it also examined the outcome of students' verbal communication ability on the students' performance in biology, and finally, what effects do the academic motivation dimensions have on students' performance in biology using photosynthesis. The Pearson product-moment correlation coefficient was performed among students verbal ability, academic performance and students' motivation, and the four dissimilar dimensions of students' motivation (i.e. M-career, M-social, intrinsic and amotivation), to examine whether there is any significant association between students verbal ability and students' motivation, and also whether the different dimensions of the students' motivation questionnaire are not.

The analyses presented that there is a reasonably high positive correlation between students' developed verbal ability, their motivation and their academic performance. Thus, it can be argued that there is presence of a student verbal communication ability positively impact on students' motivation as a result of the intervention (EdrawMax-based concept mapping) influence on the students communication and verbal ability development, which was not the case as seen in the pre-intervention relationship of poor negative correlation influence between the student verbal ability on students motivation and academic performance, (Table 3). It also indicated a positive correlation between students' communication and verbal ability and all the dimensions of the students' motivation, that is M-career, M-social, intrinsic and amotivation (Adiyiah, Mutangana, & Ameyaw, 2020). The degrees of correlation were .996, .984, .994 and .293 for M- career, M-social, intrinsic and amotivation, respectively. But the results only showed minimum correlation between student verbal ability and students' amotivation, which buttresses the findings of Solmaz (2016) .

However, high motivation is argued as with respect to verbal ability influence on a practical conceptual concept like photosynthesis, students' verbal communication ability was less utilized in the subject Biology, except for the discussion session of the intervention administration. These resulted in low motivation and in the Ghanaian context, low motivation among students could be expounded as getting a good grade in biology is only a prospect for students in getting admission into tertiary or university, but depends not on individual high levels of communication and verbal ability development and not for job attainment and hence justified. According to findings in this study, students with a higher level of language development and verbal fluency and ability are able to change their attitude toward learning biology, and consider biology as a favourite subject for developing their own better reading skills in life (Odiaka, 2002 and Adejimi, Nzabalirwa, & Shivoga, 2022). The impact of students' developed verbal ability on their biology performance was discussed in research question two. The result of one-way ANOVA indicated that the differences in the students' biology performance in different ability groups are not significant, and this shows a significant improvement among the groups, especially among the low achievers, based on their post-intervention biology performance (Adiyiah, Mutangana, & Ameyaw, 2020). The results of these findings show that the students in all three different academic ability groups had achieved a higher level of verbal communication fluency and showed high verbal ability competence after the EdrawMax-based concept mapping intervention, and had averagely better scores than their pre-intervention scores due to the influence of the EdrawMax- based intervention effect. However, it can be deduced that the higher the level of student verbal ability, the higher the students' academic performance (Adejimi, Nzabalirwa, & Shivoga, 2022) achieved in photosynthesis. The results of this study support the findings of the previous research proposing a significant correlation between students' verbal ability development and increased students' academic performance in biology, by manipulating and changing teachers' teaching approaches and practices, enthusiasm, commitment, and teaching behaviour (Tschannen-moran & Hoy, 2001; Tournaki & Podell, 2005; Wolters & Daughtery, 2007). The results are also in line with Bandura's observation (1994) that students who have a strong sense of self-efficacy about language competencies and capabilities (Odiaka, 2002 and Adejimi, Nzabalirwa, & Shivoga,. 2022) can motivate themselves and improve their cognitive development (Adiyiah, Mutangana, & Ameyaw, 2020). However, an important review of the study shows that amotivation had a weak relationship with the verbal ability, and all the other components; the motivation, academic performance and, for that matter, the use of the EdrawMax-based concept mapping intervention. This is as a result

of the instance where students who are unenthusiastic and less motivated show poor interest and demonstrate shyness in the activities of Biology, and hence, have low self- confidence and poor internal motivation (Adiyiah, Mutangana, & Ameyaw, 2020). They cannot cope with any innovative instructional strategy at a significant level, and do not think that learning biology will contribute to their selection of any related experimental sciences programmes of choice as a future profession in life. These findings are consistent with a similar review by Wolters and Daugherty (2007), which discusses that amotivation weakly and negatively correlated with other variables of motivation.

The current study on the impact of students' communication and verbal ability (Adejimi, Nzabalirwa, & Shivoga,. 2022) builds up to our understanding of the academic motivation and students' confidence beliefs and fluency level of students, and which affords us with support for the use of these students' verbal ability scale outside language specific cultural related fields and settings of every learner's developmental stage. Thus, we can confidently conjecture that students' verbal ability (Odiaka, 2002 and Adejimi, Nzabalirwa, & Shivoga, 2022) competence can influence their academic motivation and performance in different settings, and thus, it is not subject and context-bound. It is also imperative that in any educational setting, as well as schools' management principles, provide maximum opportunity in order to enhance students' self-competence in verbal ability development, and consequently, improve students' motivation and performance (Tschannen-moran et al., 2007). The results of this study indicated that there is a strong positive influence of students' motivation on students' academic performance in biology using the concept of photosynthesis. However, much other valuable information remains to be learned and investigated about the role of students' verbal ability development and self-motivation in learning and teaching, especially in sciences, mathematics, and technology education (STEM). The ideas and concepts below are necessary for further research based on this study:

1. There should be further studies to examine the effect of instructors' verbal and communication ability on students' selection of sciences or the biology programme.
2. Further research study should be done to examine if students' verbal communication ability development can be moderated or changed as a result of specific school cultural ethnics influences, administrators' principle and practices adopted.
3. An investigation should be directed to find out if the level of students' communication and motivation development differs among various categories of teachers' instructional strategies implementation in schools.

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