Self-Regulatory Learning Strategies for Senior Secondary Agriculture Students

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Abstract

Self-regulation is essential to the learning process as it enhance student performance. However, there is very little research on the self-regulatory strategies employed by students. Therefore, this study sought to identify self-regulatory learning strategies used by senior secondary agriculture students. The study used a descriptive survey design, and targeted agriculture students in senior secondary schools in Eswatini. Consequently, there were ten schools sampled using cluster sampling; which produced 356 respondents. Data were collected using a questionnaire and analysed using descriptive statistics. Three experts from the Department of Agricultural Education and Extension at the University of Eswatini ensured the validity of the questionnaire. A pilot study using 30 students indicated that the instrument was 72% reliable. Findings revealed that the senior secondary agriculture students used all the self-regulatory learning strategies. The most commonly used strategies were self-evaluation, structuring the environment, keeping records and monitoring, and organizing and transforming. The study also revealed that teachers were equipping students with self-regulatory strategies. Therefore, the study concluded that the senior secondary agriculture students used self-regulatory learning strategies. Based on the findings, it was recommended that teacher training institutions should equip agriculture teachers with self-regulatory strategies which will enable them to assist the students.

Keywords: agriculture, self-regulatory learning, senior secondary school, strategy

Self-regulated learning (SRL) is a process that assists students in managing their thoughts, behaviors, and emotions in order to successfully navigate their learning experiences. This process occurs when a student's purposeful actions and processes are directed towards the acquisition of information or skills. It requires students to independently plan, monitor, and assess their learning (Zimmerman, 1990; 2004).

Self-regulation is essential to the learning process (Jarvela & Jarvenoja, 2011; Zimmerman, 2008). According to Harris et al. (2005) self-regulated learning (SLR) is recognized as an important predictor of student academic motivation and achievement. It assists students in creating better learning habits and strengthen their study skills. Students apply learning strategies to enhance academic outcomes, monitor their performance, and evaluate their academic

progress; thus, teachers should be familiar with the factors that influence a student's ability to self-regulate their learning. Furthermore, teachers should know the strategies that they can use to identify and promote self-regulated learning (SRL) in their classrooms. In addition to self-regulation, motivation can have a pivotal impact on students' academic outcomes (Zimmerman, 2008). Without motivation, SRL will be difficult to achieve. Self-regulated processes that facilitate learning include goal setting, planning, self-motivation, attention-control, flexible use of learning strategies, self-monitoring, appropriate help seeking, and self-evaluation.

Self-regulated students differ from their peers because they are proactive, self-motivated and more engaged in their learning. They usually seat themselves toward the front of the classroom (Montalvo & Torres, 2004), voluntarily answer questions, and search for additional resources when needed to master content (Zimmerman & Kitsantas, 1997). Self-regulated students also manipulate their learning environments to meet their needs, and are attentive in class (Harris et al., 2005).

Since self-regulatory learning is important, students must be encouraged to practice it (Zimmerman, 2002). Jayawardena, van Kraayenood and Carroll (2017) argue that part of the teaching process should include explaining the usefulness and importance of self-regulated learning skills to students, explicitly teaching students self-regulated learning strategies, and supporting students to identify where and when they can use self-regulated skills. Teachers also need to provide clear examples on how to students can use self-regulated learning skills (Sautelle, et al., 2015).

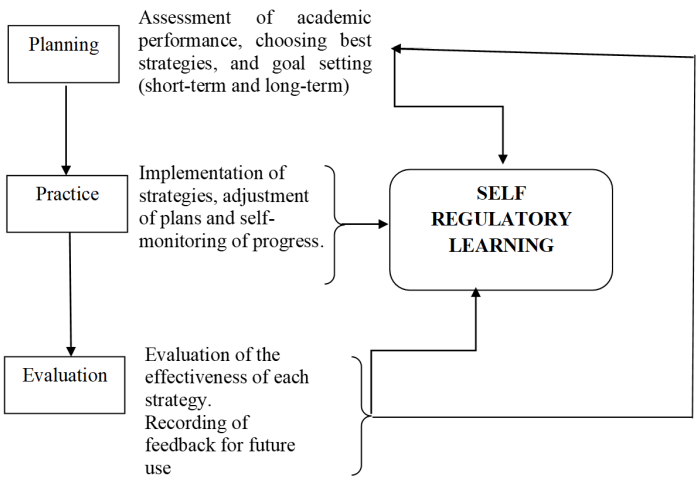
In order to promote self-regulated learning, teachers should provide students with the learning strategies while also educating them on how to self-regulate their own learning. Teachers should structure the learning process such that the students have an opportunity to discover strategic learning procedures themselves. Schunk and Zimmerman (1997) asserted that teachers must be well trained so that they are able to teach their students strategies for self-regulated learning.

Theoretical Framework

The study was framed by Zimmerman's Theory of 2002. The theory opines that as a student progress in learning through the levels of the education system, they should take greater responsibility for their own learning and implication related to academic success. Zimmerman believes that the greatest academic success occurs when students and teachers use metacognitive strategies to guide learning and instruction. The theory postulates that SRL entails planning, evaluation, and adjustment of thoughts and actions. The SRL model incorporates advances in cognitive science to help teachers engage their students fully in the learning process. Zimmerman made use of an ongoing series of feedback cycles that consists of three phases: planning, practice, and evaluation (see Figure 1). The theory is relevant to this study as its precepts are on the self-regulatory learning strategies which the study seeks to establish with the senior secondary agriculture students.

Figure 1.

Theoretical Framework by Zimmerman (2002)



Purpose and Objectives

Purpose of the study

The purpose of the study was to identify self-regulatory learning strategies for senior secondary agriculture students.

Objectives of the study

The objectives of the study were to:

1. describe the respondents by their demographic characteristics and background information.
2. identify self-regulatory learning strategies used by senior secondary agriculture students.
3. identify agriculture teachers' practices used to enhance self-regulatory learning for senior secondary agriculture students.
4. identify ways of promoting self-regulatory learning for senior secondary agriculture students.

Methodology

This was a descriptive study. It targeted agriculture students (doing Level 4 and Level 5) in senior secondary schools in X country. A cluster random sampling method was used (Polit & Beck, 2012). A total of ten schools from 213 schools were selected in X country. For a big cluster (school), simple random sampling was used to select 30 respondents. A questionnaire was developed from literature on self-regulatory learning, and used for data collection. The questionnaire was divided into four sections, namely: demographic characteristics, self-regulatory learning strategies, agriculture teachers' practices used to enhance self-regulatory learning, and ways of promoting self-regulatory learning. A six-point Likert-type scale, having the following ranges: 1= strongly disagree; 2=slightly disagree; 3=disagree; 4=agree; 5=slightly agree; and 6=strongly agree was used to measure the variables. The Likert-type scale (without neural value) is preferred over the Likert scale (neutral value) when means and advanced statistics

will be used (Polit & Beck, 2012). The respondents were also required to circle or fill in the blanks for demographic characteristics and background information. The questionnaire was validated by three experts from the Department of Agricultural Education and Extension at the University of X country. The comments of the experts were incorporated to enhance the content and face validity of the questionnaire. The reliability and suitability of the instrument were established by 30 students who were not involved in the study. The inter-item reliability of the questionnaire was determined using Cronbach's Alpha in SPSS version 20 and the reliability coefficient was r=.72.

Letters seeking permission to conduct the study were written to the Ministry of Education and Training, school principals and the respondents; and permission was granted. The respondents were required to provide appropriate information and sign a consent form. Data were collected in February 2019. The questionnaire was not completed in the presence of the researchers but respondents were given a two weeks to complete the paper-pencil survey questionnaires. This was done to give the respondents enough time to complete the questionnaire without being put under pressure by the presence of the researchers. To ensure confidentiality, the questionnaire was formulated such that respondents' names were concealed. The questionnaires were hand delivered by the researchers to the agriculture students. The respondents were reminded to complete the questionnaires two days before they were collected. To ensure confidentiality and safe-guarding of information, the questionnaires were only accessible to the researchers. Descriptive statistics such as frequencies, percentages, mean and standard deviation in the Statistical Package for Social Sciences (SPSS) version 20 were used during data analysis.

Results and Discussion

Demographic characteristics of respondents

Table 1 indicates that most of the students were males (n=185, 52%). A majority were aged between 16-18 years (n=205, 57.6%). Although students appear to be equally distributed between rural (n=162, 45.5 %) and semi-urban areas (n=163, 45.8%) in terms of residence, it was observed that they were mainly coming from rural areas than urban areas (n=31, 8.7%). However, a majority of the schools were situated in semi-urban (n = 263, 73.9%) and few students were attending school in rural areas (n = 28, 7.9%). This literally imply that even though some students resided in rural schools; they were attending schools that were in the semi-urban areas. Most of the respondents were doing Form 4 [Level 4] (n=220, 62.0%) and only 135 (38.0%) were doing Form 5 [Level 5].

Table 1.

Demographic characteristics of respondents

Demographic Variable	*f*	%
Home location (n=356)		
Rural	162	45.5
Semi-urban	163	45.8
Urban	31	8.7
School location (n=356)		
Rural	65	18.3
Semi-urban	263	73.9
Urban	28	7.9
Sex (n=356)		
Male	185	52.0
Female	171	48.0
Age (n=356)		
16-18	205	57.6
19-20	90	25.3
21-22	46	12.9
> 22	14	3.9
Grade (n=355)		
Form 4 [Level 4]	220	62.1
Form 5 [Level 5]	135	37.9

Self-regulatory learning strategies

Table 2 reveals that the students were using all the self-regulatory strategies in learning agriculture. The most commonly used self-regulatory strategy was self-evaluation (M=5.02, SD=1.17). Students were able to reflect on their performance, evaluate their improvement from previous test(s), and able to revise their test. Another prominent self-regulatory strategy was the ability of students to organize and transform own learning (M=4.84, SD=1.26). This involves attending classes regularly, making good use of study time, generating ideas to write about easily, and using library resources and the internet to get information. The students were regulating their learning through record keeping and monitoring (M=4.55, SD=1.24). Others self-regulator learning strategies include keeping records and monitoring which entails note taking during lessons, and monitoring improvement. It can also be noted that another self-regulatory learning strategy used was structuring the environment (M=4.32, SD=1.82). An example of this is when students isolate themselves from noisy environments.

The findings of the study are consistent with existing literature regarding self-regulatory learning strategies. Weinstein (2011) found that students were using self-evaluative and self-corrective strategies to improve their academic performance. Similarly, findings of this study revealed that agriculture students were engaged in self-evaluation strategies such as reflecting on their performance, their academic performance in previous tests, and revising their tests. The students also demonstrated the ability to

Table 2.

Self-regulatory strategies used by learners in the learning of agriculture

SRL strategies	M	SD
Goal setting and planning	4.21	1.40
Seeking social assistance	4.16	1.58
Self-evaluation	5.02	1.17
Keeping record and monitoring	4.55	1.24
Environment structuring	4.32	1.82
Organizing and transforming	4.84	1.26
Average	4.52	1.41

organize and transform their learning as a self-regulatory learning strategy. This finding reiterates that by Batool and Webber (2019), who reported that students consult different resources (e.g. library, books, and internet), seek assistance, and work in groups to maximize learning and performance during different situations. The students were regulating their learning through record keeping and monitoring. Monitoring academic progress enables students to create better learning habits that enhance the learning process and improve academic performance (Lan, et al., 1993; Morisano, et al., 2010). Lan et al. (1993) argued that students who monitored their learning and level of self-efficacy performed better than those who did not. The study also revealed that structuring the environment is another self-regulatory learning strategy. Zimmerman and Kitsantas (1997) noted that manipulating the learning environments to meet students' needs was the most important self-regulatory learning strategy.

Teachers' practices used to enhance self-regulatory learning

Table 3 indicates that teachers' practices used to enhance self-regulatory learning of students in the learning of agriculture include: providing students with strategies to apply when learning (M=5.18, SD=1.07); explaining the importance of self-regulatory learning (M=4.98, SD=3.47); using clear examples of self-regulatory learning (M=4.69, SD=1.15); teaching students self-regulatory skills (M=4.66, SD=1.42); helping students to identify where they can use self-regulatory learning (M= 4.65, SD=1.17); among others. The findings are consistent with those by Jayawardena, et al. (2017), who argued that self-regulatory learning practices such as explaining the usefulness and importance of self-regulated learning skills to students should be encouraged. Sautelle, et al. (2015) argued that in the teaching process, teachers must assist students regulating their own learning.

Ways of promoting self-regulatory learning

Table 4 indicates that self-regulatory leaning for agriculture could be improved by predominantly training the students on self-regulatory learning (M=5.34, SD=2.92); teaching the students the value of honesty in doing school work (M=5.30, SD=1.04); providing students with self-regulatory learning strategies (M=5.12, SD=0.96); training themselves on self-regulatory learning (M=5.05, SD=1.17); and using rewards to encourage self-regulatory learning (M=5.04, SD=1.14). The findings of this study are consistent with those by Schunk and Zimmerman (1997), who found that promoting self-regulatory learning requires teachers to structure the learning situation such that students have the opportunity to discover strategic procedures themselves. Schunk and Zimmerman (1997) suggest that teachers must be well trained in order to be able to teach self-regulated learning well, and the students can be induced to perform a certain task or activity without being informed that the activity is a learning strategy. Similarly, Zimmerman (2002) asserted that it is necessary for the teacher to first understand how students can self-regulate their learning and then consider the students' needs and abilities.

Table 3.

Teachers' practices used to enhance self-regulatory learning in the learning of agriculture

Teachers' practices used to enhance self-regulatory learning	M	SD
Providing students with strategies to apply when learning	5.18	1.07
Explaining the importance of self-regulatory learning	4.98	3.47
Using clear examples of self-regulatory learning	4.69	1.15
Teaching the students self-regulatory skills	4.66	1.42
Helping students to identify where they can use self-regulatory learning	4.65	1.17
Allowing teachers to teach about self-regulatory learning	4.62	1.23
Believing in the value of self-regulatory learning	4.61	1.19
Constructing an environment that allows the use of self-regulatory learning	4.52	1.34
Average	4.74	1.51

Table 4.

Ways of promoting self-regulatory learning in the learning of agriculture

Ways of promoting self-regulatory learning	M	SD
Teachers should train their students on self-regulatory learning	5.34	2.92
Teach students the value of honesty in doing school work	5.30	1.04
Teachers should provide students with self-regulatory learning strategies	5.12	0.96
Teachers should be well trained on self-regulatory learning	5.05	1.17
Teachers should use rewards to encourage self-regulatory learning	5.04	1.14
Schools should encourage self-regulatory learning	4.92	1.06
All learning activities should be learner- centred in order to keep students motivated	4.84	1.16
Teachers should examine students' abilities before giving them tasks to work independently	4.83	1.19
Teachers should allow students to discover strategic procedures themselves	4.73	1.27
Teachers should give unannounced tests to ensure that students regulate their learning	4.39	1.58
Average	5.00	1.35

Summary

The findings of the study revealed that senior secondary school agriculture students use all the self-regulatory strategies as postulated by Zimmerman (2002) in learning agriculture. The most commonly used self-regulatory strategy is self-evaluation whereby students reflect on their performance and evaluate their improvement from previous academic performance. The students also have the ability to organize and transform their learning as another self-regulatory learning strategy. This strategy involves attending classes regularly, making good use of study time, and using library resources and the internet to get information. The students were also regulating their learning through record keeping and monitoring. They were doing so mainly by taking notes during lessons, monitoring improvement. Structuring the environment, such as isolating themselves from noisy learning environment was also found to be an effective self-regulatory learning strategy by the senior secondary agriculture students. Teachers were reported to use numerous practices to enhance self-regulatory learning. These practices include providing students with strategies to apply when learning, explaining the importance of self-regulatory learning, using clear examples of self-regulatory learning, teaching the students self-regulatory skills, and helping students to identify where they can use self-regulatory learning. Self-regulatory learning for agriculture students could be improved by training them on self-regulatory learning, teaching the students the value of honesty in doing school work, providing students with self-regulatory learning strategies, teachers training themselves on self-regulatory learning, and using rewards to encourage self-regulatory learning.

In conclusion this study from this study indicates that the senior secondary agriculture students use self-regulatory learning strategies. However, they should improve on goal setting and planning, and seeking social assistance. The agriculture teachers have practices that enhance self-regulatory learning strategies for the senior secondary agriculture students, and also attempt to promote the self-regulatory learning strategies. Based on the findings and conclusions of the study, it is recommended that teacher training institutions should equip teachers on the self-regulatory learning strategies so that they can assist the students. Senior secondary schools should have policies that enable students to use self-regulatory learning strategies. Students learn better if they learn on their own with minimum guidance.

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