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SELF-CONCEPT, GENDER AND ACADEMIC ACHIEVEMENT OF SECONDARY SCHOOL LEARNERS IN AGRICULTURAL SCIENCE IN THE ZAMBEZI REGION, NAMIBIA

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ABSTRACT: *The study investigated the relationship between academic self-concept and academic achievement of learners in Agricultural Science in three selected senior secondary schools in the Zambezi Region, Namibia. A sample size of 220 (made up of 110 males and 110 females) learners participated in the study. The purposive sampling technique was used to select the sample in three public secondary schools. Firstly, a self-reporting questionnaire using a modified 20 statements measuring the academic self-concept of learners was used to collect data on the academic self-concept of the learners in Agricultural Science. Secondly, an achievement test comprising of 20 multiple-choice items (with a coefficient of reliability of 0.70 to 0.80 was developed from the secondary school Agricultural Science syllabus and used to collect data on the learners' academic achievement in the subject. Three hypotheses were tested using Pearson product-moment correlation and t-statistic at 0.05 level of significance. The results of the study found that there is no statistically significant correlation between the self-concept scores and academic achievement of the learners in Agricultural Science. There was no significant difference in the mean score of academic self-concept and academic achievement between male and female learners.*

KEYWORDS: academic achievement; Agricultural Science; Academic self-concept; beliefs; self-knowledge

INTRODUCTION

Globally, nations are largely dependent on agriculture and education as the main components of human transformation, support, and development. This understanding is quite common, bearing in mind the time and efforts invested by all nations in teaching and learning of Agricultural Science in recent times (Adebule, 2014). Effective Agricultural Science education is therefore seen as crucial for the socio-economic growth of nations (Adebule, 2014), and Namibia is no exception. However, academic performance of learners in Agricultural Science at the national examination level in Namibia has not been up to scratch and different points of views have been attributed to this. According to Adebule (2014), many studies in the field of education have focused specifically on what is happening in the classroom, while less emphasis has been laid on other important factors such as the socio-psychological aspects of learners. The implication, therefore, is that the way an individual learner learns Agricultural Science is not only affected by what is happening in the classroom, but also by other factors such as

academic self-concept, which is believed to be a major determinant of what, why, and how the learner learns in and outside the classroom, (Ghazvini, 2012).

The blending of all the factors associated with the cognitive performance of a learner ought to be put into consideration during the teaching and learning processes (Afuwape, 2011). However, little or no consideration is given to the factors such as self-concept, attitude, learning habits, peer pressure, family issues, parental financial muscle and many other components, which are believed to be more influential on the academic performance of a learner in a school subjects such as Agricultural Science (Adebule, 2014). According to Adebule (2014), factors related to the learner's health, level of poverty, class attendance, emotional problems related to home abuse and neglect, failure, lack of self-concept among others need to be fully interrogated during the teaching and learning process.

LITERATURE/THEORETICAL UNDERPINNING

In spite of the several studies that have been carried out on the academic self-concept of learners in school subjects such as mathematics and Science globally, there is still a dearth of data on the academic self-concept of secondary school learners in Agricultural Science. The term academic self-concept has been defined by Adebule (2014), as learners' attitudes, beliefs, perceptions and positivity towards a school subject. According to Zahra, Arif, & Yousuf (2010), self-concept generally refers to the "composite of ideas, feelings, and attitudes people have about themselves". Wehrle & Fasbender (2018:1) define self-concept as "the totality of a complex, organized, and yet dynamic system of learned attitudes, beliefs and evaluative judgements that people hold about themselves". According to Muthuri & Arasa (2017), self-concept is much more than the bodily manifestation of a person. It consists of six components such as physical, moral, social, personal and family. In the context of the academic sphere, self-concept comes into being through the lifespan of an individual learner (James, 1980). James Williams, who is regarded as the father of self-concept, suggests that attaining self-concept is comparable to the attainment of self-knowledge. Grecas (1982), explains that self-concept exhibits the notion of a person's distinctiveness and qualities.

The aspect of self-concept among secondary school learners plays an important role in maximising their academic potential and effort towards school work. As noted by Jaiswal & Choudhuri (2014), a learner's academic self-concept demonstrates the aspect of feeling of oneself, and contributes significantly to an individual learner's comprehensive self-concept. The notion of self-concept is largely fashioned from the premise of self-worth. According to Trautwein, Ludtke, Koller & Baument (2006), academic self-concept is considered as a learner's self-assessment concerning a particular academic sphere of influence or competencies. Cokley (2000) describes a learner's academic self-concept as the learner's understanding of his or her academic attainment as compared to his or her peers or classmates.

The way an individual learner becomes aware of his or herself inside and outside the classroom context would greatly influence his or her behaviour and attitude towards learning a particular subject (Yara, 2010). A learner's abilities, interests, achievement, academic values, are hugely attributable to their self-concept, (Tang, 2011). Therefore, a learner who believes that he or she

can achieve fairly well in a subject may develop a clear focus in the learning process and will ultimately perform well in that specific subject (Utibeabasi, 2011).

Just like Yara (2010), Utibeabasi (2011) argues that the act of believing in oneself is a key component for an individual learner to perform well in a subject. It can be said, therefore, that self-concept is largely contributory to a learner's overall academic performance (Barbara, 2000). A positive academic self-concept enables learners to engage enthusiastically in everything about school work (Purkey, 2000).

In this study, the following hypotheses were tested at a 0.05 level of significance:

Null hypothesis 1: There is no significant relationship between academic self-concept and academic achievement of secondary school learners in Agricultural Science in the Zambezi Region, Namibia.

Null hypothesis 2: There is no significant relationship between academic self-concept and gender of secondary school learners in Agricultural Science in the Zambezi Region, Namibia.

Null hypothesis 3: There is no significant relationship between gender and academic achievement of secondary school learners in Agricultural Science.

METHODOLOGY

The study was based on the descriptive correlational research design aimed at investigating the relationship between the academic self-concept of learners and their academic performance in Agricultural Science as well as their gender. The target population of this study were all the senior secondary school Agricultural Science learners in the Zambezi region, Namibia. A total sample of 220 learners participated in this study and were purposively selected from three public senior secondary schools (one urban and two rural) out of the seven senior secondary schools offering Agricultural Science at Grade 12 level in the Zambezi region.

Three research instruments were used to collect data from the participants. The first was the 20 items self-reported questionnaire adapted and modified from Adebule (2014), measuring academic self-concept in Agricultural Science. The participants (learners) were requested to rate themselves in Agricultural Science on a four-point Likert scale, such as Strongly Agree = 4, Agree = 3, Disagree = 2 and Strongly Disagree = 1. Content validity of the questionnaire items was carried out using experts in the field of educational psychology from the Faculty of Education at the University of Namibia's Katima Mulilo Campus. The reliability of the items of the questionnaire was estimated at 0.70 to 0.80 using Cronbach (1951). A generally accepted rule of thumb is that an alpha of 0.60-0.70 indicates acceptable reliability and 0.80 or higher indicates good reliability, while 0.95 or higher indicates very high reliability (Golafshani, 2003). The second instrument was a 20 item multiple-choice Agricultural Science achievement test questions developed from the senior secondary Agricultural Science syllabus. The achievement test, which had a maximum completion time of 30 minutes, was used to assess the participants' competencies in the following learning objectives as articulated in the syllabus: knowledge with understanding; handling information, application and problem

solving (NIED, 2006). The researchers administered the instruments with the assistance of the Agricultural Science teachers at the selected senior secondary schools.

Finally, follow-up face-to-face structured interviews were used to collect qualitative data from the participants to authenticate the data generated from the learners' questionnaire on academic self-concept as well as to gather in-depth data. Structured face-to-face interviews were used since all the participants needed to be presented with the same set of probing questions in a similar sequence (Maree, 2011; Mashebe, 2018).

The purposive sampling method was used to select six learners (three males and three females) to participate in the follow-up interviews. The participants were well informed about the purpose of the study and the researchers requested them to provide honest and objective responses. All the interviews were recorded and later transcribed verbatim into texts (Barreiro & Albandoz, 2001). The transcribed data were analysed using the thematic analysis method to generate the themes that emerged. According to Cohen, Manion & Morrison (2007:461), qualitative data analysis can be viewed as the process of making sense from research participants' views and opinions of situations to generate corresponding patterns, themes, categories and regular similarities. "Qualitative data analysis is a non-numeric examination and interpretation of observations, to discover underlying meanings and patterns of relationships" (Babbie, 2010:394). The completed questionnaires were captured using a customized excel spreadsheet and later analysed using Pearson's product-moment correlation.

RESULTS AND DISCUSSIONS

Academic self-concept

The academic self-concept score was based on the participant's answers to 20 items using the following scale: strongly disagree = 1, disagree = 2, agree = 3 and strongly agree = 4. The results in Figure 1 showed the distribution of academic self-concept scores and academic achievement of secondary school learners in Agricultural Science in the Zambezi Region, Namibia. Both variables showed a reasonably symmetric pattern, which allowed the researcher to assume normality for the statistical tests carried out.

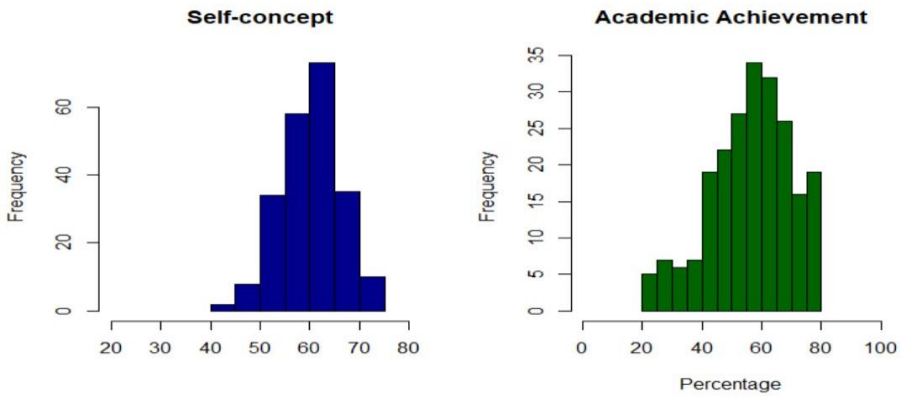

Figure 1. Histograms showing the distributions of participant's academic self-concept scores and academic achievement

The reasonably symmetric pattern obtained in the distribution of participants' academic self-concept and academic achievement of Agricultural Science learners suggests the way learners evaluated themselves in Agricultural Science concerning their academic performance in the study area. The results obtained suggest that learners' self-concept has no impact on their academic achievement in learning Agricultural Science. Because of this, learners in the Zambezi region, like in many parts of Namibia, develop their academic achievement from a very young age of schooling and constantly improve while in school. It is thus essential for the schools to create an enabling environment for the learners to successfully improve their self-concept, which will help to foster their academic achievement. Therefore, the result of this study disagrees with the findings by Ayodele (2011) in the study on self-concept and performance of secondary school students in mathematics who obtained a sample correlation coefficient of 0.569.

Null hypothesis *1*: *There is no significant relationship between academic self-concept and academic achievement of secondary school learners in Agricultural Science in the Zambezi Region*

A scatterplot was used to assess the relationship between academic self-concept and academic achievement. The assumptions of the model follow a linear relationship between the variables, and that both variables are normally distributed. As seen in Figure 2 below, there is no clear linear relationship between academic self-concept and academic achievement of the secondary school Agricultural Science learners in the study area. The significance of the correlation was tested using Pearson's product-moment correlation at $p = 0.05$ level of significance. Based on the result obtained, there is no significant relationship ($p > 0.05$) between self-concept scores and the academic achievement of the learners.

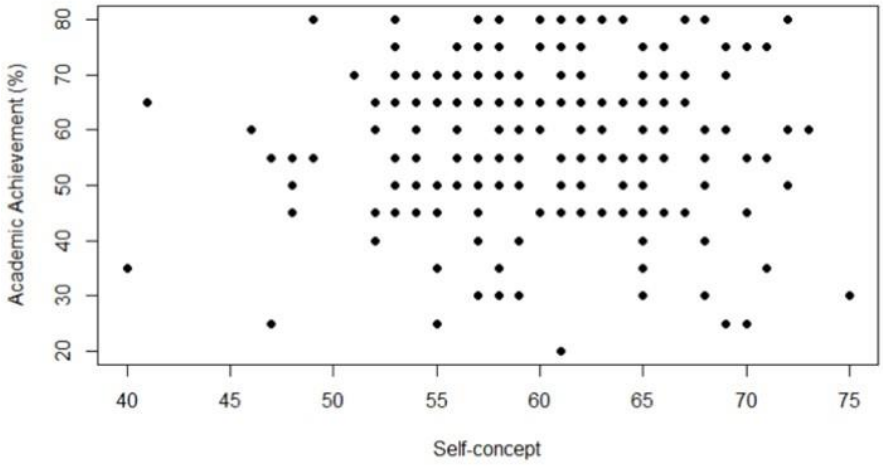

Figure 2. Scatterplot of self-concept and academic achievement variables

The findings of this study corroborate the findings by Afuwape (2011), in a study on students' self-concept and their achievement in Basic Science in which the author held that there is no

significant relationship between secondary school students' self-concept and their academic performance in Basic Science, with a sample correlation value of 0.008. The findings of this study are also in agreement with the findings by Adebule (2014) in the study on self-concept and academic performance in mathematics among secondary school students in Ekiti State, Nigeria. Adebule (2014) maintained that self-concept is not significantly related to the academic performance of students in Mathematics. However, in their study on self-concept and academic achievement of secondary school students, Jaiswal & Choudhuri (2014), noted that there is a positive and significant relationship between academic self-concept and academic achievement of secondary school students.

Null hypothesis 2: *There is no significant relationship between academic self-concept and gender of secondary school learners in Agricultural Science in the Zambezi Region*

The assumptions of the model follow the normal distribution of the variables and homogeneity of variance. As shown in Figure 3 below, the distribution of both variables is symmetric and the boxplots showed similar variance, which indicates that the assumptions of the model have been met. Based on the result of the t-test analysis of paired sample means at p = 0.05, there is no significant difference (P > 0.05) between the mean score of the self-concept of male and female Agricultural Science learners in the study area (see Table 1).

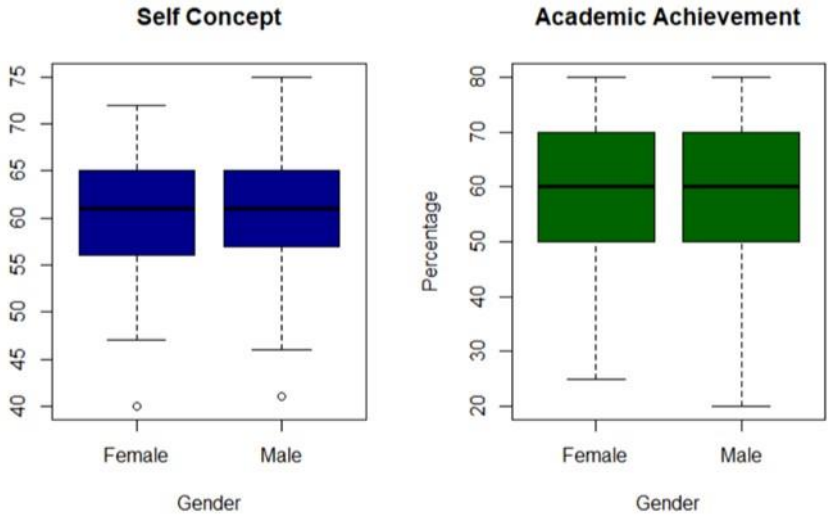

Figure 3. Boxplot of self-concept and academic achievement by gender

Perhaps, this could be understood that female learners no longer consider themselves inferior to their male counterparts as it was previously thought to be the case. The results of this study refute the findings by Jaiswal & Choudhuri (2014), which revealed that there is a significant difference between the academic self-concept of male and female students. However, Manjari & Pandey (2017), revealed that there is no significant difference between the self-concept of male and female art students

Null hypothesis *3*: *There is no significant relationship between gender and academic achievement of secondary school learners in Agricultural Science in the study area*

The assumptions of the model follow the normal distribution of the variables and homogeneity of variance. As shown in Figure 3 above, the distribution of both variables is symmetric and the spread of the boxplots showed similar variance, which indicates that the assumptions of the model have been met. Based on the result of the t-test analysis of paired sample means at p = 0.05, there is no significant difference (P > 0.05) between the mean score of the academic achievement of male and female Agricultural Science learners in the study area (see Table 1).

The results of this study are in line with the findings of the study by Ayodele (2011). The author revealed that there is no significant gender influence on the academic performance of students. A similar finding was recorded in this study, as there was no difference in the academic achievement of the learners by gender in the Agricultural Science.

Test	Test-Statistics	Degree of Freedom	p-value	Sample Correlation	Mean Female	Mean Male	Female Standard Deviation	Male Standard Deviation
Correlation	0.22941	218	0.8188	0.0155334				
t-test								
(Academic Self-Concept)	-0.91503	218	0.3612		60.18182	60.92727	6.085299	5.998026
t- test								
(Academic Achievement)	-0.49343	218	0.6222		58.27273	59.18182	13.50223	13.82272

Table 1: Tabulation of results summary

The results obtained from the face-to-face interviews revealed three emerging themes: (a) Learners' views about Agricultural Science as a subject, (b) learners' views about Agricultural Science's lesson instruction, and (c) learners' applications of Agricultural Science's knowledge.

Learners' views about Agricultural Science as a subject

Making Agricultural Science compulsory in senior secondary school curriculum would bring learning to life and this could help learners to experience Agricultural Science based on practice and investigations in actual life contexts (Knobloch, Ball, & Allen, 2007). The participants were asked: "Kindly share with me your view of Agricultural Science as a school subject. Would you like Agricultural Science to be made a compulsory subject for all learners up to grade 12?" The results of this study revealed that 100% of the participants indicated that Agricultural Science should be made compulsory in senior secondary schools up to grade 12. The following were the excerpts from the participants' responses concerning their views about Agricultural Science as a school subject: Making Agricultural Science compulsory in senior secondary school:

- *In my own opinion, I would like Agricultural Science to be compulsory for all learners because it helps in many ways.*

- *Yes, I think that is a good idea to make it compulsory because Agriculture is a subject that does not only deal with schoolwork but we also apply the skills and knowledge that we come up with at home.*
- *I would say yes, I agree that Agricultural Science should be made a compulsory subject because Agriculture helps learners to understand the concepts when it comes to farming.*

The above responses suggest that Agricultural Science should be made a compulsory school subject for all learners in the senior secondary school phase in the study area. Elsewhere in Malawi, Agricultural Science is a compulsory subject at the secondary school level (from a form I to IV), since the government of Malawi regards Agriculture as the mainstay of its economy (Vandenbosch, 2006).

Participants were further asked the question: Does Agricultural Science help you to understand any other subject better? If yes, explain how Agricultural Science knowledge helps you in understanding that subject better. One participant remarked that:

Yes for Agricultural Science, it helps me to understand geography better. I am doing geography as an extra subject and I understand it better than the others who are just doing general geography.

Interestingly, the majority (83%) of the participants also indicated that Agricultural Science helps them to understand Biology better. One participant responded as follows:

One of the subjects, which I can link with Agriculture, is Biology. When we are usually studying Agriculture, that knowledge can assist you in answering the questions in Biology.

Participants were further asked: Are you always satisfied with your performance in the Agricultural Science test and examination? If no, explain why. This question was asked to probe the participants' views of their academic self-concepts in Agricultural Science as a subject. One participant responded as follow:

I am satisfied although sometimes the teacher does not explain to us, some of the things we need to learn in class.

This response suggests that the respondent is not completely satisfied with his or her performance in Agricultural Science, attributing the poor performance to how the teacher presents the subject content during classroom instruction. Interestingly, the majority (83%) of the respondents indicated that they were satisfied with their performance in Agricultural Science. One of the participants remarked:

I am always satisfied with my results, whether it is a test or an activity because Agriculture just requires general knowledge…….

Learners' views about Agricultural Science's lesson instruction

Participants were further asked to give their views concerning Agricultural Science as a school subject as follows: People always say, Agricultural Science is easy to pass. Do you agree with them? If no, explain why. It was found that 100% of the participants indicated that Agricultural

Science is an easy subject to pass since it is a more practical subject affording hands-on knowledge during the teaching and learning process. One of the participants had this to say:

Yes, I agree Agricultural Science is easy to pass because it is about just having the basics that you are doing at home; it is the same things that you are taught at school, so it is easy.

The response by the participant conflicts with the finding by Mavhungu (2004), in the study on the factors influencing the performance in Agricultural Science in some high schools in the Limpopo province. The author revealed that Agricultural Science is not an easy subject to pass as the highest percentage of learners obtained less than 25% per cent in Agricultural Science compared to other subjects like Mathematics and Physical Science. The researchers further discovered that no learner achieved 70% or better in the end of year national examinations.

The participants were further asked the question: Have you ever been taken for a field excursion in Agricultural Science? If yes, mention the places you visited during the field excursions. Interestingly, the majority (83%) of the participants indicated that they have not been taken for field excursion in Agricultural Science. One of the participants remarked as follows:

I may say that we have only done that in Biology but we have never done that in Agriculture. There are so many places that we can visit for an Agriculture Science excursion here but then, we never visited such.

The above response suggests that the learners might not be exposed to field knowledge in Agricultural Science. Field excursion is one of the teaching and learning methods which can be used to motivate and generate more interest in Agricultural Science as well as other subjects such as Biology. Agricultural Science field excursions are meant to support the classroom learning activities. According to Eze & Asogwa (2016), field excursions expose learners to a new learning environment outside the classroom that will always enhance the learners' assertiveness and thoughts about Agricultural Science as a subject. According to Eze & Asogwa (2016), teaching through field excursions brings about improved memory of knowledge learners gained in Agricultural Science lessons. This suggests that remembering the subject knowledge is likely when demonstrations during field excursion are given to learners. Therefore, Agricultural Science teachers should be encouraged to utilize field excursions to aid the subject knowledge that they taught the learners.

The participants were also asked: Do you love the practical aspect of Agricultural Science? If no, explain why. The majority (67%) of the participants indicated that they loved the practical aspect of Agricultural Science. One of the participants gave the following remark:

Exactly, I love the practice because the more you practice, the more you get knowledge and skills to do the things involved…like keeping animals.

The above response by the participant suggests that the learners might be happy to learn Agricultural Science via practical work. Practical work has been described as any teaching and learning activity that at some point involves the students in observing or manipulating the objects and materials they are studying (Millar, 2004). This implies that learning can also effectively take place outside the classroom such as in the school garden, abattoirs and in the field where learners can acquire relevant Agricultural Science experiences. The findings of this study are in concurrence with the findings by Oladele, Subair & Thobega (2011) on the

effectiveness of field practical training for competence acquisition among students of Botswana College of Agriculture. The authors revealed that from the 47 Agricultural Science tasks on which students' competence were measured, 37 tasks changed the participants' competencies after exposure to practical training. Furthermore, Oloruntoba (2008) reported in the study on Agricultural students' perceptions of farm practical year programme at the University of Abeokuta, Nigeria, that the practical year programme helped them to improve their academic competencies in many Agricultural Science tasks.

Learners' applications of Agricultural Science's knowledge

Participants were asked: Does Agricultural Science knowledge you gained at school make you think of having your small garden at home to practice your skills? If no, explain why. The majority (83%) of the participants indicated that the Agricultural Science knowledge they have gained in school would help them to set up their small gardens at their homes.

The responses provided by the participants suggest that Agricultural Science practical lessons are important in educating and motivating learners to be future farmers and entrepreneurs. The teaching and learning of Agricultural Science in senior secondary schools is important as it is expected to produce learners with the necessary agricultural knowledge and skills that are needed to be self-employed through income-generating projects such as gardening (Diise, Zakaria, & Mohammed, 2018). Agricultural Science practical work is generally hands-on experience aimed at exposing learners to the practical lifelong learning experience. According to Diise et al. (2018), hands-on experience is an effective method of learning Agricultural Science in secondary schools because it makes learning more enjoyable and aids lifelong skills acquisition by the learners. The primary objective of teaching and learning Agricultural Science in secondary schools is to prepare learners with the necessary skills, knowledge and attitudes in Agricultural Science practices. Thus, the Agricultural Science knowledge that learners gained during the teaching and learning processes would enable and motivate them for self-employment (Olusoga, 2014).

Participants were further asked: Based on your performance in Agricultural Science, would you love to study Agriculture Science specialization in universities? If no, explain why. The majority (83%) of the participants indicated that they would love to study Agricultural Science at the university level. One of the participants raised the following remarks:

> *Yes, I would love to study Science, Agricultural Science in university, because it prepares me for life. The knowledge and skills that you get from school can also be used in university. You can take Agricultural Science like crop productions as major and you can even become a veterinarian with the knowledge that you have.*

The above remarks suggest that the learners are already aware of the career prospects in Agricultural Science and that further training in Agricultural Science opens a window of opportunities for many people to gain employment in various sectors of agriculture, including becoming self-employed. Hence, Agricultural Science training is concerned with acquiring practical skills (Olusoga, 2014).

CONCLUSION

This study investigated the self-concept of Agricultural Science learners in the Zambezi region. The results of the study revealed that there is no statistical evidence to show a linear relationship between academic self-concept and academic achievement among Agricultural Science learners in the selected senior secondary schools in the Zambezi region. There was also no significant difference between the mean scores of the academic self-concept of male and female learners as well as between the mean scores of academic achievements by gender. Thus, given equal opportunities and enabling learning environment, both the male and female learners could perform well academically in Agricultural Science in the study area.

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