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## **Curriculum Reforms and Competence Level of High School Agriculture Teachers in Swaziland**

**Sandile B. Ndwandwe**

P.O. Box 533, Manzini, Swaziland  
[sandilebirthwelln@gmail.com](mailto:sandilebirthwelln@gmail.com)

**Barnabas M. Dlamini**

Department of Agricultural Education and Extension  
Faculty of Agriculture  
University of Swaziland  
Private Bag Luyengo, Luyengo, Swaziland  
[dean@uniswa.sz](mailto:dean@uniswa.sz)

### **Abstract**

*A descriptive study was designed to determine competence level of high school agriculture teachers regarding curriculum reforms in Swaziland. The major objective of the study was to compare the International General Certificate of Secondary Education (IGCSE) and Swaziland General Certificate of Secondary Education (SGCSE) agriculture syllabi using content analysis procedure in terms of objectives, content topics contained in the syllabi, learning approaches used, available teaching facilities and assessment used. In this study, information from content analysis revealed that the SGCSE agriculture syllabus was similar to the IGCSE agriculture syllabus in some aspect and dissimilar in other aspects. The findings indicated that the SGCSE agriculture curriculum had three more objectives, and had more content topics which were responsive to the socio-economic challenges of the country. The IGCSE and SGCSE agriculture curricular had similar teaching facilities and similar teaching and learning approaches as they are both student-centered and skill based. It can be concluded that the new objectives and new topic contents incorporated into the SGCSE agriculture syllabus has created a gap in terms of knowledge base possessed by the high school agriculture teachers in Swaziland. There is a need for agricultural topics to change to reflect changing conditions in the environment and advances in technology. This is to enable high school agriculture teachers enhance their competencies in addressing the new objectives incorporated in the SGCSE agriculture syllabus, as well as teaching the new content topics incorporated in the SGCSE agriculture syllabus.*

**Keywords:** Competence, Content Analysis, Curriculum, High School Agriculture Teachers, IGCSE Agriculture, SGCSE Agriculture

### **Introduction**

The Government of Swaziland recognises the importance of skills-oriented education in addressing the problem of unemployment. Agricultural development was viewed as one important part in

addressing the problem of unemployment, given the nature of the geography and the economy of the country. Schools were singled out as key players responsible for bringing immediate and positive transformations. In order to fulfil this

mandate, David Gooday was tasked by the Education permanent Secretary to activate the formation of the Schools Agriculture Panel (Dlamini, 1986). The Schools Agriculture Panel is supposed to work hand-in-hand with the National Curriculum Centre in ensuring that an appropriate curriculum is in place and that adequate support in terms of teachers and equipment is provided to schools.

Agriculture teachers have a mandate to teach agriculture to the youth in schools in a formal setting because agriculture teachers possess technical agriculture and professional education (Dlamini, 2007). One of the aims of introducing agriculture in schools is to demonstrate the value of agriculture to the family and community so as to show how improved agriculture can contribute to the world-wide campaign for freedom from hunger. Another aim is to ensure that schools take an active part in rural development by the integration of agricultural activities into the school curriculum and development of a school farm, ensuring that students actively participate in farming events through the course (Magagula, 2005).

Since the inception of agriculture in schools, remarkable achievements have been made with regards to the attainment of the objectives of the programme (Dlamini, 1982; and Khoza, 1986). According to Sukati (2000), there has been proportional increase in the number of schools incorporating agriculture as a practical subject, and by 1998, there were 65 high schools, 96 secondary schools and 210 primary schools offering Agriculture curriculum. However, Dlamini (1990) noted inadequacies in the Ordinary Level Agriculture curriculum; its rigidity and non-flexibility in accommodation and the difficulty of injecting new relevant areas, which can assist school graduates to

consider agriculture enterprises as an alternative to self-employment.

The Government of the Kingdom of Swaziland underscores the fact that, since the country is faced with socioeconomic challenges such as poverty, unemployment, HIV/AIDS, increased competition in Direct Foreign Investments and global competition in products and market conditions, educational reforms are inevitable. The curriculum offered should take into account the demands of the industry, informal sector and special target groups as well the emerging and potential economic sectors (Ministry of Education and Training, 2010). His Majesty described agriculture as the backbone of the country's economy (The Ministry of Economic Planning and Development, 2006).

Agriculture being the backbone of the country's economy, there is a need to consistently evaluate the agriculture curriculum offered in schools and align it with the current socioeconomic challenges. A needs assessment revealed the importance of crafting business management skills, entrepreneurial skills, and information technological skills, improving human relations, and transforming the current curriculum to fuse some vocational and technical aspects in order to adapt to the foregoing changes (Ministry of Education, 2009). A major transition in agriculture curriculum in Swaziland is currently underway. The country's economic reforms have brought changes in traditional agriculture curriculum offered in schools. The Ministry of Education and Training have since moved from the O Level Agriculture curriculum to the International General Certificate of Secondary Education (IGCSE) Agriculture in 2007, then subsequently localized to the Swaziland General Certificate of Secondary Education (SGCSE) Agriculture in 2010 (Ministry of Education, 2009).

Borich (1980) defined a training need as "a discrepancy between an educational goal and trainee performance in relation to this goal." He further suggested that training programs could utilize his model by employing the two extreme positions: what are (the measured behaviours, skills, and competencies of trainees) and what should be (the goals of the training program). According to Borich, the discrepancy between these two positions can be used as an index to determine the effectiveness of training.

Curriculum changes are basically responsive to political and socio-economic challenges; therefore, new content information is likely to be crafted in the new curriculum. Such curriculum modification, in the modern era of technology, more often than not demands changes in pedagogy; hence, teacher competence is consistently challenged (Dlamini, 2004; Wallance, 1996; Ottevager, 2001; Taylor, 2000; and Bently, 1992). Indeed, the SGCSE agriculture syllabus came with new additional objectives and new topic contents. Since there were new additional objectives and new topic contents incorporated, the questions were (a) *How are high school agriculture teachers coping with the implementation of the syllabus, in terms of knowledge base?* and (b) *What are the knowledge gaps, if any, and in which aspects of the teaching and learning of agriculture?* There is a need to investigate teacher competence levels in teaching the SGCSE agriculture syllabus. Currently, there is no systematic documentation in Swaziland on professional competencies of the SGCSE agriculture teachers. Hence, a gap in the literature existed, and this investigation represented an important piece of research that contributed to the knowledge and needs of high school agriculture teachers in Swaziland.

According to Krippendorff (1989), content analysis is a research method that uses a set of procedures to make inferences from text. Content analysis therefore remains an ideal data collection procedure in this study, where the SGCSE and IGCSE agriculture syllabi can be compared objectively and systematically and have inferences drawn on similarities and differences in term of their objectives, content topics contained, teaching and learning approaches used, and assessment used.

The purpose of content analysis is to provide knowledge, insights, facts and a practical guide to actions (Krippendorff, 1989; Tesch, 1990; and Holsti, 1969). This suggests that inferences drawn from the two syllabi, with new additional objectives and new topic contents incorporated, can be used to develop insights on teacher competence and subsequently allow one to develop a practical guide to actions on identified in-service training needs of high school agriculture teachers in Swaziland.

### **Purpose and Objectives**

The purpose of the study was to determine the competence level of high school agriculture teachers regarding curriculum reforms in the Swaziland high school agriculture curriculum. The objectives of the study were to:

1. Compare the IGCSE and the SGCSE agriculture syllabi using a content analysis procedure in terms of their objectives, topics contained in the syllabi, learning approaches used, teaching approaches used, available facilities, and assessment used.
2. Identify knowledge gaps of high school agriculture teachers on the new topic contents included in the SGCSE agriculture syllabus.

### **Methodology**

The study design was descriptive, employing qualitative procedures. In this research design, data collection procedures involved content analysis of SGCSE and IGCSE syllabi. To collect data, a checklist was developed after extensive review of literature. Information from the two syllabi was compared to each other in terms of their objectives, content topics, learning approaches, teaching approaches, facilities, and student assessment, so as to identify the knowledge gaps. A summary of facts was drawn and then organized into similarities and differences, which enabled the researchers to give a careful and thorough description of the situation. A thorough analysis on the differences in terms of objectives and new topic contents offered by the two syllabi allowed one to determine gaps in terms of knowledge base, upon which insights on teacher competencies could be determined. Information obtained from content analysis was further analysed and presented in charts, tables, and figures.

To identify knowledge topic gaps of high school agriculture teachers on the new topic contents included in the SGCSE agriculture syllabus, content analysis comparisons of the SGCSE and IGCSE syllabi were conducted to identify differences and similarities of topics in the two syllabi to determine more and new topic contents incorporated into the SGCSE new agriculture syllabus.

### **Findings**

Objective 1 of the study was to compare the SGCSE and IGCSE agriculture syllabi in terms of their objectives, content topics, teaching approaches, facilities, and assessment.

*Content analysis of the objectives contained in the IGCSE and SGCSE agriculture syllabi*

The results of the study indicated that the IGCSE and SGCSE agriculture syllabi were similar in terms of objectives. Information contained in Table 1 revealed that the IGCSE syllabus had ten objectives, while the SGCSE syllabus had 13 objectives. The two syllabi had ten similar objectives which relate to practical teaching, stimulating positive attitudes towards agriculture, providing basis for further training, demonstrating farming as a profitable business, encouraging self-reliance and resourcefulness, and creating an awareness of opportunities and challenges in agricultural development. The findings are in line with Sukati (2000), who called for integration of the modern agriculture and pre-vocational agriculture programs, since they had similar objectives. However, the observed differences in this study were that the SGCSE agriculture syllabus had three more objectives, which were addressing current socio-economic challenges such as millennium development goals, human rights, gender equity and environmental issues.

#### *Content analysis by syllabus topics*

The results of this study indicated that there was a difference in topics taught at the SGCSE and the IGCSE agriculture syllabi. Information contained in Figure 1 revealed a list of new topic contents incorporated in the SGCSE agriculture syllabus. The findings revealed that there were more and new topic contents incorporated in to the IGCSE new agriculture syllabus to respond to socio-economic challenges and technological changes. The findings of the study are consistent with findings from several studies (Mbingo, 2002; Mabusa, 2002; and Wallance et. al, 1996). These studies called for curriculum innovations and for the curricula to be responsive to socio-economic challenges. The new topic contents covered

in the SGCSE curriculum that were not offered by the IGCSE curriculum were: HIV/AIDS, national and regional policies, desertification, global warming, pollution,

invasive plants, biotechnology and plant improvement, marketing, farm credit and agribusiness/entrepreneurship.

**Table 1.** The Objectives of the SGCSE and the IGCSE Agriculture Syllabi

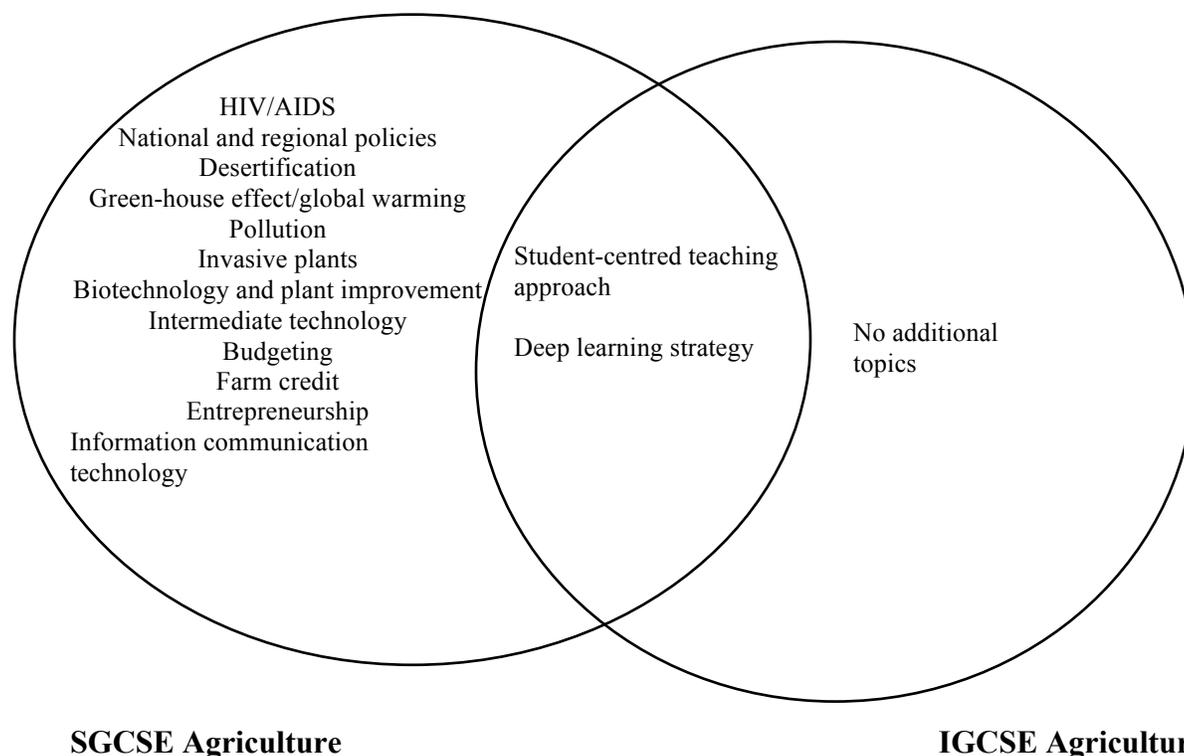
<b>SGCSE</b>	<b>IGCSE</b>	<b>Comments</b>
1. Demonstrate the value of agriculture to the family and community, and show how agriculture can contribute to the world-wide campaign for poverty alleviation and food security.	Demonstrate the value of agriculture to the family and community, and to show how improved agriculture can contribute to the world-wide campaign for freedom from hunger.	This objective was similar in both the SGCSE and IGCSE syllabi. It emphasized the contribution of agriculture in alleviating poverty and food security.
2. Develop scientific methods such as accuracy and precision, objectivity, integrity, enquiry and inventiveness.	Develop scientific attitudes such as accuracy and precision, objectivity, integrity, enquiry, initiative and inventiveness.	The objective was similar in both syllabi. It highlighted relying on scientific methods to solve problems.
3. Develop initiative and self-education so as to encourage resourcefulness and self-reliance.	Develop initiative, self-reliance, resourcefulness, problem-solving abilities, scientific methods and self-education.	The major objective was similar in both syllabi, and it encouraged students to be resourceful
4. Develop desirable values and attitudes towards the country's natural resources for sustainable agricultural development.	Ensure that schools take an active part in rural development by the integration of agricultural activities into the school curriculum.	The objectives was similar in both syllabi and emphasized a need to wisely use natural resources for development while ensuring that future generations also benefit from them.
5. Create awareness of existing problems so as to stimulate problem solving abilities.	Promote an appreciation of agriculture as an applied science.	In both syllabi, this objective emphasizes creating awareness, where students can appreciate agriculture and how it can be scientifically applied to solve existing problems.
6. Stimulate development of entrepreneurial skills necessary to initiate and manage business.	Encourage the teaching, in a practical manner, of basic principles and skills in agriculture, and of efficient farm management.	In both the syllabi, this objective encourages one to teach agriculture in a practical manner, such that students are motivated to start agricultural projects and encourage self-employment, since it is skill based.
7. Provide a background, together with basic sciences,	Provide an important element, together with the	In both syllabi, this objective encourages students to

mathematics and other relevant subjects, for more advanced studies in agriculture.	sciences and mathematics, in the background required for more advanced studies in agriculture.	understand that agriculture is science and should be linked with mathematics for advanced studies in agriculture.
8. Ensure that the learning of agriculture integrates with development agencies.	Stimulate an interest in, and create an awareness of, existing problems and opportunities in agricultural and rural development	In both the SGCSE and IGCSE syllabi, this objective ensures that learning of agriculture should be a vehicle that will initiate rural development and the community should benefit for learning of agriculture.
9. Encourage the development of an agriculture department farm or small holding, ensuring that learners actively participate in farming events.	Develop a school farm or a small-holding and ensure that students actively participate in farming the small-holding throughout the course.	In both syllabi, this objective ensures that students are provided an opportunity to work with various farm activities to develop the essential skills needed to be self- sustainable.
10. Encourage pupils to appreciate and have interest in agriculture because of its contribution to food security and poverty alleviation.	Stimulate positive attitudes by showing that farming can be both a beneficial and a rewarding occupation.	In both the syllabi, these objectives encourage students to develop interest in agriculture and consider it as a rewarding occupation that can be used toward food security and poverty alleviation.
11. Promote gender equity in the learning activities, by recognizing the realities of the roles played in agriculture.	X	This objective was new and was responsive to recent changes, addressing issues related to the millennium development goals, such as, human rights, gender equity.
12. Harness indigenous knowledge and experiences so as to promote socio-cultural diversity.	X	This objective was not contained in the IGCSE. However, after the IGCSE was localized, there was a need to teach agriculture in a manner in which indigenous knowledge and experience were used while promoting socio-cultural diversity.
13. Promote awareness of the impact of HIV/AIDS on agricultural production.	X	This objective was responsive to recent challenges and aimed at developing insight into the effect of HIV/AIDS on agricultural production.

*Comparisons of the SGCSE and the IGCSE agriculture syllabi in terms of teaching and learning approaches*

The findings of the study indicated that both the SGCSE and IGCSE agriculture syllabi foster “deep learning strategy,” and teaching is student-centred. Information contained in Figure 1 reveals that, in both

syllabi, teaching is student-centered and students foster a deep learning strategy. Teachers teach outside the instructional paradigm and encourage the use of problem-solving, inquiry learning, cooperative learning, field visits, and use of resource persons.



**Figure 1.** Comparisons in the content topics and teaching and learning approaches in the SGCSE and IGCSE agriculture syllabi.

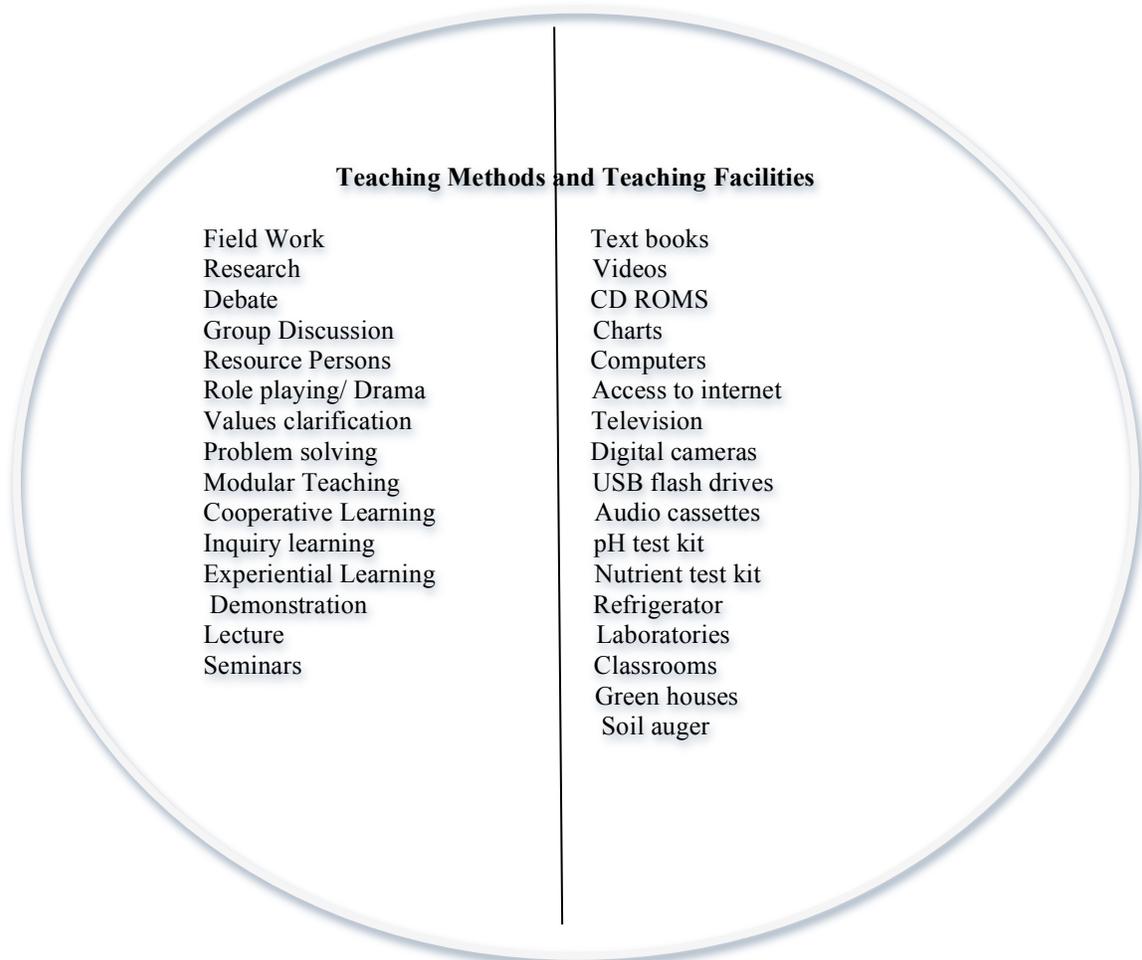
The results of the study are inconsistent with results obtained by Mbingo (2002). Mbingo (2002) suggested that teaching of agriculture should be practically oriented and competence based, use discovery learning, involve investigatory approach, be research based, problem-based, and seek to probe students about current problems and brainstorm on possible solutions to existing problems.

*Comparisons of the SGCSE and the IGCSE agriculture syllabi in terms of facilities*

The findings of the study indicated that both the SGCSE and IGCSE curricula require similar facilities and equipment (Figure 2). Since both the SGCSE and IGCSE are skill based, this requires facilities such as: books, videos, CD ROMs, charts, maps, instruments, solids, tools, trundle wheels, computers, access to internet, television, digital cameras, USB flash drives, audio cassette recorders, soil augers,

pH test kits, nutrient test kits, refrigerators, laboratories, classrooms, greenhouses etc. This study therefore acknowledges the work by Sukati (2000), where he concluded that the integration of modern agriculture and

pre-vocational agriculture programme would improve the use of physical and personnel resources.



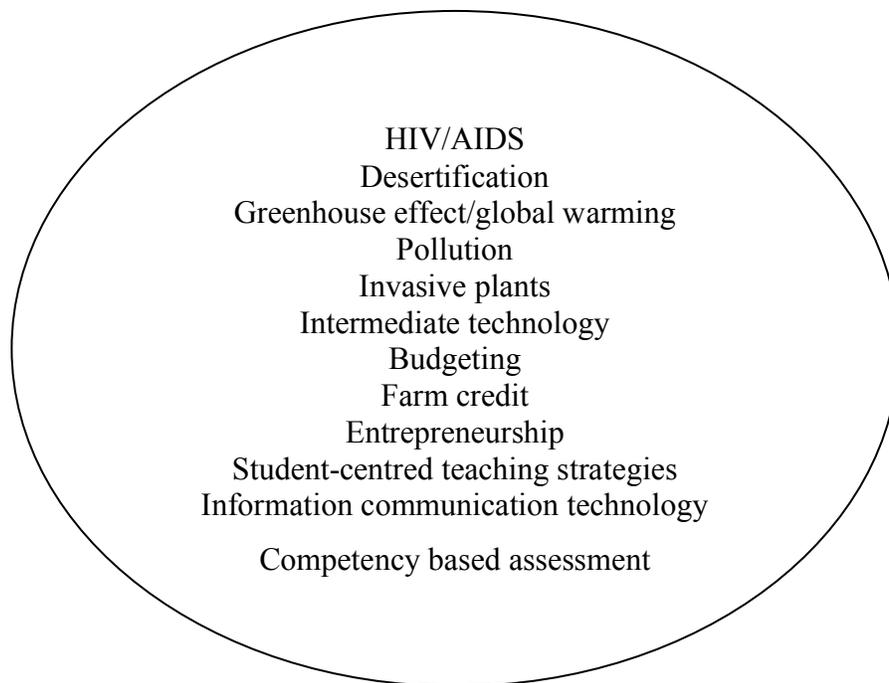
**Figure 2.** Teaching methods and facilities used in both SGCSE and IGCSE agriculture syllabi.



*Identified knowledge gaps in teaching the new topic contents included in the SGCSE agriculture syllabus*

Objective 2 of the study was to identify knowledge gaps of high school agriculture teachers on the new topic contents included in the SGCSE agriculture syllabus. Information contained in Figure 4 reveals a list of in-service training needs for high school agriculture teachers. The findings of this study revealed that curriculum reforms incorporated new topic contents, addressing current socio-economic

challenges; hence, inferences drawn from content analysis with regard to contents topics contained in the SGCSE and IGCSE agriculture syllabi revealed an insight that teachers had low competence levels on the new topics incorporated in the SGCSE agriculture syllabus and need in-service training on the following topics: HIV/AIDS, desertification, greenhouse effect/global warming, pollution, invasive plants, intermediate technology, budgeting, farm credit, and entrepreneurship.



**Figure 4.** Identified knowledge gaps of high school agriculture teachers in Swaziland.

**Conclusions, Implications and Recommendations**

The conclusion drawn from this study was that the SGCSE agriculture syllabus was similar to the IGCSE agriculture syllabus in some aspect and dissimilar in other aspects. The syllabi were similar in their objectives, teaching approach, and assessment. They were dissimilar in that the SGCSE agriculture syllabus had more objectives and new topic

contents integrated to address advances in agricultural technology, current socio-economic challenges, as well as addressing issues related to global and environmental challenges. The study examined and ensured that agricultural education curricula can validate knowledge gaps between what is to be taught by teachers to meet national, regional, and international standards, and the need for the provision of in-service training

on new curriculum topics to agricultural teachers.

The study revealed that there is a gap in terms of knowledge possessed by high school students and agriculture teachers and knowledge needed to successfully teach and learn the new topic contents incorporated in the SGCSE agriculture syllabus. Joerger (2002), Nzuza (1989), Mhlanga (1995), Mbingo (2002), and Mabusa (2002) reported agriculture teacher inadequacies regarding agricultural technology and agribusiness. This implies that for high school agriculture teachers to successfully implement the SGCSE agriculture curriculum, they need an urgent in-service training on the new topic contents. The study is adding new knowledge and making sure that teachers have the competency to deliver the new curriculum including the new topics, such as HIV/ AIDS, desertification, greenhouse effect/global warming, pollution, invasive plants, intermediate technology, budgeting, farm credit, entrepreneurship, student-centred teaching strategies, information communication technology, and competency based assessment. The identification and recognition of the new topics to be included in the curriculum is appreciable in considering national, regional and global concerns. The study is adding new curriculum topics and indicating that teachers need in-service training for them to have the competency to deliver the new curriculum.

There is a need for agricultural topics to change to reflect changing conditions in the environment and advances in technology. This is to enable high school agriculture teachers to enhance their competencies in addressing the new objectives incorporated in the SGCSE agriculture syllabus, as well as teaching the new content topics incorporated in the SGCSE agriculture syllabus.

## References

- Borich G. D. (1980). A needs assessment model for conducting follow-up studies. *Journal of Teacher Education*. 3(3), 39-42.
- Dlamini, B. M. (2007). *Strategies to Promote Interaction between Field Extension Workers and Agriculture Teachers in Swaziland*. Paper presentation. University of Swaziland, Luyengo, Swaziland.
- Dlamini, B. M. (2004). Self-reported level of competence and training needs in supervisory roles by secondary agriculture head in Botswana. *Journal of International Agricultural Education and Extension*, 11(1), 43-53.
- Dlamini, B. M. (1982). *Evaluation of the modern agriculture programme in secondary schools of Swaziland as perceived by agriculture teachers and headmasters*. Unpublished MSc thesis, West Virginia University, Morgantown, USA
- Dlamini, B. M. (1986). *Perceptions of professionals in agricultural education regarding the agricultural education programme in Swaziland*. Unpublished doctoral dissertation, The Ohio State University, USA.
- Dlamini, D. (1990). Vocationalizing secondary education in Swaziland. Terminal paper presented as part of the IIEP 1989/1990 trainees' programme. Paris, France. (11. Oct. 1990).
- Holsti, O. R. (1969). *Content Analysis for Social Sciences and Humanities*. Adison Wesley publishing company, London, Great Britain.
- Joerger, R. M. (2002). A comparison of the in-service needs of two cohorts of beginning Minnesota agricultural education teachers. *Journal of*

- Agricultural Education*, 43(3), 11-24.
- Khoza, E. (1986). *An Evaluation of the O-level agricultural programme in Schools of Swaziland*, Unpublished BSc Dissertation, Luyengo, Swaziland.
- Krippendorff, K. (1989). *Content Analysis*. Sage publications, California, U.S.A.
- Mabusa, K. (2002). Determining In-service Training Needs of Senior Secondary Agriculture Teachers in Botswana, Unpublished master's thesis, University of Swaziland, Luyengo, Swaziland.
- Magagula, S. D. M. (2005). *Agricultural Education: Curriculum Reform for Secondary Education in Swaziland*. Mbabane. Swaziland.
- Mbingo, S. T. (2002). *Curriculum Innovations needed for the transformations of the Junior Certificate and O'level Agriculture curriculum*. Unpublished master's thesis, University of Swaziland, Luyengo, Swaziland.
- Mhlanga, M. K. (1995). *Factors related to the unsatisfactory teaching of agriculture in Secondary Schools*. Unpublished BSc dissertation, University of Swaziland, Luyengo, Swaziland.
- Ministry of Education and Training (2010). *National technical and vocational education and training; and skills development policy and strategy*. Mbabane, Swaziland.
- Ministry of Education. (2009). *Report on Localizing the International General Certificate of Secondary Education*. Mbabane, Swaziland.
- Ministry of Economic planning and development. (2006). *Poverty Reduction Strategy and Action programme*. Mbabane, Swaziland.
- Nzuza, I.J. (1989). *Performance of Female agriculture Teachers as perceived by headquarters and coordinators in Swaziland*. Unpublished BSc dissertation, University of Swaziland. Luyengo. Swaziland.
- Sukati, S. J. (2000). *Relationship between pre-Vocational and Modern Agriculture programme in Swaziland*. Unpublished, master's thesis, University of Swaziland, Luyengo, Swaziland.
- Tesch R. (1990). *Qualitative research: analysis types and software tools*. New York. Farmer Press.
- Wallace, I., Mulhall, A. and Taylor, P. (1996). *Developing a Research Framework for Improved Policies for Agricultural Education and Training in Sub-Saharan Africa: Report of an International Consultation Held at Reading, UK, 20-21 March 1996*. Agricultural Extension and Rural Development Department, University of Reading: Reading, UK