

An Analysis of knowledge and Skills Acquisition in Home Economics in Integrated Science
and Technology Curriculum in Selected Teachers' Training Colleges in Malawi

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Thesis

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Declaration

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and I have not previously in its entirety or in part submitted it to any university for a degree.

Signature.....

Date

Dedication

I dedicate this work to my beloved husband Bernard and my children Elizabeth, Winnie, Chinsinsi, Jonathan and Uzie.

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A thesis is rarely the individual's effort, and this one has not been spared. I owe emotional, social and intellectual debts to a range of people who have supported, guided and influenced me at various stages of my work: I am very grateful to the Almighty God for making it possible for me to undertake these studies, and keeping me in good health throughout my studies.

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Abstract

This thesis is an interpretive analysis of knowledge and skill acquisition in Home Economics in the integrated Science and Technology curriculum in the Teachers' Training Colleges in Malawi. The study was situated within the interpretive paradigm and constructivism theory. The research design which guided this study was mixed method but bias to qualitative with the critical research question as: How has the introduction of the Integrated Science and Technology curriculum affected the acquisition of knowledge and skills in Home Economics?

Five methods were used to collect data which include: document analysis, questionnaires, classroom observations, face- face interviews and FGDs. The research sites were the two TTCs Kasungu and Lilongwe. The sites had a sample of ten lecturers and twenty students currently teaching and learning integrated Science and Technology.

The results have revealed that there is less knowledge and skill acquisition in Home Economics while integrated in Science and Technology curriculum among learners. What was observed was theoretical teaching and assessment without or with few resources. Less challenging activities were carried out which were attributed to lack of subject substantive dimensions from lecturers. These were attributed to: background factors as a result of inadequate training at the university colleges as well as teaching colleges in inform of CPDs and Curriculum structure factors.

The study proposes that teaching of Home Economics can be improved if subject integration starts right away from university colleges. Home Economics to be taught as a separate subject and the lecturers should receive enough financial and administrative support.

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List of Abbreviations

Bio	Biology
Chem	Chemistry
CPDs	Continued Professional Development
FGDs	Focus Group Discussions
HEC	Home Economics
JICA	Japanese International Cooperation Agency
IPTE	Initial Primary Teacher Education
MANEB	Malawi National Examination Board
MASTEP	Malawi Special Teacher Education Programme
MIE	Malawi Institute of Education
MITEP	Malawi Inservice Teacher Education Programme
MOE	Ministry of Education
P/S	Physical Science
SES	Social and Environmental Sciences
S/Tec	Science and Technology
TALULAR	Teaching and Learning Using Local Available Resources
TTC	Teachers' Training Colleges
UNESCO	United Nations Educational, Scientific and Cultural Organization

Chapter 1: Introducing the Study

An Analysis of knowledge and skills Acquisition in Home Economics in the Integrated Science and Technology Curriculum in Selected Teachers' Training Colleges in Malawi

This chapter is an outline on background information on the teaching of Home Economics in public Teachers' Training colleges in Malawi. The chapter also contains a problem statement, purpose of the study, significance of the study, research questions and objectives which were used to carry out the study.

1.1 Background information

Musset (2010) ; Malawi Institute of Education (MIE), (2004) ; Banda (1982) observe that the education systems worldwide for so many years have been affected by several challenges which still exist to date. Among some notable ones include; low performances, low knowledge and skill acquisition, absenteeism, high dropout rates in schools, curriculum overload and shortage of teachers who can competently handle the science subjects like Home Economics. In relation to this development, there has been dramatic decline in a number of teacher preparation programmes. Splitting of subjects into different disciplines like Home Economics to be split into human ecology and family science serves as an example among the changes in the teacher preparation programmes.

On this regard Smith and Leah de Zwart (2010); Mchanzime (2003) noted that the governments globally have resorted to employing or sometimes hiring teachers qualified in other focus areas as well as changing the curriculum. This development has not spared the government of Malawi in Particular the Teachers' Training Colleges in the education sector. In Malawi, Home Economics is no longer a single subject but has been incorporated into other science subjects like Science and Technology.

Since 1964 to 2006 the Primary Teachers Training colleges in Malawi had a fifteen subject areas curriculum where Home Economics was taught as a separate subject. During this period, the entire Teachers' Training programmes in Malawi followed the same curriculum (Hauya, 1992; MIE, 2004). From 2006, the Teacher Training Colleges stopped the fifteen subject areas curriculum where Home Economics was taught as a separate subject and replaced it with the Initial Primary Teacher Education (IPTE) curriculum of ten subject areas of study, and two professional areas, which are Foundation studies and Teaching Practice. Since 1964 up to 2006, the areas of study were categorized into five departments namely:

- Social studies; which includes General studies and Religious education,
- Mathematics and science; which includes Mathematics, Science, Agriculture and Home Economics,
- Practical and Performance Arts; comprising of Music and Physical Education,
- Languages; which includes, Chichewa and English,
- Foundation studies; which also organized Teaching practice in collaboration with other faculties.

Meanwhile the content and methodology are integrated in the subject areas, while Foundation has been incorporated Teaching Practice but as a separate learning area.

The new curriculum for teacher training has still maintained the five departments with the same learning areas. But there is a slight change in the Mathematics and Science Department where now Home Economics has been integrated in Science and Technology as a new learning area. This learning area is composed of the following disciplines; Biology, Physical Science, Chemistry and Home Economics. This meant a shift from handling of Home Economics as a subject but as concepts in integrated Science and Technology. Home

Economics does not have its own experts and it does not appear as a separate subject on the time table in the Science Department (Ministry of Education, 2006).

Contardi, Fall, Gina, Gandee and Treadway (2000); Meghan (2008) state that there is a strong case to be made for the integrated curriculum. The integrated curriculum strengthens skills that students encounter in one content area but also practice in another, and it can lead to the mastery of those skills. In this case learners solve the problems together while making real-world connections with a variety of disciplines. It is also a more authentic way of learning because it reflects what learners' experience, both professionally and personally in the world. In the integrated curriculum, students work together in the collaborative manner while the teacher just facilitates the process of learning.

However United Nations Educational Scientific and Cultural Organization (UNESCO) (2003) warns that an integrated approach requires careful planning within and across the units and year levels to ensure that subjects are comprehensive and coordinated. If the bodies of knowledge are different it will be merely impossible to integrate them in any real sense.

It is against this background where Home Economics has been integrated in Science and Technology curriculum (S/Tec) as a science subjects which raises a great concern to whether or not the curriculum really prepares the student teachers with reasonable and the desired knowledge, skills, and attitude in Home Economics in the Teachers' Training colleges in Malawi. For the purpose of this study, the integrated curriculum is defined as a type of curriculum using a multidisciplinary approach which combines different subject parts so that they are taught together to form one single subject. This curriculum approach purposefully draws together knowledge, skills, attitude and values from within or across subject areas to develop a more powerful understanding of ideas (Contardi, et al 2000). Hence this study

examined the knowledge and skills acquisition in Home Economics in the integrated S/Tec curriculum.

1.2. Statement of the Problem

The integration of Home Economics into Science and Technology is drastically affecting the acquisition of knowledge and skills in Home Economics. Initially, in the old curriculum when Home Economics was taught as a separate subject, the subject included the following concepts; food and nutrition, food security, family studies, needle craft (clothing and textiles), human development (child care) and home improvement. In these areas of study the learners were equipped with essential knowledge and skills in cooking, (Nutrition and Health), personal hygiene, sewing, budgeting, family resource management, time management, home management childcare and entrepreneurship (MOE, 1999; Molewa, 2000). Currently these skills seem not to be emphasized in the Integrated Science and Technology curriculum.

In Malawi Home Economics is perceived as a multidisciplinary and integrated subject whose main aim is to promote family wellbeing. As such the subject adopts an ecological perspective in dealing with problems through the use of practical problem-solving approaches (Kunkwenzu, 2007). Hence Alberta (2000) warns that the aspect of integration requires a great deal of preparation both at curriculum development and implementation to ensure meaningful learning.

Despite the introduction of integrated curriculum to adopt learner -centered approaches in Teachers' Training Colleges in Malawi in 2006, the integrated Science and Technology curriculum has seriously compromised the quality of skill and knowledge acquisition in Home Economics.

During the researcher's involvement in teaching of students teachers at Kasungu Teachers' Training College for three years the researcher observed some variations in the way college

lecturers handled their lessons in Science and Technology curriculum. It was observed that not all lecturers who were teaching Science and Technology were experts in all the subjects which are integrated in the learning area. These practices somehow seem to have affected lecturers to teach all the concepts in the curriculum effectively, affecting the quality of knowledge and skill acquisition in some concepts especially those which require a great deal of practical work like Home Economics.

The concern was even more evident when the researcher was involved in formulating and marking of the Initial Primary Teacher Education (IPTE) Science and Technology students papers. The researcher observed some variations on how different students responded to similar questions with very little demonstration of an understanding of the concepts especially those which were related to Home Economics. In addition, looking at the multidisciplinary and diverse nature of the subject itself the researcher wondered if the curriculum really equipped the students with enough knowledge and skills in Home Economics, as it requires a great deal of expertise with regard to the subject's substantive dimensions.

Similarly from outside research, UNESCO (2003) observes that integration of Health education with other subjects such as Science and Technology, Home Economics, Social studies and Physical education the findings revealed that some skills like hygiene were not emphasised in the curriculum. Meghan (2008) also conducted similar research on integrating subjects to find out if the integrated curriculum really promotes critical thinking among adolescents in secondary education. The results confirm that some components within the curriculum were not given enough attention and were down played because teachers lacked knowledge across all the subjects.

Due to these experiences it made the researcher to start questioning the integrity and authenticity of the Science and Technology curriculum offered in the Teachers Training colleges in Malawi, with regard to knowledge and skill acquisition in Home Economics. Therefore the study was conducted to examine knowledge and skill acquisition in Home Economics in the integrated Science and Technology curriculum in the public Teacher Training Colleges in Malawi.

1.3. Significance of the Study

From the literature, it has been observed that many studies conducted on the integrated approach have been from outside Malawi; hence little is known on the Malawian context especially on the Teacher Training. For instance, many results by some researchers like, UNESCO (2003); Meghan (2008); Alberta education (2007) were based on the survey reports which were conducted in early childhood schools, primary and secondary. Again the studies were also conducted on other learning areas like Health education integrating it with Science and Technology, Home Economics, Social studies Physical education and Social studies integrating with Geography. Hence the literature leaves a gap as little is known on how Home Economics knowledge and skills are acquired by learners in the integrated Science and Technology curriculum in the Teachers' Training Colleges in Malawi. It was the interest of this study to establish an understanding on the factors which can affect knowledge and skill acquisition of other learning areas in the integrated curriculum like Home Economics.

It is hoped that the information obtained from this study will bring an insight into the teaching of Home Economics and improve performance of student teachers. This will translate into improved performance of learners at primary school level. Again the information will help practitioners and policy makers, for example heads and members of the science department, to make appropriate decisions on areas which will require the Continued

Profession Development activities (CPDs), to improve their performance in teaching and assessment of Home Economics. The research is also hoping to provide information to the curriculum developers to revisit the curriculum with regard to the structure. The reports are hoped to be disseminated to them by hand.

1.4. Main Research Objective

The study aimed at finding out how the introduction of the Integrated Science and Technology curriculum has affected the acquisition of knowledge and skills in Home Economics.

1.5. Objectives of the Study

- To find out how the lecturers are prepared to handle Home Economics in the integrated Science and Technology curriculum.
- To analyse the type of knowledge and skills taught in Home Economics in the integrated Science and Technology curriculum.
- To investigate how Home Economics is taught in the integrated Science and Technology curriculum.
- To explore lecturers' experiences in handling Home Economics while integrated with other science subjects.
- To explore the learners experiences in understanding Home Economics concepts alongside other science subjects in the integrated Science Technology curriculum.

1.6. Critical Research Question

How has the introduction of the Integrated Science and Technology curriculum affected the acquisition of knowledge and skills in Home Economics?

1.7. Research Questions

- How are the lecturers prepared to teach Home Economics in the integrated Science and Technology curriculum?
- What type of knowledge and skills are taught in Home Economics in the integrated Science Technology curriculum?
- How is Home Economics taught in the integrated Science and Technology curriculum?
- What are the lecturers' experiences in handling Home Economics while integrated with other science subjects?
- What are the learners' experiences with the integrated Science and Technology curriculum in acquiring skills in Home Economics?

1.8. Purpose Statement

The study aimed at examining how the introduction of the Integrated Science and Technology curriculum has affected the acquisition of knowledge and skills in Home Economics.

1.9. Conclusion

The chapter has looked at the background to the problem by providing the general overview of the trends which occurred in the education system and curriculum changes in the Teachers' Training colleges in Malawi. The chapter has also discussed the problem statement of the study, significance of the study, purpose of the study, research questions and objectives which guided this study.

1.9.1. Organization of the Study.

The study has been organized into 6 chapters. Chapter 1 presents the background information on the trends of teacher education in Malawi with regard to curriculum integration, statement of the problem, significance of the study, research questions and research objectives and purpose statement. Chapter 2 contains a review of literature on topics regarding teacher education system in Malawi, curriculum integration and the teaching of Home Economics. Chapter 3 has described the methodology of the study. Presentations of findings have been outlined in chapter 4. Chapter 5 contains discussion of the results and their implications on teacher education in relation to teaching of Home Economics. Chapter 6 has included a summary of the findings, conclusion, and recommendations for the improvement on teaching of Home Economics, areas of further study and limitation of study.

1.10. Definition of Terms

Because words of everyday language are rich in multiple meanings (Creswell, 1994) it has become imperative to define some concepts that have been used in the context of the research and its subsequent right up.

Integrity – means nature of Home Economics content/ wholeness.

Authenticity- means how this content in Home Economics is taught/ genuineness.

Weighting is the same as suggested by Nitko (1983) that it is a coefficient assigned to elements of frequency of distribution in order to represent their importance, or simply stated as proportionality of elements within the curriculum.

Knowledge and skills acquisition- means ability that has been acquired by training.

Chapter 2: Review of Related Literature

2.1. Introduction

2.2. Teacher Education System in Malawi

This chapter aims at exploring what has been documented on integrated curriculum and related theories with regard to knowledge and skill acquisition of the integrated subjects. This will assist to establish what is known about the professional world of teaching Science subjects like Home Economics while integrated. Therefore this literature review focuses on the following issues: Teacher education system in Malawi with a special focus on the pre-service Initial Primary Teacher Education Programme (IPTE), concept of curriculum in general and integrated curriculum, key requirements for successful curriculum integration, benefits of integrated curriculum to both teachers and learners, theories regarding knowledge and skill acquisition among learners. These aspects have also formed part of conceptual and theoretical frame works guiding this study. Lastly research studies on the teaching of Home Economics including challenges which teachers face when teaching the subject as well as the pedagogical approaches used to teach the subject have been discussed.

2.2.1. Pre-service Training System.

Currently, Malawi has six public Teachers' Training Colleges namely Karonga, Kasungu, Lilongwe, St Joseph, Machinga and Blantyre but there are two additional TTCs, which are yet to be opened and these are Phalombe and Chiradzulu. In addition there are six private Teachers' Training Colleges, which are Emanuel in Lilongwe, Development Aid for People to People (DAPP) in Dowa, DAPP .Chilangoma in Thyolo, DAPP in Mzimba, Mariam in Mangochi and Loudan in Mzimba (Japan International Cooperation Agency, 2011).

2.2.2. Background of Initial Primary Teacher Education (IPTE).

Since 1964 to 2005 Malawi has undergone several changes in its teacher training programmes. Malawi has been training primary grade teachers using three modes at certificate level. These modes are a two- year which started earlier in 1964, a one- year special residential teaching programme which started in 1987-1989 which specifically targeted serving temporary teachers. The syllabus stressed on methodology because the assumption was that these teachers have got vast experience but needed upgrading to sharpen skills and obtain formal certification. Again, due to increase in number of learners the government increased number of trained teachers. This led to introduction of a three- year special teacher training programme through distance mode known as Malawi Special Teacher Education Programme (MASTEP). The goal of the program was to increase the number of teachers by 4,500 by 1993 to try to meet a 60:1 pupil -teacher ratio. The government adopted this method because it wanted to train more teachers within a short period of time and the programme was cost- effective as compared to conventional programmes (Hauya, 1992).

MASTEP was followed by MITEP following the full implementation of Free Primary Education (FPE) in 1994; primary school enrolment also rose from 1.2 to 3.2 million. The government also recruited over 22000 untrained teachers to try to meet the demand of teachers. These teachers were trained through the Malawi Integrated In service Teacher Education Programme from 1994 to 2005 (MITEP) (National Education Sector Plan, 2008-2017; World Bank, 2010).

MITEP programme ended in 2005 because it had limited capacity for provision of quality pre-service and in-service teacher training. In addition to that the primary school curriculum went through curriculum reform and there was need to change mode of training teachers to cater for current learners' needs. It was also discovered that one of the shortfalls of the

previous primary curriculum was overloading within the subject and across the curriculum (MIE, 2004). All these conditions necessitated the government to embark on different programme of training teachers in order to align the teacher education with the reformed primary curriculum. This resulted in the onset of Initial Primary Teacher Education (IPTE), or one plus one model in the Teachers' Training colleges.

This two year mode of training consists of one year residential training in the college where students are introduced to classroom pedagogy and course content and another year for practicum in schools (MIE, 2004; MOE, 2006). This two- year programme is outcome based and is currently run with another distance mode (Open and Distance learning ODL) which has a duration of two and half years. The programme started in 2011 to meet the demand shortage of qualified teachers especially in rural areas. The programme follows the same curriculum like that of IPTE conventional mode which is the outcome based (MOE, 2011; MOE, 2005; MOE, 2006).

2.2.3. IPTE Outcome based curriculum.

An outcome based curriculum is focused on student's achievement with emphasis on participatory approaches. To achieve these outcomes the students are introduced to new knowledge in the context of the existing knowledge so that they can develop new understandings. Therefore, the process of learning is integral of the final product. These products are the outcomes which learners achieve in terms of teaching competences and are clearly stated before they begin teaching (MOE, 2005). However on ground the integrated Science and Technology curriculum seems not to be matching with purpose and mission statement with regard to knowledge and skill acquisition in Home Economics. Transfer of all knowledge and skills in Home Economics seems not to be fully demonstrated among the learners in teacher training colleges in Malawi. The achievements made at the college will

only be seen to be truly beneficial when students transfer them beyond college and view learning as a lifelong process. Therefore the government should put in place mechanisms which will allow learners acquire enough knowledge and skill in a particular subject.

2.2.4. Learning Area and Core Element.

In order to address the issue of overloading the reformed teacher education curriculum introduced learning areas. A learning area is the organized body of knowledge, skills, values and desirable attitudes that serve as a foundation for future learning. Each learning area has got the rationale in which core elements are derived MOE (2006). The IPTE curriculum comprises of ten learning areas as stipulated in the course design below:

2.2.5. Course Design.

The course was designed to last for two years for each intake and had the following components:

First year -residential phase and second year-school -based phase. The residential phase of this course has three terms of 14 weeks each. During this period the students cover the following learning areas; refer to table 1 below:

Table 1: IPTE Learning Areas

Learning area	Hours (hours per week)
Agriculture	60(2)
Chichewa	90(3)
English	150(5)
Expressive arts	90(3)
Education Foundation studies	150(5)
Life skills	60(2)
Numeracy and Mathematics	120(4)
Religious studies	30(1)
Science and Technology	90(3)
Social and environment studies	60(2)

In the second year phase students familiarize themselves with the school situation and put into practice the theories they learnt in college (MOE, 2006).

2.2.6. Modes of assessment in IPTE Programme.

In IPTE programme assessment comprises of two major components: continuous and summative assessment. Both modes involve assessment of tasks that measure the student teacher's achievement of knowledge, skills, values and attitudes. These tasks include oral presentations, practical tasks, report, research, tests and national examination administered by Malawi National examination Board (MANEB). The 40% comes from the continuous assessment and the 60 % comes from the national examinations. The students are examined in all the ten learning areas. Those who fail more than three subjects are not allowed to proceed into second year. Instead they are asked to sit for supplementary examination. The Students are required to write major assignments which contribute to 40% of the student's

grade. This major assignment can be in form of the project which has to be completed before they leave the college for school based phase. The assignment and project are supposed to be marked by specialist lecturers in a particular learning area. Lecturers are allocated load for marking depending on number of lecturers in the department. Monitoring and standardization of the assignments and college based project is done by Malawi National Examinations Board (MANEB). While in the field 40% comes from supervision grades by other stakeholders and projects. The 60% comes from TP supervision of college lecturers. Final grades from school based phase have to come from TP moderated grades done by external moderators plus the projects and these grades should be sent to MANEB. MANEB has to award the education profession certificate. This is a combined grade from continuous and summative assessment in all learning areas and teaching practice (MOE, 2006). This is in support of what Alberta (2007) suggests being one of the important requirements in integrated curriculum because assessment forms part of the learning process and it has to be the interactive process between a teacher and a learner. But practically it seems the implementation is affected.

2.3. The Concepts of Curriculum

In formal education, a curriculum is the planned interaction of pupils with instructional content, materials, resources, and processes for evaluating the attainment of educational objectives (MOE, 2005). On a contrary view Nitiko (1994) observes that curriculum is the total learning experience provided by a school. It includes the content of courses (the syllabus), the methods employed (strategies), and other aspects, like norms and values, which relate to the way the school is organized. However both definitions target a learner as a central point in the teaching and learning process.

Progressive Points of View on Curriculum

Nitiko (1994) has the view that to a progressivist, a listing of school subjects, syllabi, course of study, and list of courses of specific discipline do not make a curriculum. These can only be called curriculum if the written materials are actualized by the learner. Hence, curriculum is defined as the total learning experiences of the individual. This definition is anchored on Dewey (2009)'s definition of experience and education. The Dewey believed that reflective thinking is a means that unifies curricular elements. The Dewey suggests that thought is not derived from action but tested by application. The research study was guided by these two definitions, that is the formal education from Nitiko (1994) and the progressive point of view by Dewey (2009).

The research study mainly focused on curriculum as a systematic process in which each component is crucial for successful learning of Home Economics. Meaning to say, curriculum is the instructional process which works like a system in which all interrelated components work together towards a defined goal. The components depend on each other for the input and output. The components of the system are learners, the instructor, the instructional materials as well as the methodology applied to deliver content and the learning environment. All these components interact in order to achieve the goal (Dick & Carey, 1985). In this study, the instructor, the learner, the instructional materials, the content and methodologies which were used to deliver the content were all analysed in addition to the learning environment to establish an understanding to whether Science and Technology curriculum allows enough knowledge and skill acquisition in Home Economics. In the Teachers' Training Colleges in Malawi the approach which has been adopted since 2006, is the integrated type of teaching approach and Home Economics has formed a component of this curriculum.

2.4.1 Curriculum Integration.

Research studies have revealed that the integrated curriculum has been used in many countries like Canada, United States of America, Britain, Manitoba and South Africa (Alberta, 2007; Mkholo, 2012). But the curriculum mainly focused on primary and secondary education with little known in Teacher Training colleges in particular to the Malawian context. The study has therefore provided new knowledge on implementation of integrated curriculum, with regard to teaching of Home Economics while integrated in Science and Technology.

2.4.2. Concept of Curriculum Integration and Home Economics.

Alberta education (2007) defines curriculum integration as the way of organizing instruction in an interwoven, connected, thematic, interdisciplinary, multidisciplinary, correlated, linked and in a holistic manner. Hence, curriculum integration can be described as an approach to teaching and learning that is based on both philosophy and practicality. Thus, it can generally be viewed as a curriculum approach that purposefully draws together knowledge, skills, attitudes and values from within or across subject areas to develop a more powerful understanding of key ideas. Therefore, curriculum integration occurs when components of the curriculum are connected and related in meaningful ways by both the students and teachers. Hence, Contardi, et al (2000) make a plea to integrate the content from different disciplines only when there are obvious connections and touch points among them. In addition, Bilbao, Lucido, Iringan and Rodrigo (2008) suggest thorough preparation of the curriculum so that activities should not be “pointless busy work” or distorts the content or be beyond the student’s knowledge and skill levels if the curriculum is to be successful.

Grant and Paige (2007) emphasize that successful curriculum integration is characterized by drawing on several discipline areas together into one learning area with flexible timetables,

team teaching, student-centered learning and high levels of interaction between students and teachers and between teachers themselves. Much that Grant and Paige cite the characteristics of the integrated curriculum; it seems these characteristics are not clearly reflected in implementation of the integrated Science and Technology curriculum in the Teachers' Training Colleges in Malawi therefore it was not known if the learners were indeed fully prepared to teach the aspects of Home Economics in the primary schools. Hence there was need for carrying out the study which attempted to reveal the reasons why the implementation of the curriculum is diverting from the norm in the Malawian context. And this directly addressed question number three of research question *on how is Home Economics taught in the integrated S/Tec curriculum?*

Alberta (2007) further states that an integrated approach to teaching is possible when themes or projects are combined and students are able to make meaningful and relevant connections between the different disciplines. In an integrated approach there is an added advantage that in addition to creating a more profound understanding of the material, repetition between the subjects decreases. The research studies in South Africa by Mkholo (2012) also suggest that the integrated curriculum provides autonomy to the instructor to structure his or her own learning situation, hence existence of different curricula processes. However, Hinde (2005) observes that an integrated curriculum is a potential power design, but only if it is implemented in an appropriate way that promotes significant education goals. Not as a mere way to cut across the disciplines. For instance Hutchings (2006) noted that the time taken for preparation of the needed themes, coordinate with other teachers, exploration of resources, and consulting students about issues of their concern poses a great challenge for effective implementation of the integrated curriculum.

In agreement, Montgomery (1999) in Meghan (2008) cites examples on research studies on critics against the idea of integrated curriculum using several arguments; Firstly,

Montgomery asserts that it is sometimes appropriate for the information to be taught within the content area. Some concepts run the risk of becoming confused when connected to unrelated subject matter. Secondly, most teachers have always been a part of a somewhat modernist method of teaching. Therefore, implementing integrated curriculum becomes increasingly more difficult. Thirdly, critics claim that many teachers may lack knowledge and skills of the various disciplines, this too affect the performance of teachers. Finally, a key criticism of integrated curriculum is assessment. Schools continue to struggle with effective methods to assess student achievement with regard to higher level thinking and deeper understanding. Hence, there is danger in having an examination oriented teaching approach. The danger is that this teaching approach may not necessarily focus on subject objectives but may only focus on passing an examination. This will omit certain values and skills which might be learnt along with the subject. For example Home Economics is linked with learning of values and attitudes used in everyday life hence not all these may be embedded in an examination paper.

Therefore Hinde (2005) had the view that for integrated curriculum to replace traditional teaching styles, the entire structure of the school needs to change. For example, there should be block scheduling where by teachers have to teach together more than one class, or learning area. And teaming in which lecturers from different backgrounds can be teaching one integrated subject together, need to be implemented.

2.4.3. Key Requirements for Successful Curriculum Integration.

Curriculum integration is more than just clustering of related learning outcomes. The selection of learning experiences should be based on the extent to which they promote progress or broaden and confirm understanding (Nitiko, 1994; Bilbao, et al., 2008). Alberta

(2007) confirms that there is no best way of curriculum integration; however the following principles have to be considered:

2.4.4. 1.Content Integrity

Alberta (2007) emphasizes that curriculum should possess a solid understanding of the various curricula and intentionally linking curriculum outcomes by a central organizing concept, for example, a topic, theme, issue, project or problem. This will ensure that integrity of the content is maintained. In addition to that the intent of the philosophy, rationale and outcomes of individual subject areas should be maintained and linkages between subject areas should be explicit.

2.4.4. 2. Authenticity

The connections made as part of the integrative process must make sense and be significant. Topics need to be challenging and profound so that generalizations and a deeper understanding of fundamental ideas can be developed through different content and contexts (Alberta, 2007). These two principles raised a great concern if the integrated Science and Technology curriculum really meets these demands for effective knowledge and skill acquisition in Home Economics as well as providing the relevant assessment tasks. Mkholo (2012) citing in Dun et al., (2005), asserts that “*it is not unusual for teachers to assess [knowledge] and skills that are not stipulated in a subject's learning outcomes*”. This statement suggests that generally teachers lack the skills in aligning assessment tasks they construct with the intended learning outcomes. Thus they are faced with a challenge to align assessment tasks with the learning outcomes stipulated in the official curriculum.

On the other hand opponents argue that each discipline operates under fundamentally different ways of knowledge. Duibhir and Cummins (2012) believe that robust understanding of important concepts depends on the study of disciplines. This implies that teachers should

have adequate knowledge to teach the subject effectively. In agreement Tytler (2004) in Hutchings (2006) argues that research studies conducted on integrated curriculum in Canada Alberta education states revealed that one disadvantage of an integrated curriculum is that one of the other learning areas is downplayed or minimized. Tytler further states that Science is one of the subjects that suffer particularly if it is simply a matter of trying to incorporate it within a broad topic or learning area. Teachers may sometimes lack all skills to handle the subject. Hence, it is essential that students are introduced to the various disciplines and the relationships between them should also be established.

2.5. How Does an Integrated Curriculum Benefit our Students?

Integrated curriculum adopts a student-centred approach, by nature of its definition. It moves further away from the modernist viewpoint. With an integrated curriculum, a "right" way to complete a task does not exist. Students are free to reach conclusions on their own and they are provided with many different perspectives, affording students the opportunity to question the conclusions of their teachers. Additionally in the integrated curriculum students identify both the distinctive qualities and related elements of subject areas; hence students become more involved in their learning because the context is more understandable and meaningful to them (Alberta, 2000; Meghan, 2008; Mkholo, 2012). But the implementation of Science and Technology curriculum provided a lot of doubts if it was really reflecting what Alberta, Meghan and Mkholo point out. Learners demonstrated variations in understanding of Home Economics concepts. Hence the study was conducted to establish an understanding on the reasons why learners are showing these variations amongst themselves in colleges.

2.6. Benefits of the Integrated Curriculum to Teachers

Supporters of an integrated curriculum believe that interdisciplinary education offers heightened levels for mastery of the content and real-world applications, which inevitably

increases the opportunity for deeper levels of learning. Teachers are given the opportunity to learn about areas of interest, but where the teacher has little expertise as h/she will develop an interest to learn something which is new to him/ her. Furthermore, teachers, like students, are given the opportunity to grow, reflect and are also exposed to the richness that different perspectives offer (NCCA, 2011a; Taylor & Usher, 2004). However, even if teachers can share a vision of an integrated curriculum, the effort will not be successful without the substantial administrative and financial support. Therefore, in the Malawian context this approach will be effective if the colleges are to given autonomy on how much colleges are funded and on when colleges are funded. Again, how frequently lecturers are involved in refresher courses for them to be kept abreast with latest information in Science and Technology with regard to the teaching of Home economics.

2.7. Theories Related to Integrated Curriculum

2.7.1. Bandura's Social Learning Theory

Glaserfeld (1989) reveals that the concept of implementing an integrated curriculum or running an interdisciplinary classroom is positively correlated with Albert Bandura's theory of social learning. In a multidisciplinary classroom, students work together in a collaborative manner to solve problems, construct knowledge, and make connections between existing curriculums. Cooperative learning forms a basis of instruction in an integrated curriculum. Students work in small groups to achieve a common goal. From the standpoint of the social learning theory, as Slavin (1991) points out, students are likely to have higher self-efficacy for performing a task when they know that they will have the help of other group members. Furthermore, students can model effective learning and problem-solving strategies for one another.

However, Slavin (1991) observes that this type of learning occurs when a teacher uses his/her expertise to demonstrate the activity before allowing learners engage into an activity in practical subjects. It is the responsibility of the teacher to structure cooperative activities in such a way that promotes optimal learning conditions. Hence, Stuart (2002) warns that cooperative learning encompasses much more than simply "group work." Cooperative learning requires that the teacher and each student is held accountable for a specific aspect of the project, or group task. Activities are often enriched due to the experiences and perspectives that each student brings to the learning situation through the guidance of the teacher.

Meghan (2008) emphasises that a teacher should not try to impart information in the students' head and expect them to learn. The educator should not be a lecturer or a knowledge-giver, but a facilitator that helps students to make sense of the information. Students should concentrate on using their own skills and knowledge to answer their questions and construct their own meaning.

Kolb (1984) claims that the process of knowledge acquisition begins with action and observation, it is hypothesized that effective instruction can help students organize their intuitive conceptions into 'principles' consistent with those held by experts. Hence need for instructors' expertise in their subject matter. In view of this, Meghan (2008) has a feeling that no one can teach different learning areas to all learners. Therefore constructivists do believe that the students should not be left alone to construct their own knowledge. But teachers have to facilitate the process of learning. Glasersfeld (1989) adds that teachers should identify goals to guide student learning and structure the learning environment for students to explore and experiment within the environment.

Larsen-Freeman (2011) asserts that learners must receive enough information if they are to learn effectively. Larsen-Freeman recognized that information alone is not sufficient, hence identified other factors such as the affective filter hypothesis which can inhibit learning. If the learner is not motivated, s/he does not see the need to learn. A question raised on this theory was whether the integrated Science Technology curriculum allowed learners acquire enough knowledge and skills which were relevant to Home Economics. The implementation of this curriculum seems to have a lot of challenges to meet some of the principles required for effective implementation of the curriculum.

2.7.2. Constructivism Learning Theory.

Constructivism can be described as a theory that deals with the way people create meaning of the world through a series of individual constructs. Constructs are the different types of filters we choose to place over our realities to change our reality from chaos to order. This is a learning process which allows a student to experience an environment on first-hand basis, thereby, giving the student reliable, trust-worthy knowledge. The student is required to act upon the environment to acquire as well as test new knowledge (Meyer, 2009; Learning Theories Knowledge Base 2012). This theory provided an eye opener to critical research question which demanded an analysis on the learning context in which Home Economics is being taught. *Does the learning context provide relevant conditions for effective learning of Home Economics?*

To second Dick and Carey (1985) views the context in which the learning occurs as central to the learning itself. It is regarded as the most important aspect which can facilitate knowledge and skill acquisition of the components in the integrated curriculum. On this regard, Glasersfeld (1989) outlines the important aspects which form part of the learning context like

the learner, the instructor, learning mood and the process of learning. Hence the study was intertwined around these aspects to find out whether or not learners acquire enough of the desired knowledge and skills in Home Economics while integrated in Science and technology curriculum.

In view of this, Dewey (2009) argues that the underlying notion of the learner as an active information processor is the assumption that there is no one set of generalized learning laws with each law applying to all domains. One social constructivist notion is that of authentic or situated learning, where the student takes part in activities directly relevant to the application of learning that takes place within a culture similar to the applied setting. Therefore, Glasersfeld (1989) believes that the learner is not a blank slate (*tabula rasa*) but brings past experiences and cultural factors to a situation. But on a contrary view Dick and Carey (1985) believes that the learner can only be an active information processor if h/she enters the classroom situation with enough prerequisite knowledge on the subject matter.

Research studies from many educators have revealed that the best way to learn is by having students construct their own knowledge instead of having someone construct it for them. In other words, students will learn best by trying to make sense of something on their own with the teacher as a guide to help them along the way; and only if the learners possess enough prerequisite knowledge of the subject (Brooks, & Brooks, 1993).

With regard to teaching methods, Dewey (1897) suggests that those teaching methods used to educate must provide for exploration, thinking, and reflection as well as interaction with the environment. The reasons behind use of hands on activities as teaching methodologies is that constructivists do not look for copies of an outer reality in the human mind. But instead they rather see humans as observers, participants, and agents who actively generate and transform the patterns through which they construct the realities that fit them. In this theory, it implies

that the teacher should have necessary skills and resources to prepare the right content for the learners. This will allow learners show their potential and at the same time the teacher will provide the necessary support. In contrast MOE, (2005); Banda (1982); Lewin and Stuart (2003) noted that sometimes it becomes increasingly difficult to effectively train teachers in colleges because of challenges which are experienced. For instance shortage of both human and material resources impedes effective teaching in colleges in Malawi. *By analysing the factors related to content and the learning process, the study tried to reveal if learners are exposed to environment which would allow enough knowledge and skill acquisition in Home Economics while integrated in Science and Technology.*

Scientific observation has established that education is not what the teacher gives; education is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experiences upon the environment. Knowledge is constructed based on personal experiences and hypotheses of the environment. Learners continuously test these hypotheses through social negotiation. Each person has a different interpretation and construction of knowledge process (Kolb & Fry, 1975). Hence the learners should be provided with enough time to interact with the environment to construct their own knowledge and should be responsible for their own learning. This is in agreement with the interpretive paradigm which guided this research study that *different people interpret things differently and every individual is unique with his or her own ways of knowing things.*

Another crucial assumption regarding the nature of the learner with regard to knowledge and skills acquisition concerns the level and source of motivation for learning. According to Glasersfeld (1989) sustaining motivation to learn is strongly dependent on the learner's confidence in his or her potential for learning. These feelings of competence and belief in potential to solve new problems are derived from first-hand experience of mastery of

problems in the past and are much more powerful than any external acknowledgment and motivation. This implies that prerequisite knowledge is essential for mastery of the subject matter. This links up with Vygotsky "zone of proximal development" Vygotsky (1978) in Dewey (2009) where learners are challenged within close proximity to, yet slightly above, their current level of development. By experiencing the successful completion of challenging tasks, learners gain confidence and motivation to embark on more complex challenges. Therefore Alberta (2007) suggests that the type of learning and assessment in the integrated curriculum should demand high order abilities to help learners be critical thinkers and use the knowledge to solve their daily problems. This study serves as an answer to examine whether or not learners are exposed to challenging tasks in Home Economics in the integrated Science and Technology curriculum so as to instill a positive attitude towards the subject.

Wertsch (1997) stresses that Social constructivism or socioculturalism encourages the learner to arrive at his or her version of the truth, influenced by his or her background, culture or embedded worldview. Historical developments and symbol systems, such as food habits, language, logic, and mathematical systems, are inherited by the learner as a member of a particular culture and these are learned throughout the learner's life. This also stresses the importance of the nature of the learner's social interaction with knowledgeable members of the society. The use of field trips and community involvement are encouraged as relevant pedagogical approaches in integrated Science and Technology curriculum in constructivist learning theory. Food Agricultural Organization (FAO) (2005) noted that most learning about Nutrition and Health (Home Economics) comes from real life. Equally, learning about nutrition is useless if it is not ultimately applied to real life. Hence learning must make bridges between the classroom on the one hand, and the environment, the family and the community on the other. Kolb (1984) suggest that during field trips and community involvement a teacher must take an active role to guide learners.

According to the social constructivism approach, instructors have to adapt to the role of facilitators and not teachers (Kolb, 1984). In this case a teacher gives a didactic lecture that covers the subject matter; a facilitator helps the learner to get to his or her own understanding of the content. In the former scenario the learner plays a passive role and in the latter scenario the learner plays an active role in the learning process. The emphasis thus turns away from the instructor and the content, but towards the learner (Brooks & Brooks, 1993). This dramatic change of role implies that a facilitator needs to display a totally different set of skills than a teacher.

A further characteristic of the role of the facilitator in the social constructivist viewpoint is that the instructor and the learners are equally involved in learning from each other as well (Holt & Willard-Holt, 2000). This means that the learning experience is both subjective and objective and requires that the instructor's culture, values and background become an essential part of the interplay between learners and tasks. Learners compare their version of the truth with that of the instructor and fellow learners to get to a new, socially tested version of truth. This creates a dynamic interaction between task, instructor and learner (Brooks & Brooks, 1993). This entails that learners and instructors should develop an awareness of each other's viewpoints and then look to their own beliefs, standards and values, thus being both subjective and objective at the same time. Learners with different skills and backgrounds should collaborate in tasks and discussions to arrive at a shared understanding of the truth in a specific field. Stuart (2002) encourages use of small group discussions and participatory approaches to be used in the teaching and learning process with clear reasonable tasks given to learners.

2.7.2.1. Structuredness of the Learning Process in an Integrated Curriculum and Constructivism Theory

Glaserfeld (1989) contends that it is important to achieve the right balance between the degree of structure and flexibility that is built into the learning process other than having the curriculum overload which provides too much information within a short period of time. Hence, Biggs (1999) warns that the more structured the learning environment, the harder it is for the learners to construct meaning based on their conceptual understandings. A facilitator should structure the learning experience just enough to make sure that the students get clear guidance and parameters within which to achieve the learning objectives. Kolb (1984) affirms that the learning experience should be open and free enough to allow learners discover, enjoy, interact and arrive at their own, socially verified version of truth. The question which was raised in this investigation was whether the curriculum had reasonable content which will match with the allocated time in integrated Science and Technology curriculum to effectively teach Home Economics.

2.7.2.2. Assessment in Constructivism Learning and Integrated Curriculum

Meghan (2008) observes that the trend in education today is to have a subject-centered curriculum that meets the demand put on teachers by state standards and testing. But Hutchings (2006) expounds on problems that exist with standardize testing and curriculum integration. Hutchings affirms that most state standards and proficiency tests are set up in terms of conventional subject areas, such as reading, mathematics, science, or social studies and the rather huge number of competencies specified in the standards. For instance, in the Malawian context, the examinations for all Teachers' Training colleges are set by Malawi National Examinations Board (MANEB) with the already state standards sets. This approach does not provide any autonomy to the lecturer to assess learners with regard to the tasks achieved by the learners during the learning process. At the same time it also affects the way

the lecturer approaches his or her curriculum. On this regard, Nitiko (1994) also observes that having the focus of the curriculum on testing is detrimental to students' learning. Drilling students for tests makes learning and school unpleasant and creates an environment where students are disengaged and uninterested. This approach does not instill in learners behaviour of continued learning.

Holt and Willard-Holt (2000); Meghan (2008) emphasize the concept of dynamic assessment, which is a way of assessing the true potential of learners that differs significantly from conventional tests. Assessment of learning is authentic, continuous, and based on individual growth and performance. Here the essentially interactive nature of learning is extended to the process of assessment. Rather than viewing assessment as a process carried out by one person, such as an instructor. Assessment is seen as a two-way process involving interaction between both instructor and learner. The role of the assessor becomes one of entering into dialogue with the persons being assessed. Due to other logistical problems like time factors, state standardized testing rules Hutchings (2006) observed that assessment is normally carried out by an instructor in the education system. And this practice has not spared education systems in Malawi including colleges. The learners are normally involved in the actual taking of the assessment and not on how the assessment has to be carried out and on what to be exactly assessed.

Holt and Willard (2000) proposes that the main aim of assessment is to find out their current level of performance on any task and sharing with them possible ways in which that performance might be improved on a subsequent occasion. Thus, assessment and learning are seen as linked and not as a separate process, with the immediate feedback given.

Scanlon, Scanlon & Dick (1985) further claim that in integrated Science and Technology curriculum one of the features of these science courses is their laboratory -based component

of teaching and assessment. In traditional courses, whether in primary and secondary schools or areas of higher learning, practical work involved students assembling apparatus, following procedures and writing reports according to set recipes. The aim was to instill in the students basic principles through repetition and strict scientific practice. But Klopfer (1971) in Scanlon, Scanlon and Dick (1993) have a different view that science courses should aim at instilling in learners a spirit of inquiry through problem solving approach. Specifically laboratory work should aim at seeing a problem and finding ways to solve it and to apply that scientific knowledge to their everyday problems. Hence laboratory work has to be encouraged in schools.

Klopfer (1971) in Scanlon and Dick (1993) adds that immediate feedback should to be provided to learners after some laboratory work. Providing feedback and support to learners during the teaching and learning process and assessment in science courses is essential. In view of this, FAO (2005) observed that there is positive correlation between teachers' immediate feedback and learners' performance. Feedback helps in clearing misunderstanding in the concepts taught and check if the learning is taking place. Therefore teacher educators should see assessment as a continuous and interactive process that measures the achievement of the learner as well as the quality of the learning experience and coursework.

2.8. Research Studies on Teaching of Home Economics

2.8.1. Background of Home Economics (what is Home Economics).

Home Economics is an area of study and profession which originated from United States of America with its history dating back from 1800s. The subject was first conceived as a multidisciplinary area to deal with main issues affecting human life. Hence Home Economics was defined as the study of laws, conditions and principles as well as ideas concerned with

man's immediate physical environment and its nature as a social being (East, 1980 & MOE, 1991).

Kunkwenzu (2007) asserts that the focus of Home Economics has constantly changed over years as a result of changes of perspectives in the subject. Various models/ perspectives of Home Economics have emerged with varying areas of focus. This directly relates to the research question one which was mainly concerned with the type of content in Home Economics, *does the curriculum really include the right content?*

East (1980) points out on four dominating perspectives which have guided the trends of the subject over years as: management of the household, application of science for improvement of the environment, human ecology inductive reasoning and education of women for womanhood.

The nature of Home Economics therefore varies depending on the dominant model being used in the curriculum resulting to changing of names. For instance, Home Economics courses have been named as Human ecology, Human development, Home and family life, applied sciences, Domestic science, Home craft, Home management, Home Economics, food security and Cookery. In Teachers' Training Colleges in Malawi, this course was called Home Economics before it was incorporated in Science and Technology MOE (n.d.).

In Africa Home Economics was introduced by missionaries as a domestic science or Home Economics in the 20th century. Home Economics diverged from its perspective on ecology and became centered on aesthetic and functional relationships, primarily in the context of western middle-class household (Eckman, 1994). Kunkwenzu (2007) noted that there was emphasis on household technologies and traditional values related to home and motherhood. It is this model that was transferred from western countries to developing countries in the post – independence period as part of development efforts. The same trend was reflected in

the curriculum, for example, in text books which were designed to teach girls and women European life styles, values and norms. As such Home Economics developed a reputation as a “stitch and stir” subject whose main aim was promoting family wellbeing (Eghan, 1990).

In Teachers’ Training Colleges in Malawi, Home Economics include concepts from home management, food and nutrition, food security, child care, personal hygiene, textile and design also known as needle craft, Entrepreneurship and family studies (MOE, 1991). These concepts have to be effectively delivered to the Malawian youth by competent teachers as per mission statement in the IPTE programme by MOE (2005). However this practice seems not to be the case with the implementation of integrated Science and Technology curriculum where Home Economics is a component in the curriculum. The subject is handled by any member who belongs to Science department and who can teach Science and Technology even though s/ he has not studied the subject in the university college. This raised a concern to whether or not all learners are acquiring relevant knowledge and skills in Home Economics.

One of the major concerns of the Malawi government is to raise the standards of the population by promoting good health and poverty reduction as stipulated in Government of Malawi (2006- 2011) Malawi Growth and Development Strategy. One way of achieving this is through educating both the young as well as the society as a whole. In Malawi primary education is terminal and not many proceed for their secondary education. Hence MOE, (1991) suggests that these learners need to receive the right education as they play a very important role in family life, such as participating in child care, minding the home and preparing meals for the family. MOE emphasizes that the children in Malawi need to be educated in aspects pertaining to good health, food and nutrition, personal hygiene, family management and income generating activities.

FAO (2005) observes that much of the school curriculum content in Home Economics has changed in other African countries like Zambia, Botswana, and Lesotho. The aim is to meet the new millennium development goals like hunger and poverty reduction and food security. But little is known to the new integrated curriculum in Malawi where Home Economics is an integral part. It seems in Malawi the subject still has low status in the curriculum. This has been evidenced through the literature from the Teachers' Training Colleges where all subject in Science department are standing as separate subjects except Home Economics which is no longer treated as a separate subject. Therefore, the study tries to uncover the status of Home Economics in the new integrated curriculum in terms of knowledge and skill acquisition. Hence, a paradigm shifts of labeling the subject as primarily for preparing women for womanhood. Most importantly, the subject has to be regarded as learning area which will assist in dealing with practical perennial problems. These perennial practical problems include malnutrition, food security, issues to deal with economy and population booming. These issues are directly related to retard development in Malawi as one of the developing countries.

2.8.2. Factors Affecting Teaching of Home Economics.

2.8.2. 1. Undermining of Home Economics as a Subject and a Professional Course

Research studies on the teaching of Home Economics by Pendergast (2004: 4) noted that Home Economics teachers face negative stereotype worldwide. The author observed that Home Economics is the marginalized field of study. "When taken from modernist frame work where things exist in dualities: one end of dualism is privileged the other marginalized". Pendergast contends that Home Economics teachers and their profession are on the margins of the already marginalized teaching profession. Home Economics also exist as a marginalized field of study classified as "women's knowledge" and devalued in the school

curriculum. Because of this, Home Economics teachers experience feelings of disempowerment and isolation and are constantly asked to justify the existence of their field. By exploring teachers' and learners' experiences in teaching and learning Home Economics while integrated in Science and Technology the study tried to find out if the subject is treated equally like other components so as to allow enough knowledge and skill acquisition of the concepts in the subjects.

2.8.2. 2.Resources and Administration Support

Research studies on experiences of beginning teachers in Home Economics in Malawi by Kunkwenzu (2007) revealed that the subject received little administration support in terms of finances. Unlike other subject Home Economics require constant funding and resource provision. Home Economics teachers perceived that the administration did not see any need to provide such support. Hence the lessons were affected as they had to be adjusted as the administration did not see the need of carrying out such practical lessons. It was revealed that some of the challenges arose as a result of the perception that Home Economics is the easy subject hence no need for constant funding. This reduced the teachers' morale of teaching the subject.

This is in agreement with what FAO (2005) points out on the findings based on factors affecting the teaching of Home Economics that teachers' positive feelings about their jobs are governed by many things like: pay conditions, prospects of promotion, learners' attitudes, working relationships, their sense of being valued, expertise and the enjoyment they get out of teaching. These factors influence the way teachers behave themselves and their job performance. If there are real unresolved problems, teachers will not be very interested in innovation as well as the subjects they are teaching. Hence it has to be noted that it is hard to be a good teacher if one is not professionally interested in the job.

2.8.2. 3. Shortage of Teachers who are Experts in Home Economics

This has been a challenge in both secondary school sector and college levels worldwide including Malawi as observed by Lewin and Stuart (2003); Kunkwenzu (2005); Maldonado (2008); Leah de Zwart (2010) on research carried out on Home Economics teacher recruitment and deployment. This development has led the subject being handled by non expert teachers, or dismantling of the subject or not being taught in schools. For example in the Teachers' Training Colleges in Malawi Home Economics has been integrated in Science and Technology because of the similar reasons (MOE, 1991).

Research studies on teacher education reveal that there is a positive correlation between teacher's knowledge of their subject matter and their impact in the classroom. Subject matter knowledge affects the way teachers prepare for their lessons in terms of methodologies and use of resources Manitoba Education and Training (1997) ; Mulkeen, Chapman and Dejaeghere (2004 a); Stuart (2002); Musset (2010); Smith and Leah de Zwart (2010). Furthermore, Stotsky (2006) states that the teacher is defined by a deep knowledge of the subject matter. It is evidently noticed that familiarity with content as student helps in understanding of its teaching in later years. Teacher's profession behaviour and its development cannot be isolated from their personal experience and their past background. Research studies conducted by Kadzera (2006) on teacher education in Malawi also revealed that in many cases teachers' lack of understanding of the principles of their subject may affect the choices on type of resources to use in class and this impede good teaching.

Research studies further reveals that "uncertainty" about the technology of teaching is the enemy of rational planning and teaching. The uncertainty comes in if the teacher lacks enough subject matter. The literature on primary school teacher education by (MUSTER) Multi-site Teacher education Research project in Malawi, Lewin and Stuart (2003:93) point

out on factors which impede effective training of enough teachers like resources. Lewin and Stuart states that “It is extremely difficult to train new teachers in school conditions where so many basic resources both human and material resources are lacking”.

Apart from shortage of teaching and learning resources, Scanlon, et al (1993) observes language barrier as one of the challenges which affect the teaching of science especially Home Economics. Kunkwenzu (2007) asserts that this learning area contains a lot of technical words which needs to be clarified by experts. For example fold in Home Economics can mean mixing of dry ingredients together with whisked egg white in cake making and it totally gives a different meaning in other learning areas Tull (1996). Scanlon, et al state that Language becomes a barrier to learning because so much of what goes on in a working memory takes place in visual or verbal form. An unfamiliar word or phrase can occupy an inordinate amount working memory space as the learner strives to make sense of it from the context. If the context is already complex the chance of clarifying the meaning becomes slim which hinders learning.

Therefore, Musset (2010); Kunkwenzu (2007) emphasize on the importance of training that it instills new skills and abilities to perform tasks which were not possible previously. In addition, training provides confidence in teachers in undertaking their duties and clarifying any new and un familiar words. But Ochs (1993) observed that, “While training is an investment in the skill and productivity of programs, companies (administrators) tend to look at only costs and programmers often see only loss of production time” (p. 105). Although sometimes books may be available for teachers to read about how to teach Home Economics and other Science Subjects, Kunkwenzu (2007) emphasizes that good training courses are almost always superior because they effectively drill concepts into a format that is easy to master. Kadzera (2006) notes that when tutors are undergoing training at the university to

become tutors, they need to be exposed to how different technologies are operated and how they can be used in a classroom situation as well relevant teaching methodologies.

2.9. Pedagogical Approaches in the Teaching of Home Economics

MIE (2008); Dick and Carey (1985) suggest that the use of instructional technologies in the classroom has the potential to help the teacher explain new concepts clearly, resulting in better student understanding of the concepts being taught. Hence teaching using resources becomes meaningful. In a survey, to find factors that facilitate teacher skill, teacher morale, and perceived student learning in technology-using classrooms, Kadzera (2006) citing in Baylor and Ritchie (2002) found that teachers valued the use of technologies in class and that it had an impact on students' content acquisition. Teachers revealed that use of technology added to class performance and prepares students for a life that will be drastically different. In addition, students become creative as well as problem-solvers and will be able to analyze a wealth of information in order to draw valid conclusions. Learning of this kind is more likely to take root when a variety of instructional technologies are used during instruction. At the same time teachers should work as a team to make use of the existing resources.

Quinn and Kantar (1994) expound on team teaching as teaching that requires sharing the same group of students and common periods to preparing for the teaching. On this regard, Meghan (2008) affirms that when a group of teachers work together, plan, conduct and evaluate the learning activities for the same group of students, teaching can lead to better students' performance. Exposure to views of knowledge and skills of more than one teacher can develop a more mature understanding of knowledge often being problematic. Quinn and Kantar add that team teaching makes effective use of existing human resources because teams generally comprise teachers of different areas of subject expertise. However Quinn and Kantar observe that implementing team teaching approach requires administrative

encouragement and support. This is like that because team teaching requires more than just a common meeting time and space. But teachers have to use their different experiences and expertises to assist students understand the subject. This approach will call for common understanding among teachers from different backgrounds through continued professional development (CPDs).

To add, Merwe and Merwe (2008); Manitoba Education (2002) view CPDs as a means by which teachers maintain their knowledge and skills related to their profession. This structured approach to learning ensures competence to practice, taking knowledge, skills and practical experience thereby increasing potential in effective delivery of content among teachers. This practice can be extended to other teaching strategies like field trips which will require a great deal of team work.

Apart from using classroom setting to teach Home Economics, FAO (2005) notes that good links with communities are highly desirable for nutrition education. One reason is that nutrition and Health is a social phenomenon and needs to be understood in its social context. It is also a source of beliefs and values which are shared and reiterated by the community hence the community is a major source of messages about nutrition and health. Another reason is that a great deal of the knowledge involved in Home Economics can be directly observed in the community.

2. 10. Chapter Summary

In this chapter issues concerning teacher education in Malawi, concept of general curriculum and integrated curriculum, theories related to knowledge and skills acquisition of Home Economics in the integrated curriculum and research studies on the teaching of Home Economics as well as the challenges which the teachers teaching Home Economics face and the pedagogical approaches used in teaching Home Economics have been discussed. The next chapter will present the research design and methodology used in this research process.

Chapter 3: Research Design and Methodology

3.1 Introduction

As outlined in the first two chapters of this paper the drift for this study arose from the researcher's own teaching experiences as Home Economics teacher now teaching Science and Technology as an integrated subject. The researcher had a lot of doubts to whether all the components in the curriculum receive equal attention that can allow enough knowledge and skill acquisition. In this study, the researcher wanted to find out the position of Home Economics with regard to knowledge and skill acquisition in the integrated Science and Technology curriculum. Therefore, the study focused on examining documents, teaching and learning context lecturers' and learners' experiences currently teaching Science and Technology.

This chapter presents the research design and methodology of the study. The chapter will begin by describing research design, the choice of interpretive paradigms as well as theoretical frame works which have guided the study. Next the chapter will explain on the research site where the study was conducted, the population sample and sampling techniques used and how piloting was done . The data collection methods and how the data was analysed will also be presented. Then issues of validity and reliability, ethical considerations will be explained.

3.2. Research Design

The choice of the research design or methodology depends on what one is trying to do other than a commitment to a particular paradigm (Cavaye, 1996 cited in Krauss, 2005). Thus, the design or methodology employed must maintain a particular phenomenon of interest. Different phenomena may require use of different methodologies. Methods are systematic and orderly procedures or processes for attaining some objectives (Baserville, 1991 cited in

Daniel, 2011). Whereas Durrheim and Wassenaar (1999) state that a research design is a strategic framework for action that serves as a bridge between research questions and implementation of the research as well as the assumption that researchers hold about the nature of the research they are carrying out. And a paradigm provides a frame work for the whole research process. However Lincoln and Guba (2000) emphasizes that the choice of research methodology should depend on research paradigm to ensure 'design coherence' in a study. Lincoln and Guba state that the coherence between research methodology and research paradigm is achieved when the used techniques in sampling, data development, interpretation as well as the context of the study fit within the logic of the paradigm and also with the purpose of the research.

The study used mixed methods research design but with bias to qualitative research design and was framed within the interpretive paradigm. There are several methodologies associated with interpretive paradigm, each which has its own underlying philosophies practices, and methods of interpretation. These include: phenomenology, ethnography, grounded theory and case studies (Durrheim & Wassenaar, 1999). The nature of this study specifically employed the case study approach. Interpretive inquiry allows the use of mixed methods to collect data (Krauss, 2005). This is consistent with what Creswell (2007) calls mixed method triangulation design convergence model. Under this design both quantitative and qualitative data are collected concurrently and merged during interpretation with equal weighting. This was the model which was specifically followed in this study. Data was collected using quantitative and qualitative methods and later on merged and triangulated during interpretation. Use of mixed methods to collect data in this study was useful because it provided a deeper understanding of the phenomenon which could have been very difficult if either qualitative or quantitative methods were used.

Use of mixed methods triangulation design convergence model and bias to Qualitative research design, was also suitable because the integrated Science and Technology curriculum was studied as a process. Hence there was need to establish an understanding using multiple perspectives on how participants make meaning with regard teaching of Home Economics while integrated. Mixed method and bias to qualitative design allowed the researcher to enter into the lives of the lecturers and learners as they are interacting with content as well as carrying further investigation on documents and the classroom context. The design also allowed the researcher to carry out the study on small scale that is Kasungu and Lilongwe using their natural setting.

The aim of the study was to establish an understanding on knowledge and skills acquisition in Home Economics in the integrated Science and Technology. Hence being bias to qualitative research design it was possible to describe a social phenomenon as it occurred in the natural setting and drew possible explanations and representations of a social phenomenon (Denzin & Lincoln, 1994). As such Denzin and Lincoln (2000) adds that “qualitative research is a situated activity that locates the observer in the world”, and consisting of “interpretive, material practices that make the world visible” p3. This design was essential for the study because the researcher uncovered possible factors affecting acquisition of knowledge and skills in Home Economics using different methodologies. This was achieved after carrying out an examination on the factors related to nature of Home Economics and how the content is taught. This examination was carried out using questionnaires, documents, classroom observation, and on interviews which were conducted.

The research was guided by the following questions;

- How are the lecturers prepared to teach Home Economics in the integrated Science and Technology curriculum?

- What type of knowledge and skills are taught in Home Economics in the integrated Science and Technology curriculum?
- How is Home Economics taught in the integrated Science and Technology curriculum?
- What are the lecturers' experiences in handling Home Economics while integrated with other science subjects?
- What are the learners' experiences with the integrated Science and Technology curriculum in acquiring skills in Home Economics?

3.3. Research Paradigm

Guba, (2000) defines a paradigm as a frame work or philosophical assumptions which guides the research process. Whereas Lincoln and Guba (2000); Creswell (1994) define paradigm as a set of basic feelings and believes about the world and how it should be studied, hence paradigm provides the frame works for the entire research process. Alternatively Creswell (2007) describes paradigms as alternative 'claims'. Despite varied meaning of paradigm, all authors agree on one important role of the paradigms: that is, shaping the whole research process. There were several research paradigms which emerged over years and the first paradigm to be used was positivism. Following criticisms that the positivism paradigm felt short of informing human experiences and social phenomena Lincoln and Guba (2000), several competing post- positivism also emerged which include; critical theory, participatory, constructivism, structuralism, post structuralism feminist-interpretivism and interpretivism. All the paradigms encompass ontological (assumption about nature of reality), epistemology (assumptions about nature of knowledge) and methodology issues (assumptions on procedures for investigating what is known). Assumptions embedded in each of the paradigms are interdependent. Therefore, each paradigm contains a set of assumptions that

are coherently related in a unique way and have practical implications on the conduct, interpretation and utilization of the research (Lincoln & Guba, 1985).

This research is positioned within an interpretivism research paradigm with its emphasis on analyzing the content of the current integrated curriculum in relation to the teaching of Science and Technology, and acquisition of relevant knowledge and skills in Home Economics.

Ontologically, Helning (2004) states that “the interpretive paradigm does not concern itself with the search of broadly applicable laws and rules, but rather to produce a descriptive analysis that emphasizes deep, interpretive understanding of social phenomena” (p.21). Krauss (2005) also insists on two central issues: the self understanding of the individual as a basis of all social interpretation and transparent human consciousness. The interpretive paradigm thus focuses on the process by which meanings are created, negotiated, sustained, and modified within a specific context of human action. This was in line with the study as its purpose was to gain a deep level of understanding on the relevance of the curriculum in the teaching of Home Economics concepts among lecturers and learners in the Teachers’ Training Colleges in Malawi in integrated Science and Technology curriculum. In particular this research focused on examining whether or not the learners are allowed to acquire enough of the relevant knowledge and skills, in Home Economics. Therefore, interpretive paradigm was suitable for this study because it produced rich descriptive analyses that emphasize a deep, interpretive understanding of the social phenomena under study.

The underlying assumption of interpretivist is that most of the knowledge is gained, or at least filtered or even modified through social construction such as a shared meaning and sometimes documents. Hence the interpretivist attempts to understand phenomena through the meaning that people assign to them (Trauth, 2001 in Henning, 2004). It is from this

perspective that document analysis in the integrated Science and Technology syllabus, handbooks and schemes and records of work was carried out to construct the knowledge. The knowledge was directed towards finding out the nature of the content of Home Economics and how the subject was taught and assessed while integrated with other science subject. After document analysis, the Questionnaires were administered in order to establish an understanding on the professional background of lecturers teaching Home Economics. This was helpful to assess whether or not the lecturers were well prepared to teach the subject while integrated.

Furthermore, Cohen, Manion, and Moririson (2006) states that in interpretivist paradigm, no one scientist can objectively capture the world but multiple perspectives might have a better chance. The paradigm was in line with this study as it also aimed at establishing an understanding on opinion of the lecturers and learners with regard to knowledge and skill acquisition in Home Economics while integrated in Science and Technology. To achieve this objective the researcher conducted interviews and Focus Group Discussions (FGDs) with lecturers and learners. This was helpful to triangulate the findings to have multiple perspectives and have better chance of having valid results.

The researcher being separate from the research process does not apply in the interpretive paradigm Neuman (2006). During an analysis on the integrated Science and Technology syllabus, schemes and records work, interviews, FGDs and classroom observations the researcher was involved in interrogating and analysing the aspects on issues under investigation. There after some interpretation were made basing on the research findings and the opinion of the researcher in relation to the research objectives. This implies that the researcher was considered as an insider during the research process and was part and parcel of meaning making.

Mertens (2010); Creswell (2007) emphasizes on the use of mixed methods to collect and analysing data in the interpretive paradigm. That is, the use of qualitative and quantitative methods is accepted as it provides a deeper understanding of the issue under investigation which could have not been possible if only one methodology was applied. For example, in this study, document analysis questionnaires and classroom observations on commonly used strategies used quantitative methods; here the specification tables, frequency tables, pie chart, graphs were used and data also had percentage figures. While in interviews data, filed notes and part of classroom observation on general activities of the lesson were collected and analysed qualitatively. Data on interviews were recorded using the audio recorder, transcribed and themes were developed while in classroom observation a summary was made on each of the activities carried out in the lesson observations and were represented in a figure as well as pictures; refer to chapter 4 on data presentation. After constant merging of data during discussions of the results, qualitative description and interpretation of the findings was provided. This process gave clear analysis on factors which might have compromised quality of knowledge and skill acquisition in Home Economics in the integrated Science and Technology.

In addition, basing on a research question, the researcher's experiences, beliefs, opinions, and attitude also played a role in providing meaning to the reality and then made some interpretations. The assumption of the researcher was that integrated curriculum has greatly affected knowledge and skills acquisition of Home Economics. Basing on the discussions of the findings, it was assumed that Home Economics is not effectively taught in the integrated Science and Technology curriculum to allow enough knowledge and skill acquisition among learners in TTCs in Malawi.

On the other, hand positivism and critical paradigms did not qualify for this research because the positivist objectively discovers the nature of reality which is "out there" and the

researcher is not involved in meaning making but to unveil the findings and make some generalization basing on the objective principles, and makes them available to the users. Creswell (2003) adds that reality is fixed and governed by natural laws. The methodologies used are purely quantification to provide the generalizable truth. Though critical theory shares ontological stances of positivist and interpretivist as regards to reality as Neuman (2006) calls “realistic orientation”. But it has also not been chosen for this study because it aims at questioning the political relationship in the process and injustices which exist. And its main purpose to the world is to empower people and bring a change on the issues under investigations.

3.4. Conceptual and Theoretical Framework

3.4.1. Conceptual Framework.

As already defined the concept of curriculum integration in the literature review of this study, in this section the focus will be on forms of integration which have formed the conceptual frames work and have guided the study. There are different forms of curriculum integration, for example that Meghan (2008) where integration mainly focused on skills emphasized from different disciplines. But this study was guided by that of Alberta (2007) which mainly focused on subject integration to form a curriculum. To cite examples on different forms of integrated curriculum Alberta provides a continuum on these forms of integration. The description provided in this section emphasizes on the forms which are directly related to this study and have also formed part of the conceptual frame works which has guided this study. The curriculum forms are described using the figure 1a below:

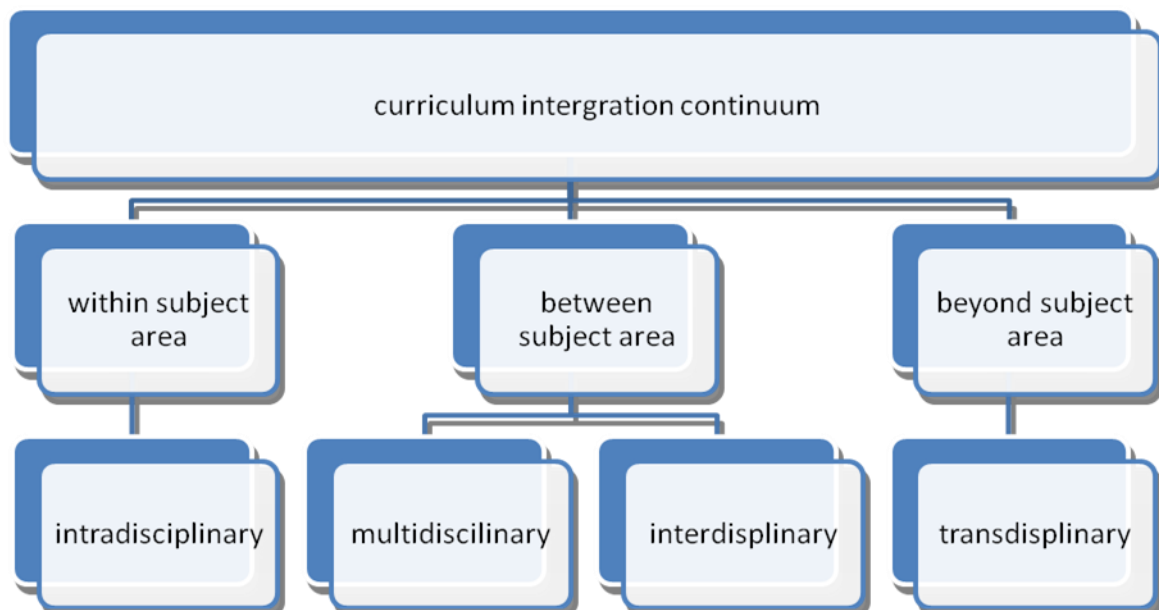


Figure 1a: Curriculum Integration Continuum; Adopted from Alberta (2007)

Within Subject Area: Interdisciplinary.

In this form of integration knowledge and skills are connected within one subject area. The Knowledge and skills are learned through individual subject areas. The distinctive nature of learning is recognized in each subject area and the students’ personal meaning and the social relevance of learning are enhanced by the integration of cognitive, affective and social domains with subject-area knowledge and skills. This form of integration can be equated to the old curriculum where integration in Home Economics was within the topics and the methodologies to teach the topics. This integration allowed learners to clearly understand the relationship of concepts within the subject (MOE, 1991).

Between Subject Areas: Multidisciplinary and Interdisciplinary.

This continuum of integration exist in two different categories that is; Multidisciplinary and interdisciplinary. In multidisciplinary approach topics, themes, issues or big ideas bring together outcomes from more than one subject area. The subject-area outcomes remain distinct. For instance in the new integrated Science and Technology each learning area has

got its own learning outcomes. For instance in Home Economics one of the outcomes states that learners will be able to demonstrate an understanding of the inter-relationship between nutrition, health and agriculture in homes, communities and the world. While in Biology it states that learners will be able to understand and apply scientific knowledge, skills and values to solve everyday problems and provide a base for further learning (MIE, 2006). This clearly demarcates the distinct nature of the subject.

Alberta (2007) further states that Knowledge and skills are learned through individual subject areas but at times connected to cross-curricular topics, themes, issues or big ideas. The distinctive nature of learning is recognized in each subject area. Like in Science and Technology syllabus, Home Economics as a component has specific topics on nutrition and health; like meal planning and cooking methods, laundry and home improvement. Likewise there are also topics specifically for Biology, Physical science and Chemistry. This clearly indicates that knowledge and skills in Home Economics are learnt independently of other learning areas in integrated Science and Technology but are connected to cross-curricular topics since most of the topics are related in the curriculum (MOE, 2006). Therefore this integration is similar to the integration which has taken place in Science and Technology where Home Economics forms a component. (Alberta, 2007) also adds that the students' personal meaning and the social relevance of learning are enhanced by the integration of cognitive, affective and social domains with subject-area knowledge and skills. And the components should be interconnected across the curricular. The students are guided to see linkages between subject areas within the curriculum. To try to equate this curriculum approach with Science and Technology curriculum knowledge and skills learnt in other science components within the curriculum can be used to the teaching of Home Economics and help learners in understanding the subject better. For instance a topic on heat transfer in Physical science can be used as a basis of understanding the topic on cooking methods that is

on how the food is cooked in Home Economics. It can be assumed that it is the multidisciplinary form of integration which is currently used in the integrated curriculum in the Teachers' Training Colleges in Malawi because several disciplines have been integrated each with its core element attached to the specific topics. In this form of integration, Home Economics forms a component and they are other three learning areas like Biology, Physical science and Chemistry that are forming one learning area which is Science and Technology.

The figure 1b below provides a clear description of this form integration.

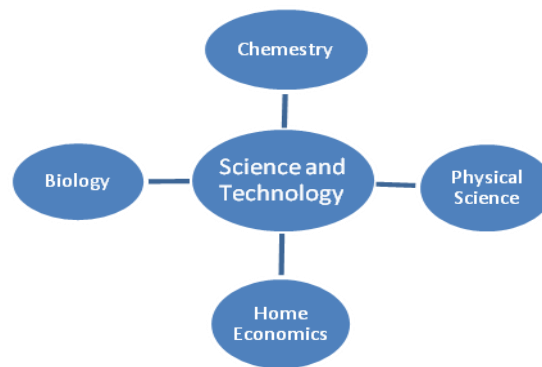


Figure 1b: Multidisciplinary form of integration in Science and Technology Curriculum

3.4. 2. Theoretical Frameworks.

One of the requirements in the multidisciplinary form of curriculum integration is to allow the learners be active participants (Alberta, 2007). In this case the learner should clearly see the linkages among the subject areas within the curriculum. Therefore the focus of the study was to examine whether or not the learner was placed at the centre of the learning process to allow enough knowledge and skill acquisition in Home Economics in an integrated curriculum. This principle idea led the researcher to the choice of Constructivism Theory of

Dewey (2009). The theory states that, people create meaning of the world through a series of individual constructs. Constructs are the different types of filters we choose to place over our realities as well as changing our reality from chaos to order. This aspect guided this research in examining to whether or not the learners are being exposed to the environment which can help them construct knowledge. Here the document analysis was conducted; instructional materials used in the curriculum were cross checked to determine whether or not the integrated Science and Technology curriculum provides learners with the desired knowledge and skills for learning of Home Economics, in relation to other science subjects in the integrated Science and Technology curriculum.

In Constructivism Theory, the learning goal is the highest order of learning: heuristic problem solving, metacognitive knowledge, creativity and originality. Constructivism not only acknowledges the uniqueness and complexity of the learner, but actually encourages, utilizes and rewards it as an integral part of the learning process (Wertsch, 1997). It was from this view that during classroom observation, an analysis was carried out on the strategies used as well as the activities carried out. The analysis aimed at determining whether or not the content taught is providing reasonable and relevant knowledge and skills in Home Economics. Again the analysis was conducted to determine if the teaching practice can increase probability of solving some problems and develop critical thinking among learners in Home Economics.

Furthermore, it is argued that the responsibility of learning should reside increasingly with the learner. Social constructivism_ thus emphasizes the importance of the learner being actively involved in the learning process; either through investigation or any form of assessment (Glaserfeld, 1989). Using this principle class observation was also conducted to examine the strategies used on involvement of learners in class. This was helpful to find out

if learners are given the opportunity to construct knowledge using learner centered approaches. This will allow learners acquire enough and relevant knowledge and skills in Home Economics.

In the integrated curriculum, students work together in the collaborative manner and the teacher just facilitate the process of learning. Learners solve the problems together while making real- world connections (Meghan, 2008). This is in agreement with the principles of Constructivism Theory which asserts that the teacher has to guide learning to help learners acquire both factual and skills knowledge while they are actually involved in working in small groups (Montgomery in Meghan, 2008). However, Mulkeen et al. (2004) observes that there is a positive correlation between teachers' knowledge of their subject and their impact in the classroom. Research shows that in many cases teachers' lack of understanding of the principles of their subject may impede good teaching. Hence affect the way teachers conduct themselves during the facilitation in the teaching process. It is against this principle that the lecturer's experiences on teaching of Home Economics while integrated were obtained through interviews; the questionnaires were administered to establish an understanding on whether or not the lecturers were well prepared to handle Home Economics while integrated with other science subject. Again the FGDs were conducted among learners on their experiences in learning Home Economics while integrated in Science and Technology. The analysis aimed at establishing an understanding on how the learners were involved in the teaching and learning process.

Kolb (1984) concludes that for the social constructivist, the real is not there to be found: it does not pre- exist, but we invent it in a social context. Kolb further argues that we construct the real through our actions. People, as members of a group, together they invent the

properties of the world. On this regard, the findings have tried to reveal the position of Home Economics with regard to knowledge and skill acquisition.

3.5. Research Site

This research was conducted in Kasungu and Lilongwe TTCs in Malawi and was conducted within the specified time schedule of the school calendar. Convenience sampling was used to come up with the site for the study. According to Ary, Jacobs, Razavieh, & Sorensen, (2006), convenience sampling is choosing a sample basing on availability of time, location or ease of access. In this case the places were chosen for convenience because the researcher lived in Kasungu and it also became easy to operate from Kasungu to Lilongwe as they are neighboring colleges. In addition, both colleges once offered Home Economics when it was taught as a separate subject.

3.5.1. Population Sample and Sampling Techniques.

Since not all lecturers and students were to be included in the study, the researcher has to use a sample and sampling techniques. According to Frankel and Wallen (2003) they are two main types of sampling techniques, these are random sampling and non random sampling. Random sampling is the process of selecting samples in which every member of the population presumably had an equal chance of being selected. While non random sampling also known as purposive sampling, the researcher select representative from the population to come up with a sample and each member of the population does not have an equal chance of being selected. Frankel and Wallen further states that random sampling uses different methods to come up with a sample; and these methods are simple random sampling where by each and every member has got an equal chance of being selected; stratified random sampling in which certain subgroups or strata are selected and cluster sampling, this involves the

selection of groups or clusters of participants rather individuals this method is more convenient for large number of clusters.

Mertens (2010); Frankel and Wallen (2003) define a sample as any group on which information is obtained. And larger group to which one hopes to apply the results is called a population. While sampling techniques are procedures or processes for selecting these individuals. The study used simple random sampling and purposive sampling to come up with the population sample of thirty participants. Each college had a population sample of fifteen participants, of which five were lecturers from the Science Department who are currently teaching Integrated Science and Technology and ten were learners from those classes of the sampled lecturers as a target sample. Among the ten lecturers one participant was a Head of department (HOD) from each college. The researcher thought it was necessary to include the Head of department to establish a deep understanding in terms of management support and their experiences as heads of department when they are managing the department with regard the teaching of Home Economics in the integrated Science and Technology. Hence the HODs were only interviewed and completed the questionnaires and no classroom observation was conducted on them. This made the researcher to finish up with eight lecturers for classroom observation.

Purposive sampling was used to come up with five lecturers from each college who were currently teaching Integrated Science and Technology from the Science Department. Creswell (2007); Frankel and Wallen (2003) describes purposive sampling as when the researcher intentionally select participants who have experience to the central phenomenon or the key concepts being explored. Purposive sampling was ideal for the study because only the lecturers from Science Department who are currently teaching Integrated Science and Technology were targeted and personal judgment was required to come up with this specific population. The preconceived idea of the researcher was that this sample will provide

relevant information on position of Home Economics with regard to knowledge and skill acquisition.

Purposive method of sampling was also used to come up with classes where learners were drawn as participants. Purposive sampling technique was ideal for selecting classes for this study because only those classes where lecturers were chosen as a sample were targeted and the sampled learners were representatives of the population of learners.

Since there are different types of purposive sampling as outlined by Ary, et al. (2006); Frankel and Wallen (2003), like systematic sampling; this is when a specific sampling interval to select a sample is used. For example a researcher can use every n th individual for inclusion in a sample; convenience sampling; this is when the researcher select a sample which s/he has an access with special interest and intensity sampling techniques. Mertens (1998) suggests that intensity sampling is when the researcher only identifies sites or individuals which the phenomenon of interest is strongly represented. Intensity purposive sampling technique was used to come up with lecturers as participants and classes where learners were drawn. The technique was suitable for the study because the researcher targeted only those who are knowledgeable about the matter under investigation.

To come up with a sample of ten learners from each college making a total of twenty learners, simple random sampling was used. Frankel and Wallen (2003); Enerst (1994) describe simple random sampling as one in which each and every member of the population has an equal and independent chance of being selected. The sampling frame was the number of learners from classes of the lecturers who were currently teaching Integrated Science and Technology from science Department and only those learners formed the sample under study. Simple random sampling which was used in this study was useful to come up with target number of learners because the numbers of learners exceeded that of the lecturers to be used

as a population sample. To carry out random sampling the numbers of all learners from the five classes from each college where the lecturers were chosen, were written down on small pieces of paper then were mixed in a box. Girls were separated from boys to allow gender equality then picked out ten learners using numbers from each college. Two learners from each class were picked and were used as a sample. This sampling technique increased the likelihood of each learner of being picked.

Table 2 below is showing a summary of the description of the sample used in the study.

Table 2: Demographics

Group	Population	Male(Female)	College
Lecturers	10	6(4)	Kasungu and Lilongwe
Students	20	10(10)	Kasungu and Lilongwe

3.5.2. Pilot Testing.

Before the actual data collection the researcher conducted a pilot survey for five lecturers from Kasungu and Lilongwe. These lecturers once taught integrated Science and Technology but were not teaching it at the time of study (see appendix C). The researcher piloted face to face interview schedule and questionnaires. The purpose of this pilot survey was to check the clarity of the questionnaires. This was important to ensure that the research questions were adequately covered and satisfied the methodological issues. In addition to that it was helpful as it assisted the researcher to estimate the exact time for each interview and identify the questions which demanded the similar information. The questions which demanded similar information from the interview schedule and questionnaires were completely removed and others were modified to suit the research question. For example in the questionnaires

where lecturers were required to provide professional background information, some questions in section two were removed because the section had questions which demanded same information as that of the interview schedule. Again item number three which required them to supply information on subject specialization, lecturers supplied information on teaching subject; this too was rephrased to college training.

This process is in an agreement with what Rea and Parker, (1997) suggest. Rea and Parker state that Pilot testing “is a small scale implementation of the draft questionnaire that assesses questionnaire clarity, questionnaire comprehensiveness, and Questionnaire acceptability” p. 28-29. Emphasize the need for pilot testing because “every questionnaire must be tested and refined under real-world conditions” p. 282. Rosier (1988) asserts that surveys “should be adequately pre-tested ... to check that the respondents understand the meaning of the questions or statements, to gauge whether test items are at an appropriate level of difficulty” p. 109. The items needed to be clear so that respondents would not have difficulty in trying to understand what the questions meant. The items needed to be relevant according to the intended purpose and they needed to be complete and not redundant. Furthermore, they needed to be of an appropriate length and be written so as to make respondents feel their privacy was not being jeopardized (Rea & Parker). Since the pilot testing was administered by the researcher, it provided an opportunity, apart from the written comments that participants had submitted, to discuss the questionnaire with the respondents soon after administering them. This approach also helped the researcher to make corrections and address other shortfalls in order to make appropriate instruments for the actual research population sample.

3.6. Data Collection Methods and Instruments

The actual data collection begun from 30th December 2013 to 26th February 2014. The agreement was made to meet the lecturers and learners in their respective colleges. During this meeting the researcher explained to lecturers the purpose of the study and the requirements of the study. The researcher assured each of the lecturers of the confidentiality of their information in the document and final report, and the use of pseudonyms and numbers for their anonymity. All the participants agreed to participate in the study and signed the consent form as indicated earlier in this chapter. The researcher obtained the consent form from each of the lecturers.

On part of the learners the communication was done soon after lesson observation on 6th February and 26th February 2014. The researcher explained to learners the purpose of the study and issues of confidentiality. They were informed that the information will be kept anonymous through the use of pseudonyms and numbers. The students agreed to participate in the study and signed the consent form alone as they were adults with the age range of seventeen to thirty five. The researcher later collected the forms.

In this study, data concerning knowledge and skill acquisition in Home Economics in the integrated Science and Technology curriculum was collected in four ways; this approach is in agreement with Creswell's (2007) mixed method triangulation design convergence model of data collection where both quantitative and qualitative data are collected concurrently. Similarly, this approach is what Ary, et al. (2006) call it multi- method approach where by different types of data collection instruments are used which relates to the objectives. This approach helped the researcher not to rely on a single source of data and the approach enhanced confirmation of the findings. The multi-method approach also made triangulation process possible in this case the researcher carried out constant cross checking of the

responses. The study particularly used questionnaires, Document analysis, classroom observation, face-face unstructured interviews and Focus Group Discussions (FGDs) as data collection techniques.

3.6 .1. Questionnaires.

A questionnaire was used as a method as well an instrument for the study. The questionnaires were used to collect information related to the professional background of lecturers teaching Home Economics while integrated in Science and Technology Curriculum. The questionnaires were self administered and contained closed questions (See Appendix C). This data was also useful to provide addition information for the unstructured interviews. This method tried to address question number one, which specifically assisted in establishing an understanding on how lecturers were prepared to handle Home Economics in the Integrated Science and Technology.

The limitation noted from studies when using questionnaires concerns issues of communication and use of language which might not be understood by the respondent on self administered questionnaires which can sometimes affect the type of information being provided (Fraenkel & Wallen, 2003). However this limitation did not affect much on the results which were obtained as the instruments were pre tested using the five lecturers from Kasungu and Lilongwe Teachers' Training Colleges. These lecturers belonged to Science Department and have once taught Science and Technology and were not teaching the subject when the study was being conducted. This was helpful to clear out the misunderstandings and all the mistakes which might arise before administering the tools to participants understudy. When administering the questionnaires the researcher was available to address some of the problems which arose with regard communication. The lecturers from Kasungu and Lilongwe Teachers' Training Colleges represented the same population sample of the participants

under study. The researcher used the lecturers who are currently teaching Integrated Science and Technology from Science Department. In addition the questions were written in a simple language with some clear instructions for the participants to understand the questionnaires very well.

3.6.2. Document Analysis.

Document analysis is the systematic examinations of the documents. Mertens (1998) adds that documents are good and stable sources of data that provide a good descriptive information which help to ground the study in its context. In this particular study the method used documents inform of Initial Primary Teacher Education (IPTE) Science and Technology syllabus, old Home Economics Teachers Training Colleges (TTC's) teaching syllabus, IPTE student handbooks and schemes and records of work. Document analysis was very helpful in order to examine the nature of Home Economics content in the integrated curriculum. This is essential in the curriculum process because one of the requirements in this process is to have a relevant and adequate content. The content should have well stipulated strategies so as to guide the teacher in the preparation and actual teaching process of the subject. This information tried to uncover the factors which surround the content integrity. Specifically this analysis addressed question number two which targeted the type of knowledge and skills taught in Home Economics in the integrated Science and Technology curriculum. Table 3 below provides an outline on how the reviewed documents were used.

Table 3: List of Documents

Documents Used	Information Required
Science and Technology IPTE syllabus	Home Economics content taught in integrated Science and Technology, strategies and time allocation per term
Science and Technology IPTE Handbooks	Home Economics content, strategies and time allocation in hours
Old TTC Home Economics syllabus	Actual content in Home Economics and strategies
2013-2014 Term 2 Schemes and records of work for Science and Technology	Actual Home Economics content taught, strategies and time allocation in Science and Technology curriculum

To begin with, the analysis was conducted on the integrated Science and Technology syllabus and text books to examine the nature of the content in terms of percentage weighting of Home Economics topics in relation to other three components; Biology, Physical Science and Chemistry. This analysis was carried out by cross checking number of Home Economics topics against number of topics of the other three components.

Time allocation of Home Economics topics in the new Science and Technology curriculum was examined by cross checking time allocated to Home Economics topics in the syllabus and hand books against time allocated to other three components. This process provided an insight on adequacy of time allocated to Home Economics topics with regard to strategies to be used to teach the concepts.

Another analysis was also carried out using the same documents to examine knowledge and skills taught in Home Economics while integrated in Science and Technology. The

knowledge and skills of Home Economics were examined using the topics available in the new curriculum and which are related to Home Economics, and were cross checked with the available topics which were taught in the old curriculum when Home Economics was taught as separate subject. The strategies expected to be used were also crosschecked against each topic. This was helpful to check if Home Economics has been reasonably represented in the new curriculum and also to check the relevance of the strategies used in the new curriculum. For Home Economics topics and their strategies, in both old Home Economics syllabus and Science and Technology (See Appendix Diii).

To determine the position of Home Economics with regard to strategies included in the official documents and how it was reflected in the schemes of work, each topic in the Science and Technology syllabus was examined and was cross checked with the expected strategy to be used to teach the topic whether it constituted theory work or practical work. This analysis was then verified by checking whether each topic used all the recommended strategies that is; theory followed by practical work. Then schemes were also examined to check the actual reflection of the official Science and Technology syllabus.

3.6.3. Classroom observations.

Classroom observation was used to establish an understanding on the strategies used to teach Home Economics in the integrated Science and Technology curriculum. The classroom observation was particularly important for this study because the classroom provided a natural setting for the researcher to get information on the factors surrounding knowledge and skill acquisition in Home Economics which was the issue under investigation. Specifically this investigation aimed at cross checking if what has been written in the official document is being implemented in the classroom setting with regard to topics and strategies if not, what can be the possible causes. The data was also helpful to find out if lecturers really used the

effective strategies which could allow learners acquire relevant knowledge and skills in Home Economics. Classroom observation checklist was used as a tool to examine the strategies used to teach Home Economics concepts (See Appendix F part ii). The data also provided a basis for interviews which were conducted among lecturers and learners. This method specifically addressed question number three which investigated how Home Economics was taught in the integrated Science and Technology curriculum.

Though Kunkwenzu (2007) in Angrosine and Mays de Perez (2000) states that observation is the important base of all methods in the social sciences. It has been noted that classroom observation as a method of data collection raised many ethical debates. Many of these have focused on issues of acceptability and reliability. The issue will be whether the lesson to be observed will represent a typical lesson as some lessons may be exaggerated by teachers. To minimize limitations, the lecturers were assured that the observations were not for grading purposes or evaluating the lecturers; but that data collected were solely to be used to examine the strategies used in the real life situation when teaching Home Economics. In addition to that the lecturers were assured of confidentiality that their names will not be exposed but numbers will be used as the identity to allow lecturers hold their lessons normally. In addition, the researcher's presence did not interfere with the normal teaching because the observations were carried out within their time schedule. Similarly, while in class the researcher was introduced as a co- teacher in team teaching not as a researcher; this setting provided a conducive environment for both learners and the lecturers to interact freely. However careful attention was placed on the methodological issues that the researcher should not divert from the norm.

3.6.4. Face - Face interviews.

There are a variety of types of forms of qualitative interviews such as structured, unstructured semi- structured and discursive (Henning, 2004) This study used Face- Face unstructured interviews. Face to face unstructured interview was used in this study in order to provide an in -depth understanding on the position of Home Economics with regard to knowledge and skills acquisition in the integrated Science and Technology curriculum. Gaskell (2000) adds that qualitative interviews may help to map and understand the respondent's life world and sometimes they can provide relevant information that the researcher did not even think about. Frankel and Wallen (2003) also note that the interviewer can also clarify any questions that are difficult to understand and can ask participants to expand on answers that are particularly important. Hence interviews can supply large volume of in-depth data quickly. Therefore interviews were useful in this study because the method provided a basic data for creation of an understanding of relationship of the social actors and the situation. The interviews were conducted among all lecturers and HODs using the unstructured interview guide to collect detailed information on their experiences in teaching and management of Home Economics while integrated in Science and Technology (see appendix Fii). Follow up meetings were conducted for participants to verify if what has been coded is reflecting their views on the initial interviews. The data was recorded on the audiotape recorder. The lecturers were requested if they can get recorded and they agreed. The arrangement was made to conduct interviews at the most convenient time and quite place to avoid disturbing their classes as well as interrupting the interviews. This procedure assisted the researcher to retain the exact information for data transcription, coding and data analysis as well as future for references. This method tried to address question four which tried to explore the lecturers' experiences in handling Home Economics while integrated with other science subjects.

Even though interviews are such important techniques, they cannot stand without limitations; Gaskell (2000) identifies three main limitations of the method. Firstly it concerns with the issue of language For example the interviewer may not understand the local language being used. But this was not experienced in this study because the language which was used was known to both the researcher and the participants. Secondly the interviewee sometimes may omit important details; which are taken for granted, but would be very useful if communicated to the researcher. Similarly in this study some of the respondents were not detailed to give information which concerned them, most. Thirdly sometimes respondents view situations with distorted eyes and provided information that is misleading. Likewise in this study some information from respondents was rather different though it originated from the similar question.

To also minimize such limitations encountered in this study, the interview guides were pretested during the pilot survey to check clarity of questions. Secondly the researcher asked probing questions to seek for more information on the important issues of the study objective. Lastly, lecturers and Head of Department from two different colleges were interviewed separately and data was compared. In addition, the limitations were further minimized by triangulating data from different methods used in the study. For the list of interviewees and used asked (see appendix Fi.i).

3.6.5. Focus group discussions.

This is another form of discursive interview which uses a group of participants ranging from six to fifteen with special knowledge or interest in a particular topic under investigation (Henning, 2004; Kusakari & Yajima, 2011). However Kusakari and Yajima (2011) suggest that FGDs should not be dominated by people who are dominating and of great influence for example mixing lecturers and learners. In this study only learners from the sampled classes

learning the subject formed a group of participants and no lecturer was involved. The group was composed of ten participants from each college. The focus group discussions with learners were conducted soon after the lesson observation on the content learnt to get the learners experiences on learning Home Economics while integrated. Discussions were carried out in a well ventilated classroom with a round table seating plan for learners to feel comfortable. This method tried to address question number five which targeted exploring the learners' experience when learning Home Economics while integrated. (See appendix Fi.ii), which contains a list of participants in a focus group discussion and the issues which were asked.

3.7. Data Analysis

Data analysis is the process of systematically applying statistical and logical techniques to describe and illustrate, condense and recap and evaluate data (Daniel, 2011). In this study, Quantitative data from classification tables on document analysis, questionnaires and frequency tables on strategies found in classroom observations were entered into the statistical package for the social research (SPSS) for analysis as well as excel sheet. Percentages were calculated and presented in graph form as well as pie charts to establish an understanding on how Home Economics has been affected with regard to knowledge and skills acquisition while integrated in Science and Technology. This data was later on interpreted using narrative description after merging it with qualitative data from interviews and field notes.

Qualitative data from interviews focus group discussions and field notes were recorded, typed on the file and later on reduced and reconstructed through the process called open coding system. The categories of related themes were created and systematically compared to establish the relationships of these categories. This process later on produced common

themes which provided a basis for discussions and arguments in relation to the topic under investigation in this thesis. This is in agreement with what Holiday (2001: 100) in Henning (2004) explains that corpus of raw data gets synthesized (rationalized) and that it takes “messy reality”, or everyday social life, into the domain of inquiry- moving it one step away from reality as lived. This corpus is then further “removed from reality” by “thematic organization” (coding and categorizing as well as extracting and constructing themes from categories). Holiday further states that processed data do not have the status of the “findings” until the themes have been discussed and argued to make a point which should come from a research question. The themes which have emerged from the interviews have been outlined in chapter 4.

Finally the statistical (quantitative) data from classification tables on document analysis, questionnaires and frequency tables on strategies found in classroom observations were constantly merged with descriptive (qualitative) data from interviews focus group discussions and field notes to provide a descriptive analysis or interpretation of the two sets of data in the interpretation and discussion of the results. The themes which developed from interviews and Focus group discussions were cross checked with the figures from the questionnaires on how the lecturers were prepared to teach Home Economics. In addition the same themes were also cross checked with what was found on the document analysis and frequency tables on the content as well as strategies used in classroom observation. Then finally after constant checking and comparing of the results, the explanation was provided on position of Home Economics with regard knowledge and skill acquisition in Home Economics while integrated in Science and Technology. This is in line with Creswell’s (2007) mixed method triangulation design convergence model. This model allows the researcher to concurrently collect both quantitative and qualitative data and constantly merge it either during analysis or interpretation and discussion of results. This process allowed the researcher to provide a deep

understanding if Home Economics was effectively taught in the integrated Science and Technology curriculum to allow learners acquire relevant skills in Home Economics. This analysis is clearly represented in chapter 4 and 5.

3.7.1. Validity, Reliability and Trustworthiness of Results.

Validity is the degree to which research results are sound. Validity determines the strength of the conclusions. On the other hand, reliability refers to the degree to which results are repeatable (Durrheim & Wassenaar, 1999). But Kunkwenzu (2007) points out that the qualitative researchers often refer to validity and reliability of a study as trustworthiness.

In order to develop trustworthiness of the results of the study the researcher used triangulation of the data obtained using different methods and participants validation. Triangulation refers to the use of multiple perspectives in a single study to check one's own position (Durrheim & Wassenaar, 1999; Creswell & Clark, 2007). Durrheim and Wassenaar add that there are several types of triangulation which can be adopted such as data triangulation, investor triangulation, theory triangulation, methodological triangulation and interdisciplinary triangulation. This study used four different methods to collect data and this constituted data triangulation.

In addition to data triangulation at various points during data analysis process, the participants were asked to confirm the summary notes and emerging categories from the interviews conducted. The teacher educators and learners were asked to check if the reports reflected the discussions carried out. This member check validation was helpful to authenticate the transcripts and it also ensured that the perspectives and experiences of the participants have been correctly represented. Though the research has been conducted using the two TTCs not all TTCs in Malawi, which is a small scale but it can be assumed that they are representing the real situation on what is happening in all Teachers' training colleges in

Malawi with regard to the teaching of Home Economics in the integrated curriculum. The results can also be accepted and be applied in other colleges as well. This is like that because of the tenets described in interpretive paradigm, that the research can be conducted on the small scale within the natural setting but can have accepted truth (Denzin & Lincoln, 2000). Additionally the literature review for this study contains an examination of the previous research findings which was used to assess the degree to which the results were congruent with those of the past studies. Therefore the methodologies applied in this study assisted the researcher to have a broad understanding of the issue under investigation and allowed the researcher to provide a detailed report.

3.7.2. Ethical considerations.

The researcher obtained a consent letter from Mzuzu University to conduct research in Kasungu and Lilongwe Teachers Training Colleges. The letter was later on submitted to the principals of the two colleges through the District education Managers where these colleges belong.

The researcher explained the purpose of the research to participants. The participants were assured that the research was voluntary. One was free to participate in the research or not and was allowed to withdraw if need arises.

During data collection, analysis and report writing participants were assured of their confidentiality. The participants were assured that their names will not be used; instead pseudonyms or numbers will be used for identity. Finally, the participants were asked to sign an informed consent form and they agreed to sign (see appendix B).

3.8. Chapter Summary

This chapter has described the methodology for analysing the integrated Science and Technology curriculum with regard to knowledge and skills acquisition in Home Economics in the Teacher's Training colleges in Malawi. This chapter has included the description of the population and sampling procedures, the format and construction of the questionnaires and the interview questions, FGDs, pilot testing for the study, procedures for data collection and how data were analyzed. The chapter has also explained how data was collected from two colleges under study. Finally issues of validity, reliability, generalisability of the results and ethical considerations have been discussed. This data was used to develop a portrait of how Home Economics is being taught while integrated in Science and Technology. The next chapter is the presentation of findings.

Chapter 4: Presentation of Findings

4.1 Introduction

This chapter presents data that was collected from questionnaires, documents inform of Home Economics TTCs, IPTE Science and Technology syllabus, IPTE Science and Technonology hand books and lecturers' schemes and records of work, classroom observations, interviwes from lecturers and FGDs from students. who are currently teaching and learning Science and Technology in public TTCs in Malawi.

In this chapter the data from questionnaires, document analysis, classroom observations, and interviews have been presented. The data from questionnaires, document analysis, classroom observation have been presented inform of tables, graphs and charts while interviews and FGDs have been presented inform of themes and categories. Each of the above data has been presented separately.

4.2. Presentation of the Findings

4.2.1. Proffessional Background of Lecturers Teaching Science and Technology.

4.2.1.1 Introduction of lecturers teaching Science and Technology

The ten lecturers used in this study had all graduated with bachelor's degree in education but from different university colleges like Domasi College of Education in Malawi, University of Malawi Chancellor College and Lake Land College of the United States of America. Ten lecturers majored in different science subjects.

Figure 2 below reveals that these lecturers joined the colleges in 2006 – 2011 with the majority joining the college in 2010.

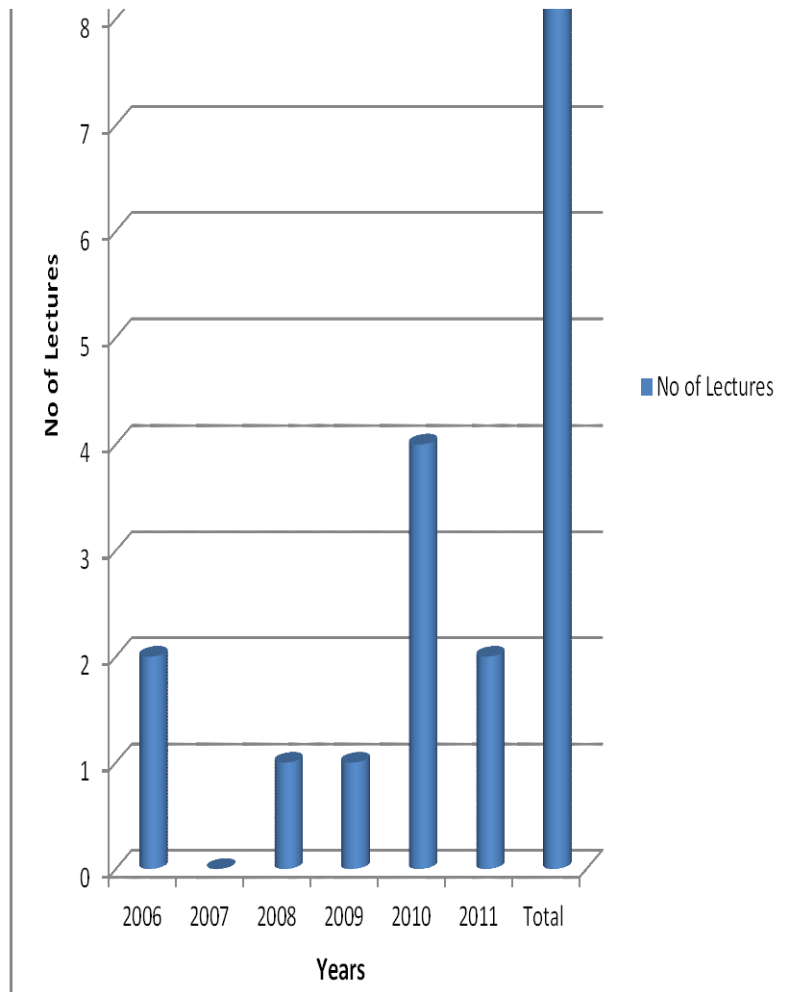


Figure 2: Year Joined College

4.2.1.1. College Training and Subject Specialization

Table 4a: Subject Specialization, College Training and on Job Training

Teaching Subjects	Major	Minor	Adequately Trained in HEC Practical	Attended CPDS after college
HEC	4 (40%)	0	1 (10%)	0
Maths	4 (40%)	0	0	0
P/S	1 (10%)	0	0	0
Bio	0	1 (10%)	0	0
S/Tch	1 (10%)	4 (40%)	0	0
Agri	0	4 (40%)	0	0
SES	0	1 (10%)	0	0
Int S/ Tec	0	0	0	1

Key:

S/Tec = without HEC component

Int S/Tec = with HEC component

SES = Social and environmental Sciences

The table 4a above has shown that out of 10 lecturers, 4 lecturers have been trained and majored in Home Economics and minor in other sciences like Agriculture while at college representing 40% of the total number of lecturers understudy. 6 out of 10 have been trained and majored in Science and Technology and other sciences without Home Economics constituting 60% of the total number of lecturers. That is 4 lecturers out 6 lecturers have majored in Mathematics and minor Science and Technology representing 40 % of the total population. Among the remaining 2 lecturers 1 has majored in Physical science and minor

Biology and the remaining 1 lecturer has majored in Science and Technology and minor Social and environment studies, with a representation of 10 % each. Among all the 10 lecturers none has been trained in integrated Science and Technology where Home Economics forms a component representing 0 % while the 4 lecturers who have been trained in Science and Technology is without Home Economics but Biology, Physical and Chemistry.

4.2. 1.2. Training in aspects of Home Economics content (Theory and Practical work)

The table 4a above has also indicated that out of the 40 % of the lecturers who have been trained and majored in Home Economics only 1 lecturer representing 10% was adequately trained in practical work in Home Economics. The remaining 6 lecturers who represented 60 % have never been trained in Home Economics and in particular practical work.

4.2.1.3. On job training on aspects of integrated Science and Technology curriculum

The table 4a above has also found out that out of the 10 lecturers who joined the college from 2006 to 2011 only one lecturer who joined in 2006 has once received on job training (CPDs) on how to handle components in the Integrated Science and Technology curriculum constituting a 10 % weighting when the subject was being introduced in the TTCs. 90% of lecturers who joined during the same years that is from 2006-2011 have not received on job training (CPDs) on how to handle components in the Integrated Science and Technology curriculum.

Table 4b: Lecturers Work Load

Lecturer's code	No of Teaching Classes	No of Students
Ku/04	5	251
Ku/01	3	150
Ku/03	3	152
Ku/05	6	317
Ku/06	5	253
LL/09	3	150
LL/11	2	120
LL13	2	91
LL/08	4	154
LL/10	3	156
Average	3.6	179.4

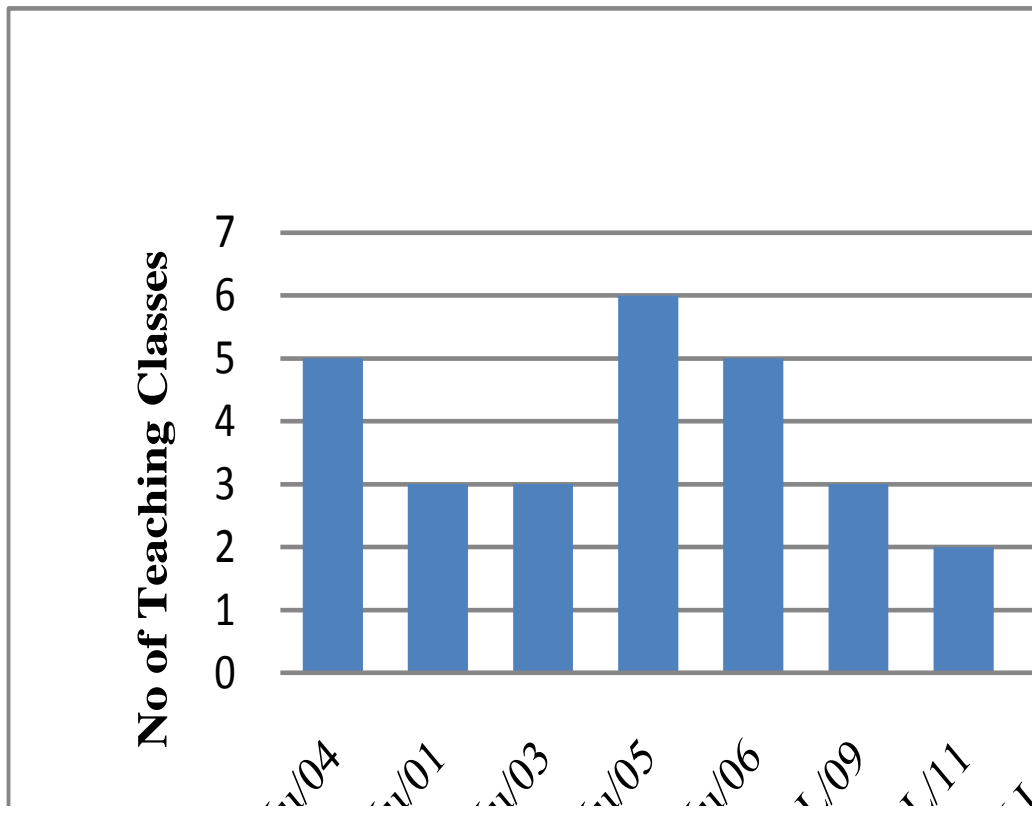


Figure 3a: Number of Teaching Classes

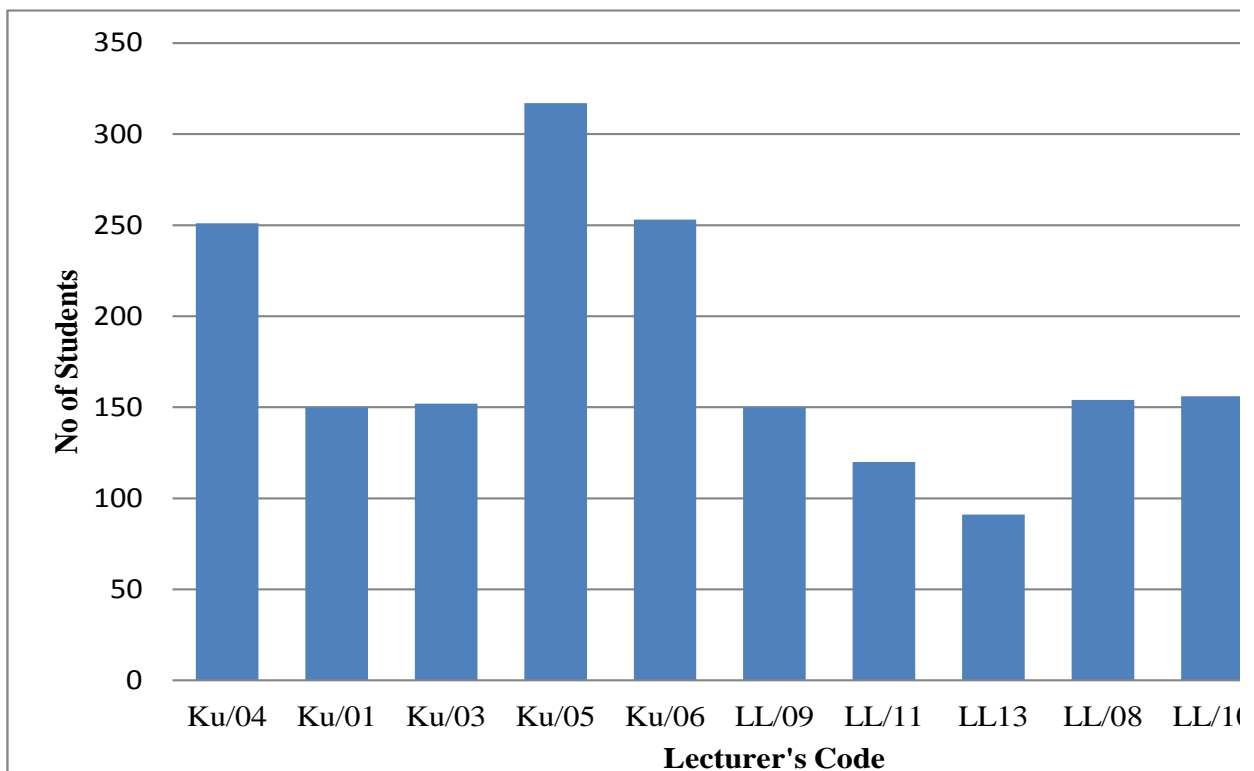


Figure 3b: Number of students

4.2.1.4. Class size and enrollments

Using the table 4b and figures 3a and 3b above, the results from this study have revealed that the teaching classes range from 2-6 with an average of 4 classes per lecturer, per week while class enrolment range is 91- 317 with an average of 179 learners per lecturer per week. The results have revealed that there are some variations in terms of workloads; other colleges are having bigger workloads as compared to other colleges. For instance, one lecturer in one of the colleges is having 6 classes with an enrolment of 317 which is on the higher side while the other lecturer is having 2 classes with an enrolment of 91 students per week which is on the lower side. But on average according to the table above all lecturers have many teaching classes with large classroom size.

4.2.2. Factors Surrounding Home Economics Content While Integrated in Science and Technology: Document Analysis

4.2.2.1. Home Economics Content Weighting in Relation to Other Components

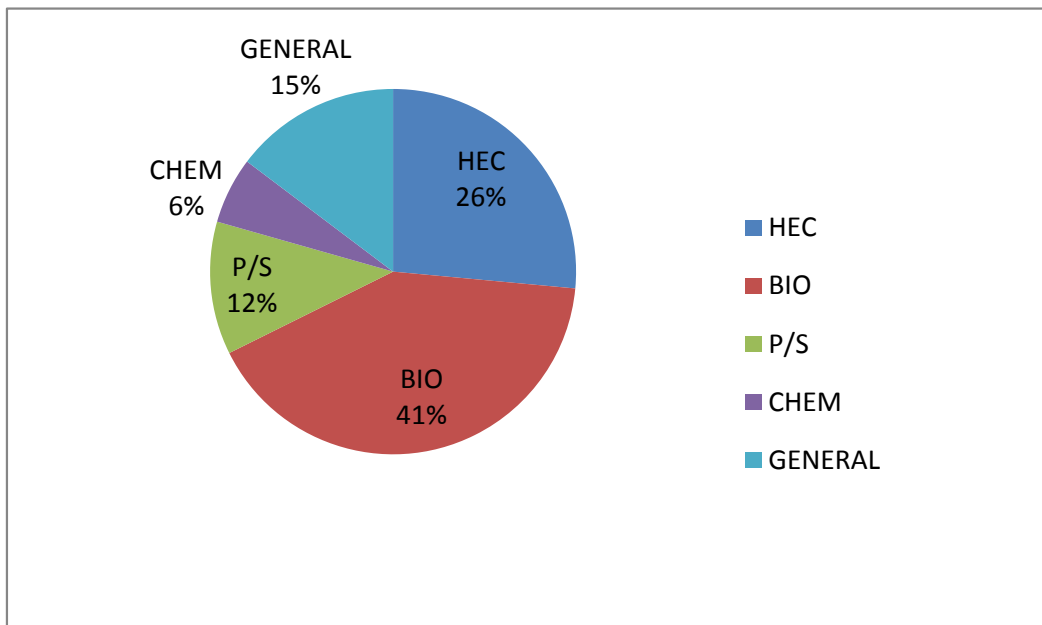


Figure 4: Content Weighting of HEC Components Interrelation to Other Components

Figure 4 above has revealed that Home Economics topics constitute 26% of the integrated Science and Technology curriculum which is rated the second highest among all the components in the Science and Technology curriculum. Biology being rated the first highest constituting 41%. From the data revealed from the documents analysis it can be assumed that in terms of weighting in the Science and Technology curriculum Home Economics content is averagely weighted. However in terms of the approach of the Home Economics content in the Science and Technology curriculum, this will be dependent on the lecturers interest, background information of the subject, availability of teaching and learning resources and time allocated to Home Economics components in the curriculum.

4.2.2.2. Time allocation of Home Economics in Relation to Other Components

Table 5: Time Allocation of HEC Components in Relation to Other Components

Components	Term 1	Term 2	Term 3	Total
HEC	0	720	360	1080
Bio	1550	750	950	3250
P/S	0	0	840	840
Chem	0	0	180	180
General Topics	540	360	180	1080

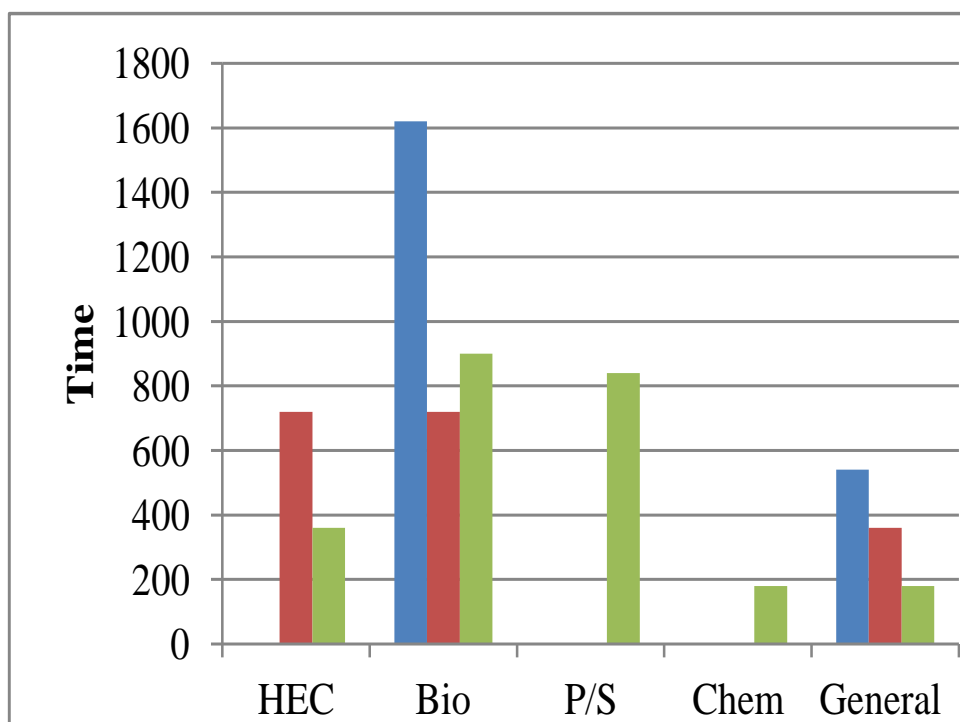


Figure 5: Time Allocation of HEC Components in Relation of Other Components

Table 5 and figure 5 above show the time allocated to all components in the Science and Technology curriculum in minutes. The documents have revealed that Home Economics is allocated 720 minutes in term 2 and 360 minutes in term 3 giving a total of 1080 minutes per

year. The results have also revealed that in term 1 Home Economics has been allocated no minutes. Likewise Biology is being rated highest in terms of time allocation with 1550 minutes in term one, 750 minutes in term two, and 950 minutes for term three with a total of 3250. Indicating that Biology has been allocated time for all the terms followed by general topics while the other 2 components Physical Science and Chemistry being allocated time in term three only. Therefore the data have demonstrated that there are some variations in time allocation; other components are rated high like Biology while others are rated least like Chemistry and Physical Science. On the other hand Home Economics has been averagely rated as compared to other components. According to the analysis the variations in time allocation is attributed to number of topics in the curriculum. The more the number of topics the more the time allocated to that component as compared to others in the curriculum.

4.2.2.3. Types of knowledge and skills in Home Economics in the integrated Science and Technology

Table 6a: Knowledge and skills in Home Economics in the integrated Science and Technology

No of topics /courses in Syllabus				
Old Curriculum	HEC	New Curriculum	Int S/Tec	Topics missed in new Int S/Tec curriculum
10		6		4

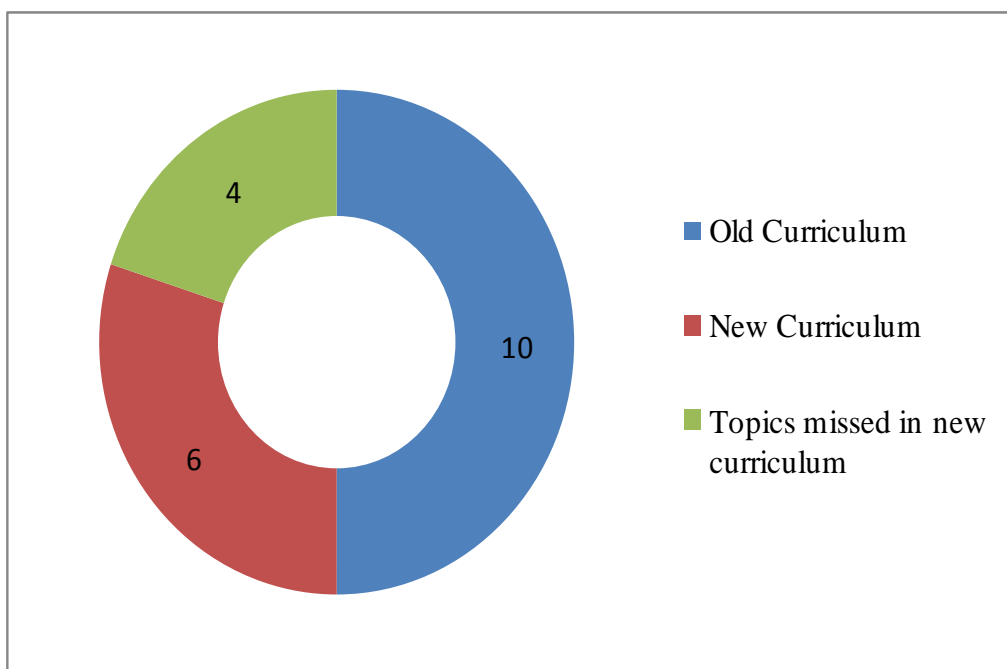


Figure 6: Home Economics Topics in the Curricula

The results from table 6 a and figure 6 above have indicated that the 10 topics/courses which are supposed to be covered in Home Economics TTC curriculum, 6 have been included in the Science and Technology curriculum. This reveals that almost 60 % of the content from the old TTC curriculum has been included in the new integrated Science and Technology. Out of all the 6 Home Economics topics/ courses which have been included in the Science and Technology curriculum each topic starts with theory work followed by practical work except one methodology topic which only covers practical part. Details for topics in old and new Home Economics curriculum and the missing topics (see Appendix Diii).

Table 6b: HEC Content in S/Tec Syllabus and 2013-2014 Term 2 Schemes and Records of Work

Course/topics and units	Term 1	Term 2	Term 3
HEC courses in S/Tec	0	2	4
Nutrition courses in schemes and records of work KU & LL	0	1	
Nutrition units in S/Tec syllabus	0	5	4
Nutrition units in schemes and records of work (KU)	0	3	
Nutrition units in schemes and records of work (LL)	0	2	

The results have also revealed that there are some variations on how the lecturers approach the official syllabus when it comes to writing of Home Economics content in their schemes of work. Table 6b above has shown that the Science Technology syllabus has an outline of 5 units which encompasses Nutrition and development courses/topics for term two. Out of these 5 units Kasungu TTC had an outline of 3 units in its schemes and records of work and Lilongwe has an outline of 2 units in its outline of schemes and records of work leaving a gap of 2 and 3 units uncovered respectively.

4.2.3. Strategies Used in Classrooms to Teach Home Economics Components.

Table 7 below shows a summary of the most frequently used strategies which lecturers used in class to teach Home Economics concepts in the integrated Science and Technology curriculum. The highest tallied strategy was regarded as a frequently used strategy for that particular class lecturer. Tallies were developed from the three main aspects of the lesson i.e. introduction, development and conclusion based on the activities which were carried out within these three main aspects (See appendix Fi and ii). This table gives an overview of the most common frequently used strategy across all eight observations.

4.2.3.2. Commonly used strategies

Table7: Percentage Summary on Strategies Used

Strategy	Frequency	Percentage
Lecture	3	27
Case studies	1	9
Discussions	5	46
Demonstrations	1	9
Practicals	1	9
Report writing	0	0

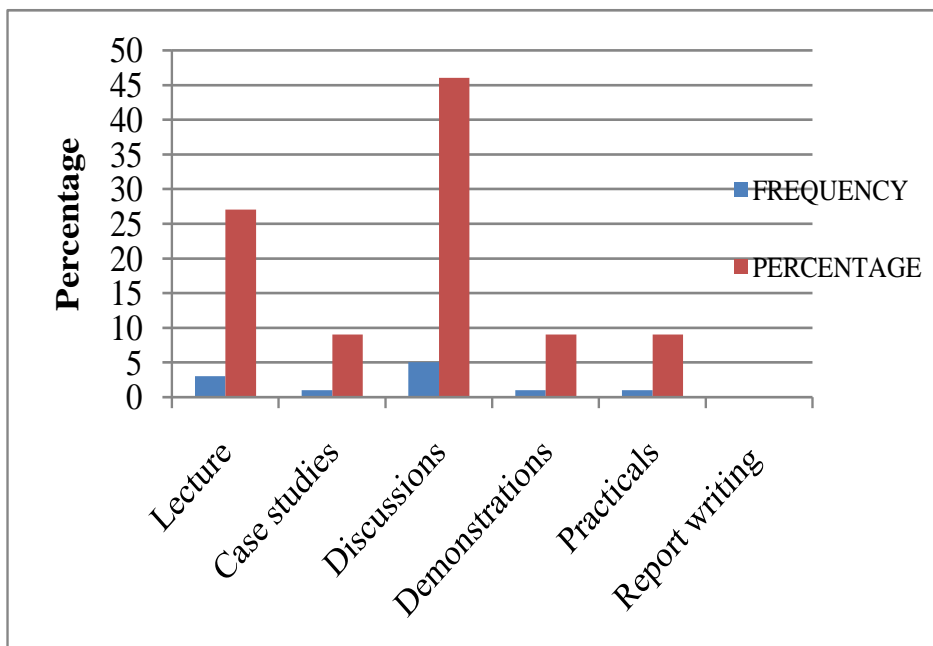


Figure 7a: Percentage summary on Strategies Used

From table 7 and figure 7 above the data have revealed that discussion strategy used in teaching in colleges is a commonly used strategy. The strategy has been rated the highest with a percentage weighting of 46 %, giving learners ample time to interact with each others during the teaching and learning process. Discussion method was seconded by lecture with a

27 % weighting. On the other hand demonstration, practicals and case studies have been rated the least with a 9 % weighting and 0% in report writing. Results have also indicated that many lecturers used few resources with little time on learners' tasks. Again, lecturers sparingly supported learners during individual and group tasks. (See appendix Fiii), on a summary of classroom observations. The results demonstrate lack of pedagogical content knowledge (PCK) on part of lecturers.

For further clarification of the image of some of the classrooms which were observed, figures 8 a, 8b, 8c and 8d are sampled pictures of the Science and Technology class where observations were carried out during the teaching of Home Economics components. The pictures just add a clear picture on some activities to depict the methods which were used in class.



Figure: 8a & 8b Showing Home Economics Class



Figure: 8c & 8d Showing Home Economics Laboratory; Learners Conducting Some Practicals

4.2.4. Lectures' Experiences on Teaching Home Economics While Integrated in Science and Technology.

The interviews conducted focused on main issues which were in line with the research objective with regard to the teaching of Home Economics while integrated in Science and Technology. After transcribing the data were coded and categorized. Out of the fourteen categories which were developed from the coded data after transcribing the ten interviews; themes were developed. Some of the categories became themes while others were renamed to match with the research objectives. The table 8a below contains a summary of categories and number of interviewees. And 8b contains themes which have developed from the coded data.

Table 8a: Lecturers Experiences in Teaching HEC While Integrated in S/Tec

No	Category	No of lectures interviewed
1	Inadequate practicals	10
2	No orientation	10
3	College training not adequately prepared in HEC	10
4	Knowledge gap	10
5	no TALULAR	10
6	Administrative support rarely done for practicals	10
7	Less knowledge and skills acquisition	10
8	Inadequate use of laboratory for HEC lessons/ using the laboratory sparingly	10
9	Curriculum overload	10
10	Lecturers with different backgrounds	10
11	Curriculum structure HEC averagely presented	10
12	Ability to see the relationship among components in the curriculum	10
13	Shortage of HEC experts	10
14	Coordination among lecturers	10

The categories in table 8a above have developed into themes which will be discussed in chapter five.

Table 8b: Common Themes and Categories that Emerged from Qualitative Interviews

Data Analysis from Lecturers

Theme	Category
Content knowledge	1.lack of subject matter 2. College training not adequately prepared in HEC 3. Knowledge gap 4.No INSERT/orientation in HEC
Teaching methodologies/ pedagogical knowledge.	1. Inadequate practical work in HEC at teaching college 2. HEC not properly taught at the teaching college 3. Less colleague interaction for team teaching
Attention in HEC	1.HEC receiving less attention
Curriculum structure	1. Curriculum overload 2. HEC averagely presented
HEC experts	1. Shortage of HEC experts
Administrative support	1.Lack of CPDs 2.Administrative support rarely provided in practical
Use of the laboratory /teaching strategies	1.Inadequate use of the lab 2. Less knowledge and skill acquisition in HEC
Background factors	1. Lecturers with different backgrounds 2.learners'background in adequate knowledge in HEC
Availability of teaching and learning resources	1.shortage of teaching and learning resources

Opportunities in Teaching Home Economics While Integrated in Science and Technologies

Using the developed themes the results from the HOD's responses demonstrated that there are some few opportunities observed in teaching Home Economics while integrated. The HODs revealed of having an opportunity of teaching Home Economics alongside other

learning areas. Again reducing number of learning areas in the department was also echoed as an opportunity. Though they also observed curriculum overload.

From what lecturers responded in terms of opportunities, the results confirmed that lecturers had similar observations as those of HODs. But some of the lecturers also observed learning of new concepts like those in Physical Science and Chemistry as another opportunity.

Challenges in Teaching Home Economics While Integrated in Science and Technology

In terms of administration support the responses from the HODs demonstrated of not providing adequate support. This was echoed as a major challenge. HODs revealed of not having adequate supervisory work, in adequate provision of financial support to conduct CPDs and buy some teaching resources for practical work in Home Economics. HODs also agreed to have few Home Economics experts who could teach the subject if it can be taught as a separate subject. And to find a lecturer who is pure Science and Technology to teach the subject was also mentioned as a challenge. On practical assessment and laboratory work HODs revealed of not being adequately done. Lack of expertise among lecturers, time factors and inadequate resources were highlighted as challenges for not conducting enough practical work in Home Economics.

From the HODs' responses it has been revealed that use of colleagues for assistance in clarifying some concepts in Home Economics was used as a solution to overcome the challenges which lecturers face. HODs confirmed of not having ready answers to the challenges which they face since they also wait for management team to act.

Lecturers revealed of facing a lot of challenges when teaching Home Economics while integrated. From the responses lecturers revealed of not adequately being trained in Home Economics, inadequate in-service training and less colleague interaction for team teaching. The results demonstrate lack of both content and pedagogical knowledge in Home

Economics. Lecturers also stated that they face a lot of challenges when it came to teaching Home Economics practically because of inadequate knowledge and skills to handle practicals. Lecturers agreed with HODs to have been teaching Home Economics theoretically and used the laboratory sparingly. Inadequate resources and lack of pedagogical knowledge to use the laboratory were also echoed as major challenges. Lecturers revealed of relying on theoretical continuous and summative assessment. None of lecturers confirmed to have used the laboratory for teaching Home Economics topics so often. Lecturers confirmed of using the laboratory sparingly for the selected topics like shapes of the kitchen. The results also affirmed that Home Economics is receiving less attention in the curriculum. Lecturers observed that some topics have been left out and the remaining topics have been fused together in two terms.

Inadequate administrative support in form of provision of CPDs, financial support for buying equipment and teaching resources were also highly echoed among lecturers' responses as challenges affecting teaching of Home Economics. The results show minimal administrative support.

On part of overcoming the faced challenges, the responses from the lecturers demonstrated minimal consultation from colleague due to busy schedules and shortage of Home Economics experts. Again relying on learners who have ever learnt Home Economics to clarify points and structure the lesson was also echoed as solution among lecturers who were interviewed. Some lecturers also revealed of leaving topics uncovered or teaching them theoretically as a solution to the faced challenges.

4.2.5. Learners' experiences in learning Home Economics while integrated in Science and Technology curriculum (FGDs)

From the Focus Group discussions, the study has revealed that the learners also face challenges while learning Home Economics with minimal opportunities on knowledge and skill acquisition in Home Economics. A summary of the responses have been outlined in table 9 below with the developed themes and categories after data analysis.

Table 9: Themes and Categories Developed from two FGDs after data Analysis

Theme	Category
In adequate practicals	1.Less time for practicals 2. Practical lessons done
Colleague interaction	1.Lack of cooperation during lessons
Poor background of the subject	1.Less knowledge and skills acquisition 2.Difficult to understand the subject
Use of the Laboratory	1.Shortage of resources/ equipment for the laboratory 2. Using the laboratory sparingly
Knowledge transfer	1. Knowledge transfer 2. Familiarity with other components in the curriculum 3. learning Home Economics as a single subject
Interest in the subject	1.Interest in the subject
In adequate resources	1.In adequate resources

Opportunities in Learning Home Economics While Integrated

According to the results learners confirmed of having a chance of learning Home Economics as it has been observed by lecturers. Learners also affirmed of teaching Home Economics if it can be taught effectively after graduation. Again, the results demonstrated that learners have some interest in the subject.

Challenges in Learning Home Economics While Integrated

On part of practical lessons and assessment in Home Economics learners responses showed similar results like those of the lecturers of rarely having them. Some learners revealed of not using the laboratory for learning Home Economics since they joined the college. And having learnt very few Home Economics topics and in adequate resources to use in the laboratory for teaching and learning of Home Economics.

Lack of knowledge in Home Economics among some learners was echoed as a challenge affecting effective learning of Home Economics. When asked to develop relationship of Home Economics with other component in the curriculum, a greater number of learners demonstrated little understanding of the concepts to depict knowledge transfer within the curriculum. For instance out of twenty participants only six could demonstrate an understanding on knowledge transfer within the curriculum. The result from learners also revealed minimal learner interaction during lessons and in adequate supervisory support from lecturers as some of the challenges which they face when learning Home Economics.

4.6 Chapter summary

In this chapter, the ten lecturers who participated in the study were introduced and described. The data collected from five different methods have been presented. In the next chapter the findings will be discussed to provide an insight on the position of Home Economics with regard to knowledge and skill acquisition in Science and Technology curriculum.

Chapter 5: Discussion of Findings, Recontextualization into Literature

5.1. Introduction

The purpose of the study was to provide a descriptive analysis on the teaching of Home Economics while integrated in Science and Technology curriculum with regard to knowledge and skill acquisition of the subject. The data was generated using the methods which have been described in chapter 4. The generated data provided a deeper understanding on factors which might have compromised quality in Home Economics with regard to knowledge and skill acquisition. These factors will be discussed in this chapter and will be correlated with the existing literature. The voice of the researcher has also been added in the discussion to determine the position of Home Economics in the integrated curriculum. These findings have also provided a basis for making recommendations on what needs to be put in place to enhance the effective teaching of Home Economics in Teachers' Training Colleges. The discussion will follow the order of the research questions which will be constantly merged throughout the discussion.

Question 1: How are the lecturers prepared to teach Home Economics in the integrated Science and Technology curriculum?

5.2. Background Factors (Professional Background, Content knowledge)

With regard to the characteristics of the lecturers who are currently teaching Science and Technology in the two colleges observed, the study has revealed that majority of lecturers joined the college in 2010 when the curriculum was already in progress. Only two lecturers joined earlier in 2006, but between these two lecturers only one had a chance of being oriented on how to handle the integrated curriculum. This implies that lecturers who joined earlier plus those who joined later are lacking enough knowledge in teaching the subjects in particular Home Economics. This poses a challenge on teachers to teach all the components

which are in the curriculum since they have never been trained on. Lecturers felt overburdened with a task which cannot be relieved unless the government through colleges intervenes. Lecturers felt relieved due to integration of the subjects because the numbers of the subject were reduced and thought that they will teach more in less period of time. Secondly for those subjects which were not covered because of lack of expertise could have been covered alongside with those subjects which have some experts. This is contrary to Alberta (2007); Meghan (2008); Slavin (19991) suggest that teachers should have enough content knowledge to effectively deliver the lessons. Again lecturers could have an idea on how they can improvise the resources to be used in class to teach the subject by using expertise from their colleague. But what was missed on the way was to draw these lecturers with different backgrounds together in order to have common knowledge. As emphasized by Merwe and Merwe (2008) as one way keeping lecturers abreast to the new information in Home Economics in the integrated curriculum. Research studies on teaching of Home Economics cited in Kunkwenzu (2005) on experiences of beginning Home Economics teachers in Malawi and contextual inquiry on Home Economics by Musset (2010) confirmed shortage of Home Economics teachers. These research studies recommended use of expertise from other colleagues as being a good alternative to bring common knowledge among teachers. Hence lecturers expected to be oriented before handling the curriculum because each curriculum has its own demands. But the findings have revealed contrary results from what was expected.

“In my case, there are a number of opportunities. One of them is that there is a possibility of teaching fewer loads but with many components within the curriculum. What I mean is that the integrated nature of the subject helps you to teach quite a number of concepts at once. For example if you talk of forms of heat it’s very easy to relate.In HEC forms of heat energy are used for various purposes for example cooking, drying clothes and others.

..... Because if we had HEC as a separate entity then we could have extended periods than as it is now so it was a plus. Of course I am an advocate of merging the areasbut what has been lost on the way was to orient teachers on how to approach these particular topics and then bringing to right to teachers on how they can mobilize their efforts, like you are good at textiles, you are good at this and that come together, but this has not happened.

.....We need to have CPDS for example this curriculum of outcome based (OBE) one of Its tenets is that you do more than less, so to do this there is supposed to be integration of concepts. In integration you cut time you teach more but with less amount of time. Not many people understand the principles behind Outcome Based Education (OBE) that is my opinion so, any change or any paradigm shift calls for CPDS so that those who are called upon to teach should be abreast or.....embraced e.g. if you might be oriented on clothing and textiles both theoretically and practically, I would be able to advice and improvise ok. For example in my own research I found out that there was a correlation between knowledge of the subject matter and the availability of Teaching And Learning Using Local Available Resources (TALULAR),for example if the teacher is comfortable in English you see a lot of TALULAR in English. If it's Geography you find a lot of it in Geography. So there is that correlation and a positive one. Now on this regard too if I am knowledgeable in Home Economics I could improvise and teach using local resources but if am blank aaa how can I improvise"(lecturer 8).

The findings from this study are in line with what the secondary school teachers, students, and stake holders recently echoed on the introduction of Science subjects as compulsory subjects in all secondary schools starting with form one and introduction of English as a media of communication in primary schools starting with standard one in Malawi beginning 2014 -2015 academic calendar (W. Kumwembe's report Zodiak, personal communication, 8

September 2014). The government has introduced the curricular without enough orientation on Science teachers and primary school teachers. Again, there are no enough resources and teachers have expressed the concern of the curricula not to being effectively implemented.

“ we have heard of the curriculum change but we have never heard of any teacher being oriented on the teaching of the subjects..... the government is also doing it without enough resources like laboratories and equipments especially in Community day secondary schools..... the laboratory is there but no equipment.....(Teachers, students, educationist on Zodiak, 8 September 2014)

So what can be implied is that even if the government can have good plans but if there is lack of thorough preparation then the implementation of the programmes will also be affected. It is so because the implementers will be lacking proper direction. From the findings it can be assumed that learners are not effectively taught because lecturers have in adequate knowledge in Home Economics. In agreement Verspoor (2008) noted that, though learning is affected by a student's ability and attitude as well as resources in the child's school and home, teacher quality has been shown to be the “single most important school variable influencing student achievement” p. 217. Teachers need to receive enough professional support to achieve quality teaching.

Administration Support.

In terms of administration support at the teaching colleges to orient teachers, (CPDS) the findings revealed to be on the lower side. This practice affected both preparation and teaching of Home Economics. Apart from providing financial support to buy teaching resources lecturers felt that the administration was supposed to plan for CPDs, team teaching and make them effective which did not happen according to plans. Lecturers including the HODs revealed that the administrative support was not enough because the planned CPDs kept on

failing till the time of this study. Lecturers felt that having CPDs was important as could have assisted in bridging the knowledge gap which existed among the lecturers. The colleges through the Science departments had some mechanisms that arrangement were made to have INSERT (CPDs). This was hoped to allow everybody have a common understanding on how to handle concepts in the integrated Science and Technology curriculum. But in both colleges it failed. Though Merwe and Merwe (2008) view CPDs as means by which teachers maintain their knowledge and skills related to their profession, to improve performance among learners. The colleges seem not to emphasize on this practice. Similar observation on in adequate administration support for professional development and necessary support on resource provision, was also observed from research studies on ensuring quality by attending to learner- centered pedagogy in sub- Saharan Africa by Vavrus, Thomas and Bartlet (2011).The researchers confirm that tutors at TTC and university education department are not given adequate professional resources to learn about the alternative approach and to integrate appropriate methods into teaching. Therefore the researchers concluded, “While the effects of reform are not completely unnoticed, most observers of African education have found a narrow range of teaching strategies in use in colleges” p.73. Similarly from the findings in this study, lecturers rarely used a wide range of effective teaching strategies to teach Home Economics using the alternative integrated approach due knowledge gaps which exists. This is dangerous when it comes to thorough knowledge and skills acquisition in Home Economics.

“.....In the department we also suggested on CPDs. But we cannot rely on it because it has failed for sometime but CPDs could have assisted us a lot but it kept on failing. We were surprised to hear that the CPDs will be conducted here at this college. But they have been changing may be next term until now. So we are yet to see as to whether this will take place or not. But to our surprise the CPDs in S/Tec has not taken place but with the other

departments it has been done. So had it been it was done, we could have given the topics which will require CPDs and in that way we could have been assisted.” (HODS1&2 & all lecturers).

What has been revealed from the findings on need for administrative support is in line with Research studies on the use of professional CPDs and team teaching in the implementation of integrated curriculum by Alberta, (2007); Grant and Paige (2007). The authors revealed that there is need for enough administrative support to implement integrated curriculum since the approach requires drawing lecturers from different back grounds together. These teachers teach the same learning area and use the same learners, time tables as well resources such infrastructures. Again, nobody can teach all the subjects hence need for common understanding. In this case the approach requires a great deal of cooperation from administration and the implementers of the curriculum to make the implementation of the curriculum successful.

Subject Specialization/HEC Experts.

On subject specialization the training colleges have also played a very a minimal role to adequately prepare the lecturers to teach Home Economics in the integrated curriculum. For example out of 10 lecturers, 4 lecturers have been trained and majored in Home Economics and minor in other sciences like Agriculture while at college representing 40% of the total number of lecturers understudy. 6 out of 10 have been trained and majored in Science and Technology and other sciences without Home Economics constituting 60% of the total number of lecturers. That is 4 lecturers out 6 lecturers have majored in Mathematics and minor Science and Technology representing 40 % of the total population. Between the remaining 2 lecturers 1 has majored in Physical science and minor Biology and the remaining 1 lecturer has majored in Science and Technology and minor Social and environment studies, with a representation of 10 % each. Among all the 10 lecturers none has been trained in

integrated Science and Technology where Home Economics forms a component, representing 0 % while the 4 lecturers who have been trained in Science and Technology is without Home Economics but Biology, Physical and Chemistry.

The findings revealed that a greater percentage of the lecturers have not been fully prepared in terms of training to teach Home Economics while integrated in Science and Technology, and on how to handle the components in the integrated Science and Technology. To handle the integrated curriculum teachers have to be well prepared to effectively handle all the components within the curriculum. To support the idea from the findings Musset (2010); Mulkeen et al. (2004) emphasize on the importance of training that it instills new skills and abilities to perform tasks which were not possible previously; and that there is positive correlation between teachers' knowledge of their subjects and what they teach in the classroom. In addition to that good training provides confidence in teachers in undertaking their duties. Hence it allows the teacher to be flexible in the choice of methodologies as well as resources to be used during lesson delivery. Because of inadequate training it can be assumed that the learners are not receiving enough of the relevant knowledge and skills in Home Economics. It is like that because lecturers have got inadequate knowledge on how to handle the subject. Hence this development can be translated into less knowledge and skills acquisition in Home Economics, because Tytler (2004) emphasizes that broad understanding of the subject will translate to effective teaching and enhance understanding among learners. This development provides Home Economics as a subject a less chance of being effectively taught by student teachers after graduation in their respective primary schools. Research findings from teacher education by Kadzera (2006) confirms that there is direct correlation on what students learn from the college to what they will be able to teach in field because many students model their teachers on what they do later in life. Research indicates that teacher preparation/knowledge of teaching and learning, subject matter knowledge, experience, and

the combined set of qualifications measured by teacher licensure are all leading factors in teacher effectiveness (Verspoor, 2008).

The findings have also revealed that lecturers teach components which are out of their subject specialization as result of inadequate training in all aspects of the integrated curriculum. This kind of teaching may affect the way the teacher prepares for his or her subject because he/she lacks deep level of understanding on the subject matter or content knowledge (CK). Vavrus et al. (2011) also expound on pedagogical content knowledge as being of great importance in the teaching process. To add Vavrus et al. again consider pedagogical content knowledge (PCK) a critical element in teaching because students' learning depend to large extent on the teacher's ability to transform their subjects into lessons their students can comprehend. Not only that, Vavrus et al emphasize that PCK is a prerequisite for higher-order thinking skills of analysis and to critique their own work and that of learners. Mulkeen et al. (2004 a) citing research in USA, and Ball & MacDiarmid, (1990) observed that there is a positive correlation between the teachers knowledge of their subject and their impact in the classroom. The research shows that in many cases teachers' lack of understanding of the principles of their subject can be a hindrance to good teaching. A deep and broad subject matter in teaching is important because it enables the teacher to have enough grounds on the content to be taught. This is like that because teaching involves the translation of the subject matter knowledge (content) into the subject matter for teaching. During teaching teachers interweave their prior knowledge of the subject with immediate knowledge of the classroom realities, in order to create relevant knowledge for learning a topic; hence this can be possible if the lecturer has good background information of the subject. From the existing research on teacher preparation; the studies indicate that teacher preparation helps candidates develop the knowledge and skill they need in the classroom. Well prepared teachers produce higher student achievement (Verspoor, 2008).

Though specific research on impact of college lecturers teaching out of their area of specialization is scarce, the studies by Mulkeen et al. (2004a); Stuart (2002) serve to emphasize the difficult situations which lecturers in this study experienced. The findings indicate that lecturers experienced difficulties in choice of topics which they can competently teach within Home Economics as a component and how they could critique their own work in the integrated curriculum. Hence lecturers were selective in terms of topics and limited in information input during lesson presentations. The topics which were related to other Sciences like Biology were highly featured in most of the schemes and records of work as compared to those which demanded more expertise in Home Economics. This practice directly reflects on less Home Economics representation in all knowledge and skills in the integrated Science and Technology curriculum. For instance Nutrition, Health and Development was highly featured in all the schemes which were analysed from Kasungu and Lilongwe and it was taught as compared to cooking methods and laundry (clothing and textiles) which were not thoroughly covered by many lecturers.

“I really have a problem, sometimes I do not even teach the topics in Home Economics or sometimes I even ask my friends to teach for me. And this really depends on the availability of time for my friends to teach my topics. As you know here at the college we are busy people. They do not have enough time to teach their own classes and mine, it becomes a problem (lecturer 7)”.

Among the challenges outlined from research findings by Meghan (2008) to find out if integrated curriculum can promote critical thinking among adolescent; it was revealed that teachers find it difficult to handle all the components in the curriculum because integration started in the teaching schools and that teachers lacked knowledge in all aspects of the curriculum. These findings are in support of what lecturers in TTCs also observed as a challenge to effectively handle the integrated curriculum because of knowledge gaps.

Lecturers felt that the integration which could include Home Economics should start right away from the college training. Lecturers felt that at the teaching college they are experiencing knowledge gaps. Or else each specialist should focus on his/her area of specialization.

The issue of different subject specialization also poses a great challenge among HODs when it came to allocation of lecturers to teach Science and Technology as well because of the integration of Home Economics. Not many lecturers have specialized in Home Economics. HODs find it difficult to find someone who is pure Home Economics to teach the subject comfortably within the curriculum. Therefore lecturers felt that they are not doing well on part of the student teachers. The reason being if one's knowledge or subject matter is inadequate or is limited, then it affects the form you make it to be understood by the learners. And that is a problem. And this implies less knowledge and skill acquisition in Home Economics in the integrated Science and Technology among learners.

“This part of integration should start right away from the college not just Science and Technology without component of Home Economics. But it should include this part of HEC. I think things can work better; otherwise as of now it's not on. Here at the college several lecturers should be involved in the teaching of the subject (Science and Technology). For example those lecturers who are specialist in physical science can teach that part and those specialist in chemistry can teach that part likewise those who specialized in HEC can teach that part. I think that can assist us here at the college” (HOD1&2, lecturer 3& 7).

“The main challenge is the lecturers themselves, because most lecturers are not competent enough to handle HEC as a component in S/Tec. Most lecturers have specialized in Science, Physical Science, and Biology. So to find someone who can teach Science component, P/sc and Biology is difficult, so this is a challenge indeed..... (HODs 1)”.

In view of this, it can be assumed that learners are not receiving enough of the relevant information from Home Economics because lecturers lack substantive dimension of the subject matter due to different subject majors and inadequate college training on the subject. This has the direct influence on curriculum decision in the subject area in particular, Home Economics which demands lecturers to guide learners in the field of inquiry with regard to constructivism theory of learning. For instance out of the already halved content learners are learning part of it without taking into consideration what has been stipulated in the IPTE Science and Technology syllabus. This is like that because lecturers are limited to what they understand better. This practice is putting the subject at risk of continuing not to be taught in the primary schools because learners (student teachers) are not receiving enough of the right content right away from the college training. Another negative effect is that there are also variations in terms of knowledge and skill acquisition among learners because those who are taught by Home Economics majors will acquire enough of the Home Economics content as compared to other Sciences. Likewise those who are taught by the non Home Economics majors will acquire more of other sciences and with selected concepts in Home Economics. Hence colleges are producing learners who are having in adequate knowledge and skills in all the components in Science and Technology in Malawi including Home Economics.

“The major problem is that I do not have enough background information in Home Economics. I think on that one for me I have more problems because my major is mathematics and Science and Technology.Science and Technology at the college is not including Home Economics. So my problem is the course outline which we had at the college did not include the part of Home Economics. So when teaching I am very comfortable when teaching science (Bio, Chem, P/sc). But when it comes to teaching Home Economics I really have problems because I do not have enough knowledge....” (Lecturer 7).

“I face quite a number of challenges especially when it comes to teaching topics which are physics and chemistry in nature. The reasons are that the training which I got at bachelors is that what we call Basic applied Sciences, because the course did not include the topics which are physics in nature. Because of that I am not supposed to teach topics which are physics in nature, chemistry in nature. Likewise when teaching Home Economics, I also face a number of challenges like some of the HEC topics are taught theoretically. When we talk of topics which deal with laundry or clothing and textile, so I find them difficult to teach because we teach them theoretically but we are supposed to conduct some practicals but we are not doing it here at the college. That is why I find it more difficult to teach (lecturer 3)”.

“In my case, I started learning Home Economics when I went for bachelors, but at diploma I did a different course I started studying Home Economics topics in third year ok. So am not comfortable to teach the subject because of the background, so I feel there might be some refresher courses which can assist in equipping me with skills which can help in teaching Home Economics topics which are integrated in Science and Technology (lecturer 4)”.

Teaching Loads.

Heavy teaching loads because of large classroom size, multiple learning areas and varied roles among lecturers in this study were also highly featured. For instance the class range of the two colleges was 2-6 and average of 4 with class size of 91- 317 with an average of 179 learners per lecturer. On average both colleges lecturers had many classes and with large class enrollments. The trend had a negative impact on the quality of teaching as well as time for lesson preparation. Lecturers had limited time for thorough preparation as they had to divide their time among so many classes and learning areas. This is in support of what Mchanzime (2003) observed as one of the effect of large classroom size in Malawi. From the lesson observation carried out in this study the lecturers used methodologies which were more of recalling facts, no time to allow learners to explore or analyse things so that the

learners could develop a spirit of inquiry because of large classroom. Lecturers had very few resources to cater for large class enrollments. This practice was not in line with constructivism theory which proposes that the responsibility of learning should reside in the learner and be actively involved in the investigations (Glaserfeld, 1989; Dewey 2009).

The findings in this study have revealed that practicals were rarely done during the normal working schedules as a result of busy schedules. But lesson make ups was the common trend which was observed to try to finish up the syllabus. And some lecturers even volunteered themselves to work during odd hours due to pressure of work. Similar to the research findings from this study it was also evidenced from the studies on teacher recruitment and deployments by Lewin and Stewart (2003). Lewin and Stewart state that teachers' work is increasing that it affected the teaching of those teachers. In addition, several research studies like that of Cooper (2001) cited in Kunkwenzu (2007) reveals that teachers are significantly working longer hours than they are paid for. The pictures from one of the observed practical lesson in chapter 4 shows clearly how over burdened the lecturers are in the teacher training colleges. Lecturers were working during odd hours with large classroom enrollments. This became increasingly difficult to manage practical work hence resources could not be enough for all the learners. Some lessons were conducted during night hours due to pressure of work during the day. The lecturers revealed that they had many lessons to teach during the working hours that they could not make it for practical lessons during the day. Squeezing lessons out of normal working hours is detrimental to both lecturers and learners because they teach and learn while they are already tired. This development affects knowledge and skills acquisition of the subjects like Home Economics.

From the discussion in this section it can be assumed that the integrated Science and Technology curriculum is not effectively implemented hence affecting knowledge and skill acquisition of its components including Home Economics. Literature from Grant and Paige

(2007) suggest that, in order for the key players of the integrated curriculum to develop a powerful understanding of the key ideas across or within the subject in the integrated curriculum, the components of the curriculum should be understood, connected and be related in a meaningful manner by both students and teachers. In this case, it seems lecturers who are key players are not familiar with all the components in the curriculum. This poses a great challenge when it comes to teaching of Home Economics.

To achieve what Grant and Paige (2007) deemed to be effective for accurate curriculum implementation, it demands lecturers to receive the right kind of training in order to understand the subject matter. On the contrary view the training of the lecturers at the college level and teaching colleges seemed not prepare the lecturers to handle all the components including Home Economics. From the findings it has been revealed that even those who have been trained in Home Economics have not been adequately trained in all aspects of the subject. This kind of training could not allow them stand confidently before the learners. Ochs (1993) observed that, “While training is an investment in the skill and productivity of programs, companies (administrators) tend to look at only costs and programmers often see only loss of production time” p. 105. This challenge has not spared the training institutions in Malawi. Many training colleges and institution provides less attention to effective training as revealed from this study.

Kunkwenzu (2007) resolves that although sometimes books may be available for teachers to read about how to teach Home Economics and other Science subjects, good training courses are almost always superior because they effectively drill concepts into a format that is easy to master. In this study Lecturers faced challenges to articulate issues with regard to Home Economics due to inadequate training. Therefore the training colleges have to develop the curricular which can allow the lecturers handle all the components including Home

Economics in the integrated manner if the subject is to remain a component in the integrated Science and Technology curriculum.

Secondly the teaching colleges need to develop the mechanism which can draw all the lecturers from different backgrounds together and have common knowledge to teach the integrated curriculum effectively including Home Economics. This suggestion is also expounded by Duibhir and Cummins (2012) who believe that understanding of important concepts of the subjects depends on the study of that subject. Giving lecturers maximum support can complement the deficiency in theoretical as well as practical knowledge gaps which the lecturers have in the teaching of Home Economics. The lecturers are finding it difficult to implement the integrated curriculum because of knowledge gaps since not all the lecturers specialized in all the components which are in the curriculum including Home Economics. For instance one of the lecturers cited an example on practical work not being adequately done right away from the college training which has trickled down to the teaching colleges and that in return the lecturer is not capable of handling practical components in Home Economics.

“I can say even at the college, there were no practical lessons because if I can remember it was once if not twice for the whole programme. So it is from above there down to the TTC. So sometimes it can even be a challenge if I want to demonstrate with my learners if I do not have knowledge and skill because I also lack the skills (lecturer 3)”

“When I look at expertise in S/Tec most lecturers are drawn from different background some are from Science and Mathematics, applied sciences and P/ sciences their competencies are not enough in most cases. That’s why we see knowledge acquisition varies from one class to another because of background of the lecturers as due to the major (lecturer 5)”

Bilbao, et al. (2008) suggests thorough preparation of the curriculum so that activities should not be “pointless busy work” or distorts the content or be beyond the student’s knowledge and skill levels. Without proper preparation on how to handle the integrated curriculum might have a negative impact on the teaching of Home Economics in the teaching colleges. Curriculum integration is more than just clustering of related learning outcomes, but the selection of learning experiences should be based on the extent to which they promote progress or broaden and confirm understanding of the main concepts of the components. Hence lecturers should have a well grounded professional background to effectively handle Home Economics. Similarly, lecturers should enough time, resources with reasonable number of classes and learners to effectively prepare for their lessons in Home Economics.

Lecturers felt that teaching the components which they are familiar with can be better than teaching unknown content it is the same as cheating the students. Citing Kadzera (2006) research studies on teacher education in Malawi Kadzera emphasized that “uncertainty” about the technology of teaching is the enemy of rational planning and teaching. Therefore Home Economics content according to the results is on the disadvantaged part because very few lecturers are familiar with most of the content. *“I think it’s better just to skip a topic or teach it theoretically than cheating the Learners (Lecturer 8)”*, In this case it can be assumed that learners are receiving less content than expected from course out line in the Science and Technology IPTE curriculum.

Question 2: What type of knowledge and skills are taught in Home Economics in the integrated Science and Tec curriculum?

5.3. Factors Surrounding Home Economics Content While Integrated In Science and Technology/ Curriculum Structure

Curriculum Structure (Content weighting, Time allocation factors).

Content weighting is among the important aspect in the curriculum structure. Content weighting provides evidence on how much content will the learners acquire at the end of that particular course. According to the results on document analysis in terms of content weighting; the study has revealed that Home Economics topics constitute 26% of the integrated Science and Technology curriculum which is rated the second highest among all the components in the Science and Technology curriculum; Biology being rated the first highest constituting 41%. With regard to the findings revealed from the document analysis, it can be assumed that in terms of weighting in the Science and Technology curriculum, Home Economics content is averagely weighted. This is a step further on the integration of components to form a single learning area. In this curriculum approach different disciplines are drawn together in reasonable weighting. This is in line with what Alberta (2007) suggests, that for effective integration of different disciplines in a multidisciplinary integrated curriculum, the components within the curriculum have to be adequately represented to allow effective knowledge transfer. However Science and Technology curriculum has diverted a bit from the norm and from what Alberta is suggesting. This is like that because the components in this curriculum were not equally weighted. Some components had the highest weighting as compared to others. For instance Home Economics was second highest and Physics and Chemistry were the least this implies that students will also have some variations on how much to acquire from each component in the curriculum.

To analyse further with regard to content weighting in TTC Home Economics syllabus; the study has revealed that out of the 10 courses/ topics which were covered in the old Home Economics syllabus 6 courses/topics have been taken on bold in the new Science and Technology curriculum having a 60 percent representation (see Appendix Diii). This implies that 4 courses of which is a 40 percent representation are no longer covered in the integrated Science and Technology curriculum. This is detrimental when it comes to adequacy of content to be assimilated by a learner at the end of the course because some of the essential knowledge and skills are left out. The findings from this study have been in support of the research studies on integrated curriculum by Meghan (2008); Alberta (2007); UNESCO (2003); Mkholo (2012) ; Montgomery (1999) in Meghan (2008) that one of the disadvantages of curriculum integration is that some of the components within the curriculum are downgraded and some skills are not emphasized. To certain extent it can be assumed that the content in the new Science and Technology curriculum has been reduced because the 4 topics which have been left out contained important knowledge and skills to be learnt in Home Economics. This implies that the learners are also denied a chance of learning all the important knowledge and skills in Home Economics.

The schemes and records of work are important tools in the teaching process because they provide an outline of important topics to be covered in a particular course in a term. These schemes also provide a basis for effective lesson preparation and assist a teacher to cover adequate and relevant content in the particular course (MIE, 2008). The schemes translate the official syllabus and should be a replica of the syllabus for adequacy, quality and relevance of the course. In terms of content weighting of Home Economics components in the Science and Technology schemes and records of work which were analysed in this study, it has been revealed that these schemes are not a replica of the Science and Technology syllabus. For instance in term 2 Science and Technology syllabus has an outline of 1 Nutrition and

Development course with 5 learning Units within the course. And what was expected was to have the same course/ unit outline in the college schemes and records of work; but what has been revealed is that colleges are also selective on what to include in their schemes with regard to Home Economics content. For instance on average the two colleges in this study had an outline of 1 course/topic and 2.5 Units outline in their schemes and records of work. This implies that out of the 5 units the colleges only managed to outline half of the content leaving out half of the content uncovered. Biology topics dominated in these schemes. This practice has a negative impact when it comes to how much content to be acquired by a learner as lecturer also allocate time according to the suggested activities. If there are few learning tasks there is also lesser chance of interacting with the content frequently. The same challenge was also noticed in Mkholo (2012) research studies on the extent on which teachers practice what is in the official curriculum, it was revealed that teachers did not align the teaching tasks with what is in the curriculum. Teachers did not reflect what is in the official documents to their daily schemes. It was revealed that teachers were doing this practice because of various reasons among some being lack of knowledge to align proper tasks with learning outcomes, in adequate resources to use to teach the topics as well as time factors. These challenges can also be assumed to have affected the lecturers in the colleges which were studied for not including all the topics as outlined in the Science and Technology syllabus. Lecturers felt that it was a waste of time to include a topic which would not be covered because there are no resources or time is not on their side. This practice is against Dewey (2009)'s suggestion in constructivism theory, that learners should receive large information input from instructors and be fully involved in challenging tasks in order to construct their own knowledge.

“.....Last term we were very busy many lecturers were going for Teaching Practice (TP), just imagine they were out for two weeks. Then it was followed by ODL/; so we did not finish

up what we were supposed to cover. This term we started with Biology topics because the resources are available and are plenty in this term.....” with Beverages I do not think we will cover it practically because of resources (Lecturer 3).

On part of time allocation the findings have revealed that there are also some variations. Home Economics have been allocated 1080 minutes and is the second highest Biology being the highest with Physical science and Chemistry being the least. This implies that there is a positive correlation between content weighting and time allocated to the content of components within the curriculum. Those which have been highly weighted have also adequate time allocation. But this development does not allow learners to equally interact with the content in the curriculum. For instance Home Economics only appears in second and third term while Physical science and Chemistry only appears in third term. This is contrary to what was observed in old curriculum where Home Economics was allocated two hours per week and three hours for the other three components i.e. science and Health education. Again Home Economics hours were spread across all the three terms (MOE, 1996; MOE, n.d). This implies that Science and Technology as a curriculum is handling components as single subjects not in an integrated manner. Which is not directly related to what Alberta (2000) suggest in which components are supposed to be taught as a whole in the integrated curriculum. In a relevant integrated curriculum structure, learners are supposed to use knowledge from different disciplines to understand the concepts within the curriculum better and the components within the curriculum have to be structured as a whole. To effectively structure the integrated curriculum then this approach needed that each component was to be given enough time and to appear in all the terms so that learners should see the relationships across all the components. In this case it can be assumed that Home Economics as a component has been greatly affected in terms of knowledge and skill acquisition in the new Science and Technology curriculum. Home Economics has been allocated less time

which is not conforming to the allocated topics as compared to when it was taught as a separate subject. The same content which was taught for one year (three terms) in the old curriculum is being taught for two terms (half year) for 1080 hours implying that there is too much work to be covered within a short period of time. This signifies curriculum overload.

This challenge was also echoed among many lecturers who observed that the new curriculum has fused so many Home Economics topics together to fit the existing time of one year. Lecturers felt that the problem of curriculum overload has not been electrified because the same content has been transferred in the new curriculum but in a different format of integration and time has been reduced. Lecturers felt that Home Economics is a wide subject which could not be covered within a short period of time. What seems to be on a positive side is just reduced number of subject in the department but the workload within the curriculum is the same.

“.....Our lecturers find it had to teach all the components especially those that are related to Home Economics. It’s a challenge because most of the Home Economics components are fused in Science. So when it comes to real teaching it becomes difficult for them to teach properly since the subject has been reduced. So it becomes a challenge because most of them complain that most of the topics are difficult. One of the problems is that the content has been reduced..... (HOD)”

“.....well as it was taught separately, it was given enough time and as learning area even students themselves were eager to study and learn about topics under Home Economics but as of now it has been diluted. One can say aaa provided I know the some physics, Biology Chemistry, hope I can do without this part of Home Economics and maybe I can get over 50 % mark and pass. So when it has been incorporated I feel it has been diluted Yaa. (HOD)”

Strategies Outlined in the Curriculum to Teach HEC.

On part of the strategies outlined to teach Home Economics in the new curriculum the study has revealed that all the topics which have been included in the curriculum used the relevant strategies. The syllabus has indicated that each of the topics which have been included in the curriculum starts with a theory and then practical /project work except one methodology topic which covered practical only. This also corresponds to what lecturers have included in their schemes even though not all the topics have been reflected in their schemes. But the challenge was to implement what was in the official document to realities of life in classroom situation. There was a mismatch on what was written in the official curriculum and what lecturers were doing in class. The diversion was attributed to the lecturers interest, background knowledge of the subject and pedagogical content knowledge (PCK), availability of teaching and learning resources and time allocated to Home Economics components in the curriculum. This affected the way different lecturers approached their lessons. Hence these factors had impact on type of knowledge and skills acquired by learners in Home Economics and how the knowledge and skills were acquired.

From the discussions in this section it has been revealed that both findings from document analysis and lecturers' experiences confirms that Home Economics content has been averagely weighted in terms of content and strategies used to teach the content; but the challenge lies on how the topics have been structured across the curriculum and the amount of time allocated to the topics in order for lecturers to use the stipulated strategies effectively. Hence Home Economics was not effectively taught because of the above discussed challenges. Hinde (2005) observes that an integrated curriculum is a potential power design, but only if it is implemented in an appropriate way that promotes significant education goals. Not as a merely way to cut across the disciplines. Lecturers felt overwhelmed with too much content to be covered within a short period of time. Hence lecturers became selective with

regard to topics which are less demanding to include in their schemes as well as strategies to use during the teaching process. Lecturers were teaching for the sake of finishing the syllabus and could only allow learners obtain the 50 % passing mark for the exam. This practice is also what Lincoln and Guba (1985); Malan (2000) suggested being detrimental to effective learning because such learning does not provide learners with enough time to interact with the tasks and develop critical thinking skills. The danger is that this teaching approach may not necessarily focus on subject objectives but only focuses on passing examination. This teaching approach will omit certain values and skills which might be learnt along with the subject. Glasersfeld (1989) contends that it is important to achieve the right balance between the degree of structure and flexibility that is built into the learning process other than having the curriculum overload which provides too much information within a short period of time. This kind of teaching just confuses learners because they get too much content at once which is never assimilated and applied in real life situation. Biggs (1999) warns that the more structured the learning environment, the harder it is for the learners to construct meaning based on their conceptual understandings. Literature from Scientific observation has also established that education is not what the teacher gives; education is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experiences upon the environment. Knowledge is constructed based on personal experiences and hypotheses of the environment (Kolb & Fry, 1975). On this regard, Home Economics as one of the subject which demands more time on hands on activities and exploration, it can be assumed that the subject is not effectively taught in the integrated Science and Technology curriculum. The approach allows very little acquisition of relevant knowledge and skills in Home Economics, learners are not frequently exposed to the challenging tasks which could allow them develop inquisitive minds and have the positive attitude towards the subject. A strong indicator if learning has taken place among learners is

observed when a learner is able make use of the gained knowledge and apply it into different context. Basing on the discussion from this section it can be assumed that very little with regard to Home Economics knowledge and skills will be later applied in real life situation.

Therefore during curriculum integration, the content should be of reasonable weighting to avoid curriculum overload. And enough time has to be allocated to each of the integrated components. Thus in this way it can generally be viewed as a curriculum approach that can have a meaningful learning (Alberta, 2007).

Question 3: How is Home Economics taught in the integrated Science and Technology curriculum?

5.3. Strategies used in the Classroom

Teaching Strategies/methodologies, pedagogical knowledge.

The findings from the classroom observations have revealed that discussion as strategy used in teaching is a commonly used strategy being rated the highest with a percentage weighting of 46., giving learners ample time to interact with each others during the teaching and learning process and was seconded by lecture with a 27 % weighting. This is a positive development as far as integrated curriculum and outcome based education in Malawi is concerned. This is in support of Good et al. (1992); (Dewey 2009) who assert that the concept of implementing an integrated curriculum or running an interdisciplinary classroom focuses on cooperative learning and use of group work. This is also in support of Albert Bandura's theory of social learning and constructivism theory. However the challenge was on how the group activities were carried out to enhance understanding of Home Economics concepts. The two theories state that this type of learning occurs when a teacher uses his/ her expertise to demonstrate the activity before allowing learners engage into an activity in practical

subjects. What was observed was against what theorist suggests. Dewey suggests on those methods that are used to educate must provide for exploration, thinking, and reflection and necessary interaction with the environment to enhance learning. This is against the theory's recommendations because lecturers carried out very few practical lessons and practical assessment. Again lecturers rarely carried out demonstration activities before learners and the tasks given could not allow learners explore the environment. Out of the eight lessons which were observed only one lesson had a demonstration activity followed by a practical activity. Lecturers felt doing demonstration without resources and practical knowledge was a waste of time, and could be impossible because they would not know how to go about it. On the other hand demonstration, practical work and case studies have been rated the least with a 9 % weighting and 0% in report writing. Lecturers failed to use these methods because of the already highlighted challenges like in adequate knowledge on how to handle practical lessons, shortage of resources, time factors and others which were related to class size and infrastructure problems. But MOE (2005); Scanlon, et al., (1993); FAO (2005) recommend the methods which were not frequently used in this study to be important, since they promote critical thinking and help learners develop positive attitude towards learning.

Time Availability on learners Tasks.

On time availability with regard to learners' tasks the study has revealed that in the group activities learners were given little time to explore on the challenging tasks or projects and minimal guidance from the lecturers. Most of the activities which were carried out were routine activities from the handbooks. In chapter 4 they are some of the pictures depicting the activities carried out by learners in class. Most of the activities were classroom based. It is assumed that this type of learning approach occurred because of less time allocated to Home Economics activities, availability of resources and in adequate pedagogical content knowledge.

For effective implementation of the integrated curriculum in the multidisciplinary approach (between the subjects), Alberta (2000) suggests that learners should be guided during the learning process. This technique assists the learners to see the clear link of all the components within the curriculum and allow knowledge and skills transfer within and across the components. On this regard, Verspoor (2008) devotes that teachers have a key role to play in helping learners to develop knowledge and skills necessary for the 21st century. In this study as it has been discussed earlier on, most of the lessons which were observed lecturers sparingly guided learners to see the relationship of Home Economics concepts and other concepts within the curriculum. Hence the learners learnt Home Economics as single component not as an interrelated concept within the curriculum. This is in contrary to what Kirschner, Sweller and Clark (2006) suggest. Kirschner et al. suggest that the process of knowledge acquisition begins with action and observation. It is hypothesized that effective instruction can help students organize their intuitive conceptions into ‘principles’ consistent with those held by experts. In view of this, constructivists do believe that the students should not be left alone to construct their own knowledge. But teachers should guide them and facilitate the process of learning. From the FGDs conducted it was revealed that six out twenty learners could depict knowledge and skill relationship of Home Economics and other components. This meant that learners lacked clear guidance from the lecturers on the components which are related and how they are related within the curriculum. Therefore it can be assumed that there is little knowledge and skill transfer of Home Economics components within the curriculum because Home Economics was learnt in isolation. Hence the approach which is followed in the Science and Technology curriculum demanded Home Economics to be taught as a separate subject so that it could have been given enough attention.

Availability of Teaching and learning resources.

On part of teaching and learning resources the study has also revealed that many lecturers used few resources. The resources which were commonly used were the IPTE student handbooks and chart papers where lecturers used to write down some important points. Teaching without enough and relevant resources in colleges was also observed in some outside research studies and including that of Kadzera (2006) conducted on the use of instructional technologies in Teachers' Training Colleges in Malawi. It was observed that chalkboard and flipcharts were common technologies used in class with little emphasis on local available resources which could depict an understanding of subject matter for a teacher. This development seems to be detrimental to effective learning because teaching and learning resources help to clarify some difficult concepts and make learning become meaningful (Scanlon, et. al., 1993; Kunkwenzu, 2007; MIE 2004; Kadzera, 2006). On part of practical lessons as well as assessment they were not carried out in the lessons which were observed. Out of the eight observations carried out, only one class carried out some practical work, but practical assessment was not done. The reasons which have been revealed from this study are that there were no resources, large class size which could not fit in small laboratory, overloaded curriculum which affected the planning of the lessons and less administrative support to provide resources and refresher courses. Chapter 4 clearly shows one the practical lesson carried out in the Laboratory. Similar challenges were also highlighted in the research findings in primary teacher education by Kunje, Lewin and Stuart (2003) and experiences on teachers from schools conducted in Lesotho, Mozambique, Tanzania and Uganda by Mulkeen and Chen (2008). This clearly translates difficult situations which college lecturers face when it comes to teaching Home Economics practically.

“..sometimes it can even be a challenge if I want to demonstrate with my learners if I do not have knowledge and skill because I also lack the skills. So because we do not have resources why can you ask someone how to do it so it’s just a waste of time Yaa” (lecturer 3).

..”The administration does not provide enough resources as I have already highlighted, the subject requires a lot of money. The administration tries to provide but not enough. The expertise might be there but if there are no enough resources the acquisition of the right skills might not be there. So on the administration part little support is provided. Because I remember only one group did practical work since I joined the college. So imagine I joined this college since IPTE 5 this IPTE 9 only one group which the administration managed to provide resources for the group to do practicals, which means all other groups have gone without getting the right knowledge and the right skills”(lecturer5).

Apart from inadequate practical lessons and practical assessments the lecturers also chose the topics which demanded them to use less expensive resources due to financial problems. The topics which demanded more resources were just ignored or were taught theoretically. In this case the approach seems to be against constructivism theory. The theory emphasizes that people should create meaning of the world through a series of individual constructs. The student is required to act upon the environment to acquire as well as test new knowledge. This can be done through the use of hands on activities, thereby giving the student reliable and trust-worthy knowledge (Wertsch, 1997; Dewey, 1897; Dewey, 2009,). Research studies from many educators have revealed that the best way to learn is by having students construct their own knowledge instead of having someone construct it for them. In other words, students will learn best by trying to make sense of something on their own with the teacher as a guide to help them along the way (Brooks, & Brooks, 1993). Therefore it can be assumed that there is less knowledge and skills acquisition in Home Economics.

Content Knowledge.

Constructivism theory implies that the teacher should have necessary skills to prepare the right content for the learners. This will allow learners show their potential and at the same time the teacher will provide the necessary support (Dewey, 2009). Because of that the teacher should have enough pedagogical content knowledge in order to prepare relevant tasks. Vavrus et al (2011); Shulman (1986) observe that pedagogical content knowledge or lack of it can affect the way that teacher critique his/ her work. How s/he select materials to teach and how the lecturers structure the content and how they conduct instructions. For example in this study, it has been revealed that lecturers who were not expert in Home Economics relied on other lecturers who were expert to assist in handling some of the Home Economics concepts. However lecturers revealed to have faced challenges because they were very few Home Economics experts in the colleges as compared to number of classes of all the non Home Economics experts. As a result some topics were just left out without being covered or were just attempted using knowledge from learners who once learnt Home Economics. However learners were also very few who could not assist the class fully. For instance out of the twenty participants only four revealed to have learnt Home Economics in the secondary schools. Hence the topics were covered without further clarification from the lecturer. On the other hand those who were Home Economics majors used their content knowledge to assist them to select and structure the content they needed to include in their curricular. Though it was observed that even the experts, also left some topics uncovered due to time factors and resource shortages. For example in Lilongwe week eleven first term of their Schemes and records of work they planned to teach ‘meal planning’ but it was not taught and it was re planned for second term and during the researcher’s visit it was revealed that it was not yet covered by all lecturers it was replaced by a Biology topic on ‘plants and

their environment'. In Kasungu week seven they had a topic on 'beverages' but it was skipped as well. Lecturers were not sure if the topics will later on be covered practically.

Use of the Laboratory.

Apart from choosing topics to teach the chosen topics were also taught without laboratory work. Lecturers used normal classroom to teach Home Economics concepts in all the colleges. This has an impact on the teaching of science in particular Home Economics because the environment where learners are exposed to also plays a greater role in understanding of the subjects. Home Economics laboratory work assists in clarifying some concepts which could have been very difficult without its use (Scanlon, et al., 1993). The study has revealed that the factors below could have played a greater role in this challenge; inadequate infrastructure; colleges having large enrollment and the facilities are still those which were built when the colleges had enrolments of less than a thousand. HOD 2 adds that *"our college has got an enrolment of one thousand plus against one small laboratory"*. The laboratory facilities do not match with present enrollment; lecturers' face a lot of class management problems. It becomes a challenge to control a big class in a small laboratory during practicals and even to conduct demonstration lessons before the actual practical work. Additionally pieces of equipment in the laboratories are old and not functional due lack of maintenance. For instance in one of the classes which were observed had one old cooker which had also developed an electrical fault against sixty three learners. Learners had to scramble for cooker to do the practical work on cooking methods. Figure 4b in chapter 4 gives a clear picture of the situation. So how would you expect a teacher to conduct an effective practical lesson in such a challenging mood? As a result lecturers felt that it was a waste of time to plan and conduct practical lessons in the laboratory. Because it makes no difference to use the classroom since resources were not enough and the laboratory did not match with class enrollment.

In adequate knowledge to handle Home Economics practical work was also echoed among many lecturers who were interviewed as being one of the contributing factors of not using the laboratory very often. Among the lecturers some sparingly used the laboratory for selected topics like shapes of the kitchen which are basics. The lecturers echoed that they would not carry out demonstration lessons effectively with very little knowledge in Home Economics laboratory. Hence they opted to use the classroom for all the lessons even though they were some lessons which could require them to use the laboratory. This contrary to what Scanlon, et al., (1993) emphasize, that in order to have an effective laboratory session a teacher must play a great role on a demonstration session and allow every individual participate into practice of the activity. Hence this practice demonstrates less acquisition of laboratory skills among learners in Home Economics.

Using the laboratory for practical work demands a great deal of time and effort for effective learning, failing which, learning will not take place and will not be meaningful. The results from document analysis of the IPTE syllabus have revealed that there was too much work to be covered within a short period of time (one year), for the whole Science and Technology curriculum and less than half year for Home Economics components. Home Economics covers part of term two and term three hence lecturers choose easy to handle topics which could not demand a great deal of time and spare time for other topics which could be handled faster.

It has also been observed that among the factors highlighted in this section strict rules on how, when and who to use the Home Economics laboratory in colleges had an impact on accessibility of the laboratory. From the interviews lecturers also revealed that sometimes the Home Economics department is being exploited in the sense that the laboratory and its equipment are most of the times being used for other functions apart from learning, which poses a great challenge when it comes to accessibility of the laboratory. For example the

laboratories act as storerooms for storing books and other school properties, housing lecturers when sometimes there are housing problems, equipment being used for entertainment purposes like graduation ceremonies and weddings which sometimes leads to loss of property. On the other hand, other lecturers had a claim that sometimes these practices occur because there are no essential materials to be used during lessons in form of ingredients. As result the laboratories are not functioning with regard to academic purposes. But Meke (2003) warns that in trying to attend to some responsibilities, Home Economics teachers should make sure that students and the department are not exploited. Meke suggest that request from other departments and management should be addressed with caution because Home Economics laboratory department is a learning center not a service center. It has also been revealed that there is rare support from the administration to buy teaching and learning resources for the laboratory due to inadequate funding in TTCs which contribute to in adequate practicals work as a result lecturers use the laboratory sparingly.

From the discussions, it can be assumed that learners in the TTC graduate without attaining enough laboratory skills in Home Economics. This implies that the graduating students will not effectively teach Home Economics concepts in their respective primary schools because they are not adequately trained. This is in support of the existing research on teacher preparation by Verspoor (2008) who states that high quality teacher preparation is important because teacher preparation helps candidates develop the knowledge and skills they need in the classroom.

Shortage of HEC Experts.

Shortage of Home Economics experts was also echoed among some lecturers and students as one of the contributing factor affecting the teaching of Home Economics. It had also impacted team teaching as a strategy for teaching Home Economics while integrated. Quinn

and Kantar (1984); Meghan (2008) believe that team teaching can lead to better students' performance. Exposure to views of knowledge and skills of more than one teacher can develop a more mature understanding of knowledge often being problematic. When a group of teachers work together, plan, conduct and evaluate the learning activities for the same group of students, teaching learning becomes meaningful. Again when there are shortages of human resource Quinn and Kantar add that team teaching makes effective use of existing human resources because teams generally comprise teachers of different areas of subject expertise. However the Quinn and Kantar observe that implementing team teaching approach requires administrative encouragement and support. This is like that because team teaching requires more than just a common meeting time and space but use of the same available resources to be used for the same students. But the study has revealed that there was minimal colleague interaction attributed to busy schedules, shortage of experts and in adequate administrative support. The development seems to have negative effect on acquisition of knowledge and skills in Home Economics because learners will not receive all the necessary knowledge and skills due knowledge disparities and gaps.

“.....Team working may also be instituted. For example lecturers who have HEC background could have invited those who do not have that background so that they can teach the concepts and skills which are required. In that way we can narrow the gap. Those who do not have enough skills in HEC can be getting those skills. But the challenge is on number of HEC experts because they have been allocated their own classes” (lecturer5).

Following the above discussions it can be assumed that group work dominated as a strategy seconded by lecture method. But educationists suggest that the educator should not be a lecturer or a knowledge- giver, but a facilitator that helps students to make sense of the information Meghan (2008). Hence it can be assumed that learners were limited in critical

thinking skills in Home Economics concepts because the strategies used seemed not to be very effective. Again, the learning conditions which learners were exposed to, did not provide enough time to allow learners make their own discoveries and perform practical task. As such Slavin (1991) warns that cooperative learning encompasses much more than simply "group work." Cooperative learning requires that each student is held accountable for a specific aspect of the project, or group task. This approach requires learners to be involved in problem solving activities like projects case studies and practical tasks which were rarely done in this study. Hence it can be assumed that learners were not well grounded in both theoretical and practical knowledge in Home Economics.

Question 4: What are the lecturers' experiences in teaching Home Economics while integrated with other science subjects?

5.4. Opportunities, Challenges and Recommendation of Lecturers Teaching Home Economics in the Integrated Science and Technology

Opportunities in teaching HEC while integrated.

From the findings Lecturers and HODs observed that there is an opportunity on the subject being taught alongside other learning areas while it is integrated, within the few available resources. Again, if the curriculum is effectively taught lecturers observed that it can enhance understanding of the subject because concepts are related. Lecturers were also in the view that integration has reduced number of learning areas which has made them to teach less than more within a shortage period of time. For example, Alberta (2000) asserts that in an integrated approach there is an added advantage that in addition to creating a more profound understanding of the material, repetition between the subjects decreases. What has been revealed in this study supports what Meghan (2008) outlines as advantages of integrated

curriculum, which is a positive development in curriculum integration of Science and Technology. But the findings call into question how the curriculum was being implemented.

“..Mmm may be apart from reducing work load I see no any importance of integrating because we are just water downing HEC. Since some elements are not covered so it means now we are down grading the subject” (lecturer2).

“In my case there are a number of opportunities. One there is a possibility of doing more than less. What I mean is that the integrated nature of the subject helps you to teach quite a number of concepts at once” (lecturer8)

“.....The first opportunity is that most topics which are very pertinent in HEC have been featured in the curriculum that is the opportunity which means if taught the way it was to be taught the opportunity of acquiring the skills and knowledge is there..... Another opportunity is that, if lecturers are well trained in this integrated curriculum right away from the universities it can be well handled” (lecturer 5).

“May be when you are teaching other topics which are related to what you know, for example in HEC there is Biology, so if you are teaching that topic in HEC you can be comfortable, you can apply in HEC and you also apply knowledge from the other components like Mathematics, P/sc’ (HODs 1 & Lecturer 7).

Challenges Experienced by Lecturers.

Knowledge gaps

Therefore Gumbari (2009); Meghan (2008); Alberta (2007) had a view that successful integration occurs when there is content integrity and authenticity and this requires thorough preparation at all levels of curriculum development and implementation. From the findings a greater percentage of lecturers revealed of not being adequately prepared both at training

college and teaching colleges to teach Home Economics. That is only four were trained in Home Economics and again not adequately trained in all aspects of Home Economics out ten who were observed in this study. Lecturers experienced knowledge gaps as result it became increasingly difficult for lecturers to teach the subject competently. On a similar note Stuart's (2002) comparison research studies on tutors at TTC for primary teachers in Ghana, Lesotho and Malawi, it was found out that tutors were not specifically trained as teacher educators. It was assumed that any one graduating with education would be capable of teaching at the college; hence the tutors lacked relevant classroom experience. Therefore, Stuart urges that universities or colleges should select tutors on the basis of academic credentials or subject expertise rather than just teaching proficiency.

Curriculum structure.

Again, it has been revealed that the structure of the curriculum does not allow the lecturer to effectively plan for relevant tasks. For instance the curriculum is overloaded with so many topics within the short period of time. Hence it can be assumed that the curriculum structure and its implementation were not in support of enough knowledge and skill acquisition in Home Economics.

Home Economics Receiving Less Attention.

From the findings , in the teaching of Home Economics lecturers were of the view that Home Economics is on the marginalized side of the learning areas taught in Teachers' Training colleges in Malawi. The subject is not receiving enough attention as compared to when it was taught as separate subject. Lecturers felt that if it can be treated as a separate subject it can increase a chance of it been effectively taught by the graduating student teachers in future. As of now lecturers felt limited to effectively deliver enough and relevant content to learners because of curriculum preparation and implementation challenges. To complement on the

effect of lack in adequate preparation of the integrated curriculum, Montgomery (1999) in Meghan (2008) also cites on examples on research studies on critics against the idea of integrated curriculum. One of the critics is the claim that many teachers lack knowledge and skills of the various disciplines. The critics suggest that this too affect the performance of teachers and there is a danger in having an examination oriented teaching approach.

“I think it could have better if it was the subject on its own. Mmm the other challenge because it has been integrated is that the students take it for granted that because it has been integrated let me go by the topics which I am familiar with. So because it has been integrated they can just say I can do without these topics of Home Economics. So they can just say let me dwell on the topics which are Science. So they can have that chance to select yaa. But had it been that it was a subject on its own they could have been forced to take the subject on its own without combing with others” (lecturer3)

“To my side it could have been better if the subject has to be the subject on its own yaa we should teach Home Economics on its own not integrating it with other subject yaa because some of the skills can be mastered by our student teachers.”(lecturer2).

From the findings it has been revealed that the teaching of Home Economics has been characterized by so many challenges which are putting the subject at risk of being effectively taught by the graduating student -teachers. And that lecturers and HODs could not easily find the solution to overcome them other resorting to leaving the subject less attended. For instance in curriculum structure, the subject has been integrated with other components with so many topics fused within two terms attributing to use of in effective strategies which does not match with the subject demands. Students are given very little time to interact with the content and carry out some practical work. Less administrative support to buy teaching resources has also been highly echoed by many lecturers in this study. This was in support of

the research on the teaching of Home Economics Malawi by Kunkwenzu (2007) and outside Malawi like that of Musset (2010) on contextual inquiry in Home Economics which revealed that the subject received less attention in the curriculum as compared to other subjects. This had an impact on how lecturers conducted themselves when it came to teaching of Home Economics.

“Well as it was taught separately it was given enough time and as learning area even students themselves were eager to study and learn about topics under Home Economics but as of now it has been diluted. One can say aaa provided I know some physics, Biology Chemistry, hope I can do without this part of HEC and maybe I can get over 50 % mark and pass. So when it has been incorporated I feel it has been diluted Yaa. I think it should be taught as a separate subject so that during exams it can have a section to say may be Biology section A has Physics, section B has Chemistry, and section C has Biology and Section D has Home Economics. Then I think lecturers as well as students can take HEC seriously (HOD1)”.

Question 5: What are the learners’ experiences with the integrated S/Tec curriculum in acquiring skills in Home Economics?

5.5. Opportunities and Challenges among Learners in Learning Home Economics while Integrated in Science and Technology

Opportunities.

From the findings learners agreed to have observed themselves learning Home Economics because it has been incorporated into other science subjects. Learners agreed to teach it in the field if it can be effectively taught here in colleges, and some learners could see that certain topics in Home Economics are related to other sciences in the curriculum. But what was lacking was to have a deeper understanding of the topics and clearly link them with other

science topics within the curriculum. This is in line with Contardi, et al (2000); (Meghan, 2008) who state that in integrated curriculum students strengthens skills that are encountered in one content area but also practiced it in another. However the authors warn that the approach can only lead to the mastery of those skills if effectively taught.

“...in Home Economics we are learning about cooking methods and in Physical science there is also a topic on heat energy and uses of heat energy. And also chewing is related to digestion, because we talk of chewing to soften the food for easy digestion so we can easily relate it to Biology...” (Students FGDs2).

“The interest is there because we have learnt to cook following procedures and we are going to use the same knowledge to teach our learners when we go to primary schools for teaching practice, or even after finishing our course. And for those who have not learnt HEC before they are going to use the knowledge at Home as well as at school because we are preparing to be teachers and we are going to teach in rural schools where people just cook without guidelines” (studentsFGDs1).

Challenges.

Inadequate Practical Work in Home Economics, Shortage of Resources and Time Factors

Though Larsen-Freeman (2011) recommend learners to receive a large amount of input if they are to learn effectively, in this study learners totally agreed of not learning enough in Home Economics especially on practical work. Learners revealed to have learnt very few Home Economics content since they joined the college. Some learners also revealed to have never used the laboratory to learn Home Economics. This implies that learners were not exposed to the learning context which could allow enough knowledge and skill acquisition Dick and Carey (1985) view the context in which the learning occurs as central to the

learning itself. It is regarded as the most important aspect which can facilitate knowledge and skill acquisition of the components in the curriculum.

Learners agreed with what was echoed by lecturers and HODs on the possible causes of Home Economics not be taught effectively. The learners revealed that in adequate teaching and learning resources, infrastructure problems, time factors and background knowledge of the subject might have affected the learning of the subject.

“The first challenge in HEC is practicals, because in HEC we have to learn subject practically for example cooking yaa. We have been finding problems in finding the apparatus in practicals. The other one is teaching learning resources yaa on the use of laboratory the laboratory is not enough to carry out some practicals. Sometimes it is because of congestion that’s why he takes apparatus outside the laboratory. And sometimes they put items in the laboratory so it acts as a storeroom. And also may be the laboratory is small becausewe are eight hundred plus so all of us we use a small laboratory” (students FGDs2)

“Time is a problem. We are not given enough time for practicals. For example this practical time which was allocated was two hours” (students FGDs1).

Background factors.

During focus group discussion sixteen learners revealed of not learning the subject in the secondary school. On this regard the findings reveal a significance difference on what Wertsch (1997) suggests. Wertsch stresses that Social constructivism or socioculturalism encourages the learner to arrive at his or her version of the truth, influenced by his or her background, culture or embedded worldview. Therefore the study provides an answer to the

difficult situation which learners experienced in understanding the subject because of poor background which also totally agrees to what the lecturers observed.

“Well you might agree with me that most of learners come from Community Day secondary School (CDSS). A quite number of them, and they do not learn Home Economics even those who are coming from the conventional secondary schools, I doubt if it were it taught. So these learners have got poor background of HEC. So if you try to discuss with them methods of cooking it becomes a problem. So in my view that is quite a big challenge” (lecturer 8).

“The other challenge is participation of student. Most of students who are here did not do Home Economics so they do not participate because of background they do not have enough knowledge in HEC. For example some never studied HEC in primary school, they never studied it secondary school. So it’s a new subject to them, they are studying it for the first time. So it’s a challenge because for a lesson to be successful it requires full participation from members of the class. So, the learners are not active they just want to receive information from you, so I think it’s very difficult to make the lesson successful” (lecturer4).

The results are also in support of what scientific studies have established that education is not what the teacher gives; education is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experiences upon the environment. Knowledge is constructed based on personal experiences and hypotheses of the environment (Kolb & Fry, 1975; Clerkin & Gilleece 2010). Therefore lecturers felt that learners should be responsible of their own learning to effectively learn and understand the subjects. The situation became even more difficult on those learners who have never learnt Home Economics and are taught by a lecturer who has never been trained in Home Economics. This implies very little knowledge and skills acquisition in Home Economics.

It is also difficult to understand the subject because others are learning it for the first time. Others at the secondary school were not taking HEC. So it is difficult to understand the subject for example cooking methods. But for me I was taking HEC so it is very easy for me to understand cooking methods (Student FGDs1).

From the discussions it can be assumed that learners did not acquire enough of the relevant knowledge and skills. Lack of teaching and learning resources attributed to learning the subject theoretically without attempting any practical lessons and assessment. In adequate time allocated to Home Economics concepts denied learners enough chance of interacting with the content, explore the environment and develop critical thinking skills. And background knowledge affected the way learners could understand the subject because prerequisite knowledge play a very important role in knowledge and skill acquisition of any subject (Dick & Carey, 1985; Vygotsky 1978 in Dewey 2009; Glasefield, 1989).

5.6. Chapter summary

In this chapter the researcher has discussed the teaching of Home Economics in the integrated curriculum. The findings from professional background of lecturers, documents, classroom observations, experiences of lecturers and learners have been used to find out the position of Home Economics with regard to knowledge and skill acquisition. In the discussion, the findings were significantly correlated to the existing literature and the voice of the researcher was also added to find out the effect of integrated curriculum in the teaching of Home Economics. The next chapter will provide a summary of the findings, conclusion and recommendations.

Chapter 6: Conclusion and Recommendations

6.1. Introduction

The education structure in Malawi has a tier 8-4-4/5. This means that one spends 8 years in the primary school, 4 years in the secondary school and 4 to 5 years in the tertiary levels of the education system. But because of increased enrollments in the primary school which does not match with number of secondary schools and tertiary levels in the country, the education system has bottlenecks. This implies that not all learners who have passed well at lower level will proceed to the next levels of education. Hence courses in the primary schools in Malawi should equip students with life skills essential for survival and poverty reduction in the country (NESP, 2008-2017). The objective of equipping learners with life skills and entrepreneurship skills will only take place if the government through colleges is training primary school teachers who can competently teach vocation courses like Home Economics. Well prepared primary school teachers are more likely to remain in teaching and contribute to the development of a strong professional learning community in the schools they serve. It was therefore important to examine the knowledge and skill acquisition in Home Economics among student Teachers in Training Colleges in Malawi. To second UNESCO Global Monitoring Report, 2010a adds that teachers are product of the education system they teach in. Where these systems are of low quality it is even more important for teachers to receive effective training and support throughout their careers. In many countries including Malawi initial training is not good enough to develop all essential skill required in the curricular. Teachers need to understand the content of the curriculum and be able to communicate it to students of varying abilities.

6.2. Summary of the Findings

The study has analysed the acquisition of knowledge and skills in Home Economics while integrated in Science and Technology. The study aimed at establishing an understanding to whether the curriculum is allowing learners acquire enough of the relevant knowledge and skills in Home Economics.

To begin with, professional background of the lecturers teaching Science and Technology curriculum were analysed. The results have demonstrated that a good number of lecturers in the Teachers' Training Colleges who are currently teaching Science and Technology where Home Economics forms a components, have not been adequately prepared to teach the subject. For instance in this study out of the ten participants only four lecturers were trained in Home Economics but not in all aspects of Home Economics. Science and Technology is combination of several disciplines being drawn together to form a single subject. This claims that a lecturer teaching the subject should have knowledge in all the aspects of the curriculum if (s) he is to teach effectively but this is not what is happening in practice at the TTCs.

The results confirm the lecturers have been trained in different disciplines. None has been trained in integrated Science and Technology taught at TTC where Home Economics forms a component. Even those who have been trained in Home Economics confirmed of not being adequately trained in all aspects of Home Economics especially practical work right away from the training colleges. Again while at the teaching colleges lecturers were not adequately oriented in all aspects after a curriculum change in 2006 to date. The findings confirmed less administration support in the Teachers Training Colleges due to in adequate funding. This significantly shows knowledge gaps among lecturers and this is a challenge when it comes to teaching of the subject. This implies less and variations in content knowledge and skills acquisition in Home Economics amongst learners.

In addition, there was evidence of inadequate number of lecturers being trained in Home Economics and Science lecturers in general. Hence the colleges were characterized of big work load in terms of number of classes and enrolment ratios. This development posed a great challenge when it came to lesson preparation, allocation of resources for practical work and conducting lessons in the laboratory for Home Economics. Hence practical lessons were rarely done. Though one class had a practical lesson but was not enough as compared to number of observations carried out in this study. The investigation has found evidence to show that practical work is not effectively conducted because of large class room size and big work load on part of lecturers which affect their preparations. This development can have a significant effect on Home Economics as a practical subject since students may lack necessary knowledge and skills in teaching the subject. In constructivism theory it requires a learner to get exposed to the environment which will provide necessary skills to construct his/her own knowledge.

On part of the reviewed documents to investigate on type of Home Economics content in the integrated curriculum; Home Economics was second from highest. This translates average weighting. But what has been missed in the way is on part of lecturers to replicate the official syllabus into the schemes and records of work to allow learners acquire enough of Home Economics content. For example, the findings revealed the missing of other 2.5 units/ topics out of 5 in the new Science and Technology schemes which could have been equally important in terms enough acquisition of relevant knowledge and skills in Home Economics. This practice translates to reducing content to be learnt among learners because the schemes and records of work guide a teacher on what to teach, how to teach and when to teach. Though the requirements in the integrated curriculum encourage a learner to receive equal weighting of content within the integrated components, the results have demonstrated a negative development in practice.

The findings have also revealed that the weighting of the topics was directly correlated with time allocation of the topics in the Science and Technology curriculum. Hence the curriculum structure translates that Home Economics was allocated average minutes of 1080 minutes per year and Biology was leading with 3250 minutes per year. But this reflects variations in terms of frequency in interacting with the content in the curriculum. Other components like Biology had a greater chance of being learnt frequently as compared to other components including Home Economics. This curriculum structure signifies learning of components within the curriculum as a single subject. In multidisciplinary form of curriculum integration, teaching of integrated curriculum requires all components to be handled as whole to allow learners make meaningful and relevant connection between the disciplines for better understanding of the subject. Hence the findings imply that Home Economics content was not allocated enough time with regard to the subject demands. The results confirm too much Home Economics content to be learnt with a short period of time of two terms. The results have revealed a significance difference with regard to time allocation as compared to the same content which was spread across three terms when it was learnt as a separate subject in the old Home Economics curriculum. It can be assumed that this curriculum structure exerted pressure on lecturers' preparation with regard to what to teach and how to teach. On part of learners, they had too much content to be learnt within a short period of time. The approach had an effect on thorough understanding of knowledge and skill acquisition in Home Economics. This practice implies less knowledge and skill acquisition in Home Economics.

On part of classroom observation on strategies used, the findings have revealed that of not using much of the effective strategies. Though discussion dominated but could not allow critical thinking among learners. The findings have indicated a negative development on part of involving learners adequately in challenging tasks during group work. Lecturers rarely modeled effective participatory methods. Instead of having contextualizing learning or

engaging students with learning, it was often executed as rote repetition of given facts. This kind of learning approach does not necessarily lead to acquisition of high cognitive skills.

The challenge of not using effective strategies to teach Home Economics can be assumed to be attributed due to lack of enough subject matter to handle Home Economics components; and other related factors like in adequate administration support to buy teaching and learning resources, time factors and overloaded curriculum. Hence lessons were taught theoretically with inadequate continuous assessment on practical task. Another reason which might have attributed to in adequate continuous assessment in practical work can be because of large number of students which makes it difficult for lecturers to administer the assessment over the course of the school year. The results therefore can be assumed to demonstrate in adequate acquisition on laboratory/practical knowledge and skills in Home Economics among learners due to use less effective strategies among lecturers.

Though lecturers observed an opportunity in Home Economics being learnt alongside other learning areas in the integrated curriculum, a contrary view was echoed that the challenges outweighed the opportunities. The findings revealed significant effect on lecturers' performance on their teaching and learners' achievement in Home Economics due to less background knowledge on the subject and other related factors like in adequate resources and time factors. The findings from lecturers' experiences have demonstrated that there is little knowledge and skills acquisition in Home Economics. What has been missed in the way during implementation is to prepare and support lecturers in teaching Home Economics while integrated.

Though Learners had the view that the subject can be learnt and later on be taught in their respective primary school as an opportunity, similar challenges which were echoed by lecturers were also presented among learners. Learners revealed of facing challenges to

understand the subject because of less background knowledge on the subject, in adequate coverage of Home Economics concepts, in adequate resources contributing to learning Home Economics theoretically and using the laboratory sparingly with no practical assessment. The findings revealed that learners demonstrated very little understanding of the subject to effectively teach it in the primary schools. This clearly demonstrates in adequate knowledge gained on the important aspects of the subject in addition to the practical skills.

6.3. Conclusion

The study was conducted in the two Teachers' Training Colleges in Malawi which aimed at examining how the introduction of the integrated curriculum has affected knowledge and skills acquisition in Home Economics. The study has revealed that there is little knowledge and skills acquisition in Home Economics among learners in training colleges attributed to different factors. Some of the factors originate from training of the lecturers who are teaching Home Economics while integrated and the learners themselves because of inadequate background of the subject. The results confirm of inadequate training at the lecturers' training colleges and inadequate support in terms of CPDs at teaching colleges. The curriculum structure has again affected how the lecturers prepared themselves to teach Home Economics to understand the subject on part of learners. For instance the findings have revealed of inadequate time allocated to Home Economics topics affecting lecturers' preparation on what to teach and how to teach. The curriculum implementation was also coupled by inadequate resources to use in teaching the topics in Home Economics practically hence theory work dominated.

The study followed mixed methods but bias to qualitative research design and was positioned within the interpretive paradigm. This methodology revealed if the requirements for successful implementation of the integrated curriculum are effectively met to allow learners

acquire enough and relevant knowledge and skills in Home Economics while integrated in Science Technology. The methodology gave flexibility to a researcher of using different methods to collect data and at the same time putting researcher's voice during discussions with regard to the research question. The model which was followed in this study was Creswell (2007) mixed method triangulation design convergence model. In this model both qualitative and quantitative data are collected concurrently and merged during interpretation/discussions. This methodology provided a relevant position on the teaching of Home Economics. Most importantly the study helped to line up our own integrated Science and Technology curriculum with those forms reviewed from the literature and observed its effectiveness with regard to knowledge and skill acquisition in Home Economics. What has been revealed is that the integrated Science and Technology is not effectively implemented to allow enough knowledge and skills acquisition in Home Economics.

This research process was achieved because the study was also guided by constructivism theoretical frameworks and Alberta (2007) integrated curriculum model which formed part of the conceptual framework. These two frameworks allowed the researcher to approach the study by considering all the conditions necessary for effective knowledge and skill acquisition with regard to tenets of constructivism theory and integrated curriculum. In this research process the researcher uncovered the learning context and the learning conditions a learner is being exposed to. This could not have been possible if the principles in constructivism theory in an integrated curriculum were not followed. For instance the objectives were framed around constructivism theory to analyse the learning context in order to find out if a learner is placed at the center of the learning process. The study have revealed that the learning context is allowing very little knowledge and skill acquisition in Home Economics in the integrated curriculum among learners. A good number of strategies and

activities could not allow critical thinking among learners. This poses a challenge when it comes to transferability of knowledge gained into other learning context.

From the findings in this study, it can be implied that Home Economics is not effectively taught in the Teacher' Training Colleges in Malawi. This is dangerous to the future of Home Economics to be effectively taught in primary schools by the graduating student teachers.

Following the study's recommendations, it is very important for practitioners to have an understanding on how to approach Home Economics to allow enough knowledge and skill acquisition in order to produce quality primary teachers in Malawi. The curriculum developers should also take into consideration the shortfalls of the curriculum in order to provide the curriculum which will equip learners with essential knowledge and skills. Hence assist the Malawi nation achieve its millennium development goal of poverty reduction by having a health nation.

6.4. Recommendations

From the results observed from in this study, the following recommendations should be taken into consideration, if Home Economics is to be effectively learnt among Malawian learners right away from primary schools:

- Due to inadequate attention in Home Economics while integrated, Home Economics is to be taught as a separate subject in Teachers' Training Colleges so that it can be given enough attention in terms of resource allocation; material, financial and human resources.
- As a result of knowledge gaps revealed from the findings, lecturers teaching Science and Technology should receive intensive on job training (INSERT/ CPDs) to assist them handle all the components in the integrated curriculum including Home Economics effectively and have the common understanding of the subject .

- Due to different subject majors observed, team teaching has to be intensified in Science departments especially for teachers who are teaching integrated curriculum because of its multidisciplinary nature, and again, the lecturers come from different backgrounds hence need to have coordinated efforts.
- Results have confirmed in adequate laboratory/ practical work in Home Economics, the Ministry through College Administration should allocate enough funds for teaching and learning resources, CPDs and maintenance of Laboratory equipment for the Science departments.
- College administration through the ministry of education should have long term plans on expanding the infrastructures especially laboratories to cater for the increased intakes in the Teachers Training colleges. Results have demonstrated inadequate infrastructures.
- Integration of Home Economics with other science subjects should start right away from the college training not at the teaching colleges only; to allow all lecturers handling integrated Science and Technology at Teachers' Training College level, handle Home Economics as well as other sciences competently. Results have revealed that lecturers lack knowledge in all the components in the integrated S/Tec.
- Training institutions should consider Home Economics practical work as paramount in their curricular activities. Results have confirmed of lecturers not being adequately trained in practical skills in Home economics in the training colleges.
- Curriculum developers should consider redesigning the Science and Technology curriculum for Initial Primary Teacher Education programme to fit the one year period as the content is too much for one face to face residential period.

- The curriculum developers should also consider the alignment of Home Economics topics and other components with the curriculum to allow effective understanding of all the components in the curriculum as some topics are not properly aligned.
- On long term plans, the Government through the ministry should train more experts in Sciences specifically Home Economics and deploy them in the TTCs. Shortage of Home Economics has also been observed affecting Knowledge and skills in Home Economics.

6.5. Limitations of the Study

A major limitation of the study was that the topic, on knowledge and skill acquisition is very broad because it encompasses all the curriculum processes and cannot be fully covered in a single study. Again the sample size of lecturers used in this study was small because the target was to use those lecturers who are currently teaching Science and Technology not everyone in the science department. Therefore, this study concentrated on those aspects which could easily be observed within a single study that could or should be commonly used in the Malawian context. Limiting the study to these aspects does not rule out impact on teaching of Home Economics within the integrated Science and Technology curriculum. Secondly the study was carried out alongside the teaching schedules this too posed a big challenge when it came to balancing up the teaching time and that of working on the paper hence it took longer than planned.

6.6. Areas of further Studies

- A lengthy study has to be conducted on the effectiveness of team teaching on the teaching of Home Economics within the integrated Science and Technology curriculum like that of Merwe (2008) but using the Malawian context in the Teacher's Training colleges.

- A correlation research like that of Meghan (2008) can be conducted in the Teachers' Training colleges in Malawi to investigate if integrated curriculum can improve the learning of Home Economics in Malawi.
- Further research can be conducted on effect of integrated curriculum on the teaching of other components like Biology and physical Science in the Science and Technology curriculum in the Teachers' training colleges in Malawi.
- Effectiveness on the teaching of Home Economics while integrated in Science and Technology in primary schools in Malawi.

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Appendices

Appendix A i, ii: Clearance letters



MZUZU UNIVERSITY

FACULTY OF HEALTH SCIENCES

DEPARTMENT OF BIOMEDICAL SCIENCES

Mzuzu University
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22nd August, 2013

The Principal
Kasungu Teachers Training College
P.O Box
Kasungu

Dear Sir/Madam,

REQUEST TO COLLECT DATA FOR MASTER OF EDUCATION

The bearer of this letter, **Ms Harriet Phiri** is a post-graduate student at Mzuzu University studying for Masters Degree in Education

The purpose of writing this letter is to humbly request you or your office to help Ms. Phiri in collecting her research data from your College and Demonstration Primary School.

I would be very thankful if you would be able to provide the needed assistance the said student requires.

Yours sincerely

Jean R. Kaunda MSc. PhD.
Research Supervisor (Mzuzu University)

Tel: (265) 01 333722/575

Fax: (265) 01 333568/334505

E-mail: registrar@mzuni.ac.mw

Consent Form

A. Informed Consent Form For Participants

Date _____

Dear _____

I am writing to request for your participation in a study that I will conduct entitled *an analysis of knowledge and skill acquisition in Home Economics in the integrated Science and Technology curriculum in the selected Teachers' Training Colleges in Malawi*. The purpose of the study is to provide a descriptive analysis on the factors which might have compromised quality of knowledge and skill acquisition in Home Economics while integrated in Science and Technology. This study is part of the requirement for completion of Master of Teacher Education Degree at Mzuzu University. Currently I am teaching at Kasungu Teachers training College from Science Department. I am seeking participation from college lecturers who are currently teaching Science and Technology.

Be assured that your participation and contribution will be kept confidential and an identity will be kept anonymous through the use of pseudonyms in the documents to be used during the study as well as final report.

If any question arises from now or during the course of study you can contact me anytime using the phone and email address below.

Yours faithfully,

Harriet Chanachi- Phiri.

Phone: 0999195431/ 0888106882

Email: phiriharriet41@yahoo.com

Duty Station: Kasungu Teachers Training College P/Bag 23 Kasungu.

B. Informed Consent Form For Participants

I agree to participate in the study entitled an analysis of knowledge and skill acquisition in Home Economics in the integrated Science and Technology curriculum in the Teachers' Training colleges in Malawi. Currently the study will be conducted by Mrs. Harriet Chanachi-Phiri for her Master in teacher education Degree.

Date_____

Signature_____

Witness_____

Appendix C

Responses Form (Questionnaire)

Professional background information for lecturers teaching Integrated Science and Technology curriculum

Instructions:

- Attached is a responses form on biographic data and professional background
- Please take your time to respond to the questions
- All responses will be treated with confidentiality.
- Provide any comment where ever necessary.

Section 1: Biographic details

1. Lecturers' identity____. Name of the college trained_____. Name of teaching college_____
2. What is your highest qualification a)Master degree b) Degree c) Diploma d) certificate
3. Identify your gender by ticking in the appropriate box.

A	female	
B	Male	

4. When did you join the teacher training college?

Date	Year

5. For Subject specialization in the college right in the appropriate box

a	Main teaching subject	
b	Minor teaching subject	

6. Fill the box below to provide a description of classes and subjects you are currently teaching

Class	Subjects	
	No of students	
	Male	Female

Section 2: professional background

7. Tick in the appropriate box to answer the questions below and provide the comment

Statement	yes	No	comment
I was oriented on how to teach Home Economics in the integrated Science and Technology after the curriculum change.			
I attended enough continuous profession development (CPDS) in all the components (subjects) integrated in Science and Technology.			
Team teaching is effectively done in the department to teach different components in the integrated Science and Technology.			

8. In what ways do you see your college training as having adequately prepared you in your job to teach Home Economics while integrated in Science and Technology curriculum?

9. In what ways do you see your college training lack in its ability to prepare you for the realities of a job of teaching Home Economics in an integrated Science and Technology curriculum?

10. Identify any gap in your college training to effectively teach Home Economics while integrated with other science subject in Science and Technology curriculum?

Thank you for your time and participation in the study

Appendix D i and ii: Content Analysis Specification Tables for S/Tec and Technology Syllabus and Text Books.

Objective	Component	HEC	BIO	P/S	CHEM
	Content/Topic				
To analyse the percentage weighting of HEC in relation to other three components in Science and Technology syllabus and textbooks					
	Total				

Appendix D ii

<p>To analyse time allocation of HEC topics in relation to other components in the new Int S/Tec syllabus and text books.</p>	<p>Component & Time allocation Topic</p>	<p>HEC</p>	<p>BIO</p>	<p>P/S</p>	<p>CHEM</p>

Appendix D iii:

Types of HEC knowledge and Skills in both new Int S/Tec and old HEC TTC Syllabus

HEC content in the new Int S/Tec	HEC Content in the Old TTC Home Economics syllabus
<ul style="list-style-type: none"> • Nutrition Health and Development • Methods of cooking • Meal planning and Presentation • Beverages • Food preservation • Improving the Home • Laundry • Teaching methods in Nutrition and Health • Teaching methods in improving the Home 	<ul style="list-style-type: none"> • Food and Nutrition • Food security • Clothing and textiles • Family studies (child care) • Personal hygiene • Resource management • Entrepreneurship and budgeting • Teaching methods in food and nutrition • Teaching methods in Home management

Appendix E

Lesson Observation Tool

Part A

Name of the lecturer _____ Date _____

Name of the college _____ Time _____ class

size _____ girls _____ boys _____

Evaluation items			
Lesson description			
Topic _____			
Main concepts of the lesson _____			
Objectives of the lesson _____			
Lesson development	Teacher activities	Learner activities	comment
Introduction			
Body of the lesson			
Concluding activities			
Other special features of the lesson			

Name of the observer _____

Title _____

Signature _____

Date _____

Observation Checklist Part B

Items	yes	No	comment
<p>Lesson Presentation</p> <ul style="list-style-type: none"> • Are the strategies effective? • Are the resources enough? • Are the resources effectively used? • Is the lecturer providing clear explanation of the concepts? • Is the lecturer providing clear instruction before the task? • Are the learners given enough time to carry out a practical task? • Are learners receiving enough support from the lecturer during some practical task? • Is the lecturer providing the relevant assessment? • Is the lecturer providing timely and relevant feedback? 			

Part C. A summary of classroom observation on HEC components for eight lecturers currently teaching integrated Science and Technology

Class Observation February 5-26, 2013-2014 Academic Year: Term 2

Code	Class size	Strategies used in the lesson (Theory and practical activities)	Availability of resources	Time availability for learners task and support in a lesson
7	49	Lecture method was	Had few	Less time was provided

		dominated in the lesson Less time was given for learners activities	resources	30 minute lesson instead of 1 hour Less support was provided by lecturer during tasks, lecturer rushed through.
5	56	Group work Pair work Individual demonstration Practiced cooking	Had few resources	Enough time and support was allowed during practical work
6	44	Sparingly used group Lecture method dominated	Had few resources	Less time was provided Minimal support was provided during group tasks and individual task
4	56	Used a variety of hands on activities(flash cards, work stations/group work, card collection)and case study	Had enough resources	Enough time and adequate support was provided
2	50	Lecture dominated	Had few resources	Less time for learners activities

				sparingly supported learners during learning tasks
1	54	Used group work	Had few resources	Enough time for learners tasks was provided Averagely supported learners during group and individual task
3	51	group work and lecture	Had few resources	Average support and time was provided
8	54	Group work Think -pair –share	Had few resources	Average support and time was provided

Appendix F i. i : List of Interviewees and Issues Asked

NO.	INTERVIEWEE	ISSUES ASKED DURING DATA COLLECTION
8	Lecturers	Opportunities, challenges, possible causes of the challenges and their recommendations on the teaching of Home Economics while integrated in Science and Technology curriculum
2	Head of Departments	Perceptions, in the teaching of Home Economics, kind of support provided to lecturers, challenges faced in the department with regard teaching Home Economics while integrated.

Appendix F i.ii: Lists of Participants for FGDs and Issues Asked

NO.	PARTICIPANTS	ISSUES ASKED DURING DATA COLLECTION
10(10)	Male(female) learners	Opportunities and challenges with regard to the learning of Home Economics in the integrated curriculum

Appendix F ii:

Interview Guide

For Head of Department

1. What challenges do you face in the department in relation to teaching of HEC while integrated in Science and Technology?
2. How do you overcome these challenges?
3. What kind of support do you provide to lecturers teaching integrated Science and Technology in your department?

For the Lecturers Teaching Science and Technology

1. What are the opportunities which you have when teaching Science and Technology?
2. What are the challenges which you face when teaching the integrated Science and Technology?
3. What are the challenges which you face when teaching Home Economics while integrated with other science subject in the Science and Technology curriculum?
4. What strategies do you use to overcome these challenges?

5. What kind of support do you receive from the school to effectively teach Home Economics while integrated with other science subjects in the Science and Technology curriculum?
6. How do you assess learners after teaching Home Economics in the integrated Science and Technology curriculum?
7. How often do you use the Home Economics laboratory for practical lessons and assessments?

For the Learners Learning Science and Technology

1. What opportunities do you have in learning Home Economics while integrated with other Science subjects in the Science and Technology curriculum?
2. What challenges do you face when learning Home Economics in the integrated Science and Technology curriculum?
3. Are you given enough time to carry out practical work in the Home Economics laboratory?
4. Do you receive any type of assessment after learning Home Economics topics?