

**REFLECTIONS OF SCIENCE STUDENTS' CAREER-RELATED  
NEEDS ON SECONDARY SCHOOL CURRICULUM IN  
TANZANIA**

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**REFLECTIONS OF SCIENCE STUDENTS' CAREER-RELATED  
NEEDS ON SECONDARY SCHOOL CURRICULUM IN  
TANZANIA**

By

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A Dissertation submitted in partial fulfillment of the requirements for the degree  
of Master of Arts in Education of the University of Dodoma

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## CERTIFICATION

I, the undersigned, certify that I have read and hereby recommend for acceptance by the University of Dodoma a dissertation titled: *“Reflections of Science Students’ Career-related Needs on Secondary School Curriculum in Tanzania”* in partial fulfillment of the requirements for the degree of Master of Arts in Education of the University of Dodoma.

.....

Dr. Baraka Kondo

(Supervisor)

Date .....

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## **DEDICATION**

I would like to dedicate this work to the Almighty God who enabled me to do all the things through Him that strengthened me. I would also like to dedicate this work to my parents Mr. and Mrs. RamadhaniMagesa for their encouragement, tender care and understanding that is a solid base for my achievements in education. I wish also to dedicate this study to my beloved daughter Glory K. Cuthbert for her prayers and support, and all people whom in one way or another had participated in accomplishing this study.

## **ABSTRACT**

Career needs have been identified as among the challenges that hinder science students in choosing appropriate career. This is due to unique needs that science students have regarding career choices. In this study, the researcher investigated reflections of science students' career-related needs on school curriculum, major aspirations behind the identified needs and the degree to which school curriculum reflects those needs. The study was conducted in Dodoma Municipality using both qualitative and quantitative research approaches. The descriptive survey research design was used so as to suit the study's demands because it allows collection of data from secondary schools with different characteristics.

Moreover, the study revealed that major science students' career-related needs include; career information, motivation, orientation, guidance, and counseling that enable them to gain knowledge of the self and world of work, employment opportunities, career requirements and salary prospects. Furthermore, it was found that, school curriculum covered more on academic materials with little attention on career-related matters. Lack of professional/ career advisors and unclear policy for implementing career services delay the understanding of science students' career-related needs.

On the basis of the findings, the researcher concluded that career services among science students are essential to meet their career-related needs. Based on the research findings, the study recommended that the government and all education stakeholders should recognize a strong need to incorporate students' career-related needs in the school curriculum.

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## **LIST OF ABBREVIATIONS**

NRC	National Research Council
SPSS	Statistical Package for Social Science
UNESCO	United Nation Education, Scientific and Cultural Organization
URT	United Republic of Tanzania

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.0 Introduction**

This chapter is an introduction to the research problem. The chapter presents the background information, statement of the problem, general and specific objectives, as well as significance of the research. Further, the chapter deals with scope of the study, limitation of the study and ends up with operational definition of the key terms.

#### **1.1 Background of the Study**

Career service programs are ideally reflected in curriculum including the society's philosophy, culture, and the means used to obtain knowledge and the nation's education goals (Basham, 2011). Curriculum outlines the knowledge; skills and attitudes that a learner is expected to acquire and demonstrate as a complete learning cycle (Chuwa, 2014).

Career education is a great priority for secondary students and should be delivered like other areas of the school curriculum. Research done in New-Zealand shows that career education and policy has been developed without any meaningful consultation with students and is just done to them as part of their general schooling (Levin, 2000; Vaughan, 2003; Howieson & Semple, 2000 as cited in Basham, 2011). Hearing directly from students, rather than inferring what it is that they need, not only helps to make the process more relevant for the students, but it can help to ensure that students' actual needs are being met (Hiebert, et al., 2001).

Curriculum for career development among science students has been focused upon science related subjects such as basic and advance mathematics, biology, chemistry,

physics and technology leading to engineering, medicine, and other science-related careers(Kidd, 2006). Science based subjects are keys to socio-economic development and future industrial competitiveness (URT, 1996). This is what drives the government to participate fully in supporting the science related programs and with Tanzania Commission for Universities (TCU), setting the standard of full sponsorship for students who do science related subjects at University level.

A review of the literature establishes that efforts to improve science education in most secondary schools since the 1980's have been impacted by a number of global challenges which have greatly influenced science education practices in schools (Ogunmade, 2005; Ogunniyi, 1986 as cited in Kalolo, 2014). These challenges include: changes in science as a discipline by itself, evolution of societal needs, rapid changes in technology, changes in scientific innovations, changing labour force demands and the evolution of market forces in science careers (ibid).Such challenges led to a mismatch between knowledge and skills offered at schools, and competencies that school graduates need to face their future careers confidently.

Tanzania, as a developing country, faces many of these challenges, which increased the need to redefine science education practices in catering for students' needs, especially the needs of students who choose to pursue science career beyond secondary education (Chonjo, Osaki, Possi, &Mrutu, 1996; Osaki, Hosea & Ottevanger, 2004 as cited in Kalolo, 2014). Another pressure is the need to address the public outcry from parents and employers for schools, colleges, and universities to produce the kind of graduates they expect with science specializations (ibid).



Ndala (2006) observed that, in Sub-Saharan Africa, secondary school curriculum is used as an instrument for selecting individuals for further education. This view is contrary to the 1995 Tanzania Education and Training Policy, which assert that secondary education prepares the graduate for both the world of work and further education (URT, 1995). So, there is a need to redefine secondary school curriculum in order to meet science students' career-related needs.

Furthermore, career counseling enable students to gain self-confidence and to be aware of career aspirations. The role of career counselors in schools include provision of careers information, enhancing clarity of personal values, interests, skills and abilities, facilitating confidence in decision-making all of which boosts self-confidence and ability to make sound career decisions (Maingi, 2007).

The career counseling need is reflected in Tanzanian government's declaration, which instructed each school to have school career counselors to guide students on how to match the school subjects and the world of work (URT, 1997). The emphasis was on the need to assist students in application for careers, career information, and their requirements as well as in making long-range plans of study (ibid). Moreover, career counselors were required to help students to apply for higher educational institutions where they can receive advanced training before joining the world of work.

The basic guidance and counselling services include information service, orientation/ mentoring service, counselling service, appraisal service, placement service, research service, career development service, and educational guidance. Career guidance and counselling targets competencies that assist students in

exploring career opportunities, making career decisions and leaping to post-secondary training or to the world of work (Kano, 2011).

In many developing countries, Sub-Saharan Africa and Tanzania in particular, career services for science students at secondary schools level is particularly important and is urgently needed due to its perceived implications for future life. The subjects selected by the students dictate the kind of career paths they will enter upon graduation (Ndalichako&Komba, 2014). Thus, it is worth mentioning that secondary school education is the gateway to future career opportunities.

According to Amani and Sima (2015), at universities, students are guided more on academic and social welfare than career-related matters. Whereby, career services provided are broad and unstructured to meet students' career needs. Nevertheless, little attention has been paid to career preparation as far as students' knowledge about prospective employers; possible links and associated challenges are concerned (ibid).

The career-related needs of students vary due to unique needs of students concerning the career desired. Since the career services provided at the university level didn't meet the career needs of students, how would the situation be at secondary schools? Thus, there was an inevitable need to explore the science students' career-related needs in Tanzanian secondary schools so as to recommend the best practices for effective curriculum. The research intended to seek for more information about reflections of science students' career needs on secondary school curriculum in Tanzania.

## **1.2 Statement of the Problem**

The career-related needs of science students as related to school curriculum in Tanzania are not well known (Kidd, 2006). Knowing science students' career-related needs provides a way of communicating with students so as to achieve the understanding of the gaps that exist due to individual unique need. Therefore, students' career needs should always be proactive, indicating gaps between the current situation and the desired situation being followed by the identification of optimal solutions to improve actual situation (Watkinson et al., 2012).

The research done by Kidd (2006) explained that majority of students in Tanzanian government secondary schools were not aware of careers that their current subject combinations might lead them to. They are getting difficulties in matching the careers of their interest and their current subject combination. For the time being, they focus more on passing examinations, from there, what to do will be determined. This implied that the majority of high school students in government schools had less exposure to career programs and limited sources of career information.

The current research sought to provide a better understanding of what Tanzanian secondary school science students need, in terms of their future careers and the extent to which science students' career needs are in harmony with their subject combination. Moreover, the study would serve as a stimulating step in the reform of science education in order to determine the specific gap and provide direction in the redesigning and implementation of secondary school curriculum. This is why it was the main task of this study to investigate the reflections of science students' career-related needs on secondary school curriculum in Tanzania.

Science students' career-related needs are hardly realized, thus require attention in Tanzanian secondary schools. It seems that there is little information concerning students' career needs and the degree to which career services have been provided in Tanzanian secondary schools. The present study was designed to address the issue of students' career needs, their career aspirations, and the extent to which school curriculum reflects career needs.

### **1.3 Purpose of the Study**

This study intended to investigate reflections of science students' career-related needs on secondary school curriculum in Tanzania.

### **1.4 Objectives of the Study**

The study sought to meet following objectives;

Firstly, to identify perspectives of science students on their career-related needs in Tanzanian secondary schools,

Secondly, to examine major aspirations behind the identified career-related needs on school curriculum, and

Thirdly, to assess extent to which secondary school curriculum, addresses the identified career-related needs of science students.

### **1.5 Research Questions**

The study attempted to find answers to following questions;

Firstly, what are the perspectives of science students on their career-related needs in Tanzanian secondary school?

Secondly, what are the major aspirations behind career-related needs on school curriculum?

Thirdly, to what extent does secondary school curriculum address the career-related needs of science students?

### **1.6 Significance of the Study**

The study intended to identify the career-related needs in reflection to secondary school curriculum among science students in Tanzania. This would contribute to the greater understanding of what secondary students require from career services to be better equipped so as to make relevant career decisions for the complex and dynamic world of work today. This means that the study will enable the Ministry of Education, Science, Technology, and Vocational Training to get a clue on what is perceived as important to be included in the current secondary school curriculum, as well as to formulate strategies that would assist science students to achieve their future careers.

Furthermore, the study will enable a teacher to have the information needed to make a number of decisions related to what, how and when to provide career services; this will enhance the improvement in science students' career development. The knowledge gap existing would be closed as regard to science students' career-related needs and secondary school curriculum in Tanzania secondary school.

### **1.7 Delimitation of the Study**

The focus of this study was on reflections of science students' career-related needs on secondary school curriculum in Tanzania. The study was conducted in Dodoma Municipality. Moreover, information in this study was collected from 124 respondents, whereby 16 were teachers and 108 were science students from four selected secondary schools. Therefore, generalization of the findings beyond these considerations may not be accurate.

## **1.8 Limitation of the Study**

The study faced some limitations as follows; it was limited in collecting information from four secondary schools only in Dodoma Municipality. Furthermore, the information from this study was collected from few respondents. The respondents in the study were 124 only, though, the small number of respondents did not affect the study since the sample selected signified the characteristics of the population it represented.

## **1.9 Operational Definitions of Key Terms**

For clarity, the key terms used in the study are clarified as follows:

**Career:** Career is a profession for which one trains and which is undertaken as a permanent calling (Mish, 2004). Career is an occupation or a profession involving special training within a single industry or sector (Cole, 1995). The roles individuals play over their lifetime that includes leisure, community service, and other activities. In this current study, a career refers to a job/ occupation particularly recommended for science students.

**Curriculum:** refers to the knowledge and practices in subject matter areas that teachers teach and that students are supposed to learn. A curriculum generally consists of a scope, or breadth of content, in a given subject area and of a sequence of concepts and activities for learning (NRC, 2012). In this study, the term curriculum refers to relevant official goals, objectives, and methods, teaching and learning materials as well as evaluation traditions related to science education in secondary schools in Tanzania.

**Needs:** A need is something that is necessary for an organism to live a healthy life. <https://en.wikipedia.org/wiki/Need>

It refers to something required to accomplish a purpose. In this context, needs refer to the requirements of science students in pursuing their career.

**Perspective:** refers to the organization, identification, and interpretation of sensory information in order to represent and understand the environment (Schacter, 2011).

It is the way one looks at events happening in an environment. In this study, students' perspective refers to students' considerations on school curriculum towards career needs.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This Chapter reviewed and discussed literature related to Reflections of Science Students' Career-Related Needs on Secondary School Curriculum in Tanzania. Literature review was central to the research process because it provided a general understanding of the research problem and it served as a focus against which the researcher compared and contrasted the research results. It involved theoretical framework, empirical studies, knowledge gap, and conceptual framework.

#### **2.1 Theoretical Framework**

Theories played a critical role in a research process because they were keys in planning, data collection, and explanation of the emerging findings. This section describes social constructivism and Parson's trait and factor theories that frame this study.

##### **2.1.1 Social Constructivism Theory**

Social constructivism theory is a theory of knowledge in sociology and communication theory that examines the knowledge and understanding of the world that are developed jointly by individuals. Its founder is Lev Vygotsky. The theory assumes that understanding, significance, and meaning are developed in coordination with other human beings. The key tenets of this theory are (a) the assumption that human beings rationalize their experience by creating a model of the social world and the way it functions and, (b) the belief in language as the most essential system through which human construct reality (Leeds-Hurwitz, 2009 as cited in Amineh&Asl, 2015).



The roots of individuals' knowledge are found in their interactions with their surroundings and other people before their knowledge is internalized. In social constructivist classrooms, students are actively involved, the environment is democratic, and interaction becomes crucial in learning (Gray, 1997 as cited in Amineh&Asl, 2015). The theory is important in helping the research focus on an issue at hand. It was chosen due to its relevance among current study's variables.

In social constructivist learning, students construct their own knowledge and there is a purposeful nature to design learning activities. In this theory, a bridge is built between what students already know and what they are expected to learn (Gagnon &Collay, 2006). The literature suggested that students should be at the center of their career journey with individualized programs within a narrative constructivist mode of delivery to ensure relevancy (Levin, 2000; Vaughan & Roberts, 2007).

In line to that, students' career needs should relate to school curriculum and societal expectation. In contrary, research showed that careers education and guidance policy has been developed without any meaningful consultation with students and is just done to them as part of their general schooling (Levin, 2000; Vaughan, 2003; Howieson&Semple, 2000 as cited in Basham, 2011).

Careers emerge to individuals through the interaction between an individual activity and the experience, constraining and enabling forces of the social context (Kidd, 2006). People's experience on careers reflects the changing needs, values, aspirations, and attitudes towards work. This situation has the role in science students' career related needs as linked to school curriculum and the condition that career services provision reflects those needs.

Students seem to be motivated to learn if the science content is interesting, useful, and connected with their cultural and contextual everyday life (Osborne et al., 2003 and Dawson, 2000 as cited in Kalolo, 2014). It is from this perspective that the International Conference in Science and Technology Education held in Penang, Malaysia recognized the critical need to increase the relevance of science education. This involves three main areas: the needs and interests of the student, careers, and the needs of society (ICASE, 2003; Onwu, & Kyle, 2011 as cited in Kalolo, 2014).

Kidd (2006) argues that, career services programs involve the provision of career skills and knowledge about work and educational choices. These programs enable students to select the fields of study through subjects chosen, access to information and requirements as well as to meet the unique needs of students (Amani&Sima, 2015). However, school leavers face many difficulties in career decision making due to inadequate career information, awareness, and abilities. Thus, school curriculum has to clearly integrate career programs that should be provided to students.

The Vision of 2025 emphasizes the importance of curriculum transformation with a focus on promoting creativity and problem solving as a means towards high quality science and technology at all levels of education hence a well-educated and learning society (URT, 2009). This means, the implementation of curriculum should promote learning by doing whereby both the teacher as facilitator and the student are active participants in the classroom interaction.

The use of career programs such as Internet programs, career visit, career workshops and other ways related to these can help students in getting career information

available within and outside the country (Kingazi, 2006). Essentially, individuals need to understand what exists in the world of work so that they can examine the different career options available and decide their relevance to their personal characteristics.

Therefore, learning should be rooted in the conception of social constructivism where the students get opportunities to interact with environment through a well organized tasks and reflections on learners' needs. Teachers are required to plan and design relevant tasks in reflection to the students' career-related needs so as to bring sense in the learning process. The theory is relevant as it deals with the students' involvement in reflecting their career needs towards curriculum, thus, it can help to explain the influences of career aspirations.

### **2.1.2 Parson's Trait and Factor Theory**

This study was based on Frank Parson's Trait and Factor Theory propounded in 1909. Trait and Factor Theory proposes that a choice of career depended upon the following; first, an accurate knowledge of yourself, your aptitudes, abilities, interests, ambitions, resources, limitations, and their causes. Second, through knowledge of job specifications, requirements and conditions, success, advantages and disadvantages, compensation, opportunities and prospects in different lines of work. Lastly, it is the ability to make a proper match between the two (Rukwaro, 2015). There are two major assumptions underlying Trait and Factor theory. First, individuals and career traits can be matched, and second, close matches are positively correlated with career success and satisfaction (ibid).

Parsons' Trait and Factor theory gave rise to many career theories such as Holland's Theory of Personalities, among others. Parson's second element that relates to

knowledge about the world of work is an important concept in career planning and development and it led to organized classification of occupational information.

The theory proposes that, to select a career an individual should ideally have: first, the information that indicates a clear understanding of himself or herself, his or her attitudes, abilities, ambitions, resources, limitations, and their causes (Parson, 1909 as cited in Sharf, 1992). Second, an individual should have the knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities and prospects in different lines of career. Moreover an individual should have a true reasoning on relations of himself or herself and the requirements of success (ibid).

Kidd (2006) emphasizes that career services provision is not just explanation about job choice but rather career services provision is the work and educational choices. This situation calls for more effort in providing necessary career skills and information for students in secondary schools so as to match their school studies and the careers of their interest. Therefore, the current research would examine the science students' career-related needs as they get ready for their future career.

Moreover, students had low level of knowledge in career options available in the world of work the condition that force these students to use culture orientation and social influence in their process of career decision making. The condition is different for international school students who demonstrated good exposure to various career programs and better knowledge in various career options (Kidd, 2006). This situation calls for improving the career services in secondary schools as to provide reliable and adequate knowledge to students for matching their subject choice and careers of their interests, ability, as well as aptitude.

## **2.2 Review of Empirical Studies**

### **2.2.1 Science Students' Perspectives on the Career-related Needs**

According to the study done in UK, students indicated that visiting professionals could provide valuable information regarding career such as pay scale, job description, routes to employment/ qualifications, and the range of careers within science (Bevin, Brodie&Brodie, 2007). An expert in the classroom would help to provide a relevant context for subject content and make classroom activities more exciting.

In struggling to make career services provision a reality in Tanzania secondary schools, all heads of secondary schools are required to appoint career masters and mistresses, whose responsibility is to advise secondary school heads on career-related matters (Nkuba, 2012). These involved students' job applications, placements for further education and training, assessing students' talents and capabilities and disseminating occupational information. Career information is still important as it informs students about status of their careers in the world of work (Amani&Sima, 2015).

Dogar, et al., (2011) reveals that secondary school students are mostly seeking for career advice. Amani and Sima (2015) identified four major career needs of students at universities as follows: knowledge of the self and the world of work, employment opportunities, job requirements and salary prospects as well as preparation for joining the world of work.

Career-related needs of students vary due to unique needs of students concerning the career desired. Some of these needs can be: information, orientation, motivation,

placement, encouragements, guidance, and counseling of a career. Through science students' perspectives on career-related needs, this study intends to seek more information about students' needs and their reflections towards curriculum.

### **2.2.2 The Major Aspirations behind the Identified Career-related Needs of Science Students and Secondary School Curriculum.**

Career aspirations are an important duty of a student while in secondary school. Students are in transition to the world of work, so a careful choice of career is important as they need to reflect on their chosen majors, interests, ability and consider what is available in the world of work (Kalolo, 2014). They need to be aware of and to make appropriate use of the career information available.

An increasing number of jobs today draw on at least some knowledge or skills from science fields and every occupation is potential to be transformed by scientific and technological advancement (Kalolo, 2014). Majority of students perceive performance as a main factor influencing their choice of science subjects. There is a need to review and improve subjects streaming and to provide relevant career advisory services to enable students make informed stream choices.

Studies show that teaching and learning science mostly focus on passing national examination so that students can join some career that require scientific knowledge (Semali & Mehta, 2013; Vavrus & Bartlett, 2013 as cited in Wandela, 2014). Gaining access to careers like medicine and engineering have been the major aspirations for studying science in Tanzanian secondary schools. Therefore, the study examined the major aspirations behind the identified career-related needs of science students on secondary school curriculum.

### **2.2.3 Extents to which School Curriculum Reflects Students' Needs**

Basham (2011) noted that the curriculum was written by adults and without any consultation with students and did not relate well to students' needs. The research in New Zealand explored whether the current careers education and guidance programs are addressing students' needs, by asking the students instead of telling them what they need.

Successful career services provision to students in secondary schools, should involve career programs which can comprise of the use of mass media, career books, professional journals, internet, video, occupational flyers, career counselors, teachers and exposing students to role models (Hill & Nathan, 2006 as cited in Nkuba, 2012).

Kinyaduka (2014) conducted a study to examine secondary school teachers and student's perceptions on preference of curriculum and the role of the secondary schools curriculum in Tanzania. The study concluded that, while secondary education intends to prepare the graduates for the world of work and for further education, it appears that the secondary education curriculum does not prepare the graduates for the world of work instead it prepares the graduates for further education.

Biswalo (1996) commented that in Tanzania policies pertinent to career is still lacking. Tanzanian Education and Training Policy states that career guidance should be taught as a mandatory subject in teacher training colleges (URT, 1995) to enable teachers graduate with skills of career guidance which in turn will help students in secondary schools make informed career decision. Nevertheless, it is doubtful whether this is being put into practice as most studies still claim that the career

services are poor and have detrimental effect on students' career choices. It is not clear to what extent career services are provided in schools as stipulated in the Education and Training Policy.

In teacher training curricula, career guidance featured as one of the compulsory courses, which aims at preparing teachers to gain more knowledge of issues relating to occupations (URT, 1995). Furthermore, the government directive requires the secondary schools assigned career masters and mistresses to advise secondary school heads on career-related matters, such as students' job applications, placements for further education and training, collecting and disseminating occupational information, and assessing students' talents and capabilities (Biswalo, 1996). This was informed by the need to help students make long-term career plans, including the choice of fields of study in tertiary and higher education where the students receive advanced training before joining the world of work (URT, 1997). In tertiary and higher education, students receive advanced training before joining the world of work through practical work done in the field. However, it is not clear, to what extent career services are provided in schools as stipulated in the Education and Training Policy of 1995. Nevertheless, there is no empirical evidence available to discover the policy's achievability.

The public schools' environment seems to have less career programs engagements such as planning for career visit, career days, and career exhibitions (Nkuba, 2012). On the other hand, international schools engage their students in various career activities such as career visits, inviting career speakers and career exhibition that contributed to their good ability in career identification (ibid). Career programs such as career visits that were offered at those schools, were important in obtaining study opportunities and scholarships from various international universities.



Generally, the career services provision in many secondary schools in Tanzania is still less effective due to lack of trained career counselors, career instructional materials and related career facilities, a factor which limits the knowledge of students on careers (Biswalo, 1996). From literature reviewed, it was difficult to find a research that clearly reflected science students' career-related needs on secondary school curriculum to reveal its practicability in the actual sense. This study therefore, intended to fill the gap by examining the degree to which school curriculum reflects science students' career needs, and whether the current careers education delivered in secondary schools was effective, timely and relevant to students' needs.

### **2.3 Knowledge Gap**

Although the surveyed literature discussed greatly about career choices of students, career services provision, career counseling, need and needs assessment in career, improving the quality of science education while leaving beside the issue of career needs of science students which is crucial in improving curriculum so as to meet the students' needs. Empirical studies in Tanzania focused on determinants of career choice (Cosmas, 2010; Mhenga, 2011; Mbilinyi, 2012) but paid less attention to the relationship between what is behind the choice and students decision to join their prospective careers (Patton & McMahon, 2014).

There was a gap in the literature in regard to students' voice and actually asking them what they real need to make informed careers decisions. Since the reflection of science students' career needs on school curriculum has not been clearly studied and properly documented, therefore, the current study attempted to fill this knowledge

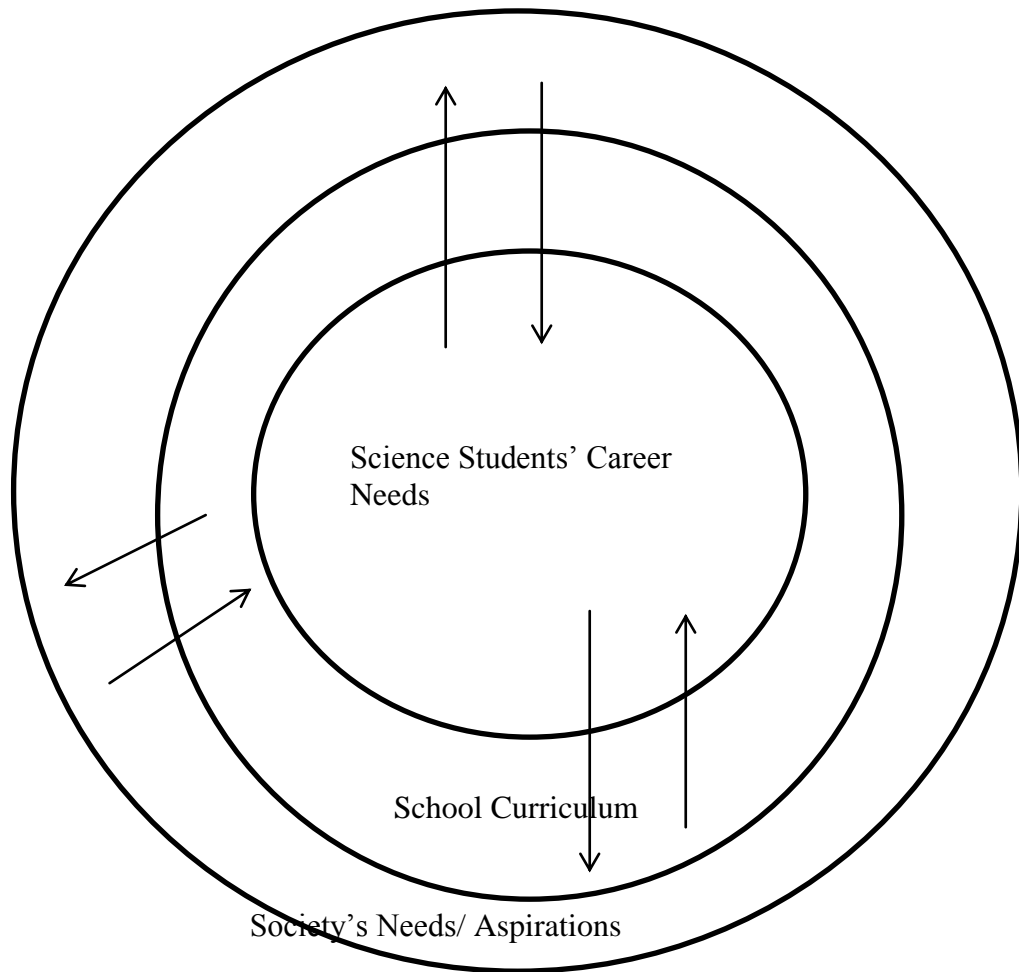
gap. The context of this research was to ask students directly what they need to succeed in their future careers and to what extent curriculum reflects those needs.

## **2.4 Conceptual Framework**

The conceptual framework highlighted the relationship of the variables that were studied and provided an overview of the problem under the study. A conceptual framework refers to a visual or written product, one that explains either graphically or in narrative form, the main things to be studied; the key factors, concepts, or variables and the presumed relationship among them (Huberman, 1994 as cited in Mwaipaja, 2015).

In the current study, conceptual framework linked students' career-related needs, secondary school curriculum as well as society's need/ aspirations as key aspects. Science students' career-related needs has a direct impact on the school curriculum, which in turn influence societal aspirations. Hence, a balanced curriculum reflects students' career-related needs and society's needs/aspirations. Moreover, school-based factors (career guidance, adequate trained career teachers and enough career sessions) when matched with Home-based factors (parents, peer, and siblings' advice) would help to identify and meet students' career-related needs, as a result, the career aspirations would be fulfilled.

A balanced curriculum reflects the needs of society that contains both practical and theoretical knowledge and career information. Practical knowledge leads towards meeting societal requirements. Teachers claimed that knowledge provided in schools is practical in the sense that it requires practice or 'hands-on' (Jidamva, 2012).The perspectives of science students on their career-related needs have a direct impact on the school curriculum that in turn influence societal aspirations as suggested below.



**Figure 1: Conceptual Framework**

As illustrated in Figure 1, the conceptual framework shows the relationship among science students' career needs, curriculum contribution on addressing those needs and influences from parents' aspirations and significant others play a significant role in influencing students' interest for certain careers. Reflections of science students' career-related have direct impact on school curriculum whereby those needs are to be met within the curriculum. Nevertheless, society expected the curriculum to produce knowledgeable and skilled school leavers who can serve the society. Therefore, a balanced curriculum reflects students' career needs and society' needs.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter concerns with the description of the ways and procedures the researcher applied in the study. The chapter includes research approach and design, study area, population of the study, sample, and sampling techniques, research methods, data collection instruments, validity and reliability of instruments, and ethical consideration.

#### **3.1 Research Approach**

The study employed both qualitative and quantitative research approaches. While qualitative approach was used to get opinions from the participants, the quantitative approach was used in attaining specific information concerning the study. The choice of employing both approaches aimed at maximizing the strengths and minimizes the limitation of each approach (Kombo & Tromp, 2006).

The qualitative approach mostly used in identifying science students' perspectives on their career-related needs and major aspirations behind career-related needs on school curriculum. On the other hand, quantitative approach focus much on the extent to which secondary school curriculum address the career-related needs of science students. Though, the study employed both approaches the qualitative was mainly used in data collection as well as analysis.

#### **3.2 Research Design**

Research design is a plan that was used for data collection and analysis in a way that aimed to produce answers to research problem. Kombo and Tromp (2006) asserted

that research design is the ‘glue’ that holds all of the elements in a research project together. The current study used descriptive survey research design. The descriptive survey research design was used so as to suit the study’s demands because it allows collection of data from secondary schools with different characteristics. The purpose of this design was to provide a better understanding of the research problem by converging both numeric and descriptive data. Though the study was largely qualitative supplemented by quantitative data sets.

The study intended to collect information from respondents’ views in relation to career-related needs in Dodoma Municipality. The researcher used both primary and secondary data whereby primary data was obtained through questionnaire and interview guide while secondary data was through journals and books.

### **3.3 Location of the Study**

The current study was carried out in Dodoma Municipality that located at the central part of Tanzania mainland. It is boarded by Chamwino District to the East, Bahi District to the West, Chemba District to the North and Mpwapwa District to the South. It lies between Latitudes 6.00° and 6.30° S and Longitude 35.30° and 36.02° East. There is no special reason for choosing this location of the study. Any district could randomly be sampled due to the nature of the current study as most of them hosts the key data respondents needed for the study. There is also apossibility to expand the understanding of science students’ career-related needs on school curriculum as it allows the responses from respondents situated in Capital City.

### **3.4 Populations, Sample, and Sampling Technique**

#### **3.4.1 Population of the Study**

Population refers to an entire group of persons or elements that have something in common that have particular interests to the study (Kombo & Tromp, 2006). The population in the current study included secondary school science students, and science subject teachers. It was concerned more with both Ordinary Level students and Advanced level Students whereby subject selection, combination, and course to select are at the peak to determine one's future career.

Science subject teachers were selected for the sake of reliable information, experience, and their valuable contribution in increasing knowledge of career needs on school curriculum. For the case of students, they were selected because they were in the position to provide information relevant for the reflections of career needs in school curriculum. Moreover, they were selected due to scientific and technological advancement as well as an increasing number of jobs demand for at least knowledge and skills from science field.

#### **3.4.2 Sample**

Sample refers to a set of target respondents selected from a larger population for the purpose of a survey (Sigh, 2007). The study was conducted in 4 secondary schools that involved two public and two private secondary schools aiming at identifying reflections of science students' career needs on school curriculum. The schools had both O-level and A-level whereby the respondents were form four, five, and six. One hundred twenty four (124) respondents were selected whereby 108 students and 16 teachers. The sample intended to get a suitable representative and to determine the characteristics of the whole population of the study.

### **3.4.3 Sampling Technique**

Sampling technique refers to the ways used in selecting sample of the participants from the entire population (Enon, 1998). In this study, both probability and non-probability were used in participants' selection whereby stratified random sampling and purposive sampling technique were employed. Stratified sampling deals with dividing population into homogeneous subgroups; then take sample in each subgroup so as to get more statistical accuracy (Kombo and Tromp, 2006). Purposive sampling technique is whereby a researcher purposely targets a group of people believed to be reliable for the study (ibid). It is relevant in understanding the audience and can be used with both quantitative and qualitative studies.

### **3.5 Data Collection Method**

The study used survey data collection method to collect information from a selected group of people using standardized questionnaire or interviews. The current study employed face-to-face survey. The method provided valid and useful results, as the population being surveyed fairly represented stakeholders. The study employed both, closed and open-ended questions that are useful to elicit respondents' feelings and to provide depth to an issue.

### **3.6 Data Collection Instruments**

Data collection instrument refers to devices used to collect data such as a paper questionnaire or computer-assisted interviewing system (Statistical Quality Standard, 2010). The study employed questionnaire and interview guide as research instruments for data collection. A combination of these techniques was designed to get an appropriate balance of information from the participants in order to attain a valid description of the current state of career services in secondary schools.

### **3.6.1 Questionnaire**

Questionnaire refers to a systematically prepared document with a set of questions deliberately designed to elicit responses from research informants for the purpose of collecting data (Annum, 2015). This method was helpful in collecting information from a large number of people and it saved time. It also ensured confidentiality since each respondent filled the questionnaire privately to enhance validity and to maximize freedom of expression.

Combinations of closed and open-ended items were included. Closed questionnaire items were employed with close questions where by respondents were given a set of pre- determined replies to choose from a set of numbers representing strengths of feelings or attitudes. Survey questionnaires enable a large quantity of relevant data to be collected and subjected to statistical analysis in a short space of time.

### **3.6.2 Interview Guide**

Interviews are those questions that are asked orally. The study employed structured interview that involve the informant to the same set of questions in order to promote the reliability of the information collected. It is comprehensive and systematic since questions are formulated before the interview (Kombo & Tromp, 2006). All 16 science subject teachers and 08 science students that mean 2 students from each school were involved in interview.

The number of students was taken among those respondents who filled in the questionnaire. The interview was guided by a schedule of open-ended questions that provided opportunities for the respondents to freely respond to questions about the topic. The interview sessions lasted in 8 to 10 minutes per respondent. Structured interview allowed the researcher to obtain data within the designed scope.



Furthermore, structured interviews were related to the need for depth of understanding and interpretation of variables.

### **3.7 Validity and Reliability**

Validity in research refers to degrees at which the instruments of data collection measure what they are intended to measure (Cohen, Manion & Marrison, 2005). This part consists of the validity and reliability of data collection instruments that were used in the study. The current study used various strategies to promote the validity and reliability of the findings. Among other strategies, the research instruments were translated into Swahili language for clarity reasons. The current study triangulated questionnaire and interview guides to promote validity whereby students were given instructions on how to fill the questionnaires as required.

Reliability refers to the degree of consistency with which the instrument measures an attribute (Polit & Hungler, 1999). The study ensured reliability by using some experts who checked the connection of research tools and study objectives so as to determine whether the instruments prepared were accurate and able to provide the required information. Moreover, numerous improvements were made on the research tools for the enhancement of consistency.

### **3.8 Data Analysis**

In this study, data were analyzed thematically. Thematic analysis refers to data analysis technique in which data are analyzed on the basis of major themes that come up in the discussions. Data Analysis refers to the examining of what have been collected and making deductions and inferences (Kombo & Tromp, 2006). It also involves scrutinizing the acquired information and making inferences. In this study, the analysis passed through various steps as: examining the collected data relevant to

the research objectives, developing a coding system based on samples of collected data, classifying topic covered, highlighting key quotations, and presenting the findings using descriptions, tables, and direct quotations.

Qualitative approach was mainly employed and to some extent quantitative data was used in percentage and presented in simple tables. In this study Statistical Package for Social Sciences (SPSS) software Version 16 and open coding were used to analyze data.

### **3.9 Ethical Issues Consideration**

Ethical issues consideration in research serves the purpose of protecting participants' dignity, rights, privacy, and confidentiality. In the current study, the ethical issues were adhered by seeking official permission for conducting research. The researcher sought an approval letter from the University of Dodoma Authority, District Executive Director, and District Education Officer in Dodoma Municipality for conducting the research before collecting data in the targeted secondary schools.

The participants were asked for their willingness to participate in the study. They were also assured of their rights to withdraw their involvement at any stage of their participation without penalty or loss of benefits. Furthermore, the confidentiality of respondents' identity was maintained. The researcher ensured non-disclosure of respondents through the use of numbers in place of names and their respective organizations by using letters in place of names. So respondents did not write their names on the questionnaires; only the researcher and his dissertation supervisor had access to the data.

Moreover, information from other sources was acknowledged. Apart from that, effort would be done to ensure the findings are exposed to participants. The

researcher intended to inform the participants the place where they could find the results of the study as well as to provide a copy of the final research findings to the district education officer so as to enable participants and the community in the study area to get easier access to them.

## **CHAPTER FOUR**

### **DATA PRESENTATION AND DISCUSSION OF THE FINDINGS**

#### **4.0 Introduction**

This chapter presents analysis and discusses the findings of the current study. The purpose of the study was to investigate reflections of science students' career-related needs on secondary school curriculum in Tanzania. The data of this study were collected from science students and science subject teachers from four secondary schools in Dodoma Municipality. Furthermore, the data were collected using questionnaires to science students plus interview guides to science students and science subjects' teachers.

In addition to that, the data are presented in tables and subsequently thematically analyzed. Furthermore, the chapter consists of two parts; part A, and part B. Part A presents demographic information while part B presents and discusses the findings according to the research objectives.

#### **Part A**

##### **4.1 Demographic Information**

This part presents the demographic information of respondents including age, sex, education; the total sample size participated in the study and the science students' class levels.

##### **4.1.1 Respondents' Categories by Sex**

This part presents the number of respondents participated in the study from the four schools. A total number of 124 respondents participated in this study include science subjects teachers and science students. Table 1 presents the number of respondents involved in the study while Table 2 presents frequency and percentage distribution of respondents by their categories.

Table 1 below describes the number of respondents who participated in the study. The study involved four schools with a total number of 108 (87.1%) science students and the total number of science teachers participated in the study were 16 (12.9%). School A involved 40 (32.3%) male science students; school B involved 25 (20.2%) female science students; school C involved a total number of 22 (17.7%) whereby 12 were male science students and 10 were female science students; school D involved 21 (16.7%) female science students. Four (3.2%) science subject teachers were obtained from each school, whereby, in school A and school D all respondents were male while in school B and school C were 2 female and 2 male respondents each.

The majority of respondents among the selected science subject teachers were male (66.6%) and few female (33.3%). Science students were equally represented in terms of numbers, 56 in each sexual category that made 50%. School ‘A, B, C and D’ represents Bihawana seminary secondary school, Msalatogirls secondary school, Dodoma secondary school and Maria de Mathias secondary school respectively. In the current study, the researcher has used letters instead of names of the schools.

**Table 1: Respondents Categories by Sex**

Schools	Science Students			Science Subject Teachers			Total
	M	F	Total	M	F	Total	
School A	40	-	40	4	-	4	44
School B	-	25	25	2	2	4	29
School C	12	10	22	2	2	4	28
School D	-	21	21	4	-	4	25
<b>Total</b>	<b>52</b>	<b>56</b>	<b>108</b>	<b>12</b>	<b>4</b>	<b>16</b>	<b>124</b>

**Source:** Field Data, 2017

These respondents were expected able to give appropriate information required in the current study. Since, reflections of science career-related needs on secondary school curriculum involve both male and female. Therefore, their perceptions are going to be useful in the study.

**Table 2: Frequency and Percentage Distribution of Respondents by their Categories (N=124)**

<b>Respondent Categories</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Science Teachers	16	12.9
Science Students	108	87.1
<b>Total</b>	<b>124</b>	<b>100.0</b>

**Source:** Field Data, 2017

The table 2 above shows that a total number of 124 individuals participated in this study. Among them 16 (12.9%) were science subjects teachers (4 from each school), 108 (87.1%) were students from four secondary schools with a total number of 40, 25, 22, and 21 respectively. Since the study sought to identify the reflections of science students' career-related needs on school curriculum, the majority of the respondents were science students expected to give a comprehensive information.

#### **4.1.2 Science Students' Class Levels**

This part presents the education level of the science students who participated in the study. The levels of education were categorized in forms, namely; form six, form five and form four. The table below presents the distribution of education level of 108 science students.

**Table 3: Distribution of Respondents by their Class Levels (N=108).**

<b>Education level</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Form Six	42	38.9
Form Five	45	41.7
Form Four	21	19.4
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:** Field Data, 2017

Table 3 presents information on the education level of students participated in the study. Out of 108 science students who participated, 42 (38.9%) were form six students, 45 (41.7%) were form five students, and 21 (19.4%) were form four students. These students were in the completion stage of secondary education that means they are in transition from school totertiary education and the world of work. Therefore, they were expected able to give appropriate information.

### **Part B: Analysis Based on Objectives of the Study**

This part recognized the research objectives whereby under each research theme the research tasks were organized and data were analyzed based on questions under each task. The following were research objectives, which this study sought to meet:

1. To identify the perspectives of science students on their career-related needs in Tanzanian secondary schools.
2. To examine the major aspirations behind the identified career-related needs of science students and secondary school curriculum.
3. To assess the extent to which secondary school curriculum reflects the identified career-related needs of science students.

## **4.2 Findings Related to the Research Objective 1: Awareness of Presence of Career-related Needs in Secondary School Curriculum**

The study's first research objective, sought to identify the reflections of science students' career-related needs on secondary school curriculum in Dodoma Municipality. To achieve this objective, the researcher engaged 16 science subjects' teachers and 8 science students on a number of questions during the interviews, these 8 students were taken from the same sample of 108 students who filled in the questionnaire, while 108 science students were asked using open-ended questions. Various questions were asked to meet this objective, among them were to find out the awareness of respondents on the term career, and to find science students' career-related needs. Key viewpoints among the many highlighted views were investigated and discussed below:

### **4.2.1 Awareness of Science Students and Teachers on Career**

This part intended to investigate whether science students and teachers were aware of the term career in science field. It involved three sections that required the respondents to respond through the questionnaire and interview guide. In the first section, science students were required to choose the best response among the four alternatives given. Table 4 below presents science students' responses on their awareness of the term career.



**Table 4: Science Students' Awareness of the Term Career**

<b>Career means</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Job	40	37.0
Professional	63	58.3
Getting paid well	4	3.7
Degree	1	0.9
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

Table 4 above presents students' responses obtained through questionnaire on their awareness of the term career whereby, a total number of 108 science students participated in the study. Forty students (37%) responded as job, sixty-three students (58%) responded as professional, four students (3.7%) responded as getting paid well, and a single student (0.9%) responded as a degree. Majority of the respondents' defined career as a job or a professional. The information indicated that most of science students were aware of the term career since 95% of students responded as job and profession while 5% were unaware of it.

Most of the responses are in harmony with Cole's point of view that, career is a job or profession involving special training within a single industry or sector (Cole, 1995). According to Kidd, (2006) careers emerge to individuals through the interaction between an individual agency and the experience, constraining and enabling forces of the social context. In the current study, a career refers to a job/ profession particularly recommended for science students.

People's experience of careers over their life courses reflect their changing needs, values, aspiration and attitudes towards work. This situation has the role in

career-related matters as linked to educational courses, the condition which reflects the need for career services provision in schools (Nkuba, 2012).

#### **4.2.2 The most Attractive Careers among Science Students.**

The question required both science subject teachers and students to give out their views about the most attractive careers among science students. Most of their responses were engineering, medical-related courses, mining, and petroleum courses. The findings revealed that the reasons behind their preferences were due to their status, labour market, direct employment compare to other sector, subject influence, salary issues, and role models' life. One of the teachers in school A during interview had this to say,

*“Most of science students prefer medicine, architecture, engineering and pharmacy, whenever you ask them, this is the kind of answer they would give. These careers are attractive to them because of prestige, adequate salary, security and good working environment.”(Bihawana, 2017)*

The findings are similar to what is reported by Salami, 1997 as cited in Adegun&Aremu, (2013) that students select occupations mainly because of the salaries, positions, glamour, and prestige attached to them. This kind of reasoning may endanger such careers by producing experts who are just extrinsic motivated rather than competent personnel. It is therefore important for school curriculum to incorporate career-related needs to prepare science students for the world of work.

#### **4.2.3 Main Career-related Needs among Science Students**

This part intended to understand the main career-related needs among science students. Therefore, science students were required to respond to the question “List the main career-related needs that you have according to your priorities”, by

choosing from the answer box given according to their priorities. Table five below presents their responses.

**Table 5: Main Career-related Needs among Science Students**

<b>Science Students' Career-related Needs</b>	<b>Frequency</b>	<b>Percent</b>
Information, Guidance and Counseling	62	57.4
Motivation and Orientation	38	35.2
Other Career Needs	8	7.5
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:** Field Data, 2017

Table 5 above presents 108 science students' perspectives on career-related needs. The respondents were required to select the most career needs according to their priorities. Sixty-two (57.4%) respondents prioritized career information, guidance, and counseling, as their career-related needs while thirty-eight (35.6%) respondents preferred motivation and orientation as the first career-related needs. On the other hand, 8 (7.5%) respondents mentioned other things apart from the mentioned career needs. This implied that the highest career needs among science students were career information, career guidance, and career counseling followed by the need for career motivation and career orientation. Similarly, Hutchinson and Bottorff as cited in Witko, 2005) found that 89 percent of high school students reported career counseling to be a priority.

These findings were in line with the results obtained from interview whereby respondents provided the likely responses as one science student in school 'A' said,

*“What we need is career guidance and counseling from teachers to enable us to select appropriate careers. We also need information about the available career options, qualification*

*required, life of the workers, and to explore career alternatives.”(Bihawana, 2017)*

The findings of the study appear to be in agreement with Biswalo’s (1996) arguments, that students need career information including duties, entrance, conditions of work, rewards offered, existing and predicted supply of, and demand for workers and sources for further information. Career information updates students about status of their careers in the world of work, which motivate them to pursue science careers.

Lack of career knowledge affect science students’ career choices and as a result it may lead them to be outdated with the labor market options. This is similar to highlight given by Lent et al. (2007) that lack of career information is the main source of career indecision. It is worthwhile to distribute enough career information to science students so as to improve transition from secondary schools to further studies and to the world of work.

In addition to that, career information enables science students to have better knowledge concerning career. Such career information include; to have up-to-date information about the nature of the career, career requirements, entry qualification, current employment demand and options, salary prospects, how to write an application letter, curriculum vitae, as well as the codes of conduct.

The previous response corresponded to science subject teacher’ view from school C, as he asserted that;

*“Students need guidance on career matters. For example, students do not put much effort towards physics subject. They think the basic subjects are chemistry and biology; in reality, they should focus more on physics as it is the major subject in science field.”(Dodoma, 2017)*

The findings of this study illustrates that career advisors have a big role to play in order to arouse awareness on career issues among students. Matem (2010) found that for students being moderately active on some career and be inactive on other career proves that students lack career guidance in schools. This means, availability of career guidance practices in schools assist students plan for their future career. Absence of it may lead to mismatch between subjects combinations and expected careers.

Apart from that, a science student from school 'B' during interview contended that,

*“We need encouragement, orientation, and information from teachers and career experts to explore more on various careers. Having a wide range of career knowledge will enable us to make appropriate career choice. We also need support from government, such as availability and qualifications of loans from Higher Education Students' Loan Board to be able to fulfill our dreams.”(Msalato, 2017)*

The results revealed that science students need encouragement to choose science careers. Career information that is obtained at school through career programs can help many students to make right career decisions and pursue subject combinations, which can lead them to their dreams (Kariuki, 2008). Exposing science students in a wide range of career possibilities enable them to appropriately choose and prepare for career of their choice. Failure to do so may result into inadequate career choice.

The guideline for secondary school heads in Tanzania explain how well career services should be conducted in the country to help students in government schools in making career decision a reality (MOEC, 1997). It emphasizes that; every school in Tanzania should have career masters or career mistress who will be responsible in guiding students about career choice, and supervising different career services.

Despite the government's effort in career guideline provision, there is still inadequacy implementation of career services provided (Nkuba, 2012).

The current secondary school curriculum is overloaded with too much content that has little or no career content within (Biswalo, 1996). These lead teachers to focus on finishing the syllabus with little attention to career-related materials. If schools overemphasize intellectual learning, with little attention to career-exploration and career orientation, it will lead to frustration, regret, and even stress (Tien, Lin, & Chen, 2005). In this case, there is a need to integrate career plans with school curriculum in order to meet science students' career-related needs.

The findings pointed out the need for curriculum developers and educational planners to review the existing curriculum and include career subjects in secondary schools. They are also expected to contribute in closing the gap in the literature on career-related needs of science students by reflecting them in school curriculum.

#### **4.2.4 Awareness of Science Students' Career needs**

In this part, a researcher aimed to understand whether science students' career-related needs were well known and met. The question required science students to respond 'Yes' if their career needs were known and met, 'No' if their career needs were neither known nor met and 'Not sure' if they were not sure whether career needs were known and met or not. Table six below presents their responses.

**Table 6: Career-related Needs are Known and Met**

<b>Known and Met</b>	<b>Frequency</b>	<b>Percent (%)</b>
Yes	37	34.3
No	67	62.0
Not sure	4	3.7
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

Table 6 above presents science students' responses on whether their career needs were known and met. The information indicated that, 37 students (34.3%) responded that career-related needs were known and met, 67 students (62.0%) responded that career-related needs were not known nor met, while, 4 students (3.7%) were not sure whether career needs were recognized and met or not. The possible explanation might be that, the career needs were known but certainly not met.

Career services provided at school, work adequately when they meet career needs of students. Since secondary school education is the gateway to future career opportunities, career services is urgently needed to meet students' career needs (Ndalichako&Komba, 2014). Career services should timely cover the provision of knowledge about future careers so as to prepare students for the world of work.

#### **4.2.4.1 Students are Ignorant of Career-related Needs**

Students are ignorant of career-related needs that include career guidance, counseling, information, motivation, and orientation. In this part, the questionnaire required 108 respondents to provide their perceptions on a given statement by strongly agree (SA), agree (A), undecided (U), disagree (D), or strongly disagree

(SD). The table below presents the responses on whether science students were not aware of the career needs or not.

**Table 7: Science Students are Ignorant of Career-related Needs**

<b>Frequency</b>		<b>Percent</b>	
Strongly agree	25	23.1	
Agree		33	30.6
Undecided		5	4.7
Disagree		26	24.1
Strongly disagree		19	17.6
<b>Total</b>	<b>108</b>		<b>100.0</b>

**Source:**Field Data, 2017

According to the information provided from Table seven above, 25 (23.1%) respondents strongly agreed and 33 (30.6%) respondents agreed that science students were not aware of career needs. On the other hand, 5 (4.7%) respondents remained undecided whether students were aware or not aware of career needs. However, 26 (24.1%) respondents disagreed and 19 (17.6%) respondents strongly disagreed on the statement that science students were not aware of career needs. The above facts showed that 30.6% agreed and 23.1% strongly agreed, this means more than a half of respondents agreed that science students were ignorant of career needs.

Basing on the findings, it indicates that the career situation in secondary schools is a threat, as students themselves do not know what they need in their career development. Nkuba (2012) argued that teachers were appointed to be career counselors without any training. Teachers with specific training in career planning would understand the importance of providing information as well as professional guidance, and would be more likely to meet the needs of individual students. With



this situation students will remain ignorant when it come to the matter of linking their school content and the world of work.

In most cases, secondary students have no idea of their own interest and do not discover their real needs insubjects' selection. This is contrary to Parson's and trait factor theory, which proposes that, an individual should have a clear understanding of himself or herself, his or her attitudes, abilities, ambitions, resources, limitations, and their causes (Parson, 1909 as cited in Sharf, 1992).

Career services assist science students to obtain career knowledge that may lead them to future success. Adegun&Aremu (2013) concluded that career guidance and academic counseling can therefore, provide students with the necessary tools to set career goals, and give them an understanding of the career and skills needed to meet their needs. Hence, there is a need to increase the relevance of science subjects so as to meet students' career needs.

#### **4.2.4.2 The Entry Qualification required to Career Firm were not KnownEnough by Students**

In this part, 108 respondents were given statement and required to give out their views by responding as strongly agree (SA), agree (A), undecided (U), disagree (D) or strongly disagree (SD). The table below presents the information about science students' awareness on the qualification needed in different careers.

**Table 8: Student's Knowledge about Career Entry Qualification**

<b>Frequency</b>		<b>Percent</b>	
Strongly agree		33	30.6
Agree		53	49.1
Undecided		5	4.6
Disagree	10		9.3
Strongly disagree		7	6.5
<b>Total</b>	<b>108</b>		<b>100.0</b>

**Source:**Field Data, 2017

Table eight above presents the responses about science students' awareness on the qualification needed for different careers. The findings showed that, 33 (30.6%) respondents strongly agreed and 53 (49.1%) respondents agreed that science students were not knowledgeable enough about qualification needed for different careers. On the other hand, 5 (4.6%) respondents remained undecided, while 10 (9.3%) respondents disagreed and 7 (6.5%) respondents strongly disagreed that science students were not knowledgeable enough about qualification needed for different careers.

The findings showed that science students do not receive much information about which career is available in relation to their subjects. Since 49.1% of the respondents agreed and 30.6% of the respondents strongly agreed that the qualification required in various careers were not known enough by science students.

The findings implied that science students are at risk to enter into various careers after graduating from secondary school without adequate knowledge of what it takes to succeed and achieve in those careers. Guidance of students to further studies does not solely focus on information dissemination but to take care of the actual needs of

students (Kidd, 2006). It is time for students' career-related needs to be reflected in school curriculum so as to meet the required career qualification.

Generally, the situation in secondary schools opposes what Parson in the Trait and Factor theory suggested. He proposes that, to select a career an individual should have the knowledge of the requirements and conditions of success, advantages and disadvantages, compensation, opportunities and prospects in different lines of work (Sharf 1992) as cited in Nkuba (2012).

Hence more efforts are required to enable students to be aware of their career needs and entry qualification required in various career so as to make appropriate career choice. This is possible by providing knowledge to students on careers available in the world of work and in matching these careers with personal attributes. In line to this observation, Biswalo (1996) explains that, the career services provision in many secondary schools in Tanzania is still less effective due to lack of trained career counselors, career instructional materials and related career facilities a factor which limits the knowledge of students on careers.

#### **4.2.5 Findings Related to the Research Objective 2: Examination upon Major Aspirations behind the Identified Career-Related Needs of Science Students and Secondary School Curriculum**

The objective sought to examine the major aspirations behind the identified career-related needs in Tanzania secondary schools. Aspirations refer to a student's desire, or wish to get into a given occupation. Career aspirations "provide information about an individual's interests and hopes, freed by reality" (Hellenga, Aber, & Rhodes, 2002, p. 200; Rojewski, 1996 as cited in Kopoka, 2010). Career aspirations

represent an individual's orientation toward a desired career goal under ideal conditions.

Questionnaire and interview were used to solicit information from science students and teachers. Science students were asked to fill in the questionnaire whereby science subject teachers and 8 out of 108 science students were interviewed to understand deeper on students' major career aspirations. The objective had been described in the following parts.

#### **4.2.5.1 Sources of Information for Qualification required to Join Science Careers**

There are various sources of information for qualification required to join science careers. Printed materials and seminars are among the source of career support provided in many schools. According to the responses obtained from the study, science students acquired information through academic masters, guest speakers, career visits and during project works. Respondents were asked to mention the sources of information for qualification required to join science careers in questionnaire and during interview. A science student from school 'D' responded to this question by saying,

*We normally obtain information from our academic master who advises us in science career according to one's ability. Though the information obtained is not enough due to lack of experts from specific field. Sometimes people from university come to advertise their institution and the courses they offer so that we can join them once we finish our secondary education. (Maria de Mathias, 2017)*

The findings showed that people from universities tend to visit some of the schools, talk to students, and motivate students to proceed with their careers. This implied that students depend a lot on outsiders rather than school curriculum. It is high time for the curriculum developers to incorporate career education within school curriculum (Nkuba, 2012). Also making some follow-up during implementation to ensure the expected outcome.

In addition to that, the findings revealed that a need of information flow to the secondary schools was a common outcry, which require appropriate and immediate measure to be taken. Curriculum outlines the knowledge; skills and attitudes that a learner is expected to acquire and demonstrate as a complete learning cycle (Chuwa, 2014). However, there were lack of know how in career matters and the need for career exposure in majority of schools. It is important to incorporate in school curriculum the items that allow external facilitators for career talks.

Another sources of information are the use of career programs such as Internet programs, career visit, career workshops and other ways related to these can help students in getting career information available within and outside the country (Kingazi, 2006). Students' career success can be best attained if the right subjects suited to their interests, ability, and intellect serves as their guide in choosing the course they have to take in college.

#### **4.2.5.2 Influences towards Future Career Choice**

There are various influences that made science students to pursue their intended careers. These include societal pressure, internal motivation, parents, teachers, role

models, availability of employment, prestigious like to become a Dr., personal interests such as helping sick people, and to earn money.

During interview, a certain science student from school ‘B’ respondent argued that,

*“Most people in our society tend to praise doctors, this intrigue attitude towards that career, even their wearing style is remarkable. Another thing that inspired science students is life history. For example, when one had suffered from sickness or had lost his or her beloved due to lack of health services, they desired to pursue medicine so that they could help others who face same situation as they did.” (Msalato, 2017)*

This implies that, internal motivation and family background might have led students wish to pursue science careers such as medicine so that they could be in position of helping others who face the same problem as they did. Though others were inspired by societal pressure that sometimes can cause damage in society.

#### **4.2.5.3 Teachers’ Influences on Career Aspirations**

This part presents teachers’ influence on science students’ career aspirations whereby 108 students participated in this study responded to the question as required. Table nine below presents students’ responses on teachers’ influence.

**Table 9: Teachers’ Influences on Career Aspirations**

<b>Influence from teachers</b>	<b>frequency</b>	<b>percent (%)</b>
No influence	14	12.9
Some influence	34	31.5
A large amount of influence	60	55.6
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

Table ten revealed that teachers had large influence on students' career aspirations. This is evidenced by the information obtained from 60 (55.6%) respondents, while 34 (31.5%) respondents argued that there was some influence from teachers and 14 (12.9%) respondents claimed that there were no influences from teachers. These responses showed that teachers had a large influence in science students' career aspirations, since 55.6% agreed on teachers' influence concerning science students' career development.

According to the findings, teachers had a big role to play upon science students' career aspirations. It is part of their responsibility to provide appropriate and current career information, proper career guidance, career counseling, career motivation, as well as career orientation. By so doing, science students would be able to successfully reach their career aspirations as their career-related needs are identified.

Similarly, Witko, et al. (2005) contended that there may also be a difference in students' aspirations of what a teacher may be able to help them with: students may be seeking support for their career plans, where teachers may provide information. The fact that teachers may not be trained in career planning may also contribute to students not approaching them for help (ibid). Teachers were seen as role models to students; hence, they should be equipped with the necessary career knowledge such as career requirements, provision, and counseling skills.

#### **4.2.5.4 Parents tend to influence Students' Career Choices**

This part sought to understand if it was true that parents mostly influence students' career choices. Respondents were required to give out their view as strongly agree

(SA), agree (A), undecided (U), disagree (D) or strongly disagree (SD). Table ten below presents the responses that were given.

**Table 10: Students Career Choices are Mostly Influenced by Parents**

<b>Frequency</b>	<b>Percent</b>	
Strongly agree	50	46.3
Agree	37	34.3
Undecided	6	5.5
Disagree	11	10.2
Strongly disagree	4	3.7
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

The tabulated information above shows that, 50 (46.3%) respondents, strongly agreed and 37 (34.3%) respondents agreed on parents being mostly influenced students' career choices. On the other hand, 6 (5.5%) respondents were undecided whether parents had mostly influenced students' career choices or not. Apart from that, 11 (10.2%) respondents disagreed and 4 (3.7%) respondents strongly disagreed on students' career choices are mostly influenced by parents.

The above fact showed that parents influence students' career choices the most through parental expectations, parent-child relationship, and their socialization. Parents help to create a challenging and supportive environment when they allow their children to explore their own interests and listen to their ideas in a nonjudgmental manner (Jungen, 2008). Basing on the findings, parents are obliged to advice their children on career aspirations and encourage them to fulfill their dreams regardless of parents' likeliness or not.



Furthermore, findings of this study appear to be in agreement with those reported by Chuwa (2014) that science students were being encouraged by their parents to study hard and sometimes they referred them to professionals who would inspire them to do science subjects. Therefore through the interactions from the professionals in the field they become motivated to do science careers. It is clear that parents have big opportunity to instill science attitude in the minds of their children that will lead to science generation.

#### 4.2.5.5 Science Subjects have Good Future Prospects

This part required students to provide their views about science courses on whether they have good future prospects or not. The responses were given as strongly agree (SA), agree (A), undecided (U), disagree (D) or strongly disagree (SD).

**Table 11: Science Subjects have Good Future Prospects**

<b>Frequency</b>	<b>Percent</b>	
Strongly agree	78	72.2
Agree	23	21.3
Undecided	3	2.7
Disagree	2	1.9
Strongly disagree	2	1.9
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

According to the information presented from table eleven above, 78 (72.2%) respondents strongly agreed and 23 (21.3%) respondents agreed that science courses (subjects) had good future prospects. 3 (2.7%) respondents were undecided whether science courses had good future prospects or not. On the other hand, 2 (1.9%)

respondents disagreed and 2 (1.9%) respondents strongly disagreed that science courses (subjects) have good future prospects.

The findings showed that most of science students were aware of the direction and the benefits of science subjects and future careers they had chosen. Since, 72.2% respondents strongly agreed and 21.3% respondents agreed that science courses had good future prospects. Therefore, career aspirations of science students were determined by subjects' selected as well as expected future careers. Thus, to place students in science classrooms should consider student's ability, attitude, and interest so as to fulfill their career goals.

#### **4.2.5.6 Connections between Classroom Content and Future Career Choice**

This part sought to understand whether it is beneficial for science students to see the connections between classroom content and possible future career. Table fourteen below presents students' responses as strongly agree (SA), agree (A), undecided (U), disagree (D), or strongly disagree (SD).

**Table 12: Connections between Classroom Content and Future Career**

<b>Frequency</b>	<b>Percent</b>	
Strongly agree	84	77.8
Agree	17	15.7
Undecided	2	1.8
Disagree	1	0.9
Strongly disagree	4	3.7
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source:**Field Data, 2017

According to the data presented in table twelve above; a total number of 108 respondents gave their responses. 84 (77.8%) respondents, strongly agreed and 17

(15.7%) respondents agreed that it is beneficial for students to see connections between classroom content and possible future careers. 2 (1.8%) respondents remained undecided while, 1(0.9%) respondents disagreed and 4 (3.7%) respondents strongly disagreed with the statement.

Basing on the findings, more than a half of the respondents (77.8%) strongly agreed that connections between classroom content and possible future career benefits students. These results indicate that integrating career planning into course content and providing teachers with training in career planning may be helpful to students (Witko, et al. 2013). This implied that most of science students had major expectations that connections between classroom content and career would benefit them.

In addition to that, Witko, et al. (2013) asserted that students might not recognize the connection between the courses they are taking and career planning. Thus, one has to integrate career content into formal academic curriculum and conform to academic standards and requirements so as to strengthen students' career goals. Integration of career content into formal academic curriculum is essential in teaching career progress. It is important for teachers to study on the resources and strategies so as to help students to link academic subject choice and career prospects.

Moreover, improvements of school curriculum and connections with specific careers sustain students' motivation and interest. Thus, school involvements in career skills encourage student' self-confidence and their ability to succeed in careers. Therefore, it is high time, for the government to introduce career classrooms that can serve as initial entry points for strengthening students' career goals (Herrera, Hurtado, and Chang n.d).

#### **4.2.5.7 The Reflections of Career Needs in Curriculum**

In the interview with respondents with regard to the extent reflections of career needs in school curriculum benefits students. The research findings showed various ways on how science students would be benefitted as described below.

A science subject teacher in school 'B' said that,

*“When career needs are reflected in school curriculum, it would increase science students’ confidence, performances as well as knowledge of a career before join it. Students would acquire enough knowledge and skills in making appropriate decision on the right careers.” (Msalato,2017)*

Another student in school 'D' had this to say,

*“Having such kind of curriculum would raise our awareness on career matters that would act like a torch to enlighten our way in career success. Moreover, we would get the foundations and experiences in fulfilling our desired careers. Besides, our career aspirations will be motivated so as to study hard in order to reach our dreams.”(Maria de Mathias, 2017)*

One science subject teacher in school C during interview had this to say,

*“As long as we want our students to succeed in the chosen career we have to make sure that the school syllabus meet students’ needs in its wide. By doing so, the specialization would be recognized and identified instead of drawn in lot of materials and came up with nothing.” (Dodoma, 2017)*

The findings were in agreement with Mwangi’s (2002) observation, that teachers were too busy with curriculum activities to offer significant career services to students. Even exams do not reflect career needs instead of basing on passing the syllabus content only. The question is, do exams relate to students’ career needs? If students’ career needs are reflected in school curriculum it will add more confidence to students since this will assure them of what they are doing.

Content-based curriculum has been criticized because it equips students with knowledge and skills, which do not tally with the demands of the job market. It has been characterized by lack of integration between theory and practice. Students are facing vague ideas of why they learn and how they should apply theory when doing practical work (Cremers&Eggink, 2006 as cited in Paulo & Tilya, 2014). However the competent-based curriculum has ideally integrated theory and practical, though in reality students are graduating with lack of career knowledge.

The perception of the society on certain careers affect career aspirations of science students. This implied that the society has a high chance to influence students' career aspirations due to the fact that students are part and parcel of the society. A career curriculum needs to be developed into three categories such as students' career-related needs, school curriculum, and societies' aspirations. Further studies showed that most secondary school leavers make poor career decisions because of their unrealistic career aspirations (Adegun&Aremu, 2013). It is important to expose students to a wide range of career possibilities in order to attain a certain career at the end as expected by the society.

#### **4.2.6 Findings Related to the Research Objective 3: Extents to which Secondary School Curriculum Reflects the Identified Career-related Needs of Science Students.**

The study's last research objective, sought to assess the extent to which secondary school curriculum reflects the identified career-related needs of science students in Dodoma Municipal. To achieve this objective, the researcher engaged the science subject teachers and science students on a number of issues during the interviews.

#### 4.2.6.1 Extents to which Career-related Needs were Reflected in School Curriculum

In this part, respondents were asked various questions in order to understand the degree to which career-related needs have been reflected in school curriculum. Some of the questions include: In your opinion, what do you think need to be done to effectively improve career services in secondary schools? Explain whether objectives and requirements of school curriculum reflecting science students' career needs and demands. The findings are presented in the part below.

**Table 13: The Extents to which Career-related Needs were Reflected in School Curriculum**

Questions	Frequency			Percent		
	Yes	No	Total	Yes	No	Total
Have you ever gone for career visit?	61	47	108	56.5	43.5	100.0
Do you have career books in your school library?	42	66	108	38.9	61.1	100.0
Most science topics do not reflect career needs	42	66	108	38.9	61.1	100.0

**Source:** Field Data, 2017

Students were assessed on the career visit with the career exploration themes in mind. The researcher asked the question, “Have you ever gone for any career visit?” The responses showed that 56.5% of respondents indicated, “Yes,” while 43.5% indicated “No.” The responses of those who indicated, “Yes” were the highest on this matter. It implied that career visits are rarely done in schools, if 43.5% had never gone for career visit at least once per years spent in schools.

The findings spotted career visits program though it was hardly done in two schools involved in the study. However, career masters can expose science students into various careers by organizing a career visits to various factories, industries, firms, or any other place of students' interests. During an interview, a science subject teacher in school "A" gave out his suggestion as follows,

*"Students should be more exposed to job markets through invitation of employers from public and private sectors as guest speakers so as to motivate them. The problem we face is that most of experts when invited needed something in return for their services, as there is nothing free. Field trips should be organized and become a compulsory programme for science students." (Bihawana, 2017)*

The findings revealed that invitation of guest speakers is crucial for science students' career motivation and awareness. Though, financial constrains hinder the schools to invite guest speakers since some experts need something in return when invited, while there were no allowances for topic providers. Moreover, results indicated that only 56.5% of the students had attended these trips. The rest 43.5% had never attended field trips on careers education.

For the case of having career-related books in school libraries, 42 (38.9%) respondents said 'Yes', that they had career-related books in school libraries. On the other hand, 66 (61.1%) respondents said 'No'; there were no career-related books in school libraries. Availability of career books in school libraries not only enable science students to acquire the required career knowledge but also a wealth of career information can be shared among students through libraries.

However, Kano (2010) asserted that bulletin boards and the school library that are used to disseminate information were not fully utilized. It is at this point that school libraries as resource room for career services can be well equipped with up-to-date information including books, career manuals, videos, and other resources.

In addition to that, respondents expressed their views on ‘most of the science topics that are taught do not reflect to students’ career-related needs’. 42 (38.9%) respondents agreed with the statement by saying “Yes”, most of science topics that were taught did not reflect students’ career-related needs. On the other hand, 66 (61.15%) respondents were against the statement by providing no for an answer.

The findings spotted that most of science topics that were taught reflect students’ career-related needs since more than a half science students claimed so. Science based subjects are keys to socio-economic development and future industrial competitiveness (URT, 1996). In biology for example, topics about disease, reproduction, nervous system, blood system, and the alike give the foundations to students who intend to pursue medicine career in the future.

#### **4.2.6.2 Improving Career Services in Schools**

The study pointed out the necessity of improving career services in secondary schools. The findings obtained through interview revealed that, there was no career advisors in most schools participated in the study. In those schools that had career advisors, they were there without knowing their responsibilities or where to start in providing the services. One of the two-career advisors found in school ‘C’ argued that,

*“We have been given the responsibility to guide students on career-related issues without been able to attend at any training nor given a career guide document to use in assisting students on their career needs. However, there is no time allocated for career services provision, as the school timetable doesn’t favor us to even finish syllabus on time. It has been difficult to provide suitable services as required.” (Dodoma, 2017)*

The findings revealed that availability of career education in teachers’ colleges is crucial to maximize their ability in assisting students in their career-related needs. It



is time to train personnel for the services and establish a career curriculum that aim to prepare students for the world of work (Kano, 2010). Such kind of curriculum enables students to gain more power and responsibility for shaping their life and career.

Basing on the findings, time factor is another limitation for adequate career services. Rukwaro (2015) agreed that career teachers had no time allocation in the school timetable to meet with students for career services. Lack of allocation of time for career services robs students a chance to be guided through activities, which are conducted on a regular, planned, and systematic basis.

This point is in line with the assertion made by (Kano, 2010) that secondary school career counselors were overburdened with teaching load that they hardly offered effective career services to the students. With all this, career teachers obviously cannot make time to meet the students. Thus, reducing workload or exemption from some routine duties for career teachers will give them enough time for effective career counseling provision to students (Rukwaro, 2015). Free periods could be useful in talking to students about career issues.

This is in line with the response provided by one student from school 'A', who had this to say,

*“The school is a place where we expect to get adequate information about where we are and where the desired career will bring us. Unstable curriculum lead to confusion among students, for example, there was a time physics-chemistry was taught as one subject and later on turn back as two independent subjects.” (Bihawana, 2017)*

The findings revealed that science students preferred to have stable curriculum since frequent changes of curriculum is a disturbance in learning environment. They

preferred the kind of curriculum that exposes the needs of society so as to realize gaps. Moreover, curriculum that encourages more group discussions, presentations, and that enable good relationship between students and teachers was desired.

The findings also revealed that there is a need to have cooperation between private and public sectors for students' benefits. A chemistry-biology teacher from school 'C' claimed,

*“Due to financial constraints, it has been difficult for us to invite experts to talk to students. There is a need to improve the relations among institutions so as to freely invite guest speakers to provide in-depth information on career without asking something in return. Schools should not stay as a separate entity because these students are going to serve the society.”(Dodoma, 2017)*

The findings revealed that, cooperation among ministries, institutions, public, and private sectors is crucial in assisting science students to meet their career-related needs. The experts' readiness in career services provision motivates students to increase efforts and efficiency in their studies.

#### **4.2.6.3 Reflections of Career-related Needs on School Curriculum**

The responses were obtained during interview indicated that school curriculum reflecting science students' career-related needs. A chemistry teacher in school 'C' had this to say;

*“Curriculum reflects career needs for about 75%, for example students learn about malaria germ, its circle, the way to prevent the circle to complete, and how to cure. Thus, science students acquire knowledge on malaria disease that links to their future career. Although there is lack of equipment in practical teaching, lack of teaching and learning materials in general, they somehow reflect career needs.” (Dodoma, 2017)*

According to the findings, the study revealed that absence of career program in school curriculum limits the career experience of students. Thus, most students completed secondary schools with poor career knowledge. A biology teacher from school 'D' contended that,

*“There are some items in practical that do not reflect our real life situation, for example, in dissection, it is ok for students to be taught about mammals but how about amphibians? Much effort should be put on birds and fish, which are more applicable in our context. 80% of practical work should be useful in the real life.” (Maria de Mathias, 2017)*

This implies that improving practical exercises to science students accelerate the gain of the required skills. However, dissections in amphibians strengthen students' courage. In line with this, chemistry and biology teacher in school B asserted that,

*“The curriculum doesn't reflect the needs of students, most modules are based a lot on theory rather than practical. Moreover, the topics taught at colleges do not reflect the things we are teaching.” (Msalato, 2017)*

A comprehensive career curriculum would address students' career planning needs by providing students with career information tailored to their developmental needs delivered by individuals trained in career planning who would support them throughout their career planning process (Witko, et al 2005).

Another science teacher from school 'C' had this to say,

*“They reflect for about 85% especially when the objectives are met on time, students can master those objectives. In Biology, for example, students are taught about plants and human beings, they are also taught real things such as food test in nutrition that help in food consumption, children diseases like kwashiorkor and marasmus; things they are going to practice them in their future careers.” (Dodoma, 2017)*

The study revealed that most of the schools have not formally recognized career services as an integral part of their programs. They put more emphasis on academic

and social problems than career-related matters. Thus, career services were not officially offered at secondary schools due to absence of a well-structured program for career issues.

Career services such as guidance and counseling help students in choosing career and enable them to have access to information about the world of work in terms of occupational structures and requirements (Amani&Sima 2014). It also helps students to meet the unique needs based on their different experiences. The study explored the career-related needs identified such as information, motivation, orientation, and guidance and counseling for effective career services practices.

The situation reflects a similar image given by Hiebert, et al as cited in Witko, et al. (2005) conducted a study that examined junior high school students' reports of their guidance counseling needs and found that three of the students' top five needs pertained to career concerns. Career guidance is needed to enable science students to choose and prepare for an appropriate career while career counseling is needed to understand self-knowledge, ability, interest, as well as to enable them in integrating subjects studied and expected career.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter presents a summary of the findings, conclusion, and recommendations based on the findings. The purpose of this study was to investigate the reflections of science students' career-related needs on secondary school curriculum in Tanzania.

#### **5.1 Summary of the Study**

The study presentation has based on the research objectives whereby tables were used to present the findings, while frequencies and percentages were used to discuss them. It also suggested areas for further research. The study sought to meet the following objectives:

- i. To identify the perspectives of science students on their career-related needs in Tanzanian secondary schools.
- ii. To examine the major aspirations behind the identified career-related needs of science students and secondary school curriculum.
- iii. To assess the extent to which secondary school curriculum reflects the identified career-related needs of science students.

The study used a descriptive survey design. Two research tools were used in collecting data: a students' questionnaire, an interview schedule for science subject teachers and for science students.

Objective number one sought to identify the perspectives of science students on their career-related needs in Tanzania secondary schools. The study investigated career-related needs of secondary school science students in Dodoma Municipality using social constructivism theory and Parson's Trait and Factor theory. The findings

revealed that curriculum should balance between practical issues in initiating career programs and upgrading of teachers' career skills so as to fulfill students' career needs.

The findings showed that the highest career-related needs among science students were career information, guidance, and counseling followed by the need for career motivation and orientation. Career information, guidance, and counselling are unique in a way that the teachers need to be very sensitive to changes in career setting. The findings revealed that exposing students to all career possibilities enable them to decide wisely before they choose, prepare for, join, and progress in it.

It was also revealed that society and students' needs play a big role in shaping secondary school students career aspirations in Dodoma Municipality. Apart from that, the research findings showed that science students do not receive much information about what career is available to their subjects. Some students did not know what is required to enter a certain career. In this regard, they should be taught things that would meet career qualification. Therefore, there is a need to have up-to-date information about the nature of the career, career requirements, as well as salary prospects.

The guide provided by the Tanzania Ministry of Education in secondary schools and teachers' colleges remain silent on career services, instead, it put much emphasis on students' social problems and the problem of HIV/AIDS. Nevertheless, the advantage of involving career issues in a guide would enable science students to be aware of their career needs and aspirations.

On the other hand, school climate was found to be one of the major aspirations for science students. While in school, they need to gain school support in career aspects, such as provision of career information, career guidance programs, career counseling, career motivation, career consultation, and career orientation. However, it is essential for school administrators to provide sufficient resources, such as career room, career teachers, and reduction in teaching load so that career teachers are given enough freedom to conduct individual career supports.

Science students need career information of the current job market, the situation of job market to the near future, as well as the way forward in pursuing that career. The findings pointed out that there is a need for educational planners and curriculum developers to review the existing curriculum in order to include career courses. In addition to that career needs have been identified as among the challenges that hinder science students in choosing appropriate career. This is due to unique needs that science students have regarding career choices.

The study was conducted in Dodoma Municipality using both qualitative and quantitative research approaches. The descriptive survey research design was used so as to suit the study's demands because it allows collection of data from secondary schools with different characteristics. Qualitative approach was mainly employed and to some extent quantitative data was used in percentage and presented in simple tables. In this study Statistical Package for Social Sciences (SPSS) software Version 16 and open coding were used to analyze data.

Furthermore, it was found that, school curriculum covered more on academic materials with little attention on career-related matters. Lack of professional/ career

advisors and unclear policy for implementing career services delay the understanding of science students' career-related needs.

## **5.2 Conclusion of the Study**

Reflections of science students' career-related needs on secondary school curriculum at Dodoma Municipality have been greatly compromised by inadequate career knowledge, as well as by the ill equipped careers education resources in schools. Failure to prepare career teachers, combined with poor career resources in secondary schools made slight contribution in fulfill students career needs.

It was evidenced from the findings in this work that career needs in secondary schools had some genuine gaps that required attention from all stakeholders, and especially the government, through its career department at the Ministry of Education, Science, and Technology. Also, the findings of this study are expected to contribute in filling the gap in the literature on science students' career-related needs on secondary school curriculum in Tanzania.

The findings on the views of students and teachers in secondary schools in Dodoma Municipality painted a dull picture of Dodoma Municipal' schools unpreparedness in career services provision. While schools were noted to be in terrible need of upgrading their careers provision, students were noted to have little opportunities of attending field trips as part of learning various careers. Thus, both teachers and students were requesting their respective authorities that they should be more exposed to job markets information through invitation of employers in public and private sector as guest speakers or through field trips.



Therefore, the study concluded that there is poor cooperation among schools and other institutions that resulted into little understanding of students' career-related needs. Due to unclear career services provision within secondary schools curriculum, most students enter higher-level institutions without knowing what courses do they really want to pursue. Unawareness of career matters lead to mushrooming of changing courses at the university level. Realizing this, the current study focused on career-related needs so as to be incorporated in school curriculum.

### **5.3 Recommendations of the Study**

The current study came up with following recommendations pertinent its findings. The recommendations are related to improvements of policies and practices. Furthermore, the chapter put forward recommendations for further studies.

#### **5.3.1 Recommendations for Policies' Improvement**

With regard to policy, the current study recommended the following

- First of all, the government should incorporate the issues of career within secondary school curriculum. Having such kind of curriculum would enable science students, career teachers, and other educational stakeholders to identify and reflect the career-related needs of students.
- Secondly, the government should ensure the cooperation among ministries, institutions, public, and private sectors so as to assist science students in confronting their career-related needs. The experts in various ministries and private sectors should be ready to provide career services required to students whenever necessary and without expecting something in return.
- The study recommends the urgent need for the Ministry of Work, Employment, and Youth to work together with the Ministry of Education,

Science, Technology, and Vocational Training in providing information on career opportunities and career guidance. However, the emphasis should be put on career programs provided within the school career curriculum. It is suggested that guidance should not solely focus on information dissemination but to take care of the actual career-related needs of science students.

- Further, the study recommends that emphasis should be laid on activities that raise awareness of science students on career stuffs. Such activities include field trips, visits to institutions of higher learning, inviting guest speakers, and equipping career departments in schools. Moreover, it is suggested that career programs be carried out on a whole school basis with the integration of different parts of career in school curriculum.
- Apart from that, the government should look for teachers' interest so as to teach comprehensively. Moreover, curriculum developers should see the requirement of the market so as to prepare curriculum the market demanded.
- Finally, the government should provide training for career masters and career mistresses in secondary schools. Having professional career masters and mistresses in secondary schools is crucial whereby science students' career needs could be easily identified and met. Moreover, by incorporating career matters within school curriculum would enable students to fulfill their career aspirations.

### **5.3.2 Recommendations for Improving Practices**

With regard to improve practices the current study recommends the following to Tanzanian secondary schools, teachers, and parents in order to promote science career aspirations in reflection to school curriculum

- Schools administration should have the vision to establish career clubs like other clubs within school. It would be easy for students to obtain and disseminate the required career information through these career clubs. Not only that, but also the career-related needs of students would be met.
- In addition to that, the study recommends that secondary schools should be encouraged to conduct events such as career's day or career's week in schools, career exhibition, combining all stakeholders in careers education with the aim of allowing students interrogate on career issues.
- The findings of the present study is expected to enlighten heads of schools, counselors, teachers and other educational stakeholders, Ministry of Education, Science, Technology and Vocational Training, in particular, on how to plan, conduct, and guide career programs to improve and nurture the career aspirations of secondary school students.
- The findings also revealed that science students' career-related needs were less identified and met. This has been shown due to the fact that most science students were not aware of their career-related needs; as a result they failed to reach their aspirations that might lead to stress and frustration. To avoid such frustrations and regrets, schools should pay attention to career-exploration and career orientation rather than overemphasizing in intellectual learning alone.
- Career teachers should upgrade their knowledge on career through Internet,

experts, media and books rather than waiting for the government to provide training for them. Being up-dated on career matters would give them a wide horizon in their responsibilities of guiding, counseling, orienting, motivating and providing current information concerning career.

- It is highly recommended that career programs be provided in an earlier stage so that students would have sufficient time to plan for their career. Moreover, the study found that parents and family play a big role in science students' career aspirations. Therefore, it is high time to involve parents in their children's educational and career journey. By doing so, science students' career-related needs would be easily identified and met.
- Career plan for students should start from an earlier level of schooling and should be endless. It is crucial to include parents in students' career program so that they can understand and help their children in choosing careers of their interest and intellectual ability. Therefore, collaborative effort of the school administrations, career teachers, and parents should also be made so as to come- up with better career plan for every individual student.

### **5.3.3 Recommendations for Further Research**

- The study invited further studies to be undertaken to reflect the career-related needs on school curriculum in higher learning institutions as this study was only carried out in secondary schools.
- The study was conducted in four secondary schools in Dodoma Municipal; therefore, similar studies should be undertaken in more schools and other municipals and districts in order to have a comparison in the findings.

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## APPENDICES

### Appendix 1: Science Students' Questionnaire

My name is **FatumaMagesa** a Master of Arts in Education student from the University of Dodoma. I am here to conduct a research on "Reflections of Science Students' Career-related Needs on Secondary School Curriculum in Tanzania" in order to fulfill the requirements of the University.

The purpose of this questionnaire is to seek your opinion on issues concerning the topic. The information that will be gathered from you will only be used for the purpose of the study so as to improve the school curriculum. Your participation is voluntary, your identity will not be revealed to any one and your opinion will only be used for the research purpose. Confidentiality will be maintained. Please, do not write your name or any contact details on this questionnaire.

#### General Information

Name of the School .....

Form ..... Sex: Male / Female .....

1. What does the term career mean to you? .....

(Job, professional, getting paid well, degree, trade, walking up the ladder)

2. Have you ever heard about career?      Yes [ ]      No [ ]

If yes, what is the source of your information on career? From. .... (Parents, teachers, friends/peers, church leaders, library, books, or media)

3. What are the main students' career needs? List according to your priorities.

(1) motivation and orientation(2) information, guidance and counseling

(3) other career needs (mention) .....

4. In this part, answer 'Yes' or 'No' according to your perception.

S/N	Items	YES	NO
i.	Are your career needs identified and met?		
ii.	Have you ever been gone for career visit?		
iii.	Has the school ever asked you about what advice and career education you want and need?		
iv.	Do you have career-related books in your school library?		
v.	Most of science topics that are taught do not reflect to students' career-related needs.		
vi.	Is it necessary for science students to acquire career information in schools?		

5. Who has influenced you the most on your subject and career choice? Put a tick ( ) on your answer in each item.

S/N	Item	No influence	Some influence	A large amount of influence
i.	Family			
ii.	Teachers			
iii.	Friends			
iv.	Media			
v.	Religious leaders			
vi.	Other influence			

5. In each item below, put number 1, 2, 3, 4 or 5 according to your opinion. 1= SA/ Strongly Agree, 2= A/ Agree, 3=U/ Undecided, 4=D/ Disagree, 5=SD/ Strongly Disagree

Items	1= SA	2= A	3= U	4= D	5= SD
a) Students are ignorant of their career needs					
b) Science subjects and courses have good future prospects					
c) Parents have the most influence on the career choice of their children					
d) Science students do not know enough about qualification needed in different careers					

e) It is beneficial for students to see connections between science classroom content and possible future careers					
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7. What career services do you need to be provided to you?Mention at least three.

.....

8. How are you going to benefit in case your career needs were reflected in school curriculum? .....

.....

9. What do you think should be done to improve career services provision in your school? .....

.....

***Thanks for Your Cooperation***

## **Appendix 2: Interview Guide for Science Students**

My name is **FatumaMagesa** a Master of Arts in Education student from the University of Dodoma. I am here to conduct a research on “Reflections of Science Students’ Career-related Needs on Secondary School Curriculum in Tanzania” in order to fulfill the requirements of the University.

The purpose of this interview is to seek your opinion on issues concerning the topic. The information that will be gathered from you will only be used for the purpose of the study so as to improve the school curriculum. Your participation is voluntary, your identity will not be revealed to any one and your opinion will only be used for the research purpose. Confidentiality will be maintained.

### **General Information**

**Name of the School** .....

**Form** ..... **Sex: Male / Female** .....

1. What do you understand by the word ‘career’?
2. Which careers are the most attractive among science students? Why?
3. Give your opinion on the major career-related needs of science students.
4. What has inspired you to pursue your intended career?
5. Do you have enough information about the qualification required in various science careers?
6. Is there any career service provided in your school? If your answer is yes, what are those services?
7. Do the services provided meet students’ needs and solve their problems?
8. How are you going to benefit in case your career needs were reflected in school curriculum?

9. What do you think should be added in your school curriculum?

10. What do you think should be done to improve career services in your school?

*Thanks for your Cooperation*

### **Appendix 3: Interview Guide for Science Subjects' Teachers**

My name is FatumaMagesa a Master of Arts in Education student from the University of Dodoma. I am here to conduct a research on “Reflections of Science Students’ Career-related Needs on Secondary School Curriculum in Tanzania” in order to fulfill the requirements of the University.

The purpose of this interview is to seek your opinion on issues concerning the topic. The information that will be gathered from you will only be used for the purpose of the study so as to improve the school curriculum. Your participation is voluntary, your identity will not be revealed to any one and your opinion will only be used for the research purpose. Confidentiality will be maintained.

#### **General Information**

**Name of the School .....**

**Subject..... Sex: Male / Female.....**

1. What does the word ‘career’ mean to you?
2. Which careers are the most attractive among science students? Why do you think so?
3. What is your opinion on the major career-related needs of science students?
4. What do you think has inspired students to pursue their intended career?
5. Do they have enough information about the qualification required in various science careers?
6. Do you provide career services in your school? If yes, what are those services?
7. Do the services provided meet students’ needs and solve their problems?

8. How will they benefit if their career needs are reflected in school curriculum?
9. Do the objectives of science curriculum reflect career needs? Explain.
10. To what extent does science curriculum meet students' career-related needs?
11. What do you think should be done to improve career services in schools?

*Thanks for your Cooperation*



## Appendix 4: Research Clearance Letter



# THE UNIVERSITY OF DODOMA

DEPUTY VICE CHANCELLOR ACADEMIC, RESEARCH & CONSULTANCY  
OFFICE OF GRADUATE STUDIES AND CONTINUING EDUCATION

P.O. BOX 259, DODOMA, TANZANIA.

Tel: +255 26 23 10173; Fax: +255 26 23 10005; Email: [udomgsce@yahoo.com](mailto:udomgsce@yahoo.com); website: [www.udom.ac.tz](http://www.udom.ac.tz)

REF: UDOM/GSR/2016/83

Friday, 17 February 2017

### To Whom It May Concern:

### RE: INTRODUCING MS. MAGESA, FATUMA.

The above named candidate is enrolled at the University of Dodoma for the degree of Master of Arts in Education (MAED) with registration number HD/UDOM/097/T.2015

As an essential requirement of the study programme, each candidate is required to submit a dissertation report on a research undertaken within an industry and supervised by a member of the University's academic staff. Where possible the research should relate to a practical situation in an organisation or firm selected by the candidate. Candidates are expected to use their own initiative to identify a possible research and negotiate access with a local firm or organization.

The above named candidate has developed the proposal titled "**REFLECTIONS OF SCIENCE STUDENTS' CAREER-RELATED NEEDS ON SECONDARY SCHOOL CURRICULUM IN TANZANIA.**" which has been approved for data collection. The work may take the form of a survey, ethnography, case studies, etc. Where the research may contain confidential information and its publication could be harmful to the organization, confidentiality is assured by the University. Such reports will be seen only by the Supervisor and Examiner for examination purposes.

I would be grateful if you would provide the candidate with this opportunity to facilitate her studies while at the same time gaining some useful inputs for your own organization through the results of the research report.

Sincerely,

Waziri, A.

**For: Director, Graduate Studies and Continuing Education**

C.c: Director, GS&CE



## Appendix 5: Research Permit

JAMHURI YA MUUNGANO WA TANZANIA  
**HALMASHAURI YA MANISPAA DODOMA**  
(Barua zote zipelekwe kwa Mkurugenzi )

**MKOA WA DODOMA**

Tel.: 2354817/2321550  
Fax: 2321550



Ofisi ya Mkurugenzi wa Manispaa  
S.L.P.1249

**Dodoma**

E-mail: dodomamunicipality@yahoo.co.uk

Unapojibu tafadhali taja:

Kumb. Na. HMD/T40/30

Tarehe: 23 Februari, 2017

Kwa Wakuu wa Shule  
Shule za sekondari Maria de Mattias, Bihawana,  
Dodoma na Viwandani,  
S.L.P 1249,  
**DODOMA**

K.K Mkuu wa Idara,  
Idara ya Elimu Sekondari,  
S.L.P 1249,  
**DODOMA.**

*Inepitishwa. Apewe maadhi  
Anachitaji*

**YAH: KIBALI CHA UTAFITI**

23/02/17  
AFISA MUKU  
ELIMU YA SEKONDARI  
HALMASHAURI YA MANISPAA  
DODOMA

Tafadhali husika na somo tajwa hapo juu.

Namtambulisha kwenu ndugu Magesa Fatuma mtafiti kutoka Chuo Kikuu cha Dodoma ambaye anataka kufanya utafiti katika shule za Sekondari za Manispaa ya Dodoma kuhusu **"Mtazamo wa wanafunzi wa masomo ya sayansi dhidi ya mtaala wa shule katika mahitaji yao ya kazi"**

Kwa barua hii Mkurugenzi wa Manispaa ya Dodoma amemruhusu akafanye utafiti huo, hivyo mnaombwa apewe ushirikiano ili aweze kufanikisha utafiti wake.

Nakushukuru kwa ushirikiano wenu.

*VK*  
**K. N. Y. MKURUGENZI WA  
MANISPAA DODOMA**

**Kny: MKURUGENZI WA MANISPAA  
DODOMA**

### Appendix 6: Comment from the External Examiner

S/N	Comments from External/ Examiner	Remarks
1.	Improve chapter one	improved
2	Elaborate and critical literature review	improved
3.	Chapter three lacks clear presentation of contents in the sub-section	Incorporated
4.	Analytical arguments and discussion of the findings are needed in chapter four	Incorporated
5.	Improve chapter five	improved