

Sokoine University of Agriculture



MEd Dissertation

**Assessment of Geography
Teachers' Competencies in
Facilitating The Acquisition
of 21st Century Skills Among
Secondary School Students
in Morogoro Municipality**

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**ASSESSMENT OF GEOGRAPHY TEACHERS'
COMPETENCIES IN FACILITATING THE
ACQUISITION OF 21ST CENTURY SKILLS AMONG
SECONDARY SCHOOL STUDENTS IN MOROGORO
MUNICIPALITY**

**A dissertation Submitted In Partial Fulfillment Of The
Requirements For The Degree of Master Of Education
In Curriculum And Instruction Of Sokoine University
Of Agriculture. Morogoro, Tanzania**

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ABSTRACT

This study explored the competencies of Geography teachers in facilitating the acquisition of 21st-century skills among secondary school students in Morogoro Municipality. Specifically, the study assessed teachers' ability in planning and implementing lessons which develop 21st century skills among students and how formative assessment practices, management and administration of formative assessment tools promote the development of 21st century skills amongst students. Data were collected through interviews, documentary analysis and classroom observations from 32 Geography teachers sampled purposively, from 10 public secondary schools in Morogoro municipality. Data were analysed through content and descriptive analysis techniques. The findings indicate that most of the Geography teachers in secondary schools in Morogoro municipality are less aware of 21st-century skills which include creativity; critical thinking, communication and collaboration thus limiting their ability to integrate such skills in planning and implementing their lessons. Also, the study found that, the formative assessment practices in secondary schools do not promote the development of 21st century skills because the majority of Geography teachers employ formative assessment tools that do not develop 21st century skills to students. Moreover, such tools are poorly administered and managed in schools. Based on this observation, the study concludes that, the formative assessment practices used in secondary schools do not influence the development of 21st Century skills to students. The study recommends in-service training to secondary school teachers on integrating 21st century skills in lesson planning, implementation, management and administration of formative assessment. In addition, the secondary education curriculum should be reviewed to give more weight to the formative assessment rather than summative assessment.

DECLARATION

I, UPENDO SENJIRO, do hereby declare to the Senate of the Sokoine University of Agriculture that this dissertation is my original work done within the period of registration and that it has neither been submitted nor is being concurrently submitted to any other institution for similar purpose.

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DEDICATION

I dedicate this valuable work to my lovely husband Dr. Gimbage Mbeyale.

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LIST OF ABBREVIATION

4cs	Creativity, Critical thinking, Communication, and Collaboration
AFL	Assessment for learning
CBC	Competencies Based Curriculum
FA	Formative assessment
MoEVT	Ministry of Education
OECD	Organization for Economic Co-operation Development
P21	Partnership for 21 st Century Skills Framework
SMART	Specific, Measurable, Attainable, Relevant and Time-bound
SQAD	School Quality Assurance Department
TIE	Tanzania Institute of Education
ZPD	Zonal of Proximal Development

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

The study sought to assess Geography teachers' competencies in facilitating the acquisition of the 21st century skills among secondary school students in the selected schools of Morogoro Municipality. Chapter one presents: Introduction, background and justification of the study, statement of the problem and purpose of the study, research objectives and their questions. Besides, the chapter presents, scope and delimitation of the study, significance of the study, definition of key terms as well as the organization of the dissertation.

1.2 Background Information

The education systems at global and local level in the 21st century is striving to prepare teachers with abilities to enhance important skills to students for addressing the emerging political, economic, social and technological challenges threatening sustainable development (Shahanga, Ogondiek & Mmbaga, 2021). Such skills are termed as 21st Century skills which encompasses a set of knowledge, skills, work habits and characteristics that are perceived by different stakeholders as essential standards for a learnt person (CBSE, 2020). These are said to be key abilities to address the emerging political, economic, social and technological challenges threatening human lives and their development (Ananiadou & Claro, 2009), and an overarching concept for the knowledge, skills and dispositions that citizens need to be able to contribute to the knowledge of the society (Voogt & Roblin, 2010). The Organization for Economic Co-operation Development (OECD) 2030 paper defines the 21st century skills as key to meet the challenges of a volatile, uncertain, complex and ambiguous world, harnessing digital tools and artificial

intelligence (Martin, 2018). In general terms, the 21st Century skills include communication, collaboration, creativity and critical thinking (Joynes et al, 2019).

The development of 21st-century skills is a global concern which intends to ensure that the education provided addresses the learning needs and wants for sustainable development (United Nations, 2016). The knowledge economy era has compelled education systems to restructure their curricula at different levels of education to ensure that students adequately develop the 21st Century skills to fit in the labour market (Goldberg, 2012). Since teachers are instrumental factor for imparting skills to students, the rate of the 21st century skills acquisition among students depends mainly on the teachers' mastery of the 21st century skills and their competencies to facilitate the skills (Katane et al, 2006).

As the world's labour market require innovative, creativite, communicative, collaborative, critical thinkers and digital literate personnel, such skills require new techniques of assessment in order to ensure that, assessment influences learning instead of being judgmental and obstacle towards skills acquisition (Suto & Eccles, 2014; González-Salamanca *at el*, 2020). Therefore, the education curriculum should aim to prepare students with knowledge and skills needed in 21st Century (Levy & Murnane, 2004). This can be achieved by using instructional strategies and assessment techniques that involve students rather than lecturing and memorizing (Snyder & Snyder 2008).

To align with the labour market demands, Tanzania shifted from content to competencies-based education (Kopwel, 2014). Such changes were necessary to ensure that, the graduates are capable of demonstrating their practical competencies in the real world of work,

addressing challenges through innovation, critical thinking, collaboration and communication instead of just memorizing the facts (Mkimbili & Kitta 2019). The new paradigm necessitated not only changes in the teaching processes but also the purpose and techniques of assessment, from assessment of learning in which summative assessment was separated from teaching and learning processes. This has been purposely done to determine how well students can develop the intended competencies through formative assessment (Black & William, 1998).

Among the key 21st century skills emphasized in teaching and learning in the current Tanzania curriculum include critical and creative thinking, communication, and numeracy, independent learning, personal and social values and technological literacy (MoEVT, 2007). This study adopts the P21 century skills because it embraces the important skills delineated in the Tanzania education curriculum. Moreover, P21 has such broad categories of 21st century skills that cannot be accommodated in one study, therefore this study focuses on the 4cs which are creativity, critical thinking and problem solving, communication and collaboration. The development of 4cs among students is influenced by teaching and learning practices in the context of core subjects at classroom level (Singh *et al*, 2020). In this view, assessment should become part and parcel of the teaching and learning processes (Martin, 2018) for a student to develop the 21st Century Skills.

The 21st century skills are important for the holistic development of students, who are expected to serve as workforce at global and local levels stimulating production of goods and services for social and economic development. The need for such skills in the community has placed a new demand for teachers to ensure that,

the teaching and learning are centered towards acquisition of the 21st century (Sulaiman & Ismail, 2020). Teachers are expected to facilitate the acquisition of 21st century by adopting skills centered pedagogy in the subjects taught and nurturing skills through extracurricular activities (Suto & Eccles, 2014). Most of the teachers are facing challenges to facilitate the acquisition of the 21st century skills due to the limited competencies, inadequacy of resources and poor teaching and learning environment (Beswick & Fraser, 2019). The study conducted in Kenya by Waweru (2018) and Wafumbwa (2021), have revealed that teachers' preparation, determine their ability to impart necessary skills among the students they will teach.

Even though studies have established a poor mastery of 21st century skills among students in Tanzania (Massay, 2020; Uwezo, 2013; Sauti ya wananchi, 2014; Haki elimu, 2021), there are limited documented studies on secondary school teachers' competencies in developing 21st Century Skills in teaching and learning processes. The lack of such studies limits the inputs for intervention strategies towards the development of 21st century skills in secondary schools in Tanzania.

It can be argued that, the acquisition of 21st century skills among students in secondary schools depends largely on the teachers' competencies in such skills. This study, therefore, seeks to assess teachers' competencies in facilitating the acquisition of the 21st century skills among secondary school students in Morogoro Municipality.

1.3 Statement of the Problem

The government of Tanzania realizes the importance of education as a strategic agent for economic transformation from low agricultural productivity to semi-industrial country by 2025 (MoEVT, 2014). Therefore,

deliberate transformation in the curriculum and teacher education have been done to ensure that teachers and students develop necessary skills required to address the contextual needs of the society at global and local levels (Rao & Namamba, 2017).

The transformation of the education system from content coverage to competencies development since 2005 in Tanzania emphasized the acquisition of creativity, critical thinking, communication and collaboration (the 21st century skills) as catalyst for man power training for national development (Kopwel, 2014). Thus, teachers as engines for skills acquisition in schools are required to be competent enough to enable students acquire such 21st century skills (Mgaiwa, 2018).

Despite the fact that, studies have established a poor mastery of the 21st century skills among students in schools, (Uwezo, 2013; Massay, 2020; Haki elimu, 2021) there are limited studies on this topic that have focused on teachers. Considering that teachers are the crucial actors in the curriculum implementation, it is worth assessing their competencies which are prerequisites for enabling students develop the 21st century skills. Thus, this study seeks to assess the teachers' competencies in facilitating the acquisition of the 21st century skills among selected secondary school students in Morogoro Municipality.

1.4 Objectives

The study was guided by both, general and specific objectives.

1.4.1 General objective

The general objective of this study was to assess Geography teachers' competencies in facilitating the acquisition of the 21st century skills among secondary

school students in the selected schools of Morogoro Municipality.

1.4.2 Specific objectives

Specific objectives of the study are:

- i. To assess secondary school teachers' abilities in planning lessons which reflect the development of the 21st century skills.
- ii. To determine secondary school teachers' practices in implementing lessons which reflect the development of the 21st century skills
- iii. To determine secondary school teachers' formative assessment practices in developing 21st century skills
- iv. To assess the management and administration of formative assessment tools which promotes the development of 21st century skills

1.4.3 Research Questions

- i. How able are secondary school teachers to plan lessons which reflect the development of the 21st century skills?
- ii. Which practices are used by secondary school teachers in implementing lessons which reflect the development of the 21st century skills?
- iii. Which practices are employed by secondary school teachers as practices which reflect the development of the 21st century skills?
- iv. How assessment tools are managed and administered to promote the development of 21st century skills.

1.5 Significance of the Study

The findings of this study are essential for curriculum developers to ensure that curriculum design, development and review accommodates the 21st century skills adequately in teacher education and in schools.

The study will serve as a feedback to secondary school teachers and educators about the teachers' competencies to facilitate the 21st century in order to improve their practice. The study is expected to be a source of knowledge for policy makers and administrators to review educational policies towards 21st century development. The study reveals the role of the teacher in fostering the students' ability in explaining and creativity. Though students can construct their own knowledge the teacher is very essential for guiding the students.

1.6 Theoretical Framework

This study was guided by a Social Constructivism Theory developed by Lev Vygotsky. The theory holds that learners' ability to complete tasks needs the assistance of teachers as the more knowledgeable and experienced people than them. In this theory, learning is situated as a social and collaborative activity in which learners are responsible for constructing their knowledge guided by teachers to move them from a zonal of proximal development (ZPD) into a fully competent person (Vygotsky, 1986). In this sense, the acquisition of 21st-century skills among students depends on the teachers' ability to plan and implement lessons that move students from their level of understanding to a higher level of knowledge.

The theory believes in assessment for learning which emphasizes on the teachers and students' interaction, guiding and creating feedback for students' improvement in learning. The aim of formative assessment is to influence student's learning (Stiggins, 2007) by making it part and parcel of everyday teaching and learning process. The day-to-day collaborative assessment could reveal team members who would be more knowledgeable to support team members at their ZPD move them to next level of learning. If the assessment

techniques rely on social constructivism approach, the development of the 4cs 21st century skills amongst learners are likely to occur.

1.7 Conceptual Framework

This is an abstract idea or a theory used to develop new concepts or to reinterpret existing ones (Creswel & Plano, 2018). This conceptual framework provides the relationship between the variables, independent and dependent variables. The study has three variables: The first one is teachers' competencies as the independent variable, curricular, pedagogical skills/instruction, and assessment. The second variable is the intervening variables which are based on the institutional factors affecting the facilitation of acquisition of 21st century skills, factors like class size, availability of teaching and learning material and use of technology. The third variable is outcome variable which is the 21st century skills. With Teachers' awareness of 21st century skills embodied in the curriculum, planning the lesson, incorporating pedagogical skills and assessment methods which are interactive, collaborative and inquiry-based learning; students are expected to acquire 21st century skills. Thus, the acquisition of the 21st century skills depends on whether teachers are competent or not. Figure 1 is the conceptual framework underpinning this study.

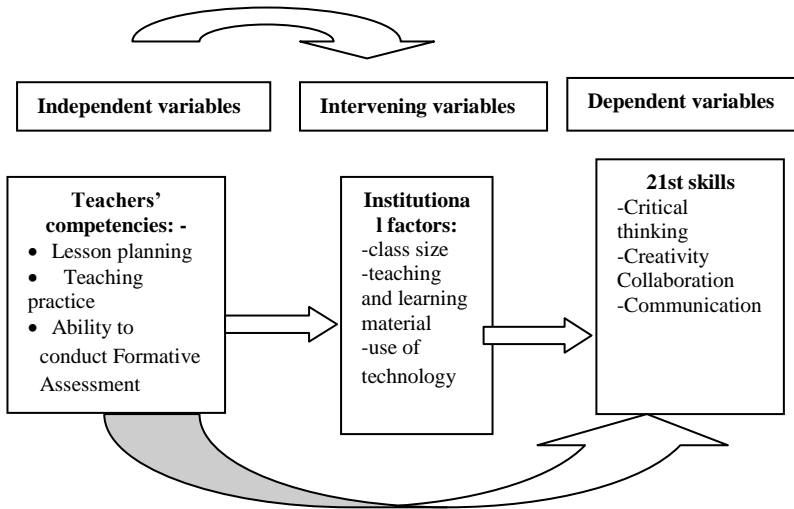


Figure 1: The conceptual framework

1.8 Literature Review

The section presents definition of the key terms used in the study; empirical studies related to the specific objectives of this study as well as research gap which this study intends to bridge.

1.8.1 Definition of terms and terminologies

21st century skills: are tools that can be universally applied to enhance ways of thinking, learning, working and living in the world. The skills include critical thinking/reasoning, creativity/creative thinking, problem solving, metacognition, collaboration, communication and global citizenship (Voogt & Roblin 2010).

Critical thinking and Problem solving: refers to student being able to analyze complex problems, investigate questions for which there are no clear-cut answers evaluate different point of view or source of information and draw appropriate conclusion based on evidence and reasoning (Ravits et al, 2012).

Communication: Processing, transforming, and formatting information and reflecting about the best way to present an idea to a particular audience, knowledge, skills and attitudes need to be communicated effectively through the use of the adequate available tools, correct language and understandable (Kereluik et al, 2013).

Collaboration: refers to student being able to work together to solve problem and answer questions, to work effectively and respectful in team to accomplish common goal and assume shared responsibility for completing task (Ravitz et al 2012).

1.8.2 The role of lesson preparation in promoting 21st Century skills in teaching and learning processes

Lesson plan is the description of all process which are done in the classroom, the materials, strategies, time, learning environment and methods of evaluating the learners (Farrel, 2012). It helps teachers to plan the content, methods, activities, practices and materials to be used in the class and is a prerequisite for successful teaching and learning process (Coppole, 2004). The ability to plan lessons towards specific skills desired to students depends on teachers' competencies. According to Makwinya (2020) the teachers plan their lessons without following the syllabus blindly by using their experiences in their instructions.

Teachers as facilitators of 21st century skills need significant knowledge and skills to interact with the students and be able to choose instructional material to accommodate students at different level (Zeiger, 2018). The facilitation of acquisition of 21st century skills require the teacher to be knowledgeable of the 21st century skills found in the curriculum of Tanzania which include; critical and creative thinking, communication, and numeracy,

independent learning, personal and social values and technological literacy.

Literature indicates a significant relationship between teachers' competencies and the ability to plan and implement lessons using specific skills desired by students. For example, Sulaiman and Ismail (2020) found that teachers' competencies in the subject matter are attributed to their capacity to foster 21st-century skills in their students on that particular subject. Similarly, Beswick and Fraser (2019) argued that the importance of teachers' competencies to impart 21st-century skills makes teachers require a tailored training programme to infuse creativity and critical thinking into students. Further, the study conducted in Malaysia on teachers' competencies and 21st-century skills in transformation schools found a relationship between professional competencies and 21st-century skills (Sulaiman & Ismail, 2020). Therefore, teachers should be competent enough to facilitate the acquisition of the 21st century skills among secondary school students.

1.8.3 The influence of teachers' competence in promoting 21st Century Skills in teaching and learning

The dimension of teachers' competencies helps the development of 21st-century skills and improves the quality of teaching and learning. Muin *et al* (2020) show students benefit from competent teachers who implement co-curricular activities well. A study by Oudeweetering and Voogt (2018) on how teachers conceptualize and perceive the enactment of 21st century skills in the Netherlands found that teachers comprehensively possess digital literacy, innovation and thinking, critical thinking and communication in teaching and learning. However, there were no clear practically viable definitions of 21st century skills; teachers rely on the teachers' self-

perceived classroom activities. The same has been observed in Kenya whereas Wafumbwa (2021) pinpoints that the Kenyan assessment framework for 21st century skills is too unsure and cannot guide teachers, thus teachers are not well-informed in any elaborative framework.

Moreover, Kim et al (2019) conducted a study in Uganda, Ghana and India on improving 21st-century teaching skills and found that teachers need to be equipped not only with the acquisition of 21st-century skills but also with the dissemination of 21st skills. They need assistance, guidance and support to improve their practices. Kim et al (2019) findings echo the findings in a study by Waweru (2018) who found that teachers are not well prepared to implement the competencies-based curriculum in new subjects as opposed to old subjects. Teachers, therefore, need support in infusing creativity and critical thinking so as to enable the acquisition of 21st century skills to students.

1.8.4 The role of assessment in promoting 21st Century Skills acquisition amongst learners

The primary goal for assessment is to improve the learning outcomes (Care, et al, 2018) and provision of feedback information to teachers and students (Black & William, 1998). Classroom assessment involves formative assessment which is conducted to enhance learning and teaching. In that case formative assessment (FA) and assessment for learning (AFL) are vital to 4cs assessment in the classroom. FA and AFL are said to have positive contribution to the teacher to adjust instruction when students are not performing well, enable the teacher to redesign strategies of teaching and learning (Black and William, 2009). The feedback from the assessment provides opportunity to the teacher to plan and attain the desired goals (Sardareh & Saad,

2012). Assessment is expected to help students to indicate how they can use the knowledge acquired in addressing the real-world problem (Webber & Tschepikow, 2013). This means, assessment should not be punitive to the learners but a catalyst to improve the teaching processes to the teachers and the learning processes to the students as well. In this view, new skills, techniques and instruments are required to be in place towards the development of the 21st century skills in secondary schools.

The curriculum of Tanzania emphasizes the use of formative assessment which provides opportunity to students to demonstrate their competencies in the real world of work and correct their own mistakes and misconceptions (Paul, 2014). The formative assessment can be achieved through multiple tools which include field assessment tasks, role playing, portfolio, oral presentation written essay and rating scale (MoEVT, 2007). Formative assessment tools probe students' understanding, reasoning and critical thinking rather than their ability to memorized facts. That means, formative assessment should have more weight than summative one in order to influence the development of 21st century skills to the learners and provide effective feedback to the teachers, parents and other stakeholders in education.

Literature indicates, formative assessment is more effective in developing the 4cs to students compared to its counterpart. The study conducted in Indonesia on the effect of formative assessment in developing critical thinking revealed that formative assessment through oral feedback can develop critical thinking to students (Nurhijah et al., 2020). Similarly, formative assessment engages students in higher order of thinking activities and develop critical thinking, collaborative, communication and creative skills (Msoqi, 2019). In addition, the study

conducted on the 21st Century assessment techniques in South Africa found that, the 4cs assessment techniques improves teaching and learning processes (Khasi, 2009). The same has been observed in Kenya where secondary school teachers are emphasized to employ formative assessment than summative (Wafubwa & Ochieng, 2021). This study seeks to assess the teachers' competencies in assessing 21st century skills among secondary school students.

Management and administering of formative assessment can be done on daily bases in classroom to gain an understanding of the students' progress and abilities. Different formative assessment tools are used to assess various skills depending on the purpose and the aim of assessment. Among the formative assessment tools used are think pair share, questions, tests and quizzes (Culline, 2015). Performance based assessment are more effective in assessing competencies and skills rather than standardized test (Siarova *et al.*, 2017). The study aimed at assessing the management and administration of formative assessment tools which promotes the development of 21st century skills.

1.8.5 Knowledge gap

Though the government of Tanzania recognizes the importance of 21st century skills among secondary students in Tanzania (Muneja, 2015; Makunja, 2015; TIE, 2019), most of the Tanzanians who were involved in the study conducted by Haki Elimu, had the opinion that graduates of secondary education lack skills and competencies, including 21st century skills (Haki Elimu, 2021), thus putting into disrepute competencies of teachers who are expected to facilitate the acquisition of such skills to their students. This study, therefore, assessed secondary school teachers' competencies in promoting 21st century skills development in planning,

implementing lessons and assessing. The limited literature threatens the strategies for improving the development of 21st century skills to secondary school students who are prepared as national, regional and global workforce for promoting sustainable development.

1.9 Methodology

1.9.1 Study Area

This study was conducted in Morogoro Region, specifically Morogoro Municipal council. Morogoro Municipal is one of nine administrative districts, which make up Morogoro Region. Other districts include Kilosa, Ifakara, Kilombero, Mvomero, Malinyi, Gairo, Ulanga and Morogoro Rural. Morogoro Region lies at the crossing of longitudes 37.0 East of Greenwich meridian and latitude 4.49 South of equator. The district borders Mvomero District on the North and West, Morogoro Rural District on the East and South Morogoro Municipal Council have twenty-nine administrative wards. The study was done in Morogoro Municipal because of the presence of different categories of secondary schools, such as special school for talented boys, special school for talented girls, boarding schools, community schools and private schools with religious affiliated and those without. The compositions of different categories of schools were determined as a strong factor for generalization of the findings, because schools in Morogoro, represents all other secondary schools in Tanzania compared to other regions. Further, teachers in Morogoro have similar qualifications from those in other regions because they are trained in the same colleges and Universities. Moreover, they follow the similar curriculum hence, the choice of the study area, could not influence the study findings. Figure 1.2 is the map of the study area.

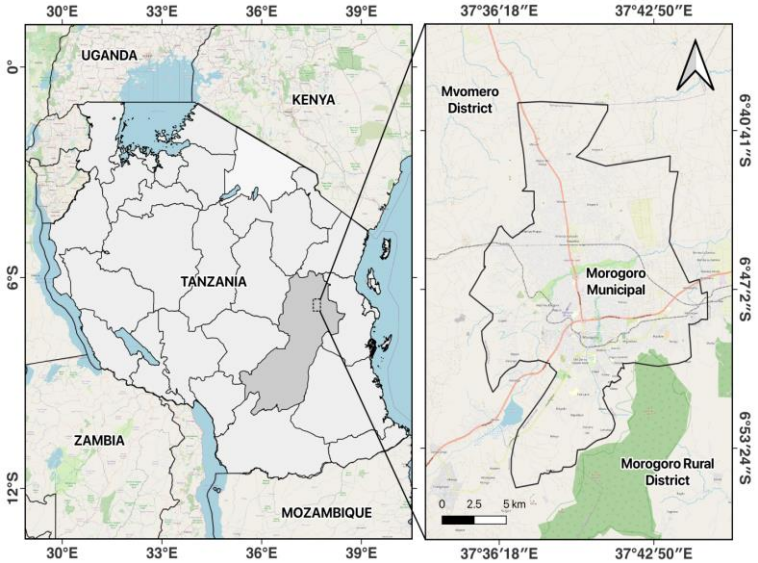


Figure 2: Map of Tanzania showing Morogoro Municipality.

1.9.2 Research design and approach

A research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure (Creswell & Plano, 2018). The study adopted a descriptive study design which was relevant in order to describe on how 21st century skills are fostered in secondary school. Both qualitative and quantitative approach was used. The study mainly employed qualitative approach to collect data based on teachers' attitudes, opinions, and socio-economic characteristics through interview while the quantitative approach dealt with numerical data which obtained through observation method. Frequencies and percentages were presented in tables.

1.9.3 Sampling procedure and sample size

The study employed 32 Geography teachers from 10 public secondary schools in Morogoro Municipal.

Teachers of Geography subject were chosen as a unit of analysis because of their professional responsibility to enhance 21st century through lesson preparation, implementation and assessment. The choice of Geography teachers was influenced by the nature of the study which lies between as science and social science hence its facilitation methods involved theory and practice.

Public secondary schools were selected through simple random sampling techniques in which every public school had equal chance of being selected. The procedure involved writing names of the 23 secondary school found in Morogoro Municipality on the pieces of papers, fold them and pick randomly ten papers which was included in the study. Purposive sampling was used to select Geography teachers from 10 secondary schools based on the subject, the number of the teacher to a given school depended on the number of Geography teachers available in that school. Table 1 shows the number of Geography teachers in selected schools. The names of schools were kept anonymous and were assigned letter A to J.

Table 1: Number of Geography teachers in selected schools

School	No. of Geography Teachers	No. of respondents
A	4	4
B	6	4
C	3	3
D	8	3
E	2	2
F	3	3
G	4	4
H	3	3
I	4	3
J	3	3
Total	40	32

1.10 Data Collection

Both primary and secondary data were collected. Secondary data were obtained from lesson plans to check and assess how teachers prepare lesson plans which reflect the development of 21st century skills especially 4Cs. Primary data were obtained through interview and classroom observation methods.

1.10.1 Documentary analysis

Total number of 17 Lesson plans prepared by Geography teachers were analyzed in order to assess the ability of secondary school teachers in planning lessons which reflect the development of the 21st century skills. There were eight variables which were identified as indicators during the lesson plan analysis. Those were: whether teachers stated the learning outcome clearly (SMART), the list of teaching aids if were shown on the lesson plan, if the lesson plan provided the opportunity to students to explore or share their knowledge, if the lesson plan linked the content and real life situation, if the lesson plan gave the opportunity to students to work cooperatively, if the lesson plan provided the opportunity to students to solve problems for themselves, if the lesson plan stated clearly ways of assessing students activities to check whether the intended skills/ability had been achieved and lastly, if the lesson plan provided a room for teacher-students interaction and among the students themselves.

1.10.2 Observation

The study employed observation method of data collection; non-participant observation was considered as the best method to gather information. The method offers opportunity to gather information direct from the natural setting and to interact with teachers and students in classroom. Observation provided the opportunity to determine teachers' practices in implementation of

lessons and assessments which reflect 21st century skills. Also, it provided the opportunity to learn socio economic and institutional factors affecting their competencies. In descriptive studies observational design should be structured (Creswel & Plano, 2018). The 21st century skill framework from P21 was adopted and modified as a check list to assess and collect information related to teachers' competencies. Therefore, I conducted classroom observations on the way teachers execute their lessons, the use of teaching aids, students' involvement in the lessons and assessment practices of the lessons.

1.10.3 Interview

Interview method was used; it provided an opportunity to listen directly from the respondents themselves (Seidman, 2013). The main reason for conducting interviews was to allow flexibility and more clarification in various items. Face to face interviews were administered to Geography teachers from the study area. The interview intended to explore the awareness of teachers on 21st Century skills; when, where and how they acquired the knowledge of 21st century skills; how they develop 4Cs during the lesson; how they assess such skills; the challenges they face on integrating those skills in lessons and whether the syllabus provides enough guidelines for integrating the 21st century skills.

1.11 Data Analysis

The collected qualitative and quantitative data were analysed through content analysis and descriptive analysis respectively. The collected qualitative data were analysed through content analysis. The analysis involved coding and categorising of themes. Afterwards, the content analysis was presented in paraphrases, narrative and verbatim quotes. Descriptive data were analysed

through Microsoft excel then presented in frequency and percentages.

1.12. Organization of the desertation

This desertation comprises of five chapters. Chapter one is general introduction, chapter two is based on the first paper which addresses objective one and two of the reseach. Chapter three is based on the second paper which addresses objective three and four of the reseach. Chapter four is general discussion and chapter five general conclusion and recommendations.

CHAPTER TWO
THE DEVELOPMENT OF 21ST CENTURY SKILLS TO
SECONDARY SCHOOL STUDENTS IN TANZANIA:
HOW COMPETENT ARE THE TEACHERS FOR THE
TASK?

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Abstract

This study explored teachers' competencies in developing 21st-century skills in teaching and learning processes. Specifically, the study assessed teachers' ability in planning and in implementing lessons that develop 21st-century skills. A purposive sample of 32 Geography teachers from 10 secondary schools in Morogoro municipality was involved in the study. Data were collected through interviews, documentary analysis and classroom observations. The findings indicate that most of the Geography teachers in secondary schools in Tanzania are less aware of 21st-century skills which include creativity; critical thinking, communication and collaboration thus limiting their ability to integrate 21st-century skills in planning and implementation of their lessons. From these observations, the study recommends that in-service training be provided to secondary school teachers on how to integrate 21st-century skills in lesson planning and implementation.

Keywords: 21st Century Skills, lesson planning, lesson implementation, Teachers, Competencies, Tanzania.

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<https://ijessr.com/view5.php?issue=1 Introduction>

2.1 Introduction

This study evaluated secondary school teachers' competencies in developing 21st-century skills for students in Morogoro Municipality in Tanzania. The study assessed Geography teachers' ability in planning and implementing lessons that reflect the development of 21st-century skills. The study focused on 21st-century skills as delineated in the Tanzania education curriculum. The key 21st-century skills emphasized in teaching and learning in the current Tanzania curriculum include critical thinking, creativity, communication, collaboration, information literacy, media literacy, technology literacy, flexibility, leadership, initiative, productivity and social skills (MoEVT, 2007). Given the time and resources, all the skills cannot be accommodated in one study, this study, therefore, focused on four competencies (4cs) namely, creativity, critical thinking, communication and collaboration.

The term 21st Century skills encompasses a set of knowledge, skills, work habits and characteristics that are perceived by different stakeholders as essential standards for a learnt person (CBSE, 2020). Voogt and Roblin (2010) define 21st-century skills as "an overarching concept for the knowledge, skills and dispositions citizens need to be able to contribute to the knowledge society." In general terms, the 21st Century skills include communication, collaboration, critical thinking and creativity as proposed by the US-based partnership for 21st Century (P21) (Joynes, Rossignolis & Amonoo-Kuofi, 2019). The development of 21st-century skills is a global concern which intends to ensure that the education provided addresses the learning needs and wants for sustainable development (United Nations, 2016). The knowledge economy era has compelled education systems to restructure their curricula at

different levels of education to ensure that students adequately develop the 21st Century skills to fit in the labour market (Goldberg, 2012).

The 21st-century skills are important for the holistic development of students, who are expected to serve as a workforce at global and local levels and thus stimulating the production of goods and services for social and economic development. The need for such skills in the community has placed a new demand for teachers to ensure that teaching and learning are centred towards the acquisition of 21st-century skills (Sulaiman & Ismail, 2020). Teachers are expected to facilitate the acquisition of 21st-century skills by adopting skills-centred pedagogy in the subjects taught and nurturing skills through extracurricular activities (Suto & Eccles, 2014). Most teachers are facing challenges in facilitating the acquisition of 21st-century skills due to limited competencies, inadequate resources and poor teaching and learning environments (Beswick & Fraser, 2019).

To reach vision 2025 and agenda 2030, the education policy in Tanzania emphasizes the development of 21st-century skills as a prerequisite for competent, competitive and innovative workforce training for social, economic and political transformation (MoEVT, 2014).-The need to develop 21st-century skills is instigated by technological advancement and the competitive market demand at global and local levels. To stimulate the acquisition of 21st-century skills among students, the Tanzania education system thus shifted from content to a competencies-based curriculum (CBC) in 2005 (Kopwel, 2014).

The Government of Tanzania realizes the importance of education as a strategic agent for economic transformation from low agricultural productivity to a

semi-industrial country by 2025 (MoEVT, 2014). Therefore, deliberate efforts have been made in transforming the curriculum and teacher education to ensure that teachers and students develop the necessary skills required in addressing the contextual needs of society at global and local levels (Rao & Namamba, 2017). The transformation of the education system from content coverage to competencies development in 2005 in Tanzania emphasized the acquisition of 21st-century skills as a catalyst for manpower training for national development (Kopwel, 2014).

The curriculum of Tanzania emphasizes integrating theories and practices in real-life situations; teachers are required to develop skills among the students (MoEVT, 2007). The teachers are required to design a learning task which is to be carried out with realistic content to develop competencies (Paulo, 2014). The ability of the teachers to translate strategies, and integrates knowledge and skills have a positive impact on the implementation of 21st Century skills (Sulaiman & Ismail, 2020). The teacher can organize lessons, develop materials and set activities which focus on the development of 21st-century skills. It is through group discussions, acting in plays, preparing oral presentations and debates the 4cs are fostered and promoted among the students (Erdogan, 2019). Thus, teachers as an engine for skills acquisition in schools are required to be competent enough to enable students to acquire 21st-century skills (Mgaiwa, 2018).

Even though studies have established a poor mastery of 21st-century skills among students in Tanzania (Massay, 2020; Uwezo, 2013; Sauti ya wananchi, 2014; Haki Elimu, 2021), there is limited literature on secondary school teachers' competencies in developing 21st Century Skills in teaching and learning processes. The lack of

such literature limits the inputs for intervention strategies towards the development of 21st-century skills in secondary schools in Tanzania.

Literature indicates a significant relationship between teachers' competencies and the ability to plan and implement lessons using specific skills desired by students. For example, Sulaiman and Ismail (2020) found that teachers' competencies in the subject matter are attributed to their capacity to foster 21st-century skills in their students on that particular subject. Similarly, Beswick and Fraser (2019) argued that the importance of teachers' competencies to impart 21st-century skills makes teachers require a tailored training programme to infuse creativity and critical thinking into students. Further, the study conducted in Malaysia on teachers' competencies and 21st Century skills in transformation schools found a relationship between professional competencies and 21st-century skills (Sulaiman & Ismail, 2020).

The dimension of teachers' competencies helps further the development of 21st-century skills and improves the quality of teaching. Muin *et al.*, (2020) also show students benefit from competent teachers who implement co-curricular activities well. A study by Oudeweetering and Voogt (2018) on how teachers conceptualize and perceive the enactment of 21st-century skills in the Netherlands found that teachers comprehensively possess digital literacy, innovation and thinking, critical thinking and communication in teaching and learning. However, there were no clear practically viable definitions of 21st-century skills; teachers rely on the teachers' self-perceived classroom activities. The same has been observed in Kenya whereas Wafumbwa (2021) pinpoints that the Kenyan assessment framework for 21st-century skills is to unsure and cannot guide teachers, thus

teachers are not well-informed in any elaborative framework.

Moreover, Kim *et al* (2019) conducted a study in Uganda, Ghana and India on improving 21st-century teaching skills and found that teachers need to be equipped not only with the acquisition of 21st-century skills but also with the dissemination of 21st skills. They need assistance, guidance and support to improve their practices. Kim *et al* (2019) findings echo the findings in a study by Waweru (2018) who found that teachers are not well prepared to implement the competencies-based curriculum in new subjects as opposed to old subjects. Teachers, therefore, need support in infusing creativity and critical thinking.

Though the 21st-century skills are embarked on the Tanzanian school curriculum, most studies are based on CBC (Muneja, 2015; Makunja, 2015) and less on 21st-century skills. Though there have been some efforts towards operationalization of the 21st-century skills (TIE, 2010), stakeholders have the opinion that graduates of secondary education lack skills and competencies, including 21st-century skills (Haki Elimu, 2021), thus putting into disrepute competencies of teachers who are expected to facilitate the acquisition of such skills. Little is known about how teachers develop 21st-century skills in the teaching and learning process. This study, therefore, assessed secondary school teachers' competencies in developing 21st-century skills in planning and implementing lessons.

This study was guided by a Social Constructivism Theory developed by Lev Vygotsky. The theory holds that learners' ability to complete tasks needs the assistance of teachers as more knowledgeable and experienced people than them. In this theory, learning is situated as a social and collaborative activity in which learners are

responsible for constructing their knowledge guided by teachers to move them from a zonal of proximal development (ZPD) into a fully competent person (Vygotsky, 1986). In this sense, the acquisition of 21st-century skills among students depends on the teachers' ability to plan and implement lessons that move students from their level of understanding to a higher level of knowledge.

2.2 Materials and Methods

A descriptive study employed non-probability sampling to purposely select 32 Geography teachers from 10 public secondary schools in Morogoro Municipality. Data were collected through face-to-face interviews, document analysis of lesson preparation, and classroom teaching and learning observations. Content and descriptive analyses were used to analyse data.

2.3 Findings

The study indented to assess Geography teachers' competencies in imparting 21st-century skills to students through lessons. It sought to evaluate teachers' ability in planning and in implementing lessons that develop 21st-century skills. The 21st Century skills assessed by the study were creativity, critical thinking, communication and collaboration skills. The study findings are presented based on the specific objectives which were: assessing teachers' ability in planning lessons that develops 21st Century skills and teachers' ability in implementing lessons that develop 21st Century Skills:

2.3.1 Teachers' Ability in Planning Lessons that Develop 21st Century Skills

Lesson planning is among the important factors for teachers' effectiveness because it arouses a sense of control, security and confidence between teachers and students. Lesson planning contributes to the

management of time and creativity and can reinforce the links between teachers' teams. Literature (Rodríguez-Gallego, 2014) denotes that the choice of content, methodological strategies, resources and assessment activities depend much on the lesson planning. Teachers as key implementers are expected to demonstrate competencies in preparing lessons that develop 21st century skills.

To assess teachers' ability in planning lessons which promotes the development of 21st-century skills, Geography subject lesson plans were assessed and analysed against eighty variables. The variables intended enquired to know whether teachers stated the learning outcome clearly (SMART) or not. It also intended to know if the list of teaching aids was shown on the lesson plan, the lesson plan provided the opportunity to students to explore or give their knowledge, the lesson plan linked the content and real-life situation. It intended to know as well if the lesson plan allowed students to work cooperatively, the lesson plan provided the opportunity to students to solve problems for themselves. Besides, it assessed if the lesson plan stated ways of assessing students' activities to check if the intended skills/ability had been achieved and whether the lesson plan provided a room for teacher-students interaction and among students themselves. The findings are indicated in Table 2.

The findings show that the majority of the lesson plan reviewed did not reflect the 21st-century skills, only 35.3% (11.8% and 23.5 % well done and done respectively) stated the learning outcome clearly, which is SMART (specific, measurable, attainable, relevant and time-bound).

Table 2: Teachers' ability in planning lessons that develops of 21st century Skills

Variables	Measures			
	WD	D	PD	ND
The teacher states the learning outcome clearly (SMART)	11.8 %	23.5%	47.1%	17.6%
The list of teaching aids is shown on the lesson plan	0	11.8%	29.4%	58.8%
The lesson plan allowed students to explore or give their knowledge	5.8 %	29.4%	53%	11.8%
The lesson plan links the content and real-life situation	0	23.5%	23.5%	53%
The lesson plan gives opportunity to students to work cooperatively	11.8 %	29.4%	17.6%	41.2%
The lesson plan provides the opportunity for students to solve problems for themselves	5.8 %	17.6%	35.3%	41.2%
The lesson plan clearly states ways of assessing students' activities	0	11.8%	53%	35.3%
The lesson plan provides room for teacher students interaction and among the students themselves	11.8 %	29.4%	47.1%	11.8%

Source Field data, 2022 WD= well done, D= done, PD= partially done, ND = not done

This implies the majority of the lesson plans analysed did not specify the intended learning outcomes. One of the lesson plans stated the specific objective as *"To explain the concept of climate."* This statement does not show

the intended outcome and the skills that the teacher intended to develop among the students.

This situation implies that the majority of teachers are not able to prepare lesson plans which reflect the development of 21st-century skills and the reason could be a lack of awareness of the 21st-century skills incorporated in the secondary education curriculum. During an interview with teachers, the majority of them revealed that they were not aware of such skills. It is therefore difficult to integrate into lessons what they did not know and they were not sure whether such skills were incorporated into the curriculum. A Geography teacher from school A said,

The 21st Century skills are a new phenomenon to me and I am not sure if it is indicated in the curriculum. What I strive for is coverage of the topics indicated in the syllabus before the end of the year. (21st February, 2022).

This reveals that, the incorporation of 21st-century skills in the curriculum does not result in teachers' preparation of lesson plans which reflect the development of such skills. The findings about the lack of teachers' awareness of the inclusion of 21st-century skills in the curriculum concur with the findings in a study by Makunja (2015) in Tanzania, who established that most of the teachers' lesson plans do not reflect the skills expected to be developed among the students. It is, therefore, proposed to the ministries dealing with education in Tanzania to develop on job training to equip teachers with the knowledge and skills for preparing lessons that reflect the 21st Century skills and making teachers adequately involved in curriculum design and development.

Although lesson planning documents indicated that 11.8 % of teachers planned to use teaching aids during the teaching and learning processes, the actual classroom observations revealed things that were not consistent with the contents of the lesson planning document. This implies even those few teachers who indicated using teaching aids in their lesson plans neither brought to nor used during lesson execution. When interviewed, the majority of teachers reported that the schools had inadequate teaching and learning resources such as a globe, Manila papers, and clip charts which can be used in preparing teaching aids. This was attested by a Geography teacher from school D who said,

Most of the teaching and learning aids listed in the lesson plans, are copy and pasted from the syllabus, they are not available in schools. Even when present, the time factor affects their actual usage in the class. 4th May, 2022).

It can therefore be deduced that the majority of teachers do not prepare and use teaching aids during the teaching and learning process. This lowers the development of creativity and critical thinking skills among the students.

Contrary to the study by Rahman et al (2020) which revealed technological teaching aid is mostly being used in teaching and learning processes in Malaysia, the classroom observations showed the majority of teachers do not use technology to facilitate teaching and learning processes. The majority reported not using the technology because they did not have computers and other technological tools to aid teaching and learning. However, all teachers involved in the study had smartphones; the study observed that they were not

using them as teaching tools. When teachers were interviewed as to why they were not using their smartphones as technological tools to facilitate classroom teaching and learning, the majority acknowledged not having access to internet connectivity due to financial constraints as attested below,

Although I own a smartphone, I do not use it as a teaching tool because I do not have money to buy internet bundles to access internet connectivity. (7th March, 2022).

Another teacher had to say,

If the government could provide free internet connectivity at my school, I could use my smartphone as a technological tool to aid my classroom teaching and learning. (7th March, 2022).

In this regard, it is therefore, important for the school administration to provide internet connectivity in their schools for teachers to access the internet. Studies affirm that the usage of smartphones as a technological tool in teaching and learning could address the technological gap in developing countries due to their availability and affordability (Bulk *et al*, 2013; Gawate & Jadhav 2019; Anshari *et al.*, 2017). It is therefore important for education authorities to awaken teachers on the usage of different technologies including smartphones to aid teaching and learning. Also, there should be reliable internet connectivity in schools to enhance technology use in teaching and learning.

When students learn by doing, they adequately develop creativity, critical thinking and problem-solving skills (Care *et al.*, 2018). However, Table 3 indicates that only

35.2 % of teachers (those assessed as well done 5.8% and as done 29.4 %) provide the opportunity for students to explore the lessons on their own. Most of the lesson plans show no activities set for students rather they are passive observers and listeners of what the teacher does in class. This deprives the opportunity for students in developing creativity and critical thinking. The majority of teachers who were interviewed depicted a large number of students and a lack of learning and teaching resources as the barrier for them to provide activities that could explore students' ideas.

The part of the lesson plan which requires the teacher to reflect on the content in real life was poorly stated. The findings indicate that 23.5 % of the lesson had a linkage between content and real-life situations, 23.5 % considered partially done and the rest (53%) had no linkage to real-life situations. This was depicted by lesson plans in the reflection part as stated '*to guide students to present their discussion.*' This does not show any implication in reflecting on real-life situations because it is just an activity to be performed by students. These findings are consistent with the findings in a study by Schleicher (2012) and Lupeja and Komba (2022) who found that there is an inability of the education system to connect the content to real-world relevance. Teachers have been concentrating on coverage of the syllabus as the assessment is mainly based on the examinations. Learning processes therefore have been inclined towards the demand of examination than imparting students with skills (Lupeja & Komba, 2021). Since teachers do not integrate the subject content with real-life situations, there is a need to address the applicability of the content and real-life situation to the opportunity for students to be creative and innovative.

According to Roekel (2011), students working together and cooperatively develop communication and collaboration skills. However, this study, found that only 47 % (5.8 and 41.4 % well done and done respectively) of the lesson plan analysed, provided opportunities for students to work together cooperatively. Most of the lesson plans indicated teaching and learning method was a group discussion, other methods such as gallery walk, think pair share and work partner were not indicated. The main reason given for not using other methods was over crowded classrooms. Similar findings are reported in a study by Massay (2020) who revealed that classes are too congested with students hindering the integration of four skills. Due to crowded classes, sitting arrangements do not favour teaching methods that develop collaboration skills, and impede the movement of students and participation in learning activities.

Generally, it can be argued that most teachers have limited ability to the preparation of lesson plans which reflects 21st-century skills. Such a situation is attributed to a lack of awareness of such skills. Studies (Waweru, 2018; Wafumbwa, 2021) affirm the need for in-service teachers' training to develop the 21st Century. Similarly, Nzima (2016) revealed the importance of in-service training for teachers to improve classroom teaching and learning processes. Professional development is highly needed among teachers to polish their competencies (Hardman *et al.*, 2012). The study acknowledged that teachers who participate in school-based training show significant differences in their pedagogical practices and demonstrate a positive attitude towards their teaching and learning. The effectiveness of the teachers learning outcome depends on professional development, mentoring, coaching and feedback (Guskey 2003; Fullan, 2001). It is therefore important for the concerned stakeholders and the education authorities in Tanzania to

give priority to in-service training to teachers to update their knowledge and skills.

2.3.2 Teachers' ability to implement lessons that develop 21st-century skills

Also, the study assessed the ability of the teachers in implementing lessons which reflect 21st-century skills. According to the curriculum of Tanzania, students should possess and apply the knowledge acquired at school to solve life challenges (TIE, 2013). Implementation of lessons should focus on the development of 21st-century skills. Teachers have the role of fostering knowledge and skills in the students; thus, they are expected to build 21st century skills including 4cs.

While assessing the competencies of teachers in secondary schools in implementing lessons which develop 21st-century skills in Geography lessons, 24 observations were conducted in classroom teaching and learning practices. The aim was to find out how skills such as creativity, critical thinking, communication and collaboration are developed among the students. The findings are discussed in the preceding subsections.

2.3.2.1 Teachers' ability to promote creativity in teaching and learning

Creativity refers to the ability of an individual to evaluate, elaborate and refine ideas and products (Kereluik et al., 2013). It brings about new ideas and new ways of using ideas. Students with creative and innovative skills can find out new solutions to tackle problems and face challenges in life. To assess teachers' competencies in developing creativity skills among students, the following (indicators) were observed during classroom teaching and learning sessions: teacher's ability to use a wide range of idea creation techniques; teachers allowing students to develop, implement and communicate their

ideas to others effectively; teachers cultivating the culture of being open and responsive and providing constructive feedback to students; teacher viewing failure as an opportunity to learn and encouraging students who fail.

The findings are indicated in Table 3

The findings show that 62.5 % (4.2 and 58.3 % well done and done respectively) of teachers develop creativity skills among their students by using a wide range of ideas creation techniques. The main idea-creation technique used by teachers was brainstorming. This was used as a way of introducing the lesson to most of the teachers while other techniques such as mind mapping and role play were not used.

Table 3: Teachers' ability in implementing lessons which develop creativity

Variables	Measures			
	WD	D	PD	ND
The teacher uses a wide range of idea-creation techniques (such as brainstorming)	4.2%	58.3%	33.3%	4.2%
The teacher allows the students to develop, implement and communicate their ideas to others effectively (create their idea to tackle a problem)	8.3%	25%	50%	16.7%
The teacher cultivates the culture of being open and responsive and provides constructive feedback to the students	16.7%	45.8%	29.2%	8.3%
View failure as an opportunity to learn and encourage students who fail	8.3%	33.3%	25%	33.3%

Source Field data WD= well done, D= done, PD= partially done, ND = not done

Meanwhile, 33.3 % (8.3 and 25 % well done and done respectively) and the rest either partially or poorly provide an opportunity for students to develop, implement and communicate their ideas to others effectively. The development of ideas is accomplished through students' activities which provide an opportunity to solve problems and come up with new ideas. It was observed that no activities were provided for students to perform in the classroom and outside the classroom. During an interview with a Geography teacher from school E, she said,

The numbers of students in the class are so many, thus, hard to concentrate on individual students' work. We normally arrange them in groups and make them. Discuss and choose a few of them to present and share their creativity. (10th May, 2022).

With overcrowded classrooms, it is difficult to develop creativity among students even if the teacher can foster such skills. Teachers who cultivated the culture of being open among students were 62.5 % (16.7 and 45.8 % well done and done respectively). The rest neither asked questions nor provided the opportunity for students to respond to questions. Unfortunately, students were not courageous to ask questions when given the opportunity, as the result, there was one-way interaction. Similar observations are made by Paul (2014), who revealed that teachers are mostly using the questions and answers method and the majority of students never try to answer the questions to avoid being wrong. This implies that classroom set-up and particularly in this era of fee-free education policy has tripled the enrolment rate, had

minimized the interactive teaching and learning among students themselves and students with their teachers.

On the aspect of giving the right remark when students respond to questions, only 41.6 % (8.3 and 33.3 % well done and done respectively) of the teachers encouraged students who failed to answer the questions correctly. On the other hand, most of the teachers remained quiet when students responded or invited other students to answer the questions. The teacher in the Geography class from school C was heard saying to a student:

Salome you are wasting time over there, if you do not know how to convert a ratio scale into a statement, sit down and give a chalk to Maimuna to do it. (18th March, 2022).

Even when Maimuna got the answer correctly, there was no applause from the teacher. That means, those who could not respond correctly are discouraged from learning and those who could get it right there are mute. Such a situation is associated with a lack of effective teacher training to meet the learning needs of the 21st century. The findings are similar to the findings in a study by Nnorom and Mezieobi (2020) in Nigeria, who found that most of the teachers lack the adequate skills required to enhance the development of 21st-century skills. Moreover, the classroom observations and the interview voices, reveal that most of the teachers lack competencies in developing creativity skills among students while those who are competent are hampered by teaching and learning environments which limit their ability to develop creativity among students. This implies that teachers are a significant factor to enhance or hinder students' ability development of creativity skills among

students. So, an intervention strategy on capacity building for teachers is very essential.

2.3.2.2 Teachers' ability to develop critical thinking skills in teaching and learning

Critical thinking is the ability of an individual to reason effectively, ask pointed questions and solve problems and analyse and evaluate alternative points of view (PPRC, 2010). According to Kereluik *et al* (2013), critical thinking can be developed through solving problems and interpreting information. It is very beneficial to students since students acquiring critical thinking skills and can have the ability to make better decisions in life and better judgments.

The present study examined whether or not teachers had the ability of developing critical thinking skills among students in the classroom. The observations were made based on four indicators which focused on whether or not the teacher guides students to compare information from different sources; the teacher guides students to summarize or create their interpretation of what they read; interprets information and conclude; the teacher asks significant questions that clarify various points of view and lead to better solutions or understanding. The findings are indicated in Table 4.

The findings show that there is low development of critical thinking skills among students; only 25 % (4.2 and 20.8 % well done and done respectively) of the teacher's guide students to compare different materials from different sources while summarization and interpretation of information are done by only 12.5 %. Most of the teachers interviewed said that teaching and learning materials are a hindrance to critical thinking development among students. Teachers fail to provide activities which involve comparing, summarizing, creating their ideas or

interpreting different material since in the classroom only one book is available.

Table 4: Teachers' ability in implementing lessons which develop critical thinking

Variables	Measures			
	WD	D	PD	ND
Guiding students to compare information from different sources to complete an assignment.	4.2%	20.8%	16.7%	58.3%
Guiding students in summarizing or creating their interpretation of what they read	0	12.5%	16.7%	70.8%
Interpreting information and drawing conclusions	0	16.7%	8.3%	75%
Asking significant questions that clarify various points of view leads to better solutions or understanding.	12.5%	45.8%	37.5%	4.2%

Source Field data, 2022 WD= well done, D= done, PD= partially done, ND = not done

The Geography teacher from school F hinted during an interview session,

In our school, there are no required resources such as a library, internet and a Geography room, we only only have one textbook. Therefore, it is

difficult to develop the intended skills
(16th, May, 2022).

This means, with a single book in a class of 73 students, it is hard for teachers to develop critical thinking skills among students through reading. Teachers use the traditional way of teaching, chalk and chalk boards, which is contrary to the competencies-based curriculum which emphasizes the facilitation of the acquisition of 4cs through interaction with the material and among the learners themselves (Tambwe, 2017, Muneja, 2015). Therefore, it can be argued that critical thinking skills is a function of students' interaction with learning resources, the absence of such a situation results in inadequacy of skills. There is a need for intervention to improve students' development of critical thinking skills through the supply and effective use of interactive teaching and learning resources such as books, internet resources and Geography subject models.

2.3.2.3 Teachers' ability in developing communication skills in teaching and learning

Communication is the ability to articulate oneself through all media of communication such as oral, written, nonverbal and digital as well as the skills necessary to be an active and respectful listener to diverse audiences (Kereluik, *et al* 2013). Students with the ability to communicate effectively can reason, make a criticism, present ideas and contribute to society. In order to assess teachers' competencies in developing communication skills among students, four variables were observed during learning sessions, these were whether the teacher encourage students to convey their thoughts and ideas orally, written and nonverbal; the teacher listen effectively; the teacher cultivate the culture of asking and answering questions in front of the audience by allowing students to ask or answer

questions; or whether the teacher invites students to demonstrate in front of other students. The findings are shown in Table 5.

Table 5: Teachers' ability to implementing lessons which develop communication skills

Variables	Measures			
	WD	D	PD	ND
Encourage students to convey their thoughts and ideas effectively using oral, written and nonverbal communication skills (Use of debate or presentations)	12.5%	16.7%	12.5	58.3%
Listen effectively (the teacher waits sufficient time for the student to answer questions)	4.2	4.1%	41.7%	0
Cultivate the culture of asking and answering questions in front of the audience (allow students to ask questions)	6.7%	58.3%	25%	0
The teacher invites the students to demonstrate in front of other students	4.2%	16.7%	0	79.1%

Source Field data WD= well done, D= done, PD= partially done, ND = not done

It was observed that the teachers' students' interaction was low. Most of the time, teachers asked questions but no responses from students and the teachers continued with their lessons regardless. As indicated in Table 5, only 29.2 % (12.5 and 16.7 % well done and done respectively) of the teachers encouraged students to convey their ideas orally through presentation and

debate. Most teachers did not use debate and presentation because they perceived them as a waste of time during class hours. During the interview, a Geography teacher from school F said,

In our school days, the debate allowed us to communicate and enhanced creativity skills but nowadays, it is hard to retain students in school for debate after school hours as during class hours we concentrate on pushing the syllabus to the end. (16th May, 2022).

This implies that the development of communication skills through debating is ineffective among students due to examination-oriented school systems. Other teachers added that *“The English language is another barrier to students’ interaction in schools where English speaking is very strict.”* These findings are in line with the findings of numerous studies in Tanzania (i.e., Komba & John 2015; Mtallo, 2015; Massay, 2020, Lupeja & Komba, 2021) which regard debate as a means of both improving students’ interaction and communication skills and improving students’ language mastery. This means, there is a need of strengthening English language programmes in schools which would result in improving English language mastery and communication altogether.

It was observed that 45.9% (14.2% well done and 41.7% done) of the teachers listened effectively and wait sufficient time for students to answer questions. The teacher should lengthen the waiting time because a short waiting time denies students the opportunity to think and formulate answers to the questions asked. In contrast, most of the teachers did not give time students to think about the asked question. In this case when there was a delay in the answer the teachers chose another student

to respond. Consequently, students were not given enough time to organize their thought and ideas. Denying them such an opportunity hinders the development of communication skills.

Table 5 indicates that 65 % (6.7 and 58.3 % well done and done respectively) of the teacher asked questions and allowed students to ask questions. Mostly, teachers were the ones who asked questions, when students were allowed to ask questions, they did not show up. The teachers were capable of asking questions which needed responses from students but students rarely asked questions for clarification from their teachers. The findings concur with the findings in a study by Paul (2014) who found that although the second most used method of teaching was questions and answers after the lecture method, only 20.9 % of the teachers allowed their students to ask questions. This implies that students are the object of the processes and not the subject which hinders their ability to ask questions as part of communication skills.

Generally, teachers are not competent in developing communication skills since the language used in secondary schools as the media of communication is English, and teachers and students are not fluent in the English language as established by Massay (2020). Massay (ibid) found that teachers lack competencies in integrating four English skills and most of the teachers use vernacular languages while teaching. This means, there is a need to either change the medium of instruction from English to Kiswahili or improve the mastering of the English language to enhance communication skills among students themselves and students with their teachers.

2.3.2.4 Teachers' ability in developing collaborative skills in teaching and learning

Collaboration is referred to as an effort to demonstrate the ability to work effectively and respectfully with diverse learners to achieve shared goals with shared responsibilities (Roekel, 2011). Collaboration can be trained among students to make them accept differences and respect each other regardless of their differences (Sagala & Simanjuntak, 2019). Students with collaboration skills work and understand others' perceptions on different matters hence peaceful coexistence.

In assessing teachers' ability in developing collaboration skills among students, four variables were observed during teaching and learning sessions: whether the teacher uses different grouping techniques; whether students are allowed to present group work to class; whether the teacher guide students to work collaboratively and value individual contributions in a group and, whether students work in pairs or small groups to accomplish the task given. The findings were as shown in Table 6.

The findings in show that the development of collaboration skills among students is insufficient only 25 % (8.3 and 16.7 % well done and done respectively) of the teachers observed used different grouping techniques to group students. It was observed that the common grouping techniques were group discussion and think-pair-share.

Most of the teachers interviewed were aware of the teaching practices which develop collaboration skills but were not applying due to different reasons as a Geography teacher from school F noted,

I normally use the lecture method because it is not easy to conduct a participatory method in a class of 73 students while the class is capable of accommodating only 40 students. (14th March, 2022).

Table 6: Teachers' ability in implementing lessons which develop collaboration skills

Variables	Measures			
	WD	D	PD	ND
The teacher uses different grouping techniques (e.g. think pair share, Jigsaw, talk partner)	8.3%	16.7%	37.5%	37.5%
Present group work to the class and accomplish a common goal as a group	8.3%	16.7%	12.5%	62.5%
The teacher guides the students to work collaborative, and values the individual contributions made by each team member	12.5%	8.3%	20.8%	58.3%
Students work in pairs or small groups to accomplish the task	8.3%	16.7%	41.7%	33.3%

Source Field data WD= well done, D= done, PD= partially done, ND = not done

Regarding the persistence of the lecture teaching method among teachers, another Geography teacher from school H, had this to say,

Group discussion is good if you have smart students but with the nature of our students is the wastage of time because when students present what they discuss most of the time are off points hence a wastage of time. (14th March, 2022).

The minimal use of group discussion methods affects collaboration forums for students which also prevents effective learning processes and sharing of knowledge, skills and experiences.

It was observed that classes were crowded and group discussions were poorly managed. A large number of students in a group resulted in a few individuals dominating the discussion and it was difficult for the teacher to supervise all the groups. A similar observation is made by other scholars (Muneja, 2015; Mkomele, 2015; Tambwe, 2017) who revealed that a large number of students in the classroom can prevent a teacher from facilitating the development of applicable knowledge and skills since the teacher cannot practice some of the teaching practices which develop such skills.

Findings of the current study, confirmed that teachers' practice of lesson implementation does not enhance the development of 21st-century skills. The findings are in line with the findings in other studies in East Africa which established that, despite the need for developing 21st-century skills among East African countries, teachers' limitations with such abilities do not equip students with such skills (Kajoro, Chirure & Simiyu, 2010). According to Vavrus and Bartlett (2012), teachers' views of knowledge production are shaped by the cultural, economic and social context in which they teach. This means the teacher's ability emanates from their competencies,

teaching and learning environment as the obstacles towards competencies development. Therefore, there is a need for the concerned stakeholders to improve the teaching and learning environment by supplying adequate teaching and learning resources.

2.4 Conclusion and Recommendations

The teachers' competencies in developing 21st-century skills is very important in teaching and learning processes. The study assessed teachers' ability in planning and in implementing lessons that develop 21st-century skills. The study concludes that most teachers have limited competencies required for the development of the 21st-century skills such as critical thinking, communication, collaboration and creativity. Such minimal level of competencies is manifested in their lesson planning and executions in classes. Other associated factors include high-class size, language barrier, lack of enough teaching and learning resources and inadequate training towards 21st-century skills. Since such skills are very essential to 21st-century learners to address the labour market needs, the study recommends in-service training to secondary school teachers on how to integrate 21st-century skills in their lessons planning and implementation. Also, the teacher education institutions such as colleges and Universities should restructure their teacher education programmes to equip teachers with 21st-century skills necessary for 21st teachers. Moreover, the school Quality Assurance Department (SQAD) should ensure that 21st Century Skills in lesson preparation and teaching and learning are emphasized whenever they conduct school visits. Lastly, teachers themselves should be proud of their profession and hence should struggle to update their knowledge and schools towards modernized pedagogy to enhance the development of 21st-century skills.

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CHAPTER THREE
THE INFLUENCE OF FORMATIVE ASSESSMENT
PRACTICES IN PROMOTING 21ST CENTURY SKILLS
DEVELOPMENT AMONG SECONDARY SCHOOL
STUDENTS IN TANZANIA

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Abstract

The development of 21st century skills among students in secondary schools depends much on the formative assessment practices employed by classroom teachers to influence such competencies development. Specifically, the study evaluated how formative assessment practices in secondary schools develop 21st century skills, and how management and administration of formative assessment tools promote the development of 21st century skills amongst students. Data were collected from 32 Geography teachers from 10 secondary schools in Morogoro Municipal. Data collection methods used included interviews and classroom observations. The findings indicate that, the formative assessment practices in secondary schools do not promote the development of 21st century skills because the majority of Geography teachers mainly employ written tests and examinations as formative assessment tools. Moreover, it was found that such tools were poorly administered and managed. Basing on this observation, the study concludes that, the formative assessment practices used in secondary schools do not influence the development of 21st Century skills to students. In line with this, the study recommends for curriculum review and training of teachers on effective preparation, management and administration of formative assessment tools to promote 21st century skills development amongst students.

Key words: 21st Century Skills, Formative Assessment, Secondary School, Teacher, Tanzania

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3.1 Introduction

This paper evaluates how assessment techniques used by secondary school teachers in Tanzania promote the development of 21st century skills in students. Voogt and Roblin, (2010) define the 21st century skills as “an overarching concept for the knowledge, skills and dispositions that citizens need to be able to contribute to the knowledge of the society”. Meanwhile, the Organization for Economic Co-operation Development (OECD) 2030 paper defines the 21st century skills as key to meet the challenges of a volatile, uncertain, complex and ambiguous world, harnessing digital tools and artificial intelligence (OECD, 2018). Also, 21st century skills are referred as the key abilities to address the emerging political, economic, social and technological challenges threatening human lives and their development (Ananiadou & Claro, 2009).

Partnership for 21st century skills (P21) highlight 4Cs (Creativity, Critical thinking, Communication, and Collaboration) as 21st century skills that need to be developed during teaching and learning in the context of core subjects (González-Salamanca *at el.*, 2020). This study aimed to assess how the 4Cs are promoted in formative assessment practices in secondary schools in Tanzania. The study explicitly aimed to assess how formative assessment practices develop 4Cs among students and, how management and administration of formative assessment tools promote the development of the 4Cs amongst secondary school students. The development of 4Cs among students is influenced by the formative assessment practices and the types of tools employed by teachers at classroom level (Singh et al., 2020). In this view, assessment should become part and parcel of the teaching and learning processes (OECD, 2018) for a student to develop the 21st Century Skills.

As the world's labour market requires innovative, creativity, communicative, collaborative, critical thinkers and digital literate personnel, such skills require new techniques of assessment in order to ensure that, assessment influences learning instead of being judgmental and obstacle towards skills acquisition (Suto & Eccles, 2014; González-Salamanca *at el.*, 2020). Therefore, the education curriculum should aim to prepare students with knowledge and skills needed in 21st Century (Levy & Murnane, 2004). This can be achieved by using instructional strategies and assessment techniques that involve students rather than lecturing and memorizing (Snyder & Snyder, 2008).

To align with the demands of the labour market, Tanzania shifted from content to competencies-based education (Kopwel, 2014). Such changes were necessary to ensure that, the graduates are capable of demonstrating their practical competencies in the real world of work, addressing challenges through innovation, critical thinking, collaboration and communication instead of just memorizing the facts (Mkimbili & Kitta, 2019). The new paradigm necessitated not only changes in the teaching processes but also the purpose and techniques of assessment from assessment of learning in which, summative assessment was separated from teaching and learning processes. This has been purposely done to determine how well students can develop the intended competencies through formative assessment (Black & William, 1998).

The primary goal for assessment is to improve the learning outcomes (Care et al., 2018) and provide feedback information to teachers and students (Black & William, 1998). In that case formative assessment (FA) and assessment for learning (AFL) are vital to 4cs assessment in the classroom. FA and AFL are said to

have positive contribution to the teacher to adjust instruction when students are not performing well, enable the teacher to redesign strategies of teaching and learning (Black & William, 2009). The feedback from the assessment provides opportunity to the teacher to plan and attain the desired goals (Sardareh & Saad, 2012). Assessment is expected to help students to indicate how they can use the knowledge acquired in addressing the real-world problem (Webber & Tschepikow, 2013). This means, assessment should not be punitive to the learners but a catalyst to improve the teaching processes to the teachers and the learning processes to the students as well. In this view, new skills, techniques and instruments are required to be in place towards the development of the 21st century skills in secondary schools.

The curriculum of Tanzania emphasizes the use of formative assessment which provides students with opportunity to demonstrate their competencies in the real world of work and correct their own mistakes and misconceptions (Paul, 2014). The formative assessment can be achieved through multiple tools which include field assessment tasks, role playing, portfolio, oral presentation written essay and rating scale (MoEVT, 2007). Formative assessment tools probe students' understanding, reasoning and critical thinking rather than their ability to memorized facts. That means, formative assessment should have more weight than summative one in order to influence the development of 4Cs 21st century skills to the learners and provide effective feedback to the teachers, parents and other stakeholders in education.

Literature indicates, formative assessment is more effective in developing the 4Cs to students compared to its counterpart. The study conducted in Indonesia on the

effect of formative assessment in developing critical thinking revealed that formative assessment through oral feedback can develop critical thinking to students (Nurhijah *et al.*, 2020). Similarly, formative assessment engages students in higher order of thinking activities and develop critical thinking, collaborative, communication and creative skills (Msoqi, 2019). In addition, the study conducted on the 21st Century assessment techniques in South Africa found that, the 4cs assessment techniques improves teaching and learning processes (Khasi, 2009). The same has been observed in Kenya where secondary school teachers are emphasized to employ formative assessment than summative (Wafubwa & Ochieng, 2020).

Management and administering of formative assessment can be done in daily bases in classroom to gain an understanding of the students' progress and abilities. Different formative assessment tools are used to assess various skills depending on the purpose and the aim of assessment. Among the formative assessment tools used are think pair share, questions, tests and quizzes (Culline, 2015). Performance based assessment are more effective in assessing competencies and skills rather than standardized test (Siarova *et al.*, 2017).

In Tanzania, literature indicates that, education stakeholders including parents have the opinion that graduates of secondary education lack skills and competencies, including the 4Cs 21st century skills. The focus of the teaching and learning processes has become to cover the syllabus instead of mastery of skills. Students are prepared to sit for an examination and not for acquiring the necessary skills which are useful and applicable in daily life. (Lupeja & Komba, 2021). Despite the importance of formative assessment tools towards the development of 4cs 21st century skills among

students in secondary schools (Snyder & Snyder, 2008; Suto & Eccles, 2014; González-Salamanca *et al*, 2020; Singh *et al*, 2020), there is a literature gap on how formative assessment tools are used by teachers in assessing the 4cs 21st century skills in secondary schools and how are such tools managed and administered towards the development of 4cs 21st century skills. The limited literature threatens the strategies for improving the development of 4Cs 21st century skills towards Tanzania development vision 2025 and the realization of the Sustainable development goals which require competent, competitive and innovative workforce.

The study was guided by social constructivism theory by Lev Vygotsky. The theory believes in assessment for learning which emphasizes on the teachers and students' interaction, guiding and creating feedback for students' improvement in learning. Social constructivism acknowledges the social interaction of more knowledgeable peer in shaping the learners' experiences and move from their zonal of proximal development (ZPD). The aim of formative assessment is to influence student's learning (Stiggins, 2007) by making it part and parcel of everyday teaching and learning process. The day-to-day collaborative assessment could reveal team members who would be more knowledgeable to support team members at their ZPD move them to next level of learning. If the assessment techniques rely on social constructivism approach, the development of the 4Cs 21st century skills amongst learners is likely to occur.

3.2 Materials and Methods

The study adopted a mixed research design in which data were collected from 32 Geography teachers from 10 secondary schools in Morogoro Municipal Tanzania. Face to face interview was conducted to Geography teachers and key informants (academic teachers and

head of schools). The key informants were interviewed on the modality of the assessment in the school. A total of 24 classroom observations were conducted to collect data. Assessment methods recommended by the secondary school curriculum such as project, quizzes, field task, role play, oral presentation and essay writing were used as a checklist in classroom observation (MoEVT, 2007).

3.3 Findings and Discussions

The study intended to assess Geography teachers' competencies in assessing 21st-century skills among students through formative assessment tools. It sought to evaluate how formative assessment practices in secondary schools in Tanzania develop 21st Century skills among students. The study findings are presented based on the specific objectives which were to assess how formative assessment practices develop 4Cs (Communication, Collaboration, Creativity and Critical thinking) 21st Century skills among students and how management and administration of formative assessment tools promote the development of 21st century skills amongst secondary school students.

3.3.1 The influence of formative assessment practices in promoting 21st Century skills

In order to evaluate the influence of formative assessment practices used by secondary school teachers towards the development of the 21st century skills, observation was done. Eight indicators were used to show whether or not the teacher assigns students a variety of hands-on activities; whether or not the teacher provides homework or quizzes to the students; whether or not the teacher gives opportunity to the students to way out their understanding during learning process (allow questions and answers); whether or not the students are given opportunity to connect what they learn

and real-world situation; whether or not the teacher sets authentic based assessment activities such as real world (field) tasks; simulation or role play; oral presentation; written essay or report. The findings are shown in table 7.

Table 7: Teachers' formative assessment practices promoting 21st Century Skills

Variables	Measures			
	WD	D	PD	ND
Projects and practical works.	0	8.3%	4.2	87.5%
Homework or quizzes	0	25%	37.5%	37.5%
Questions and answers	4.2%	50%	37.5%	8.3%
Connecting content and real-world situation	12.5%	20.8%	29.2%	37.5%
Field tasks	4.2%	0	12.5%	83.3%
Role play	4.2%	12.5%	4.2%	79.1%
Oral presentation	12.5%	16.7%	8.3%	62.5%
Written essay or report	0	12.5%	8.3%	79.1%

WD: Well Done, D: Done, PD: Partially Done and ND: Not Done

Findings in Table 7 shows that formative assessment practices in secondary schools do not develop the 4cs 21st century skills. Teachers who assign project and practical work were 8.3%. The achievement in assessing 21st century skills depend on the methods of assessment. When students are provided with hand on activities create the opportunity to the students to be creative, innovative and critical thinking. According to García and Pearson (1994), projects are important since they increase students' ability to access information, organize ideas and share information with others. Projects also provide opportunities for students to read a variety of reference materials and resources and involve students in setting learning goals (Ibid). With such low rate of project and practical work implies that the assessment of creativity and critical thinking is insignificant.

When interviewing one of the teachers revealed that

The school has no Geography room where students can be assessed on practical bases, students are therefore being assessed theoretically". (16th March, 2022).

Another teacher added

With the fee free education, parents are not willing to contribute anything therefore it has become impossible to have study tours where hands on assessment techniques could be practiced. (16th March, 2022).

In this regard with lack of facilities and financial resources, it is difficult for the teachers to prepare practical work that promotes the development of 21st century skills. In order to address the problem of lack of facilities and financial resources the teachers should be trained in using locally available resources instead of waiting for the Government to provide all the resources. Also, parents should cooperate with teachers in academic life of their children instead of embracing the cost-free education.

Nevertheless, homework provided to students was rated low at 25%, the majority of teachers do not provide homework or quizzes to students. The reason given was large number of students in the classroom. One of the teachers asserted:

The workload of the teacher is considered by the number of periods but in actual fact a teacher has more than 45 students. In form four I have three

streams with average of 73 students which makes 220 students, this makes difficult to provide homework frequently and mark them.' (16th May, 2022).

The above qualitative statement suggests that homework is less provided to the students due to the large number of students in classes. The findings concur with the study done by Kapinga and Kimaro (2020) that teachers do not use formative assessment due to number of students in classes and limited instructional time. Therefore, the government and other stakeholders should consider embarking into increasing the number of classrooms per school so as to match with standard class size which is 45, and improve the teacher student ratio.

Mostly question and answer assessment method was used by teachers to provide opportunity to students to way out their understanding, either the teacher asks questions and students answer or otherwise. Table 7 indicates that 54.2 % (4.2% and 50 % well done and done respectively) ask the students questions in the process of learning. According to Mulenga- Hagane (2019) oral questions are used for the purpose of gauging that learning has truly occurred. Although the question-and-answer assessment method was rated higher, the majority of students never try it to avoid being wrong. This makes a way for a teacher to proceed with the lesson. This indicates that the majority of students were left behind and the teachers proceeds with the aim of completion of the syllabus. It is therefore imperative that teachers should diversify their assessment methods so as to promote the acquisition of 4Cs 21st Century skills.

The findings shows that both content and real-world connection and field work were rated very low, only 33.3 % (12.5% and 20.8 % well done and done respectively)

of teachers lead students to connect content and real-world situation while 4.2% provide field work or activities to the students as the way of assessing. This shows that assessment was mainly based on the content provided to the students and not intends to solve the real-world problems. According to Webber and Tschepikow (2013) assessment requires to indicate how students can use knowledge acquired in solving real problems. On the other hand, teachers show their concern in some of Geography topics contents that do not match with the students' real situation. One of the teachers revealed that

Students are taught about glacial while they have never seen an area covered with ice/snow. It is better the students to be taught what is found in their environment. (16th May, 2022).

This implies that 21st century skills assessment is inefficient in secondary school as what have been assessed is irrelevant, teachers strive to cover content and use assessment to prepare students for final examinations (Mkimbili & Kitta, 2019; Amua-Sekyi, 2016). Under such situation curriculum review is necessary to increase the relevance of the subject contents and streamline delivery of skills to students.

Furthermore, the findings attested that assessment activities such as role play were 16.7 % (4.2% and 12.5 % well done and done respectively). On the other hand, Oral presentation were rated low at 29.2 % (12.5% and 16 % well done and done respectively) and essay writing 12.5%. It was observed that oral presentation was hindered by language, students were struggling to discuss in their groups and fail to present in front of their fellow students. The discussion in group was done in Swahili then changed Kiswahili discussion to English.

This implies that communication and collaboration skills assessment is inefficient in secondary school. The same has been reported by Massay (2020) that students cannot communicate fluent in English. English language seems to be a key barrier to communication and delivery of materials among students, it is important to either switch to their language or improve learning and teaching environment from primary level education which would result in improving English language mastery and communication altogether.

Generally, teachers' assessment practices do not reflect 21st century skills, the majority still rely on traditional paper-pencil assessment methods despite changes in curriculum which demands the adoption of authentic and performance-based assessment methods Paul (2014). Nevertheless, methods of assessment that require extensive involvement of the students and teachers like projects and field practical were not used. Most of the teachers interviewed were not aware of the 21st century skills incorporated in the curriculum that need to be developed and assessed, in such cases it is obvious that teachers cannot be able to assess such skills. The same has been observed by Mpapalika (2014) that teachers lack adequate knowledge on how to develop assessment tools that assess competencies development. Teachers need in-service training and seminars to improve their capacity for the promotion of 21st century skills.

3.3.2 The influence of management and administration of formative assessment tools in promoting 21st Century skills

The study employed interview method to examine the role of management and administration of formative assessment tools towards the development of 21st Century skills in Secondary schools. Teachers were asked on how they set, supervise and mark their tests

and examinations in their schools. Results indicated that, most of teachers use test and examinations as the main tools for assessment, however, it was observed that the tests and examinations were poorly managed and administered. Interview with a teacher from school A, testified that:

In our school, a teacher has mandate to decide a kind of test and thus the majority of teachers set test questions that can be easily marked. Moreover, we do not have examination moderation committees and therefore our examinations are not moderated. We also do not have an internal format for setting an examination. (21stFeb, 2022).

The statement above suggests that constructed questions were biased towards testing only “knowledge” resulting into forcing students to memorize. For example, one of the examinations has four essay questions, all require students to explain factors. Question i) *With vivid examples explain six factors which influence the development of tourism sector in Tanzania.* Question ii) *Explain the factors that limit the development of hydroelectric power in developing countries.* Question iii) *Explain eight factors that lead to the population distribution in the world.* The questions have the scenario of CBC but in reality, forces the learner to memorize the points or facts. The formative assessment tools (test and examinations) do not reflect 21st century skills because the examinations rely on memorization and reproduction of facts. It was observed that most of the teachers are incompetent in constructing their own question items instead they rely on past papers from NECTA or past papers from other schools. The same has been reported by Selemani-Mbewe (2002). In-service training is

therefore imperative for capacity building to improve teacher's competencies.

Moreover, large number of students in the classes hinders the administration of the formative assessment tools which promotes the development of 21st century skills. A teacher from school D said:

With a large number of students in class, some teachers do not mark their tests, they just guess the marks and award to students basing on their personal view. (13th May, 2022).

This statement implies that students are given tests or examination as formality instead of gaging the students' skills. The tests results, therefore are meaningless since they are not a true measure of skills acquired. Similar observation by Mulenga-Hagane *et al*, (2019) indicated that huge class's impact on the frequency of administering of test and examination. With large number of students, frequency of administering tests is being reduced, most likely that limited aspects of skills are tested. In this regard, emphasis should be put on insuring a balanced teacher students' ratio. The teaching load should not be measured by the number of periods per week but the number of students in classes should also be factored in.

A teacher from school E said,

We do not mark tests and internal examinations in panels, every teacher marks on his/her own at his/her own pace to meet the deadline due to limited resources. (13th May, 2022).

Another teacher from school F argued that;

Some teachers mark tests and examinations without marking schemes, this creates variation of answers and marks among students in the similar questions and similar examination. (13th May, 2022).

This implies that the modality of marking test and examinations does not intend to develop 21st century skills but rather to create score that needed for continuous assessment. The same has been observed by Lupeja and Komba (2021) that teachers have been persuaded towards the demand of examination than imparting students with skills. This is contrary to the development of 21st century which needs more practical work. Teachers need in-service training and seminars to improve their capacity for the promotion of 21st century skills and they should work in team, experienced ones should coach the inexperienced teachers.

The interview with teachers from different schools, indicate that, despite the widely use of tests and examinations as formative assessment tools in secondary schools, such as tests and examinations are poorly managed and poorly administered hence difficult to achieve the intended results towards the development of 21st century skills among students. This infers that, even the poor tools in place for formative assessment are not adequately utilized. Large class sizes and limited resources constrain formative assessments which require practical, discussion and field tasks or activities, so it has been difficult to provide authentic assessment tools. In that case the government should apportion the teachers in schools so as conform to standard teacher students' ratio.

3.4 Conclusion and Recommendations

The study concludes that, the formative assessment tools used in secondary schools do not influence the development of 21st Century skills to students as it is based much on assessing students' ability to memorize facts and concepts instead of skills acquisition. Secondary school teachers have limited competencies in designing, managing and administering assessment tools that promote 21st century skills. This in turn affects their assessment practices towards development of 21st century skills among students. The observation is attributed to lack of in-service training, poor reading culture, lack of facilities, large number of students in classes and negative attitudes towards teaching career among teachers in Tanzania. The study findings provide a room for recommendations for actions that, the ministry of education, science and technology should organize in service training for teachers to orient them on 21st century skills' pedagogy and assessment tools. Furthermore, the Tanzania Institute of Education (T.I.E), as a curriculum development institute should develop curriculum materials that reflect the 21st century skills by including contents that match with the real situation of Tanzania.

Moreover, the secondary education curriculum should be reviewed to give more weight for formative assessment rather than summative. In addition, the National Examination Council of Tanzania (NECTA) is urged to set examinations that assess the acquisition and development of the 21st century skills rather than memorization of facts. Lastly, heads of secondary schools should ensure teachers integrate the 21st century skills in their lesson, from preparation, execution and assessment in order to develop such skills among students.

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CHAPTER FOUR

GENERAL DISCUSSIONS

4.1 Introduction

This chapter presents the general discussions of the study in relation to the specific objectives of the study. The general objective of this study was to assess Geography teachers' competencies in facilitating the acquisition of the 21st century skills among secondary school students in the selected schools of Morogoro Municipality.

4.2 The ability of Geography teachers in planning lessons which reflect the development of the 21st century skills.

The objective sought to assess the ability of the Geography teachers in planning lessons which reflect the development of the 21st century skills. The study found that, majority of the teachers have limited ability in planning lessons towards the development of 21st century skills. This observation is manifested through their lessons which they planned without indicating the intended learning outcomes to be achieved by the end of the lesson. This revelation implies that, most of the teachers were unknowledgeable to prepare lesson plans which reflect the development of 21st-century skills. That result is in-line with the study conducted by Makunja (2015) in Tanzania, who established that most of the teachers' lesson plans do not reflect the skills expected to be developed among the students. Therefore, if teachers cannot prepare effectively their lessons to reflect the development of 21st century skills, it is likely that, teachers themselves are not aware about such skills, hence they cannot prepare the lessons and therefore, they cannot develop them. This means, those teachers cannot prepare relevant teaching aids and appropriate teaching strategies for enhancing such skills. Therefore,

the poor development of 21st century skills is instigated by teachers

4.3 The Geography teachers' practices in implementing lessons which reflect the development of the 21st century skills

The study intended to assess the Geography teachers' practices in implementation of lessons which reflect the development of the 21st century skills. The study found that, most of the Geography teachers employ poor teaching and learning strategies which do not enable students to develop 21st century skills. The most suitable methods such as debate and presentations which may influence interactions among them towards communication, critical thinking, collaboration and problem-solving are rarely used. This finding is in line with the findings of numerous studies in Tanzania which found that, most of the teachers do not use effective teaching methods relevant for enhancing 21st century centuries (Komba & John 2015; Mtallo, 2015; Massay, 2020, Lupeja & Komba, 2021). Further, the findings of this study that teachers mostly use lecture and assignment methods differ from other studies which insist the use of smartphone and computer technology to enhance 21st century skills such as communication, digital literacy, problem-solving and innovations skills (Bulk et al, 2013; Gawate & Jadhav 2019; Anshari et al., 2017). If teachers use poor pedagogy which do not enhance 21st century skills, it means, lack of 21st century skills results from poor teaching and learning methods. Therefore, teachers' ability to choose and use appropriate pedagogy and technology is a key factor for successful development of the intended skills.

4.4 Geography teachers' formative assessment practices for promoting 21st Century Skills

The study examined the Geography teachers' formative assessment practices for promoting 21st century skills. The study found that, the formative assessment practices in Geography subject do not promote 21st century skills because they rarely exposed students to practical works which are expected to enhance hands-on skills to students. The finding differs from the study conducted by García and Pearson (1994), which established that, project works engage students hence promotes the acquisition of 21st Century skills, rather than preparing students for paper work examinations. This means, teachers' choice and use of formative assessment method determine 21st century skills to their students. Therefore, formative assessment practices should be linked direct to the intended skills for students as it provides immediate feedback to both, students and teachers for review and intervention for improvements. In this view, formative assessment determines how the graduate will perform in the real world of work.

4.5 The influence of management and administration of formative assessment tools in promoting 21st Century skills

The study intended to evaluate the management and administration of formative assessment tools in promoting 21st century skills. The study found that, the overcrowded classes and poor preparation impend teachers to effectively manage and administer formative assessments such as group works, individual assignments and tests hence affect the promotion of 21st century skills. The findings concur with the study conducted by Kapinga and Kimaro (2020), which established that teachers do not use formative assessment due to number of students in classes and limited instructional time. The same has been observed

by Lupeja and Komba (2021) that teachers have been persuaded towards the demand of examination than imparting students with skills. This is contrary to the development of 21st century which needs more practical work. Teachers need in-service training and seminars to improve their capacity for the promotion of 21st century skills and they should work in teams; experienced ones should coach the inexperienced teachers. The findings in this objective implies that, most of the limitations towards management and administration of formative assessment to enhance 21st century skills are either institutional, policy and personal factors. That means, the poor promotion of 21st century skills are a complex phenomenon which needs involvement of different stakeholders to address them.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the general conclusions and recommendations of the study in relation to the study objectives. The general objective of this study was to assess Geography teachers' competencies in facilitating the acquisition of the 21st century skills among secondary school students in the selected schools of Morogoro Municipality.

5.2 The ability of Geography teachers in planning lessons which reflect the development of the 21st century skills.

The study observed that, most of the Geography teachers in Morogoro secondary schools have limited skills related to lesson planning towards 21st century skills. From this observation, the study concludes that, there is a dire need of developing lesson planning skills among Geography teachers in order to enable them reflect 21st century skills when preparing for the teaching and learning processes. Lack of such skills does not only affect the teachers' lesson preparation but also, lesson implementation, assessment and 21st century skills acquisition among secondary school students.

5.3 The Geography teachers' practices in implementing lessons which reflect the development of the 21st century skills

The study observed that, most of the Geography teachers employ poor pedagogy which do not enable students to develop 21st century skills and the excuse they give, is a large number of students in the class. From this observation, the study concludes that, the teaching and learning methods which influences students' interaction enable students to develop essential 21st century skills. Therefore, teachers is large and small

classes are required to innovate effective strategies which can develop 21st century skills to their students.

5.4 Geography teachers' formative assessment practices for promoting 21st Century Skills

The study observed that, formative assessment practices conducted by teachers has a little contribution on promotion of 21st century skills as they are paper based instead of being practical oriented. Basing on this observation, the study concludes that, Geography teachers should embark on practical oriented formative assessment practices as an intervention measure towards the promotion of 21st century skills. In order to reach this goal, the readiness of the Geography teachers as well as their positive attitude towards 21st century skills is very essential.

5.5 The management and administration of formative assessment tools which promotes the development of 21st century skills.

The study observed that, there is poor management and administration of formative assessments in Geography subjects which prevents secondary school students to develop 21st century skills. From this observation, it can be concluded that, the presence of effective formative assessment tools cannot promote the development of 21st century skills unless, such tools are well and effectively managed and administered. Therefore, there is a dire need of capacity building to Geography teachers as well as school management and administration, in order to improve the management and administration of formative assessment tools, towards 21st century skills.

5.5 Recommendations of the study

The study findings provide a room for recommendations for actions that, the ministry of education, science and technology should organize in service training for

teachers to orient them on 21st century skills' pedagogy and assessment tools. Furthermore, the Tanzania Institute of Education (T.I.E), as a curriculum development institute should develop curriculum materials that reflect the 21st century skills by including contents that match with the real situation of Tanzania.

Moreover, the secondary education curriculum should be reviewed to give more weight for formative assessment rather than summative. In addition, the National Examination Council of Tanzania (NECTA) is urged to set assess which assess the acquisition and development of the 21st century skills rather than memorization of facts. Lastly, heads of secondary schools should ensure teachers integrate the 21st century skills in their lesson, from preparation, execution and assessment in order to develop such skills among students. Further study may be conducted on developing assessing 21st century skills among Geography teachers in secondary schools.

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APPENDECES

Appendix 1: Observational check list for teaching / learning practices in Secondary School.

Sex.....

Educational level.....

Teaching Experience (Number of Years).....

Observation Guideline for Lesson plan review

Indicators	WD	D	PD	ND	Remarks
learning outcome clearly stated(SMART)					
The list of teaching aid are shown					
Provide the opportunity to students to explore or give their knowledge					
link the content and real life situation					
It gives the opportunity to students to work cooperatively					
provides the opportunity to students to solve problems for themselves (activities)					
state clearly ways of assessing students activities					
provides room for teacher students interaction and among the students themselves					

**Observation check list for teaching practices/
learning process**

	Teaching and learning activities	W D	D	P D	N D	RM K
Creativity and innovation	The teacher uses a wide range of idea creation techniques (such as brainstorming)					
	The teacher allows the students to develop, implement and communicate new ideas to others effectively (create their idea to tackle a problem)					
	The teacher cultivates the culture of being open and responsive to new and diverse perspectives; incorporate					

	group input and feedback into the work					
	View failure as an opportunity to learn; understand that creativity and innovation is a long-term,					
Critical thinking and problem solving	Compare information from different sources to complete assignment.					
	Summarize or create their own interpretation of what they read					
	Interpret and draw conclusion based on the best analysis					
	Ask questions which need clarification					
Communication	Encourage the students to convey their thoughts					

	and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts (Use of debate or presentations)					
	Listen effectively					
	Allowing students to ask questions					
	Students demonstrate in front of other students.					
Collaboration	The teacher use grouping techniques (eg think pair share, Jigsaw, talk partner)					
	Present group work					
	The teacher guide the students to work					

	collaborative, Assume shared responsibility for collaborative work, and value the individual contributions made by each team member					
	Students work in pair or small groups.					

Classroom observation guide for Lesson assessment

	WD	D	PD	ND	Rks
The teacher assigns students a variety of hands-on activities such as projects and practical works.					
The teacher provides homework or quizzes to the students					
The teacher gives opportunity to the students to way out their understanding during learning process.					
Students are given opportunity to connect what they learn and real world situation					
Sets authentic-based assessment activities such as ✓ Real world (field) tasks,					

✓ Simulation or role play					
✓ Oral presentation					
✓ Written essay or report					

WD = Well done

D = Done

PD = Partially done

ND = Not done

Appendix 2: Interview guide for Teachers

1. Are you aware of 21st century skills?
2. What do you know about integration of critical thinking, communication, collaboration and creativity skills.
3. When did you get the knowledge these skills? Where and how?
4. How do you integrate critical thinking, communication, collaboration and creativity skills during the lesson?
5. What challenges do you face in integrating critical thinking, communication, collaboration and creativity skills in lessons?
6. What are your opinions in critical thinking, communication, collaboration and creativity skills in lessons?
7. What challenges do you face in integrating critical thinking, communication, collaboration and creativity skills in lessons?
8. How do you assess such skills?
9. How do you administer and manage test and examination as formative assessment?
10. Does the syllabus provide enough guidelines for integration of critical thinking, communication, collaboration and creativity skill during teaching?



Kuhusu Tasnifu Hii

Utafiti huu ulijikita kutathmini umahiri wa walimu katika kutumia mbinu zinazokuza stadi za karne ya 21 kwa wanafunzi. Lengo hasa ni kutathmini namna ambavyo uandaaji wa somo, ufundishaji na ujifunzaji, tathmini na upimaji pamoja na uendeshaji wake unavyochangia kukuza stadi za karne ya 21 kwa wanafunzi. Data zilikusanywa kwa njia ya mahojiano, uchambuzi wa maandalio ya somo na mbinu ya ushuhudiaji katika ufundishaji wa walimu darasani. Walimu 32 wa somo la Jiografia kutoka shule 10 za sekondari za serikali katika manispaa ya Morogoro walihusishwa katika utafiti huu.

Matokeo ya utafiti yanaonesha kuwa walimu wengi wa shule za sekondari katika manispaa ya Morogoro wana uelewa mdogo juu ya stadi za karne ya 21 ambazo ni pamoja na ubunifu; fikra tunduizi, stadi za mawasiliano na ushirikiano. Hali hii imepelekea walimu wengi kukosa umahiri wa kutumia mbinu zinazokuza ubunifu; fikra tunduizi, stadi za mawasiliano na ushirikiano katika kuandaa na kufundisha masomo. Kadhalika, usimamizi na uendeshaji wa tathmini na upimaji haujengi umahiri wa karne ya 21 kwa wanafunzi. Ili kuwajengea umahiri walimu katika kutumia mbinu zinazojenga umahiri wa kukuza stadi za karne ya 21 kwa wanafunzi.

Utafiti unapendekeza mafunzo kazini kwa walimu wa shule za sekondari ili kuwajengea umahiri wa kutumia mbinu zinazokuza stadi za karne ya 21 kwa wanafunzi. Kadhalika, mtaala wa elimu ya sekondari upitiwe upya ili kuipa uzito zaidi tathmini endelevu badala ya tathmini ya mwisho kama ilivyo sasa.