JRIIE Journal of Research Innovation and Implications in Education
Center for Research Implications & Practice

Website: www.jriiejournal.com ISSN 2520-7504 (Online) Vol.8, Iss.3, 2024 (pp. 239 – 246)

Vocationalisation of Basic Education: Experiences of Students in a Technical Secondary School in Moshi Municipality, Tanzania

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Abstract: *This study was undertaken to examine how vocationalisation of secondary education affects students' experiences and attitude towards pursuing technical and vocational careers. The study employed a single case study design. The target population was the students and teachers in the technical secondary school in Moshi Municipality. The sample had 41 total participants including 35 students selected using stratified sampling procedure, considering gender and the two class levels, 5 technical subject teachers and Head of school selected purposively. The school head was selected using a purposive sampling technique. Data were collected through open-ended questionnaires. Data were analysed using descriptive statistics for quantifiable data and thematic analysis for qualitative information. The results show that the students' experiences in technical subjects were building self-employment opportunities, a good foundation for future career/dream, and enhancing academic performance in other academic subjects. It was also found that, majority of students would prefer proceeding with technical career fields after completing basic education. The study concludes that technical secondary education builds and nurtures technical skills, which are beneficial to students and the nation at large. The study recommends the establishment of more technical secondary schools to open more opportunities for all the students in basic education who need technical skills.*

Keywords**:** *Basic education, Vocationalization, Students, Experiences, School, Technical, Moshi*

How to cite this work (APA):

Mokoro, D. K. (2024). Vocationalisation of basic education: Experiences of students in a technical secondary school in Moshi Municipality. *Journal of Research Innovation and Implications in Education, 8*(3), 239 – 246. **https://doi.org/10.59765/vgvrs38nyh**.

1. Introduction

Recently, Tanzania has embarked on vocationalising basic education by integrating technical subjects in secondary schools. In Tanzanian context, basic education comprises of primary and lower secondary education which is also known as ordinary secondary level (Ministry of Education, Science and Technology [MoEST], 2023a). The government of Tanzania is now reforming the education system focusing on making education provided in schools to be more skills-based by introducing vocational and technical subjects (i.e. vocationalization of education). According to the Tanzania Institute of Education (TIE), the objectives of technical secondary education in Tanzania include: i) to equip students with the necessary knowledge and skills for employment, ii) to prepare students for further technical and vocational education and training, and iii) to prepare students for self-employment in the informal sectors (TIE, 2019). The broader aims of technical secondary education are to equip Tanzanian youths with the necessary skills to contribute towards the sustainable economic achievements and facilitate the attainment of National Strategy for Growth and Reduction of Poverty (NSGRP). Further, technical secondary education is expected to enhance the realisation of National Development Vision 2025 whose goal is to move Tanzania to a middle-income country (Tanzania Institute of Education, 2019; Luhala & Yuting, 2021). Luhala and Yuting add that, technical secondary education in Tanzania aims at preparing a skilled labor force in the country that aims at industrial economic transformation.

However, despite the importance of secondary technical education in the transformation of the economy in Tanzania, there is a gap in understanding the students'

attitudes and experiences in technical secondary education and how they shape their future behaviour. Studies done in Tanzanian context seem to involve students in general secondary education than technical schools (Mayega, 2017; Ngogo, 2014). Sumra and Katabaro (2017) also mention that technical education does not appeal to students in Tanzanian context and most of them aim for general university education. There was a need to understand the attitudes and experiences of students in technical secondary school and find out how their learning experiences influence their future career aspirations. According to Virtic and Sorgo (2022), school experience can influence students' career choice. There is little evidence in literature about experiences of students in technical secondary schools in Tanzania context and the current study wished to fill this gap. Understanding the students' attitude and experiences in technical subjects and their influence on future careers can give insights for the introduction of technical subjects in secondary (basic) education. Practical skills obtained through technical subjects are currently lacking in most schools, as the majority of secondary schools are non-vocational. According to National Examination Council of Tanzania [NECTA] (2022) database, the number of technical secondary schools is only 14 out of 5926 ordinary secondary schools in Tanzania (MoEST, 2023b). This is a very small number compared to the skills gap to be addressed for the labour force in the country. Although there are vocational and technical institutions for those who completed ordinary level education, these institutions cannot cater for the massive enrollment of pupils in primary schools and ordinary level secondary school (basic education) in Tanzania, and the number of students who are not enrolled in Form one after the completion of standard seven and the number of students not enrolled in Form five after completion of Form four (Luhala & Yuting, 2021). Such a massive number of Tanzanian school graduate youths need potential skills that could make them productive through technical and vocational education. Consequently, the nation continues to lack adequate productive and skilled human resources, which would boost the country's industrialisation process and the national economy.

The current study therefore investigated the experiences of students enrolled in one technical secondary school on the influence of technical subjects towards their future career using Moshi technical secondary school as a case study. Perspectives of students, teachers and Head of schools were sought based on the following research questions: i) What are the experiences of the students in technical secondary education? and, ii) How are students' experiences in technical education influencing their future career preferences?

2. Literature Review

Vocational skills can best be developed if taught from lower levels of education (basic education). Several countries have recognized this and therefore establishing and giving support to vocational education at lower levels of education. In American context, career and technical education (CTE) strategy is used to provide young people with academic, technical and employability skills and knowledge to pursue postsecondary education. The CTE provides students with opportunities to acquire competencies required in today's workplaces (critical thinking, collaboration, problem solving, innovation, teamwork and communication). Students also learn about different careers by experiencing work and workplaces (Brand, Valent, & Browning, 2013).

According to Kozik (2015), the Slovak Republic supports vocational education at primary school level as it ensures professional orientation of students at secondary vocational education. The primary school graduates can therefore further studies at vocational fields as they meet with known concepts, which largely facilitate the transition between primary and secondary vocational education. Clancy (2022) adds that technical education experience can lead to successful careers. Aldinucci, Valiente, Hurrell and Zancajo (2023) established that, secondary TVET students in Chile aspired more tertiary TVET studies due to the growth and of an enduring individual dispositional interest in TVET and strong vocational orientation. Furthermore, Tinibu, Orji, Olokpobri, Prince and Joaji (2016) investigated the career aspirations of students in engineering, technical, and vocational education in Nigeria and found that, students' career aspiration was due to good performance in technical and vocational subjects. These studies imply that the early exposure of school students to technical oriented education affects their future aspirations positively towards technical fields.

Literature shows that exposing young learners to technical and vocational education in lower levels of education builds up the students' interests and good performance in the technical fields. The experience in the technical education also influences students' aspirations to technical and vocational studies post school studies. However, the reviewed literature revealed inadequate information about experiences of students in technical secondary education in Tanzanian context. Understanding experiences of integration of technical subjects in general secondary education is important for effective implementation of technical subjects in general education, which is a new phenomenon in most schools in Tanzania and the new curriculum has incorporated technical subjects in basic (primary to lower secondary) education. The current study therefore contributed to filling this gap.

3. Methodology

3.1 Area of the study

The study was conducted in Moshi Municipal Council in Kilimanjaro Region at a technical secondary school. The school was chosen because it offers technical subjects along with general secondary education.

3.2 Research design

This study employed a single case study design under the qualitative research approach in studying "experiences of students in technical secondary education". Single case study involves studying a single group of people in a bounded system (Coombs, 2022). According to Yin (2014), case study is an empirical inquiry that investigates a contemporary phenomenon (the case) in-depth and within its real-world context. This design is used to acquire in-depth knowledge about a particular case (Mligo, 2016). In this study, the case was Moshi technical secondary school in Kilimanjaro region. The school has integration of technical training in general secondary education following the technical secondary education (TSE) framework/curriculum. The chosen design was considered relevant as it enables the researcher to study and understand the experiences of students in the only secondary school offering such education. Sometimes researchers focus on a single case, because its uniqueness or exceptional qualities can promote understanding or inform practice for similar situations (Leedy & Ormord, 2015).

3.3 Population and sampling

The population of interest in this study comprised of students, technical teachers and the head of schools of the technical secondary school in Moshi Municipal Council. Sampling is the selection of a part of the population for study purposes. Non-probability sampling was preferred in this study hence criterion purposive sampling techniques was to select a secondary school which has integration of technical subjects in secondary education curriculum. According to Elmusharaf (2016), criterion purposive sampling is used to select cases that meet a certain criterion and can provide detailed and rich data relevant to a particular research problem. The students were purposively selected but stratified by class level whereby form three and form four classes were targeted with assumption that they have more years of experience in technical subjects and considering gender. Forty (40) students were targeted; 20 from form three and 20 from form four and from each class level (10 girls and 10 boys). However, only 21 boys and 14 girls were accessed due to many students being engaged in private studies. The sample therefore had 35 students, 6 teachers and 1 head teacher, making a total of 41 participants.

3.4 Research instruments

The study used questionnaires to collect data from both students and teachers and an interview guide was used for the school administrator. The questionnaires of open-ended items to gather the data. The researcher in person administered the research instruments. The respondents were given time to complete filling the questionnaires and the researcher collected them when all finished that task. The researcher was available for the respondents who needed clarifications on the items in the questionnaire.

3.5 Data analysis

The collected data were sorted and organised ready for analysis. The qualitative data from open-ended questionnaire items were analysed thematically. Qualitative findings were presented narratively and supported with excerpts from the participants.

3.6 Ethical considerations

Ethical principles were observed in the study whereby permission and consents were sought from Moshi Municipal Council and school authorities. The purpose of the study was also explained to the students and participation was based on one's will and that there is no financial gain attached to involvement in the study. The research instrument did not require the names or identities of the participants and they were informed not to write their names for anonymity purposes. The school teaching timetable for the involved classes and teachers was respected hence data collection was done at a convenient time for the participants. No threat was given for individuals who did not return the filled questionnaires and no coercing applied for participation in the study. The collected data were also handled confidentially and used for academic purposes of this study.

4. Results and Discussion

4.1 Experiences of the students in the technical secondary education

This aspect was intended to capture experiences of students in technical secondary education whereby both non-technical and technical subjects are integrated in secondary education. The results revealed that, majority of the students felt happy and privileged being in a technical secondary school. The following four aspects summarise the experiences of the students i) gaining knowledge and skills useful to their daily life, ii) building self-employment opportunities, iii) good foundation for future career/dream, and iv) enhancing academic performance in other academic subjects. Each of these aspects are elaborated in the following subsections:

4.1.1 Gaining knowledge and skills useful to their daily life

The students mentioned that technical secondary education is beneficial to them by importing important knowledge and skills that are useful to their daily/real life situation. These sentiments can be deduced from the following:

> *The knowledge and skills in drawing, wiring will help me apply in my life; the skills I develop here can be used in different angles of my life; I feel advantageous because the skills I am gaining can be applied later in life* (Respondent No.3, 24th October, 2022).

Another respondent wrote in relating what is learning to application: "*I feel very advantaged because technical subjects give me different experiences in my life since I can apply this knowledge in different places"* (Respondent No.16, 24th October, 2022).

Furthermore, one respondent acknowledged the skills gained as a result of being in technical secondary education that would not have been gained. This was also supported by the view from the head of school that;

> *At first, they (students) feel like they are in a new place, they are not confident because from primary education level they were only exposed to academic subjects only. But, after giving them orientation to students here, they come to understand that technical subjects are important.* (Interviewee, 24th October 2022).

This means the students see the value for technical secondary education that skills are very important even if academic performance is not so promising. Some of the skills that were mentioned by most students included domestic electrical installation, construction designing, building construction and technical drawing.

4.1.2 Building self-employment opportunity

In response to the question, "how do you feel being in technical secondary school?" Some students expressed that they were happy and felt advantaged. They see the ability to employ themselves after finishing studies is there while waiting for other higher levels of studies. The following excerpt illustrates this point as one respondent wrote: *"I feel happy and advantaged. After finishing my secondary education, I will have experience in construction work and that task will help me to employ myself while I am waiting for another level of education"* (Respondent No.19, 24th October, 2022). This finding implies that vocational and technical skills need to be developed and nurtured in secondary schools for self-employment enhancement. Training students in technical subjects is an investment as it generates immediate tangible results.

4.1.3 Good foundation for future career

The responses from students also showed that technical secondary education is helping to build their future career. The following statements elaborate *"I am happy. It (technical secondary education) assists me to reach my goal because one day I will be a civil engineer and it will help me to know some experiences of civil engineering like construction, site plan etc."* (Respondent No.14, 24th October, 2022). Another even sees that; his/her dream is already achieved by writing that "*I am very happy. It was my hobby that one day I would be civil engineer and this has come true"* (Respondent No. 13, 24th October, 2022). The technical secondary education is likely to influence the students to proceed with technical colleges. One of the respondents said that *"I feel happy and advantaged because, after finishing school, I will continue with technical subjects in college*" (Respondent No.10, 24th October, 2022). Similarly, another one said *"I am happy. When I go to technical college, I will have already mastered some subjects"* (Respondent No.29, 24th October, 2022).

In addition, this education seems to be a realisation of one's dream which was aspired before through a role model parent as one respondent wrote:

> *"I feel so happy because, when I was a young girl, I used to see my father how he was working in technical services and I liked and I used to say to myself, I wish to be a technician also because I love decorating subject (Architectural drawing) and that is why l love technical subjects and school"* (Respondent No.17, 24th October, 2022)

4.1.4 Enhancing academic performance

Qualitative analysis of the students' experiences in technical secondary education also revealed that, the knowledge gained in technical subjects is complementing knowledge gained from other (non-technical) subjects. The following statement narrates: "*I feel so good being in the technical school. Learning in technical school gives me some concepts in other subjects because some subjects are related…. also, it makes me very busy than studying in non-technical school"* (Respondent No.22, 24th October, 2022). This is attributed to the fact that technical subjects are activity-based and make students being engaged in hands-on learning experiences.

4.2 Technical secondary education and students' future career aspirations

The students who participated in this study were asked to mention the pathway they would like to take after the completion of form four (ordinary level secondary education) between two pathways (advanced level or technical college studies). In responding to the

questionnaire item, the students mentioned the pathways cross-tabulated with gender as shown in Table 1.

Table 1: Students Responses on the Preferred Pathways after Completing Ordinary Education Level Studies (N=35)

Options	Students' gender			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Advanced level secondary education	7	31.8	5	38.5
Technical college	13	59.1	8	61.5
Self-employing	2	9.1	0	0.0
Total	**22**	**100**	**13**	**100**

Results in Table 1 show that of 35 respondent students, large proportions of both male and female students in each category, aspire to go for technical studies (13 boys (59.1%) and 8 girls (61.5%) followed by significant proportions (7 boys (31.8%) and 5 girls (38.5%) wishing to go for advanced secondary general education level option. Of the five technical teachers involved in the study, three of them also confirmed that technical subjects are influencing students' future career to a large extent. Few respondents mentioned that they would utilize the knowledge and skills they got for self-employment. This implies technical education is influencing students' future career choice positively as majority preferred to take the technical studies pathway in future. Another implication shown by the data is both genders prefer technical studies compared to other educational pathways. We can therefore learn that, technical secondary education can influence students positively regardless of gender.

The finding implies that technical subjects in technical secondary education is influencing the students' future aspirations positively hence influencing the choice of technical studies in tertiary level studies. The previous data on experiences in technical secondary education justify the next path of education after completing form four. The respondent students were also asked to mention the future career fields they would like to proceed with. The answer to this is provided in Table 2.

Table 2: Students Responses on Aspired Future Career Fields

Career field	Frequency	Percentage
Electrical engineering	9	25.7
Civil engineering	13	37.0
Mechanical engineering	4	11.4
Electronics	2	5.7
Architecture	2	5.7
Agriculture	1	2.9
Medicine	1	2.9
Information technology	1	2.9
Accounting	1	2.9
Robotics	1	2.9
Total	**35**	**100**

Data in Table 2 implies that compared to other fields, technical fields are preferred by a relatively large number of students. This is attributed to the positive impact of the technical subjects on students' future career. Relatively, large proportions prefer civil engineering (13 students) followed by electrical engineering (9 students) and 4 students would opt for mechanical engineering. The rest of the fields attracted only one student each. The future career field preferences depend on the experiences that students are gaining in technical subjects. The results imply that future technical experts can be developed by laying a good foundation through vocationalization of basic education (in this case ordinary level secondary education) which enhances the students' interest in future technical career pathways.

4.3 Discussion

The results of this study indicate that knowledge and experience in technical subjects make students appreciate technical secondary education. It is through vocationalisation of basic education (including ordinary secondary level in Tanzanian context) that youths can acquire and develop vocational skills for the society's consumption. Vocational and other practical skills in secondary schools can empower the school graduates by making them employable to existing jobs lacking skilled personnel or making them self-employed self-employing (job creation). Vocational skills development can be a key gateway to access gainful (self-) employment (Mbalamula, 2023).

Vocational skills can be a solution to the public cry due to lack of skilled school graduates. The current job market requires job seekers to possess employable skills. In a study, involving secondary schools in Dodoma, Mayega (2016) advocated for vocational and other practical subjects because the current education system has failed to equip students with the skills needed for employment. Mihyo, Mmari and Msami (2021) report that studies in various countries indicate higher rates of unemployment among secondary school graduates compared to other levels of education, and that the graduates take too long searching for jobs. Since Tanzania has more general education than vocational schools, the majority of secondary school leavers become victims of unemployment. This situation decelerates the industrialization process of the country. The Tanzanian Education and Training policy 2014 (revised edition) implementation is constrained by the inadequacy of skilled human resource whereby the majority have low skill level by 84%, middle skill level 13% and high skill level 3% (MoEST, 2023b). Findings of the current study give hope that, if vocational and technical subjects are added to the school curriculum, more youths will be impacted positively through practical learning experiences. This eventually brings economic transformation in the society through application of the skills relevant for industrialization of our nation.

The industrialization in Tanzania can best be realised if the youths are equipped with the 21st century skills such as problem-solving, collaboration, creativity, and critical thinking skills, which are claimed to be lacking among basic education graduates in Tanzania despite being reflected in policy and curriculum documents (Komba & Shukia, 2023). The considerable skill gap in the lower level of education has also necessitated the Tanzanian government's goal to expand the technical and vocational education and training (Danish Trade Union and Development Agency [DTDA], 2022). The findings of the current study revealed the positive influence of technical subjects in secondary education. The good experiences gained by students need scaffolding to enhance future goals of technical school graduates. With good orientation and interaction with the technical subjects, students become motivated with technical education in secondary school. Rathidevi and Sudhakaran (2019) recommend that orientation about vocational education, skill development courses and career guidance is necessary at elementary and secondary school levels for successful career choices. However, Ngogo (2014) noted that students are lacking adequate parental advice and teachers' guidance regarding vocational education and training in schools.

The results of current study further indicate that, technical subjects in technical secondary education are influencing the students' future aspirations positively hence influencing the choice of technical studies in tertiary level studies after completion of secondary education. This implies that the vocationalization of basic education needs a well-established system, which supports vocational and technical skill learning at school. It also calls for enhancing the capacity of tertiary vocational and technical institutions, to meet the needs of students aspiring for advancement in technical and vocational studies. This is a good sign that education can be packaged in such a way that the national goals can be reached. If our country trains youth in vocational skills massively, it is possible for realisation of the country's industrialization goal efficiently and effectively. The results of the current study are in line with the finding of the study by Nazakat, Shah and Ahmad (2017) in Pakistan that many students had strong desire to join vocational education and training in future. These findings contradict those of James, Andrew and Wilson (2019) and Pano (2021) which revealed that, students prefer to pursue a general academic programme to vocational oriented programme where the majority of the students chose advanced level option than technical college. The current results also are in disagreement with Ngogo (2014) who found that students have low motivation to join vocational education and training after completion of ordinary secondary education. The results of the current study oppose those of Grundall and Mark (2023) that the technical and vocational education courses at secondary school level are not meeting the needs of students in the Caribbean.

5. Conclusion and Recommendations

5.1 Conclusion

The results of this study imply that the integration of technical subjects in secondary education is giving students good experiences through interaction with practical activities in the technical subjects. The study also concluded that, the technical secondary education is largely influencing the future career studies as the majority student respondents in this study are hoping to pursue technical studies in further levels after completion of ordinary secondary education level (basic education) studies. The findings of this study can be a basis for strengthening technical education since the students can develop future career interest in technical fields if a good foundation is established at lower levels of education. The results generally imply that vocationalising basic education develops a positive attitude towards technical education and enhances technical skills, which are demands of the current job market. Vocationalized education system is a foundation for sustainable development in Tanzania.

5.2 Recommendations

Based on the findings and conclusions, this study recommends the following:

1. The government of Tanzania should establish more technical secondary schools in the country

to enhance technical knowledge and skills among secondary school students.

2. There is also a need to develop internship programmes for graduates of technical secondary schools to give them more practical experiences in the real world for employability opportunities before advancing to the next higher levels of studies. This may be achieved through establishing a partnership with the industry, which consumes the acquired skills. The internship opportunity enhances and reinforces the technical skills learned from school.

3. Furthermore, researcher recommends that the technical secondary education should be recognised by National Council for Technical and Vocational Education and Training (NACTVET) through the Ministry of Education Science and Technology in collaboration with National Examinations Council of Tanzania (NECTA) for possibility of dual certificates awarding i.e. Certificate of Secondary Education Examination (CSEE) and Vocational Education and Training Authority (VETA).

4. Nevertheless, since this study was limited to secondary school context, further research needs to be done to establish the rate and trend of students in pursuing technical education at tertiary education level. Research should also be done using relevant design for wider coverage involving several technical secondary schools and findings generalisation.

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