

The Nexus Between Gender Socialisation in Secondary Schools and STEM Related Technical Vocational Education and Training (TVET)

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Abstract

The social construction of gender shapes society's definition of femininity and masculinity. It is through everyday behaviour and the influence of the mass media, parents, teachers and other influential people that trajectories for economic empowerment are constructed for males and females in our societies. In the backdrop of glaring gender inequalities and inequities in the economic sector, this study presents an analysis of how gender socialisation at secondary school level influences choices related to Technical and Vocational Education and Training (TVET) which is the bedrock of national economic empowerment. This study was guided by socialist feminist thinking which details how capitalism and patriarchy feeds from gender socialisation resulting gender inequality. Findings from this desk study show that gender socialisation perpetuated by the teachers and peers reinforces traditional gender stereotypes of masculinity and femininity that were inculcated into the young at a very tender age. These stereotypes contribute to the gender inequalities that prevail in Science, Technology Engineering and Mathematics (STEM) related TVET programmes and occupations. The study recommends a systematic examination of gender socialisation at secondary school level for the increased participation of females in stem related TVET programmes and occupations for the realisation of sustainable economic development in Zimbabwe and beyond.

Key words: capitalism, gender mainstreaming, gender socialisation, socialist feminism, patriarchy.

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1.0 Introduction

Despite the enactment of various laws and policies for gender equality in education there remains a clear gap in the participation of females in Technical Vocational Education and Training (TVET) programmes in Zimbabwe. The Constitution of Zimbabwe, the Education Act and the National Gender Policy provide the basis for gender equity and equality in education (United Nations Girls Education Initiative (UNGEI), 2011), but inequality in these programmes remains. In 2004, the Education Act was amended and was harmonised with the National Gender Policy, to prohibit discrimination on the basis of gender. The National Gender Policy (2013-2017) provides the broad framework for the mainstreaming of gender into various sectors including education. This policy proposes fourteen strategies for the achievement of gender equality in education. In addition, various plans such as the National Gender Policy Implementation Plan, the Zimbabwe National Plan of Action on Women and Girls and HIV and AIDS (2008-10), the National Gender-Based Violence Strategy and the National Strategic Plan for the Education of Girls, Orphans and Other Vulnerable Children that articulate priorities and identify strategies to meet specific cross sectoral and sub-sector challenges to address discrimination against women and girls in the field of education (MoWAGCD, 2009 in UNGEI 2011). Gender disparity in education refers to the unequal access and opportunities for education between males and females. It involves differences in enrolment rates, completion rates, quality of education, and subject choices. This disparity has deep-rooted historical origins and continues to persist today, posing challenges to achieving gender equality and inclusive education (GG Insights, 2024). However, there are certain constraints to women's inclusion in TVET in Zimbabwe that emanate from traditional, stereotypical patriarchal values that are subtly entrenched in the educational system. Gender functions as an organizing principle for society by giving certain cultural meaning to being male or female (Tuladhar, 2012). It refers to the socially and culturally determined relations between men and women and the expectations about attributes and behaviours appropriate to men and women, boys and girls (Chauraya & Mugodzwa, 2011 in Mawere, Chauraya, Matsa, Mugodzwa, Matope, Maruzani & Mukoni, 2015). Depending upon the cultural context, gender can condition, to differing degrees, what boys and girls are expected to think and feel, their preferences, hopes and aspirations (Tuladhar, 2012). The alluded rules and conditions determine what chances they will have in life (Kabeer, 1999). Thus, gender is an important variable in society and is affected by other variables such as age, class or caste, race or ethnicity, disability, geographical location, economic and political environment (Tuladhar, 2022; Mawere et al, 2015). Women's status in societies is the direct result of the patriarchal values embedded in the socio cultural pattern reflecting systematic subordination and inequality of

women (Tuladhar, 2012). Women are dominated by a patrilineal and patriarchal kinship system, which enforces the social and economic dependence of women on men, and prescribes the relative lower status of women (Tuladhar, 2012). Women constitute the majority of the poor, and experience greater deprivation and vulnerability due to their subordinate position and powerlessness (Tuladhar, 2022). Poverty, a culture of acceptance, lack of effective community structures, harmful practices, inappropriate and ineffective allocation and utilization of resources in the context of a strong patriarchal society stand as a hindrance to women's access to resources such as education. Despite decades of interventions to eliminate disparities between the socio-economic situations of men and women, inequalities persist. One area where this inequality is evident is in the participation of boys and girls in STEM related TVET.

1.1 Defining TVET

UNESCO UNEVOC (2020) defines TVET as education training and skills development relating to a wide range of occupational fields, production services and livelihoods. This kind of education is provided at different educational levels depending on country. As part of lifelong learning, TVET can take place at secondary, post-secondary and tertiary levels and it includes work based learning and continuing training and professional development that may lead to qualifications. It may also be referred to as apprenticeship training, vocational education, technical and vocational education, occupational education, vocational education, workforce education (UNESCO-UNIVOC, 2020). Alinea (2022) presented TVET as the formal or informal education and training processes centered on acquiring skills or technical skills to improve workplace learning for the development of individual skills. This means that TVET is an educational pathway that puts emphasis on skills development for the world of work. TVET has the potential of combating unemployment in countries as graduates from TVET programmes create opportunities for employment for themselves and others.

1.2 Theoretical Considerations

Socialist feminists present education as a site where class and gender inequalities are reproduced (Stromquist, 1989). This theory borrows from Marxist and radical feminist thinking. Socialist feminists merge the concept of capitalism from the Marxist feminists and that of biology as in heterosexuality, gender socialisation and patriarchy from the radical feminists. For example women defer a lot of opportunities to men because of their biological demands for example, when pregnant women's physical abilities are compromised so they avoid certain tasks. Radical feminists also argue that patriarchy demands that women must stay at home as the men go out as breadwinners. Education in a patriarchal society is explained as a platform where men continue to be groomed for masculinity and women for femininity. In ancient Greece Plato at the Academy in Athens believed that women were fit only to be the subjects of male rule. The radical feminists also give gender socialisation as one of the contributing factors to gender inequality in our communities. From that perspective Matsa, (2011) in Mawere et al. (2015) is of the view that socialisation in schools reinforces gender perceptions developed during primary gender socialisation. Educational institutions function as sites where the intricate matrix of class, race and gender subtly perpetuate gender inequality which in the long run affect economic development and the achievement of sustainable development in our communities. A synthesis of arguments from the radical and Marxist feminist is used by the socialist feminists in their explanations of how gender inequalities remain in both the private and public sphere. In these processes men benefit from women's disadvantages because of patriarchy, the socialisation they are getting everywhere and their biology. These factors perpetuate class division in major employment structures leading to the pay wage gap as women populate low paying jobs.

While TVET programmes have great potential in improving social and economic development through entrepreneurship and skills development in employment, the continued absence of women in science related TVET presents an imperative for doing this gender analysis. The socialist feminist perspective helps in unpacking how capitalism and patriarchy reinforce each other in the private and public spheres for the limited participation of women in TVET.

1.3 Why STEM Related TVET

The involvement of men and women in STEM related TVET programmes helps in addressing the gendered skills gap in most countries in the world (Hasan, 2023). The integration of STEM subjects in TVET helps to bridge the gap between the skills demanded by the job market and the skills possessed by the workforce. In STEM related TVET programs students gain relevant and marketable skills, enhancing their employability prospects. If more girls and women participate in the STEM related TVET programmes it implies increased skills development for women which will help them participate more in industry, make them increase their earnings and close the gender gap prevailing in the job market in the world today.

STEM related technical and vocational education training (TVET) has a significant role to play in providing the skills and competencies required to support innovation, productivity and international competencies in social development, health and education (UNESCO-UNEVOC, 2020). TVET is an important driver for achieving a range of the United Nations Sustainable Development Goals. It is the STEM related occupations that are described as jobs for the future, driving innovation, inclusive economic growth and sustainable development (UNESCO-UNEVOC 2020;CESA 16-25; Alinea,2022). While STEM subjects remain essential for today's world, gender disparities stand as a hindrance to gender equality initiatives targeting these areas. While much has been done to help inspire girls and women to study and work in technical fields, females continue to be excluded from participating fully (UNESCO,2015). Long standing bridges and gender stereotypes influenced by culture, parenting styles and religion (Masinire & Sanchez Cruz,2015) are steering girls and women away from STEM related fields. From that development a large pool of potential skill that could contribute to economic development remains untapped (Alinea,2022). This implies major constraints to the lives of women and girls which perpetuate the transmission of gender inequalities across generations (UNESCO-UNEVOC,2020;Alinea,2022) leading to negative consequences for future economic and social development (UNESCO-UNEVOC,2020).

The under representation of girls and women in these fields is a pointer to the unequal opportunities between the genders. Boys and men develop careers in potentially lucrative, existing and emerging areas of the labour market at the expense of women and girls. If girls and women are profiting less than boys and men from these relatively large employment and income generating opportunities then progress towards the achievement of sustainable development goals will be thwarted (Alinea,2022). Women at all levels should have equal access to decision making, leadership and opportunities for employment, political- participation, economic resources and access to high quality education. However, TVET systems are frequently biased against women affecting men's and women's selection, access to and participation in specific learning programmes or occupations (Alinea,2022). Sustainable development Goal number 4 encourages nations to secure inclusive and equitable quality education and the promotion of lifelong learning opportunities for all. However, gender disparities persist globally in women's access, skill development and labour market participation (Alinea,2022).

Human resource development through TVET also contributes to the reduction of unemployment for enhancement of social inclusion (Ngugi & Muthima,2017). Estimates show that half of the world's population are women and they represent two thirds of the world's workers but ironically earn one twentieth of the world's income and one hundredth of property (Adelakun, Oviawe & Barfa, 2015).

In the following table there is a closer look at the enrolment pattern of STEM related TVET programmes in Zimbabwe. The table presents enrolment statistics at various Zimbabwe Technical Vocational Education Training (TVET) institutions in 2019.

Table I.I Zimbabwe TVET College Enrolment statistics in 2019

Course/Trade	National Certificate		National Diploma	
	Male	female	Male	Female
Joshua Mqabuko Nkomo Polytechnic				
Accountancy	9	36	17	25
Animal Production	2	6	2	8
Auto electrics	47	20	0	0
Brick and Block Laying	7	1	0	0
Electrical Power Engineering	91	73	13	5
Fashion Design	0	13	0	5
Motor Mechanics	43	6	0	0
Kushinga Phikelela Polytechnic				
Accountancy	26	41	24	46
Brick and Block Laying	11	2	0	0
Fabrication Engineering	100	23	0	0
Clothing and Designing	0	22	2	40
Auto Electrics	73	17	0	0
Motor Mechanics	175	16	0	0
Gweru Polytechnic				

Clothing and Design	1	38	0	51
Motor Mechanics	73	5	0	0
Diesel Plant Fitting	221	13	0	0
Auto Electrics	50	30	0	0
Motor Vehicle Body Repair	15	0	0	0
Automotive Technicians	0	0	19	1
Electrical Power Engineering	129	57	31	2
Fabrication Engineering	68	9	0	0
Refrigeration	39	32	0	0
Masvingo Polytechnic				
Chemical Engineering	50	26	15	21
Carpentry and Joinery	24	0	0	0
Motor Mechanics	10	3	0	0
Precision Machining	8	0	0	0
Auto Electrics	88	17	0	0
Diesel and Plant Fitting	212	12	0	0
Accounting	9	30	106	0
Plumb and Drain Laying	66	17	0	0
Engineering	352	93	54	12
Fabrication Engineering	68	9	0	0
Refrigeration	39	32	0	0
Mupfure Industrial College				
Brick and Block Laying	8	0	0	0
Plumbing and Drain Laying	5	2	0	0
Wood Technology	3	0	0	0
Electrical Installation	8	0	0	0
Welding	1	0	0	0
Auto Electronics	6	3	0	0
Motor Mechanics	30	1	18	0
Diesel Plant Fitting	19	0	14	1
Kwekwe Polytechnic				
Engineering	260	102	32	9
Diesel Plant fitting	346	5	0	0
Fabrication Engineering	211	20	0	0
Metallurgical Assaying	70	82	56	29
Plumb and Drain Laying	58	19	0	0
Motor Mechanics	214	7	0	0
Auto Electrics	297	58	0	0
Mutare Polytechnic				
Drainlaying carpentry and joinery	7	1	0	0
Electrical Power Engineering	178	67	38	12
Fabrication Engineering	72	4	0	0
Machine shop Engineering	81	5	0	0
Diesel Plant Fitting	124	13	0	0
Bulawayo Polytechnic				
Carpentry and Joinery	9	0	0	0
Civil Engineering	93	42	139	47
Diesel Plant Fitting	36	13	0	0
Electrical Power Engineering	284	90	52	18
Fabrication Engineering	124	20	0	0
Machine Shop Engineering	110	30	0	0

Motor Vehicle Body Repair	21	6	0	0
Plumbing and Drain Laying	27	3	0	0
Automobile Electrics and Electronics	69	16	0	0
Vehicle body building	9	0	0	0
St Peters Kubatana Industrial Training College				
Motor Vehicle Mechanics	0	0	57	0
Auto Electrics	0	0	38	8
Machine Shop Engineering	36	8	82	3
Brick and Block Laying	8	0	5	0
Welding Techniques	3	0	0	0
Harare Polytechnic 2019				
Motor Mechanics	450	40	0	0
Motor Vehicle Body Repair	35	6	0	0
Electrical Power Engineering	512	132	121	38
Plumbing and Drain Laying	54	16	0	0
Brick and Block laying	37	8	0	0
Fabrication Engineering	97	9	0	0
Machine Shop Engineering	232	12	0	0
Vehicle Body Building	29	0	0	0
Diesel Plant Fitting	237	11	0	0
Masasa Industrial Training College				
	Short courses		National Certificate	
Machine Shop Engineering	0	0	33	1
Boiler Making	87	6	0	0
Auto Electrics	41	4	34	8
Motor Mechanics	65	1	39	6
Diesel Plant Fitting	88	0	139	3
Motor Vehicle Body Repair	6	1	0	0
Electrical Power	39	7	97	42
Brick and Block Laying	45	0	5	0

Source Zimstat (2020)

The statistics from this table show that in STEM related TVET programmes the enrolment differences are so wide for example: Diesel Plant fitting at Gweru Polytechnic males were 221 and females 13, at Mupfure Industrial college; 19 males and no females, Kwekwe Polytechnic; 346 males against 5 females. In all STEM related TVET courses females were far less than boys. In some programmes as indicated in the above table females were totally absent. In line with these disparities, a lot is happening in schools to motivate the participation of all students in STEM subjects starting from secondary education. Schools organise trips for their students to attend business events such as the National Trade Fair, agricultural shows and university open days where they interact with key players in economic development. At such gatherings, students are exposed to the role of STEM subjects in national economic development. These educational trips are expected to motivate all learners equally. However, glaring inequalities prevail in the participation of males and females in STEM related TVET programmes.

1.4 Gender socialisation in secondary schools

Experts in gender socialisation agree that nature (biology) and nurture (environment) act together in reciprocally causal, interactive ways to produce gender differences through the experiences afforded to girls and boys within social environments such as the family, the school and the workplace, thereby providing differential skill practice and reinforcement (Bigler, Haynes & Hamilton, 2013). This leads children to actively socialize themselves along gender-differentiated pathways. Schools are major sites for gender socialisation, in part because children spend large amounts of time engaged with peers in the school settings. In schools gender socialisation takes place via two primary sources: teachers and peers. Teachers and peers directly influence gender differentiation by providing boys and girls with different learning opportunities and feedback (Bigler, et.al, 2013). Teachers present curricular materials that contain gender stereotypic expectations, and peers exhibit gender stereotypic attitudes and

behaviour. Children internalize these gender stereotypes and prejudices, which in turn guide their own preferences and behaviours (Bigler, et al.,2013).

These stereotypes perpetuate certain rules (norms) that are expected from different individuals because of their gender. These norms are based on power relations and traditional views of roles and positions of men and women in society (GEM,2019). They shape social attitudes, behaviours and practices; affect laws and policies; and prevent changes in education. The Convention on the Elimination of All forms of Discrimination Against Women (CEDAW) (1979) provides clear guidance on the type of actions and policies countries should implement to address gender based discrimination, even in education. It stresses that the discrimination girls and women face in education is both ideological and structural. CEDAW (1979) calls on parties to modify social and cultural patterns of conduct that are based on 'stereotyped roles for women and men' (Articles 5 and 10c). Unless the negative gender norms, values and practices that permeate the very fabric of some societies are challenged, girls and women will continue to face discrimination, preventing them, as well as boys and men in certain cases, from exercising their right to education (GEM,2019).

In most societies women's primary role is to be housewives and caregivers (GEM,2019). Such views are said through word and action and it influences educational choices in several ways, including how boys and girls view education. In some cases, girls are convinced that 'being a wife is as fulfilling as working for pay, what matters is to get married to a good husband. Such beliefs can lead to a vicious circle of reduced opportunities in employment and education especially for girls (GEM,2019). On the other hand, patriarchal norms place little or no value on girls' and women's education which restricts their chance of equal access to education (GEM, 2019).

1.5 Methodology

In this desk study, the literature review that was done was used as a research method. About ten articles were selected using the criteria of (i) published between 2019 to January 2024 (ii) to include the concept of female participation in TVET and (iii) linking gender socialisation in secondary schools to participation in TVET. Full articles from open access publications were accessed. Data were coded and developed into themes which were analysed using thematic analysis. In the first step, literature review was conducted. In the second step codes were developed and the codes included gender socialisation in the primary agent (family) and in secondary agent of gender socialisation (the secondary school). In the third step each code was defined to search for potential themes based on primary codes. These sub themes included manipulation, canalisation, verbal appellations in the family, subject allocation and activities in secondary school. These were reworked in relation to how they influence girls' and women's enrolment and participation in TVET programmes. Information was summarised and interpreted and the report presented below was the final step.

1.6 Influence from home/family (primary agent of gender socialisation)

Observations from Mbetu-Nzvenga & Kudenga (2016) are that parents play an important role in determining a child's academic path starting from a very tender age. USAID (2019) concurs and adds that from an early age, the social and academic development of young girls is moulded and prepared for social sciences while boys are expected to participate in hard sciences. Depending on cultural and social context, parents can direct girls not to take Woodwork or Building as subject choices at secondary school because they are girls and boys are not allowed to take home economics classes simply because they are boys. Experiences in families can point to deep rooted negative attitudes against girls' education in general which mitigates their future in (STEM) related TVET. For example, the belief that STEM subjects are better suited for boys. This perception is then inculcated into boys and girls who internalise and are guided by these beliefs (Mbetu-Nzvenga & Kudenga, 2016).

Subject allocation in secondary schools is one of the ways in which learners are socialised into appreciating that STEM subjects are for boys (Maruzani & Mutamba, 2014). In the allocation of subjects many educators endorse cultural gender stereotypes, for example, mathematics is easier for boys than for girls and prejudices such as, girls are smarter and more organised than boys (Gökçe & Dikme, 2020). These explicit or implicit biases influence teachers' classroom interactions with learners. It also affects learners in their subject choices and the effort they put in studying particular subjects (Van der Vleuten; Jaspers; Maas & van der Lippe, 2016). Gender socialisation in the family emphasises on girls purity and submissiveness as critical elements of women's character which will make them marriageable and live happily as wives. In some cultures, and religions girls education should never go beyond secondary school. Girls are socialised to worry more about getting into a successful marital relationship. Men on the other hand, are socialised to work hard to prove that they are man enough to be husbands and heads of families (Maruzani & Mutamba, 2014).

In the socialisation process teachers pass comments (verbal appellations) that promote girls' absence from STEM related subjects. In the wake of incentivised teaching, teachers verbally discourage girls from taking STEM subjects because their failure is a minus on the incentive that they target to get if all the learners in a specific subject pass. When girls and boys join different subjects, they become familiar with the tools of the trade that are used in related fields of study (Van der Vleuten; Jaspers; Maas & van der Lippe, 2016; Maruzani & Mutamba, 2014). Guided by internalised stereotypes, most girls develop negative attitudes for woodwork, building, technical graphics, physics and other STEM related subjects. Girls get attracted to subjects related to beauty and fashion and they heavily populate these areas of study in TVET at the expense of STEM related TVET programmes (Mbetu-Nzvenga Kudenga, 2016).

For those girls who do not conform to the accepted stereotypes and join the male dominated subject areas it is never an easy task. These are the few girls whom we see taking TVET related programme in very limited numbers. Socialisation in the school feeds from prejudices and stereotypes internalised by boys and girls to direct learners into gendered field of study. The school environment, teachers and peers all reinforce traditional stereotypes leading to very limited number of girls participation in STEM related TVET courses. Activities in the hidden and formal curriculum adds to the way subjects are allocated leading to girls participating more in the subject areas described as feminine and boys in those disciplines described as masculine.

1.7 Discussion

The results on linking Technical Vocational Education and Training (TVET) to gender socialisation in secondary schools of Zimbabwe revealed that there are processes of gender socialisation in secondary schools that influence the limited participation and enrolment of women and girls in STEM related TVET programmes. The main theme was that primary socialisation in the family through manipulation, verbal appellations, canalisation and role modelling contributed to the limited participation of women and girls in stem related TVET programmes. Girls and boys imitate what they see around them. Young boys are motivated by the idea that it is men who are in control so boys follow the footsteps of older men. Girls have limited role models. A handful of women are in key positions in the economy. Of these women suspicion is that they are there by unorthodox ways or have been placed there just for window dressing. With limited role models girls develop the thinking that STEM subjects and all courses related to these subjects are not for women and girls. That for women, This takes away their motivation to study these challenging disciplines.

Women and girls at times get negative verbal approval or comments whenever they want to enrol for challenging courses in tertiary education. Girls are openly discouraged. Canalisation and manipulation all target the socialisation of girls into feminine disciplines which makes them focussed on those study areas that are of less significance in national economic development.

Gender socialisation in the school is a confluence of gender beliefs and attitudes developed over the years. Teachers and peers work hand in hand with the formal and informal curriculum to make sure that girls and women fulfil traditional gender stereotypes. In the allocation of subjects at secondary schools, girls are subtly pushed into those subjects generally considered as feminine while boys remain in their masculine kind of subjects. Gender socialisation in secondary schools is a key contributing factor to this development but it cannot be blamed in isolation for it reinforces the gender damage that was done by primary agents of gender socialisation. As nations move towards deadlines for sustainable development there is still a lot to do in terms of making Zimbabwe secondary education system more gender responsive.

1.8 Conclusions and Recommendations

Gender socialisation in secondary schools plays a key role in influencing the choices that boys and girls make if they are to consider enrolling for STEM related TVET programmes in tertiary education. This kind of socialisation happens implicitly or explicitly but the boys and girls receive it as reinforcement of the kind of gender teaching that they received from the primary agents of socialisation. Teachers and peers in the school are the key agents who use processes and expectations from the formal and the hidden curriculum to direct boys and girls into cultural stereotypes that promote power, dominance, innovation and industrialisation and decision making for boys while girls are directed into academic choices that promote submissiveness and dependence.

What is needed in Zimbabwe secondary education is not the challenging of prevailing gender norms in order to increase girls' participation in education but it means working with adolescent girls and boys on gender role issues. Engaging boys and girls in the process of reworking their understanding of generally accepted gender norms. Make boys and girls accept and articulate that sex and gender are different. In doing this there is need for a cognitive appeal to every one concerned about gender equality in our communities especially in education. An appeal for

individual cognitions that consider gender equality as a possibility that starts from an individual and when such individuals harness their efforts, the operationalisation of gender equality initiatives will bear more fruit. The mental convictions for gender equality will provoke boys and girls to change gender attitudes. In the process restrictive gender norms will be eroded away. With time, girls will be convinced that they can as well do STEM subjects which will act as the springboard from which they can be catapulted into STEM related TVET programmes.

There is also need to give the educators gender knowledge which will enhance their conduct in terms of gender relations. Each teacher experienced gender socialisation differently hence they will transfer knowledge in their own way. If we change the curricula and nothing is done to train teachers, those envisaged changes will worsen the gender situation in schools.

Policy makers need a reworking of their approaches to improve the gender terrain in schools. Policies should not only fight for political will and stop there but it must be measured by practical outcomes over the years with possible revision of suggested methodologies until the possibility of girls doing STEM subjects together with boys comes out naturally for the increased participation of girls in STEM related TVET.

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