Interdisciplinary Research Review
Volume 17, Number 2, Pages 47 – 53

Mapping the gender gaps in TVET practices: A literature review

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Abstract

Technical and Vocational Education and Training (TVET) is the formal or informal education and training process centered on acquiring practical or technical skills to improve workplace learning and develop an individual's occupational abilities. However, there are non-inclusive practices in gender in the TVET fields. This study coined them as the gender gaps. This study aims to review various literature on the TVET practices to map the gender gaps. In addition, solutions to bridge the gaps were also identified in the literature. Pieces of literature were reviewed and inductive thematic analysis was conducted with MAXQDA resulting in major themes. For gender gaps, the major themes are gender stereotyping: challenges to inclusivity, culture as factors of gender discrimination, and parenting styles influencing career choices. Policy and guidelines towards equal TVET access and practice, internship and career programs as industry pathways, and community support system towards gender inclusivity are the emerging themes to bridge those gaps. The results of this study may provide insights into the understanding of the gender gaps that may be helpful in the development of inclusive policies and guidelines in the TVET system. Further, this study recommends further inquiry into the gender literature of TVET since there is a limited number of readings available in the field. With the changing and updating nature of the industry, further study on the same nature should be pursued to keep TVET institutions gender-sensitive and gender-responsive.

Keywords: gender gaps, TVET practices, literature review

Article history: Received 11 January 2022, Revised 14 March 2022, Accepted 15 March 2022

1. Introduction

Technical and Vocational Education and Training (TVET) is the formal or informal education and training process centered on acquiring practical or technical skills to improve workplace learning and develop an individual's occupational abilities. According to UNESCO [1], TVET entails the acquisition of practical skills, attitudes, comprehension, and information connected to vocations in diverse sectors of economic and social life. As such, TVET has long been acknowledged as a vital part of human resource development (HRD) and a critical tool for socio-economic development [2, 3]. Furthermore, TVET can be a significant driver in achieving the SDGs by 2030, such as reducing poverty, expanding opportunities for lifelong learning, and creating jobs and decent work for all [4 – 6].

However, gender gaps existed in the TVET system. These gaps are in the form of impending problems thriving a long time ago in the history of TVET. These problems may include gender stereotyping [7] as influenced by culture [8], parenting styles [9], or religion [10], among others.

2. Conceptual Framework

Gender equality is necessary for achieving sustainable development, which cannot be accomplished without women's full participation and engagement. Women, at all levels, must have equal access to decision-making, leadership, opportunities for employment, political participation, economic resources, and, most importantly, access to high-quality education [11]. However, in the technical-vocational field, gender stereotyping is rampant. TVET systems are frequently biased against women, affecting men's and women's selection, access to, and participation in specific learning programs or occupations. As a result, this gendered division of labor perpetuates gender inequalities in the workplace and throughout society.

UNESCO [12] recognized this impending problem in the industry. TVET can increase women's productive participation in the labor market by equipping them with the skills necessary to perform future jobs. This potential, however, remains largely untapped in specific occupational sectors. Women are significantly less likely to enroll in TVET in most developing countries.

Sustainable Development Goals (SDG), specifically SDG 4, focus on quality education and call on the Member States to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all." The International Center for Technical and Vocational Education and Training (UNESCO-UNEVOC) establishes a plan to improve national TVET systems through institutional transformation, capacity building, and international cooperation. Their Medium-Term Strategy for 2018-2020 focuses on the three thematic priorities. One of those three is the promotion of equity and gender equality in TVET [13]. According to Alam [14], as cited by Ali Idris and Mohammad [15], technical and vocational knowledge is the primary driver of a nation's economic and social development; as a result, investing in human capital is an

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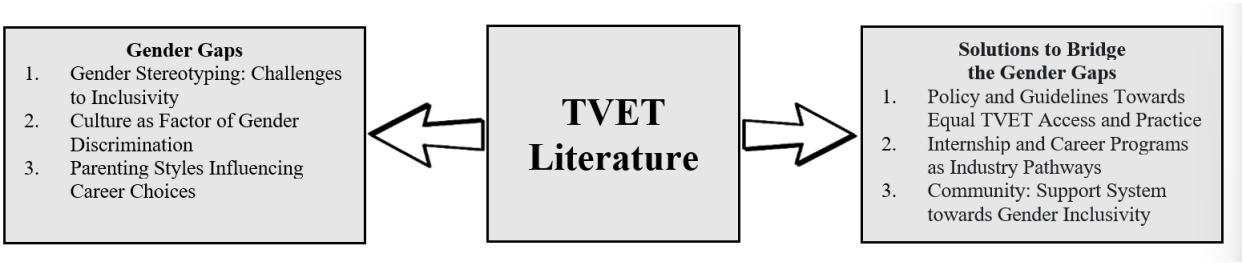

Figure 1: Conceptual framework of the study.

investment in a country's future. However, gender disparities persist globally in women's access to skill development and labor market participation. Women face numerous obstacles, including gender bias in occupational choices, barriers to education and training, particularly in rural and informal economies, and sociocultural and economic constraints. To address these issues, countries must incorporate gender considerations into their national skills development policies and strategies, create gender-sensitive training environments, expand opportunities for women in technology-intensive fields, expand opportunities for men in social and care work, promote role models, and encourage and enable women to participate in lifelong learning opportunities.

Due to the government's emphasis on women's equal access to education as a human right, statistics show that enrollment of girls in primary and secondary school has increased significantly. However, this is not the case in Technical and Vocational Education; very few women enrolled in vocational courses, mainly technical, due to the significant challenge women face in school and even after graduation [16].

The framework used in the conduct of this study is shown in Figure 1. TVET literature is the primary source of data in this study. Twelve articles were scrutinized to identify the gender gaps existing in various literature in TVET. Only twelve were identified because, surprisingly, only a limited number of publications related to gender in TVET. Only seven qualified for review out of the twelve articles. From the analysis of data using an inductive thematic approach, gaps were identified. The gender gaps are gender stereotyping: challenges to inclusivity, culture as factor of gender discrimination, and parenting styles influencing career choices. These gaps affect gender equality in the TVET system, making it non-inclusive. However, the articles also discussed solutions on how the stakeholders of the TVET system bridge the gaps. The main themes that emerged are policy and guidelines towards equal TVET access and practice, internship and career programs as industry pathways, and community: support system towards gender inclusivity.

This study is a literature review. Thus, it is limited to the available and qualified TVET literature that is aligned with gender gaps. Also, online databases that are open access are the main sources of data in this study. Solutions on how to address the gaps are also part of the scope in analyzing the literature. The study also does not attempt to cover other areas of TVET aside from the gender perspective, which is the highlight and contribution of this study to the field.

3. Objectives

This study aims to review, assess, and summarize the results and findings of research and studies on gender in TVET. The central question that directed the study is - "What are the gender gaps arising from the TVET literature and the solutions to address them?"

4. Methodology

For this study, inductive thematic analysis was conducted with MAXQDA. MAXQDA is a computer software program designed for qualitative and mixed methods data analysis. Thematic analysis was chosen because it is flexible, does not require comprehensive theoretical and technological knowledge of techniques, and is more accessible [17].

The flexible search strategy was used to support the themes in the literature. The exploratory design was chosen over the explanatory design because this study compares the similarities and differences between the available literature on gender gaps and the solutions to address them. The approach used to analyze and evaluate the data in the literature review is qualitative [18].

Twelve (12) articles were identified at the initial screening, and seven (7) articles were selected based on several criteria. The criteria were the following: a) published between January 2006 to December 2021 (fifteen years); b) include the concept of TVET gender responsiveness; and c) published in the English language. Solutions to bridge the gender gaps were also the focus of the review. The selected articles were obtained from various databases. These full articles are open access and purposive sampling was used with the keywords such as 'tech-voc gender,' 'gender gaps,' 'technical teachers,' and 'TVET gender.' Similar to Handa et al.'s [19] literature search, the search is made by title, abstract, and keyword using the keywords mentioned earlier, followed by removing articles that are only abstracts and not related to TVET gender.

Braun and Clarke's thematic analysis was used to analyze the data in this study, which included six phases of the inductive thematic coding process [17]. Using the software MAXQDA and the lenses of Braun and Clarke's thematic analysis, the content analysis started in step 1. The literature review was conducted - repeated reading on textual data and a memo was written during the coding process. In step 2, two codes were used in the inductive coding process to generate the initial codes. The first type of code is the gender gaps code and the second is the solution code. This process distinguished the data among the two initial codes. Next, in step 3, each was defined to search for potential themes based on the primary codes. Gender

gaps refer to the discrepancy in opportunities, status, attitudes, etc., between men and women in the TVET system. Moreover, the second code refers to the solutions to address the identified gender gaps. These provide clarity in the grouping of the data. In step 4, the potential themes were reviewed. Several pattern codes were identified inductively for possible themes based on the similar pattern identified from the initial coding. Some codes were combined and some were put under a mother code since they assumed the same pattern. Next, these themes are refined and defined in step 5. Several themes are classified as sub-themes as the answers are not directly answering the central questions. Data were then summarized and interpreted. Braun and Clarke [17] described the final step as producing a report. This report is presented below.

5. Results

Using the inductive thematic analysis, the following results have been derived:

5.1 Gender gaps

From the articles being reviewed, the final themes were generated. These practices among TVET systems are the main contributors to gender gaps.

5.1.1 Theme 1. Gender stereotyping: Challenges to inclusivity

Women and men have equal rights and opportunities to contribute to and benefit from national, political, economic, social, and cultural development. It is society's equal recognition of both the similarities and differences between women and men, as well as the various roles they play [20]. However, gender inequality, stereotyping, or biases happen when stereotyped qualities, roles, and actions are appointed to males/females. These may also occur when pre-judgment prompts gender separation such that lean towards one sex over the other [7]. This is true with technical-vocational education. Biases in gender also go inside the classroom. Some subjects seemed inclined to male or female sexes and vice versa. According to Pregoner et al. [7], learning environments were designed to meet a range of expectations regarding students' characteristics, traits, and family and career aspirations. Male students were expected to be conscientious, diligent, and responsible, but also insecure and prone to excessive stress. At times, teachers invoked physical strength to justify their views on unsuitable specialties for men.

The idea of 'gender roles' as a path to a future lifestyle and career was prevalent in TVET. Boys and girls enrolled in Tech Voc subjects, on the other hand, received immediate benefits and consequences. In Tech Voc subjects, the notion that girls should always be neat and well-dressed and boys should be rough and untidy became lived realities [10].

Gender stereotyping hinders the development of the female population, in the case of TVET, to better contribute to nation-building. When gender inclusivity to access educational opportunities is practiced, more females can become change agents. For this to be realized, first, there should be a significant change in the male/female enrollment ratio in school, particularly in vocational and technical subjects. Therefore, gradual but consistent strategies must be developed. Gender stereotyping perpetuates gender gaps in TVET because of expectations among the sexes. There are fields that are dominated by males or females due to stereotyping dictated by other contributing factors like culture, religion, school environment, and the individual processing of trainees/students. This stereotyping affects the potential of the male or the female to contribute to nation-building. Minimizing this gender gap in TVET through several efforts coming from different stakeholders can be equated to more beneficial and advantageous citizens, thereby contributing to economic growth.

5.1.2 Theme 2. Culture as a Factor of Gender Discrimination

The disparity/imbalance in male and female education stems from various cultural practices in society resulting from deeply entrenched prejudices, attitudes, customs, behavioral decisions, and procedures. And these factors add up to create discrimination against women's rights and educational opportunities. Religious and cultural practices that discriminate against women have existed for an extended period. Igbe [21] emphasized that the belief that women are God's creation with a weaker vessel and a shallow brain substantiated this point [22].

Sex-stereotyped male occupation over female occupation is a culture that has conditioned women to believe that it is taboo to enter a male-dominated occupation. This has undoubtedly impacted marriages, as women who pursue such vocations often struggle to marry.

Additionally, empirical research indicates that women in male-dominated fields may be disadvantaged by culture and their numerical disadvantage compared to their male counterparts [8]. Thus, the disproportionate composition may dictate the dynamics of the interaction that result in a numerical minority group gaining prominence and becoming aware of their overrepresentation.

Gender discrimination may also be visible in a variety of instances, in the form of institutional practices that are strongly influenced by cultural norms and beliefs, in the sense that women require protection, and thus rules are applied more strictly to them than to males. The same was aggravated in the field of TVET than in other areas in society. While a review of the literature and primary data collection revealed that policies are nondiscriminatory, it was also discovered that these policies are predominantly gender neutral and do not address the unique needs of female learners.

Cultural and structural barriers are the first impediments to gender equality, and overcoming them is critical. It is vital, if not sufficient, to focus exclusively on the structural context in which gender relations operate in schools, as these structures create apparent barriers to girls' participation and achievement, particularly at school [10].

5.1.3 Theme 3. Parenting styles influencing career choices

Ginzberg [23, as cited by 9] asserted that parents have a significant influence on their children's career choices. According to a study conducted with 3,971 respondents, the

primary influence on a child's career choice is his or her parents. This demonstrates that factors such as a father's career, prestige, and economic status are associated with and influence students' careers in an indirect manner. Parents have an important influence on their children's career choices. Masinire [10] also discovered that boys and girls were equally represented in Tech Voc subjects during the first two years of high school, with little regard for gender. However, as they progressed into their third year, they made a conscious choice to either dropout or continue. This is due to parental pressure.

Parents reportedly do not discriminate between daughters and sons, but the stigma associated with a girl working in physically demanding fields persists. These gender stereotypes frequently influence students' post-TVET employment status. This has a significant impact on students' specialization choices and explains why some domains continue to be dominated by one gender. This pattern is evident in the gender preference for particular specializations. According to the USAID Lebanon [32] study, some parents stated that their sons were discouraged from pursuing certain specializations. Similarly, even if female students are encouraged to pursue a male-dominated field of study, they should not work in the field but rather in the office. When asked why they chose their respective specializations, they cited three primary reasons: parental advice, personal preference, and the institute's recommendation.

As a result, parents must be educated about the importance of female education. This could be accomplished through mass mobilization campaigns utilizing a variety of media outlets (in indigenous languages) and the use of resource persons who are women in respectable positions in society. This is consistent with Bagshaw [24]. He asserted that women make superior leaders, passing on skills such as vision creation and expression, setting clear directions, taking charge, serving as an inspirational role model, setting high-performance standards, and assuming responsibilities. Adults should also participate in adult literacy programs because their involvement in the educational process encourages their daughters to attend school. Additionally, adult education will contribute to more rational and equitable distribution of educational resources among children, adolescents, and different social groups and a better understanding of economic equality and the sexes [22].

5.2 Solutions to bridge gender gaps

The following are the emerging themes from the TVET literature in addressing the gender gaps mentioned above. These are policy and guidelines, internship and career programs, community, and others.

5.2.1 Theme 1. Policy and guidelines towards equal TVET access and practice

Educational opportunities for women can be enhanced by formulating sound policies and guidelines [25]. The effects of these steps will be better and long-lasting than other ways to bridge gender gaps. The efforts should be concentrated not only on the school level but also on the governmental level. Rodgers et al. [25] added that the government should invest in workforce planning efforts that reward women for training for high-paying jobs in technology- and skill-intensive manufacturing industries. One of the most significant policy initiatives for advancing women in engineering and technical fields would be stricter enforcement of equal opportunity laws. More women will be encouraged to participate in the workforce that men often dominate.

Nurhaeni and Kurniawan [26] identified key components to help bridge the gender gaps in TVET. The first essential factor of mainstreaming gender is political will. The second is the political framework that should be manifested in the schools' regulations. Regulations should not be gender-biased. Structure and mechanism, resources, and infrastructure are also essential factors that can be improved by developing policies and guidelines. The organizational structure in schools should be gender-responsive. This is evident in the solid male dominance within the school's administrative structure and the organizational structure of school organizations such as the Intra-school students' organization, Boy Scouts, and teenage Red Cross.

Additionally, schools' infrastructures have been gender-insensitive. This is demonstrated by the absence of male and female toilet notices, a separate room for male and female students at the school health unit, and the absence of front covers on female students' desks. This increases the potential for female students' bodies to be exploited, resulting in sexual exploitation. These gaps could be easily influenced by developing gender-inclusive policies and guidelines.

Gender statistics are also effective sources of data to help understand gender differences and inequalities at all levels. These can be the springboard in developing education programs or activities for achieving gender equality in education. In most cases, schools already have data on the number of teachers by rank and position, the number of students by class and academic achievement, and the number of education personnel by rank and position. Thus, schools have owned gender statistics that could be handy in developing gender-inclusive policies and guidelines.

5.2.2 Theme 2. Internship and career programs as industry pathways

Career choice is important in sustaining a person in the TVET system. It is rooted and greatly influenced by the personality factor of the individual. Holland Theory [27, as cited by 9] stated that the degree of compatibility between an individual's personality and work environment determines his or her level of satisfaction, achievement, and ability. The theory entails the identification of personality traits that may be related to a particular occupational environment. He assumed that humans with various personalities will gravitate toward careers that fit their lifestyle. Thus, it is therefore imperative for TVET schools to develop internship and career programs aligned to the individual's personality factors.

Career guidance starting from the intermediate level in the elementary to the post-secondary level is helpful. Teachers, according to data, are the primary factor that influences students' career choices in technical fields. As a result, teachers have developed into a resource for students seeking information

about technical careers. Counseling teachers have a role in educating students about careers. Thus, a counseling teacher's role is to conduct career-related programs to guide students. Career counseling is necessary to assist students in determining their career path in the working world. As a result, the guidance department must develop a strategy for attracting female students and nurturing their interest in technical fields [9].

According to previous research, technical and vocational education reinforces the process of gender segregation in labor markets because the institutions' structures and cultures are geared toward a particular gender, reinforcing the male or female image of professions [28, 29]. According to this evidence, female students who enter educational spaces where they are a minority are impacted by the practices and discourses inherent in policy orientations and social structures that act as barriers to their participation in male-dominated areas and result in a much greater degree of reversion of their initial vocational choices than their male counterparts. In this regard, the high degree of gender segregation may represent a barrier to access and persistence in educational pathways that are not gender-typical for the student. This is consistent with the low proportion of female students who graduate with industrial specialties who pursue careers in those fields after completing their undergraduate degrees (35 percent of female students versus 80 percent of male students). Thus, TVET schools must reinforce internship and career programs that expose the students to industry. Complete understanding of the profession the students are heading to and the learner-centered career programs will help the students stay in the TVET program and pursue professions in the same field.

Masinire [10] noted a strong correlation between males' successful participation and the expectations placed on them in the public world of formal employment. They consider the opportunities available to them locally and internationally if they possess the necessary skills. Students frequently justified their involvement and participation in TVET by implying that their accomplishments would likely prepare them for the labor market. According to his research, male students often drop out of Food and Nutrition classes during their first two years of high school because they do not perceive the course as assisting them in achieving their future career goals. The same is valid with female students who enrolled in Metal Technology.

On the other hand, boys were more closely associated with Metal Technology. At the same time, girls were more closely associated with Foods and Nutrition, and these associations served as primary resources in gender performance. Simultaneously, they were aware of the environment they would enter after school. Metal Technology created opportunities for self-employment for those who acquired the necessary skills in the absence of formal paid work. The same skills were valued in South Africa and Botswana, where some boys envisioned future employment opportunities in these countries. The Voc-Tech curriculum exemplified an institutional structure in which normative gender regimes shaped young people's daily school experiences through these channels.

On that note, internship and career programs help students stay on the TVET track when it is rooted and aligned with personality factors. Moreover, the idea of the high-paying job in the future in the field of TVET helps them focus on the profession rather than on the gender stereotypes.

5.2.3 Theme 3. Community: Support system towards gender inclusivity

Despite policies and laws on gender equality, women still contend with discrimination and deprivation. Gender pay gap, under-representation in higher management positions, and slow and/or scarce women advancement in the field of work are quite apparent [30]. What seems more deplorable is the incidence of violence against women in the workplace, at home, and even in society at large [31]. Thus, in addressing the gender gaps, it is vital to have the community's collective effort.

The community or society, particularly the students' parents, are not fully aware of or understand the critical nature of gender-perspective integration into the educational field, including formal and informal education within families. This may result in discriminatory treatment and disadvantage to one of the sexes, particularly females.

Nurhaeni and Kurniawan [26] added that teachers, administration staff, and students have not known and understood gender within the school community. While principals and teachers have received gender training, they still lack an understanding of incorporating gender into school activities. They simply comprehend how males and females should treat one another. Their comprehension does not extend to the distinctions between men and women regarding authority, responsibility, and just rights.

Springing from how a child was raised by their parents and how the community within his/her personal space dictates gender roles affect the impending problems in gender gaps. Stakeholders within the society like the school, the church, the immediate and extended family members, even the environment where a child was being raised cover responsibility for the gender gaps. Thus, when these factors were addressed by information dissemination, modifying policies and guidelines, even trying to rectify a culture of non-inclusiveness, gender gaps may be alleviated.

6. Discussion

The literature review results on TVET practices revealed themes of gender gaps. The main themes are gender stereotyping: challenges to inclusivity [7, 10, 20], culture as factor of gender discrimination [8, 10, 21, 22], and parenting styles influencing career choices [9, 10, 22, 23, 24]. In addressing these gaps, the literature revealed that the main themes are the formulation of policy and guidelines towards equal TVET access and practice [25, 26], effective internship and career programs internship and career programs as industry pathways [9, 10, 27, 28, 29], and community: support system towards gender inclusivity [26, 30, 31].

Gender inequality, stereotyping, or biases are still happening in the TVET system. These biases even reached the classroom, where learning is compromised just because of

gender expectations [7]. Having this gender gap existing continues to cause a particular imbalance in the supply of both sexes in the workforce. This does not only affect the number of workers but as well the welfare of the minority. Moreover, gender stereotyping also leaked into the industry. This makes the gap more problematic. The TVET literature mapped that the gender gaps are rooted in people's various cultural practices and ideologies. Deeply fixed prejudices, attitudes, and customs boxed the individual and hindered the development of his/her full potential [22]. In addition, culture is associated with the parenting styles among TVET students/graduates. It is clear that parents significantly influence children's career choices [9]. Since parents are driven by certain cultural practices that are non-inclusive, gender, predominantly female, are discouraged from pursuing TVET.

However, gender gaps can be addressed by various means to minimize the disparity. As enforced by memoranda, laws, or resolutions, policy and guidelines can open access and opportunity for all sexes [25]. Policy and guidelines also produce budgets that are most of the time a problem in TVET. Though it may sound compelling, still, it is an external force that commands people to follow. Internal forces are still better options to drive out biases and prejudices. One effective way to instill the importance of inclusivity into TVET is through internship and career programs [9]. With that, the value of the TVET program can be laid out to the students so that they may develop a passion for pursuing TVET. When policies and guidelines back up these moves, it will be easy to integrate those into the curriculum. As a collective effort, the community and other stakeholders of the school can be a great addition to push for gender equality advocacy.

Thus, even if there are existing gender gaps, there are also solutions to bridge them. Though there are so many efforts in minimizing the gaps, still, those gaps pose challenges and problems that keep TVET from improving. The reality that TVET is the cradle of the workforce of any country is still the reality that can help countries be developed towards economic progression and stability.

7. Conclusion and Recommendations

This exploratory research via literature review derived that the arising gender gaps in TVET literature are gender stereotyping: challenges to inclusivity, culture as factor of gender discrimination, and parenting styles influencing career choices. In addition, the solutions emerging in TVET literature for gender gaps include policy and guidelines towards equal TVET access and practice, internship and career programs as industry pathways, and community: support system towards gender inclusivity.

Following the study's conclusions, this research recommends further inquiry into the gender literature of TVET since there is a limited number of readings available in the field. The findings of this study can also be used as baseline data in developing policies and guidelines that will help address the impending problems of the TVET system. TVET institutions should craft and modify existing written curricula adhering to the gender gaps identified in this study. The TVET instructors, teachers, and trainers are recommended to pursue changes in the curriculum implementation to make TVET more inclusive and encompass gender. A gender-responsive curriculum implementation framework should be developed to effectively translate inclusivity into the teaching and learning processes. With the changing and updating nature of the industry, further study on the same nature should be pursued to keep TVET institutions gender-sensitive and gender-responsive.

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