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TESDA

TECHNICAL EDUCATION AND
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Breaking the Barriers: TVET AND A PRO-WOMEN LABOR MARKET



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EXECUTIVE SUMMARY

Many countries, including the Philippines, are predominantly patriarchal which explains why despite the decade-long efforts of achieving gender equality, society still appears to be in favor of men. Some of the challenges concerning employment, for instance, are experienced regardless of gender. Still, women are surrounded by issues that may otherwise be inexistent for men such as those that limit or prohibit women from being part of the workforce or pursuing leadership roles.

In the global and local scene, women are the usual victims of unpaid or underpaid work (e.g. domestic activities such as household chores; children, and elderly care), low labor force participation, workplace discrimination, vulnerable employment, and access to alternative career choices. These issues and how they impact the participation of women in economic activities are further explored in this report.

Ironically, when linked to the overall issue of gender disparity, the Philippines is the only ASEAN country to enter the top 20 in addressing gender disparity based on the 2021 Global Gender Gap Report of the World Economic Forum. Various policies and programs are also in place for achieving gender equality, especially in the workplace.

However, despite the good representation of women in the health sector, which is among the key employment generators, women lack representation in Information and Communications Technology, Electronics and Engineering, and other STEM-related sectors. Additionally, many of the jobs where women are employed are at risk of automation which will mean either reskilling or upskilling; otherwise, they will be at risk for displacement.

Several studies cited in this report indicate that well-paid jobs and better labor force participation are linked to attaining higher education and skills training. The Fourth Industrial Revolution (4IR) and the high-value sectors for the post-pandemic recovery further magnified the need for continuous learning. Thus, strengthening education and training means providing mechanisms for women to acquire and develop the critical skills needed.

Therefore, the Technical and Vocational Education and Training (TVET) may serve as an instrument for women's empowerment especially with its nature being highly practical, helping bridge education, training, and the labor market. With the initiatives of TESDA towards mainstreaming gender and development and particularly targeting the marginalized sector, including women, TVET has the potential to level the playing field for women.

Several recommendations were presented to improve TVET policies and programs, and its delivery especially provided the challenges experienced by women, and the opportunities that 4IR and the post-pandemic economy provide.

I. BACKGROUND

Predominantly, societies around the world are patriarchal. This situation can be attributed to the colonization of the western countries and the prevailing culture or religion of the nations. Such cultures or religions are very conservative and limit the movements and choices of women in society. Thus, hindering the participation of women in society, especially in the labor force. The decision on whether the women would be allowed to join the labor force is up to the men in the house, ie. father, brother, or husband.

According to the International Labour Organization (2021), women comprise 47% of the world's labor force. Among the countries, the Solomon Islands has the highest rate of women's labor force participation in the world at 83.1% while Yemen has the lowest rate at 6%. Including the mentioned countries, there are nine that have above 77% women's labor force participation rate, and 15 countries that are below 22%.

Many jobs that women are doing are unpaid or underpaid. Examples of these are taking care of household chores, taking care of a family member, working for a family/relatives' business, engaging in informal sectors, and others. **Women spend more time doing unpaid work than men** and almost 16% of employed women are contributing family workers who are poorly paid, (ILO, 2021).

In the case study done in Indonesia, it was found that typically, women who have attained higher education, highly participate in the labor force. They can get well-paid jobs and are unlikely to marry early since having paid work gives them the freedom to do things. Also in the study, it was seen that young women in urban settings are likely to hold paid jobs while in rural settings, they are opting out of unpaid work (Schaner & Das, 2016). This shows that young women are slowly gaining empowerment in society.

As women enter married life, they are usually left with the household chores unless the breadwinner could no longer support the household expenses. Pregnancy and taking care of a child affect the employability of a female job seeker. Companies often prefer applicants who are not pregnant and do not plan to get pregnant in a few months. Additionally, pregnant women are seen as more of a liability rather than an asset because they are prone to avail sick leave and need to take time off from their jobs once the baby comes out.

Contrary to this, the trend seems to show that there was an increased number of women's participation in the labor force compared to the last four decades or so, especially among women with children. The factors causing the growth of women's participation in the labor force are the rise of the clerical sector, technological change in the workplace and the household, medical advances (the introduction and dissemination of the oral contraceptive), decreases in discrimination, institutional changes in divorce law, and the greater availability of childcare (Fernandez, 2007).

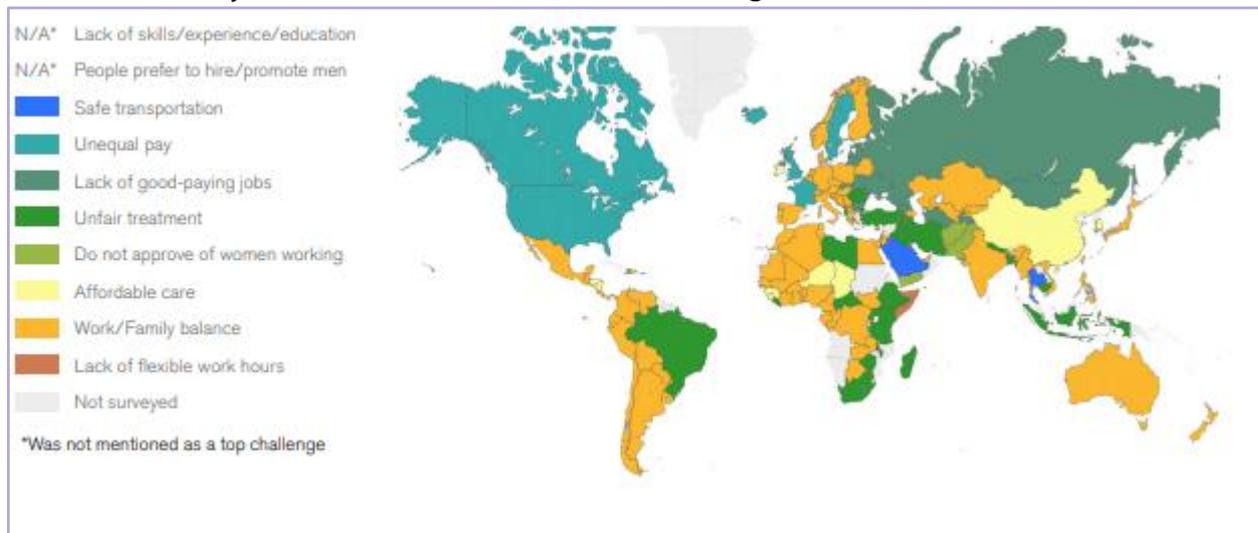
Regardless, female participation does not automatically indicates that they have gained empowerment, rather it could be that the drive for the womens’ participation in the labor force is for additional income. Many women participate in the labor force in developing countries due to household economic shocks or instability of the family's financial status (Verick, 2014).

A. Factors affecting women’s participation in the labor force

Globally, aside from the culture and religion, there are numerous barriers that women face in joining the labor force.

Figure 1

Barriers Faced by Women Around the World in Joining the Labor Force



Source. Gallup, Inc and International Labour Organization

In the survey conducted by Gallup, Inc together with the International Labour Organization (ILO) in 2017, Figure 1 shows the different barriers faced by women in participating in the labor force, which are from the respondents’ frequently mentioned reasons, resulting in the identified common themes.

Figure 2
Different Factors Impact the Probability of Women in the Labor Force



Source: International Labour Organization
 Legend: Red (Women are less likely to be in the labour force)
 Gray (No significant impact)
 Blue green (Women are more likely to be in the labour force)

Figure 2 shows that the factors on women’s participation in the labor force have different impacts on women depending on where they are located. Women around the world that preferred paid work and have attained tertiary education are likely to be part of the labor force. Being married or having partners in developed and emerging countries will discourage women from participating in the labor force; having no access to transportation in emerging and developing countries will make women less likely to join the labor force. The lack of affordable childcare is also a factor that both developed and developing countries experience.

Regarding key sectors, Prescott and Bogg (2011) surveyed 454 women working in the computer game industry, where it was found that women are less represented on the technical side of game development. Hirshfield (2010), as cited by Prescott and Bogg (2011), stated that even though more women will enter male-dominated fields, it might not change the environment; rather, these women will be concentrated in the sub-areas that are dominated by women.

On the other hand, women's representation in legislation for over 30 years in the world has increased in number along with voters' accommodation of women in political leadership roles due to women's visibility in the workforce (Iversen and Rosenbluth, 2008). Additionally, women are commonly part of executive management positions. Still, despite women being able to craft better policies that suit their needs compared to their peers, their representation in legislation and executive positions are relatively low.

B. Global agenda for women's welfare

In 1995, the United Nations held its fourth conference on women in Beijing, China, and developed the Beijing Declaration and Platform of Action. It was adopted by 189 countries. The Beijing Declaration and Platform of Action is an agenda for women empowerment and gender equality. It sets objectives and actions in 12 critical areas of concern;

1. Women and poverty
2. Education and training of women
3. Women and health
4. Violence against women
5. Women and armed conflict
6. Women and the economy
7. Women in power and decision-making
8. Institutional mechanism for the advancement of women
9. Human rights of women
10. Women and the media
11. Women and the environment
12. The girl-child

Since then, there has been a constant review of its content. In July 2010, the United Nations announced the creation of UN Women. The establishment of UN Women was done to accelerate and coordinate the actions taken to concerns and issues involving women. This organization was the result of merging the four distinct parts of United Nations systems that concern women empowerment and gender equality (UN Women, n.d.)

II. WOMEN AND THE PHILIPPINE LABOR FORCE

In the 2021 Global Gender Gap Report of the World Economic Forum (WEF), the Philippines ranked 17 out of the 156 countries benchmarked, with 78.4% of the overall gender gap closed (World Economic Forum, 2021). Additionally, despite being one position lower, the country's performance in the East Asia and Pacific region is still second best after New Zealand in terms of addressing gender disparity, and the only country to be included in Southeast Asia (World Economic Forum, 2021).

With this global ranking and in comparison to the 2016 data of the WEF, the Philippines remain to be the best performer regarding gender outcomes among the Association of Southeast Asian Nations (ASEAN) (Albert & Vizmanos, 2017). The Global Gender Gap Index measures four indicators (World Economic Forum, 2021):

1. Economic Participation and Opportunity: includes labor force participation, wage equality for similar work, estimated earned income, percentage of legislators, senior officials, and managers, and percentage of professional and technical workers. *(ranks 18 out of 156 countries)*
2. Educational Attainment: includes literacy rate and enrollment in primary, secondary, and tertiary education. *(ranks 39 out of 156 countries)*
3. Health and Survival: includes sex and ratio at birth and healthy life expectancy. *(ranks 34 out of 156 countries)*
4. Political Empowerment: includes women in parliament, women in ministerial positions, and years with female/male head of the state in the last 50 years. *(ranks 33 out of 156 countries)*

As the Philippines is among the few countries to close gender inequalities in senior, professional, and technical roles, 79.5% of the Economic Participation and Opportunity gaps were closed (World Economic Forum, 2021). **More women have been occupying roles traditionally considered male-dominated such as managerial roles.** Together with Cote d'Ivoire, Colombia, Burkina Faso, Jamaica, Togo, Botswana, and Lao PDR, **the Philippines are among the few whose managerial positions are at least 50% held by women** (World Economic Forum, 2021).

Despite the improvements concerning economic participation and opportunities, there is still more work to do in increasing the number of women in the job market, as well as closing the existing income disparities. A Philippine Institute for Development Studies (PIDS) report revealed that **in lower-level jobs** (e.g. clerks, service workers, shop assistants) **and male-dominated sectors, women earned less than their male counterparts** (Fangqing 2017). Yet, in higher-level positions, women are said to receive slightly higher pay (Fangqing 2017).

Moreover, the country still faces the need to address the gaps in political empowerment, which had been the case since 2016 (Albert & Vizmanos, 2017; World Economic Forum,

2021). Only 36.2% of the gap in this indicator had been closed as reflected by the percentage of women who hold seats in the parliament (28%) and ministerial positions (13%) (World Economic Forum, 2021).

Of the 16 Philippine presidents who assumed positions, only two of them are female, and “the proportion of women in politics or public office is still yet to meet the 30 percent critical mass” which, according to scholars, is the minimum percentage before a minority group influences decision making (Philippine Commission on Women, 2019). In 2016, only 21.44% of the elected officials were women. Additionally, in 2019, only 20.16% are female candidates (Philippine Commission on Women, 2019). All these highlight the need to encourage and empower more women to take on higher leadership positions.

A. Employment rate and participation

Labor Force Participation Rate (LFPR) is defined by the Philippine Statistics Authority (PSA) as the “percentage of the total number of persons in the labor force to the total population 15 years old and over” (Philippine Statistics Authority, 2017).

Although the Philippines perform better than other Asian neighboring countries in terms of addressing the problems of gender inequalities, this does not automatically translate to better female labor force participation. For instance, in the 2018 modeled ILO estimates, the Philippines only had 46% female labor force participation; the lowest among the ASEAN countries.

When linked to religion, BARMM, being predominantly Muslim, has the highest gender disparity index and is least economically active compared to other religions (Buenaobra, 2011; Cabegin & Gadd, 2019). In contrast, predominantly Muslim neighboring countries such as Malaysia (51%), Indonesia (52%), and Brunei Darussalam (58%) still have more women as part of their labor force (Cabegin & Gadd, 2019).

In various studies and reports, it is evident how women still lack representation when it comes to the labor market. In December 2021, the LFPR among men was higher at 76.1% compared to women at 54% (Philippine Statistics Authority, 2021). On another note, Albert and Vizmanos (2017) cited that only half of women aged 15 years and above are part of the labor force while about four of five men are in the workforce.

In terms of regional data, the female LFPR was highest (i.e. more than 50%) in Central Visayas, Northern Mindanao, Cordillera Administrative Region, MIMAROPA, CALABARZON, and National Capital Region; whereas, it is lowest (i.e. less than 48%) in Eastern Visayas, Central Luzon, Ilocos, and ARMM (now referred to as BARMM) (Cabegin & Gadd, 2019).

Cabegin and Gadd (2019) also noted that it seems that the region’s per capita income and the female LFPR have a positive relationship showing that “ARMM has both the lowest per capita GDP and female labor force participation rate, while the National

Capital Region which has about four times the per capita GDP than the rest of the country also has above average female labor force participation rate”.

Additionally, women still find it challenging to enter industries that remain to be male-dominated such as those related to Science, Technology, Engineering, and Mathematics (STEM). For instance, according to Albert and Vizmanos (2017), “working women are predominantly in the services sector” while the rest of the employed women are in the agriculture and industry sectors.

The gap in terms of the labor force aspect, however, narrows when looking at the employment rate where men are just slightly higher than females at 93.7% and 93%, respectively (Philippine Statistics Authority, 2021).

B. Challenges and barriers to employment

The Asian Development Bank (ADB) refers to seven gender gaps (i.e. deficits for women) in the labor market namely (1) labor force participation; (2) human capital; (3) unpaid domestic and care work burden; (4) vulnerable employment; (5) wage employment; (6) decent work, and (7) social protection (Asian Development Bank, 2013). Despite the narrowing gender gap in the Philippines in terms of economic opportunities and labor force participation, as shown in the results of the WEF and ADB reports, women still face various constraints related to work and employment.

Given the cultural and societal expectations when it comes to women, alongside the deeply rooted values and views on gender, women experience several challenges whether employed or actively looking for work. These are challenges and barriers that for the most part are non-existent for men. It may also be more challenging for some groups such as rural and indigenous women (with poverty and vulnerability as some of the pressing issues) (Sinha, 2017).

Despite the clamor for women's participation, “many women still lack access to productive employment” (Sinha, 2017). Below are some of the key barriers and challenges that women face which affect their labor force participation:

- Family

Although both men and women have roles to play in the perspective of having a family, the patriarchal mindset had, most of the time, limited women in the bounds of home – responsible for raising the child, keeping the home in order, and supporting the family in everything else except financially.

In a study, conducted by Monster.com where over 2600 respondents from Singapore, Malaysia, and the Philippines were surveyed, 18% were asked about their desire or plans of starting a family during interviews, indicating how pregnancy or having a child is a factor considered in hiring (Monster, 2018). The

widest gaps in LFPR between men and women also increase during the child-bearing age of a woman (i.e. 20–39 years old) (Cabegin & Gadd, 2019).

Relative to the chances of being employed, women who are currently married are at a disadvantage by 12 percentage points compared to those who were never married, and by 10 percentage points compared to those who were separated or widowed (Cabegin & Gadd, 2019). This reflects the view that women who are married (whether with children or planning to have one) should leave their spouses the role of providing for the family. As such, marital status, pregnancy, and motherhood appear to be a penalty that prevents women to pursue economic participation.

Consequently, those who are currently employed and have a family to support, bear the pressure of spending time at work while keeping/raising the family. In a webinar hosted by the IT & Business Process Association of the Philippines (IBPAP) entitled “*Gender Equality Today for a Sustainable Tomorrow*”, the panelists and speakers noted that **unpaid care and domestic work (e.g. child and elderly care) are mostly shouldered by women**, thus causing women to have less time to engage in economic and non-work related activities (IT & Business Process Association of the Philippines, 2022). The majority (84%) of the time allocated to child care, for instance, is provided by women (Asian Development Bank, 2013).

The COVID-19 pandemic has certainly intensified the “unequal burden of care carried by women” (PWC, 2021). As one of the speakers in the IBPAP forum shared, women are more burnout than many years ago because of the pandemic (IT & Business Process Association of the Philippines, 2022). Apostol (2021) as cited in PWC (2021) explained that despite flexible work arrangements and telework, “it has also exacerbated women’s double burden in balancing family and work responsibilities”.

Consequently, hindering women’s progress and sometimes leads women to leave the labor market. PWC (2021) also noted the consequences of the prolonged burden on women and the instances of resignations including the reversal of the progress made toward gender equality and stunting economic growth.

The pressures and responsibilities also affect the ability of the working wives and mothers to continue building on their careers, including the pursuit of higher leadership roles. Not to mention the additional benefits that companies have to provide women including paid maternity leave and other relevant costs.

According to a senior recruitment consultant quoted in a PIDS study, hiring, training, and keeping female workers are just the same for male workers, and the mentioned benefits are “the same as in other countries”(Fangqing 2017). Still, almost half of the respondents surveyed in the Philippines (49%) said that the

benefits received as working moms are not at par with their expectations, thus increasing reluctance to return to work (Monster, 2018).

- Promotion

In some cases, gender also plays a role in the career growth of an individual. Women, for example, may be deprived of receiving a well-deserved promotion simply because of gender. Education, experiences, and competencies aside, more than half of Filipinas (58%) felt that they have missed out on career opportunities and crucial career milestones because of their choice to have a family (Monster, 2018).

Besides the lack of family-friendly policies, some women believed that one of the hindrances in their careers is workplace discrimination. For instance, the study, which is part of the #SheMakesItWork campaign revealed that “21% of women said they have been labeled as too emotional, and 19% don’t feel like they are taken seriously in the workplace” (Monster, 2018).

According to Ilagan (2022), 60%–65% of the entry-level and rank and file positions are held by women but things are reversed in higher leadership positions. She continued that the challenges faced by women in advancing the corporate ladder are more of pathways rather than pipeline level problems; noting that several things in the workplace are distracting women to perform as leaders or pursue higher positions (e.g. women usually being the confidant in solving employee problems; women as lead in event plannings) (Ilagan, 2022).

- Vulnerable Employment

In the Philippines, many women, especially mothers, are more likely to be in vulnerable employment such as self-employment and family work as “often characterized by inadequate earnings, low productivity, and poor conditions” (Albert & Vizmanos, 2017). For working mothers, the established responsibility to guide and raise their children forces some of them to look for opportunities that will give them **more flexibility in terms of working arrangements**.

As such, if not self-employed, home-based and remote jobs are appealing to several women. Sometimes, the situation persists even at the expense of inadequate social security and the lack of decent working conditions due to informal working arrangements (Albert & Vizmanos, 2017).

- Career choices

Compared to other Asian neighbors, “Filipinas are rather free career-wise” (Jobstreet, 2019). However, job opportunities and participation in the Philippine labor market are still noticeably segregated by gender, with many industries being traditionally male-dominated. As mentioned in the earlier section, women are employed mostly in the services sector, followed by the agriculture and industry

sectors. This is also supported by Cabegin and Gadd (2019) mentioning that women are largely concentrated in the services and manufacturing sectors.

Based on the latest updates on women and men in the Philippines by the PSA, the most common field of study for women is Business Administration (Philippine Statistics Authority, 2021).

On the other hand, construction is among the sectors that are considered as highly dominated by men. For instance, the Technical Education and Skills Development Authority's (TESDA) 2020 Annual TVET Statistics Report highlighted that male enrollees and certified individuals dominated the construction, maritime, HVACR, and metals and engineering sectors (Technical Education and Skills Development Authority, 2021).

Sectors such as these remain to be challenging for women who wish to be part of the industry. Jobs commonly described or characterized as manly like welding and machine operation are careers that have little representation of women.

III. OPPORTUNITIES IN THE LABOR MARKET: WOMEN AT WORK

Relative to the identified challenges and barriers to economic participation, several key drivers are helping shape the world of work for women. The changes in policies, technology adoption, and then re-learned and unlearned values and perceptions towards women are some of the developments that had led to the continuous reshaping of a pro-gender and pro-women labor market.

These key drivers that are shaping the world of work for female employees and aspiring labor force participants are outlined below:

A. Changing views toward women

According to the ADB (2013), gendered social norms are contributing factors to the burden of responsibility being given to women regarding domestic and unpaid care work. Although many of the socio-cultural traditions and societal norms are being questioned way before the time of the internet, cyberspaces had allowed the experiences of women, particularly regarding gender inequalities and discrimination to be given more attention.

The various views about women regarding gender roles, among others, are “now being eroded by modern women asserting themselves in many aspects of life” (Anonuevo, 2000). There is also increasing participation in paid work.

Various platforms such as social media are being utilized to increase awareness about key issues surrounding women, with the hope to elicit actions and solutions. One of the popular campaigns was the #WomenShould, the UN Women advertisement series launched in 2013. One of those highlighted is how women should no longer be discriminated against, including the right to work (UN Women, 2013).

The strong patriarchal values are continuously being challenged and more married, widowed, or separated women are now empowered to participate in the labor force.

Part of empowering women and promoting gender equality is the establishment of the Women’s Empowerment Principles (WEPs). The UN Global Compact and the UN Women established the WEPs in 2010 as part of the commitment to the UN Sustainable Development Goals (IT & Business Process Association of the Philippines, 2022). The WEPs seek to encourage the private sector to promote gender equality in the workplace, marketplace, and the community, as well as obtain their corporate commitment to the WEPs (United Nations, n.d.; IT & Business Process Association of the Philippines, 2022). Listed below are the seven WEP principles:

1. Establish high-level corporate leadership for gender equality.
2. Treat all women and men fairly at work – respect and support human rights and nondiscrimination.
3. Ensure the health, safety, and well-being of all women and men workers.
4. Promote education, training, and professional development for women.

5. Implement enterprise development, supply chain, and marketing practices that empower women.
6. Promote equality through community initiatives and advocacy.
7. Measure and publicly report on progress to achieve gender equality

B. Developing and implementing responsive policies and programs

The existence of responsive policies or the lack thereof has a crucial role to play in changing the mechanisms regarding the world of work for women. Since women raised their voices to demand equality in 1969, several policies and programs had been developed and implemented (UN Women, 2013). In the Philippines, several legislative agendas and programs had been pushed and implemented for the welfare of Filipinas including

1. Republic Act No. 9710 or the “Magna Carta of Women”

Section 16 of Chapter IV (Rights and Empowerment) of the Philippine’s Magna Carta of Women (MCW) states that all Agencies under the Education Sector including the Department of Education, Commission on Higher Education, and TESDA shall ensure equal access and elimination of discrimination in education, scholarships, and training. To promote gender equality and women’s empowerment, the Philippine’s MCW requires supporting substantive equality between women and men and the empowerment of women which includes the following:

- Develop and promote a gender-sensitive curriculum
- Develop gender-fair instructional materials
- Increase enrolment of women in non-traditional skills training
- No school/training institution shall turn out or refuse admission to a female student solely on account of her being pregnant outside of marriage during her term in school/training institution
- Develop programs and policies to disseminate and prevent Violence Against Women and Children (VAWC)
- Coordinate with Philippine National Police, Department of Justice, Commission on Human Rights, Department of Social Welfare and Development, and the Local Government Unit so that appropriate assistance is given to female faculty and students who are victims of rape, sexual harassment and other forms of violence against women and discrimination.

2. Republic Act No. 11210 or the “105-Day Expanded Maternity Leave Law”

RA 11210 is in accordance with local and international legal instruments that safeguard and promote women’s rights. The State increased the maternity leave period for women workers from the initial 60 to 78 days, which can be taken as prenatal, postnatal, or a combination of, continuously and uninterrupted. This is available to women workers in the following sectors:

- Public Sector (regardless of employment status);
- Private Sector (covered either through the Social Security System benefits or the Philippine Health Insurance Corporation Circular No. 022-2014); and
- Informal Economy

The following are the key provisions of the Act that provide maternity leave credits to women regardless of their civil status or the legitimacy of their child, and regardless of the frequency with which they take their leave:

- 105 days with full pay regardless if the delivery was normal or cesarean
- 60 days maternity leave with full pay for female workers with cases of miscarriage or emergency termination of pregnancy
- Additional fifteen (15) days maternity leave with full pay for worker who qualifies as a solo parent under Republic Act No. 8972
- Option to extend for an additional thirty (30) days without pay
- Option to allocate 7 days of the maternity leave to the child's father or relative within the fourth degree of consanguinity in cases where the former is incapable of

3. Republic Act No. 10361 or the “Domestic Workers Act or Batas Kasambahay”

This act establishes policies for the country's domestic workers' protection and welfare. Their right to education and training is highlighted in Article II, Section 9 of this act, which states that the employer must provide the domestic worker with the opportunity to complete basic education and “may allow access to alternative learning systems and, as far as practicable, higher education or technical and vocational training”. The work schedule of the domestic worker must be adjusted by the employer, without jeopardizing the employer's services, to allow for such access to education or training

4. Republic Act No. 8972 or the “Solo Parents’ Welfare Act of 2000”

This act outlines the benefits and privileges which must be provided to solo parents and their children by the different government agencies, including TESDA, and nongovernment agencies. TESDA together with the other concerned agencies shall develop or assist in the formulation and implementation of a comprehensive package of social development and welfare services such as livelihood development services (e.g., training on livelihood skills, basic business management, value orientation, and the provision of seed capital or job placement). Besides that, educational benefits including scholarship programs and nonformal education programs must be made available to them.

5. Republic Act No. 11313 or the “Safe Spaces Act”

In accordance with the State's policy of recognizing women's role in nation-building and ensuring fundamental equality before the law of women and men, not only in private, but also on the streets, public spaces, online, workplaces, and educational and training institutions, this law provides protective measures and

prescribing penalties against gender-based harassment. The development of age-appropriate educational modules against gender-based sexual harassment is one of the provisions of this law that relates to TESDA. TESDA must also ensure a gender-sensitive environment in education and training institutions.

Other relevant policies relating to decent work that will impact women are still being lobbied to be passed such as

- a. House Bill 03951 or the “Freelancers Protection Act”
This bill is being lobbied to provide protection and incentives for freelancers following the State's policy of promoting gainful employment and decent work, protecting all workers from abusive and inhumane working conditions, and ensuring their right to just and humane working conditions.
- b. Women’s Priority Legislative Agenda (WPLA) for the 18th Congress
WPLA is a set of legislative agendas developed through public consultation to address women and gender equality issues by amending or repealing discriminatory provisions of existing laws and advocating for the formulation and adoption of new laws that promote, protect, and fulfill women's rights and empowerment. This includes the following (PCW, n.d.):
 - Revised Penal Code
 - New Family Code
 - R.A 8353 (Anti-Rape Law of 1997)
 - R.A 7877 (Anti-Sexual Harassment Law)
 - Domestic Workers; Rights of Kasambahay
 - Magna Carta of Workers in the Informal Economy
 - Local Sectoral Representation
 - Reproductive Health
 - Strengthening the Code of Muslim Provisional Law

C. Fourth Industrial Revolution

Low-skilled jobs are prone to the negative impact of Fourth Industrial Revolution (4IR) particularly due to automation. In response, having a higher level of education and skills will provide a competitive advantage; however, “women tend to be a minority in the digital labour market” (UNESCO, 2021). As Chen (2021) explained, it is not new information that the world of work will change due to automation and technological disruption.

The following subsections will explain the risks surrounding 4IR and automation, the trends and emerging skills, as well as the importance of continuous education and training.

1. Risks of 4IR and automation

Because of the continuous automation of jobs, around 40 to 60 million women, globally, may need transitions, particularly in higher-skilled occupations (McKinsey, 2019). In the Philippines, the ILO estimated that about half (49%) of employment faces the risk of being automated, with women being employed in most jobs that are clearly at risk for automation (e.g. low STEM skills).

One of the areas to focus on is the existing gender gaps in sectors requiring disruptive technical skills. For instance, women compose only 14% of the Engineering workforce in Cloud Computing; 20% in Data; 32% in Artificial Intelligence (World Economic Forum, 2021).

The 4IR is further complemented by the key drivers of the post-COVID-19 pandemic recovery: ICT, computer sciences, physics, mathematics, and engineering – all of which manifest women as the minorities (Marsan-Ravindra Ngo, 2021). In summary, “the fields most relevant to Industry 4.0 are the very ones where women remain underrepresented in most countries” (UNESCO, 2021).

If no appropriate interventions will be made to deal with all of these challenges, it will be difficult to manage the risks and the gap between men and women will be wider.

2. Trends and emerging skills resulting from 4IR

Despite the perceived risks brought by 4IR technologies and the increasing automation, technology and innovation may also be a driving force towards gender equality in the workforce (McKinsey, 2019). With access to technological capabilities, more women are being employed in the digital economy, also known as the gig economy. Based on the survey of Bayudan-Dacuycuy & Baje (2021), “women and young people are more likely to participate in platform work”, a result that is consistent with the study of Berg (2016) and Ipeirotis (2010). One of the reasons is flexibility.

The rise of e-commerce allowed women to pursue alternative employment such as self-employment or part-time/freelance work. As stated in previous sections, women, especially working mothers, are looking for jobs that will provide them with flexible working arrangements; thus, making the platform works appealing to several women. And this trend is projected to benefit the economy.

Based on the report of the International Finance Corporation, as cited in Crismundo (2021), when women entrepreneurs are supported, there is a projected \$280 billion addition in the e-commerce industry in Southeast Asia between 2025 and 2030. As the e-commerce industry is thriving, so should the support and investment for women be to fully maximize the opportunities presented.

It is crucial, then, according to McKinsey (2019) that women are “skilled, flexible and mobile, and tech-savvy” and that the skills to be developed should be in demand and can collaborate with automated systems. Several key industry players are also pointing out that women should be as involved as men are in the planning and creation process. For instance, in AI systems, women’s participation in its conceptualization will be crucial to avoid in-built gender-biased systems like algorithms. The same is true with the creatives industry such as in game development.

Below are some of the emerging skills resulting from 4IR, which are expected to critically impact the employment of women (McKinsey, 2019; Bayudan-Dacuycuy & Baje, 2021):

- Machine learning and Artificial Intelligence
- Ride-Hailing drivers in platform applications
- Sustainability and resource management skills
- Use of hydraulic lifts in auto mechanic
- Use of diagnostic tools/computers
- Robotics
- Sales and digital marketing
- Content creation
- Advertising
- Brand awareness/promotion skills
- Graphic development and computing

Besides these emerging skills, women also recognize the need for soft skills such as communication and negotiation (Bayudan-Dacuycuy & Baje, 2021).

3. Recommended interventions

On a positive note, the skills shift would also mean opening opportunities for women to rise the career ladder for a better-paying job. But not everyone might need to change career paths. Some may just need to “refresh their skills” and learn to integrate automated systems into the work (McKinsey, 2019). This may also solve the problem experienced by some platform workers where outputs are rejected due to inadequate skills.

Because of the 4IR and other emerging technologies such as digital platforms, work is expected to change in three ways, according to McKinsey (2019):

1. Increasing automated system collaboration;
2. Increasing relevance of certain skills; and
3. Flexible working arrangements.

Further, two of the three areas identified by McKinsey (2019) in the report which would enable the necessary transitions and overcome long-established barriers

are related to technology and skills training namely (1) Invest in training programs and platforms to enable women to develop necessary skills; and (2) Raise women's access to technology, their skills to use it, and their share of tech jobs and leadership roles.

The role of education and training in shaping the world of work for women is further detailed in the next subsection.

D. Strengthening education and training

The 64th session of the Commission on the Status of Women revealed the progress women have made in terms of basic and higher education, noting that the “number of out-of-school girls has dropped by 79 million” in 20 years (UN Women, 2020). Moreover, UN Women (2020) continued that girls are now more likely to be represented in secondary education than boys.

The data from PSA further supported this global trend showing that in 2021, females have a higher share of basic literacy (97.1%) than males (95.9%), which is also the case with the 2012 data showing a basic literacy rate of 96.1% and 95.1% for females and males, respectively (Philippine Statistics Authority, 2012; Philippine Statistics Authority, 2021).

In Table 1, it can be observed that as the educational attainment of individuals increases, the representation is leaning toward women. Male dominates from elementary undergraduate to junior high school undergraduate, but female dominates the higher education levels (junior high school graduates to college graduates).

Table 1
2021 Updates on Women and Men in the Philippines (Education)

Indicator	Women	Men
Functional Literacy Rate (%) 10–64 years old	92.9	90.2
Basic Literacy Rate (%) 10 years and over	97.1	95.9
Distribution of the Population 6 Years Old and Over by Highest Educational Attainment (%)		
No Grade Completed	3.6	4.0
Elementary Undergraduate	18.8	22.9
Elementary Graduate	10.8	11.0

Junior High School Undergraduate	14.9	16.1
Junior High School Completed	21.5	20.7
Senior High School Undergraduate	2.3	2.1
Senior High School Graduate	2.1	1.9
Post Secondary Undergraduate	1.0	0.8
Post Secondary Graduate	2.3	2.2
College Undergraduate	9.0	8.3
College Graduate	13.7	9.8

Source: Philippine Statistics Authority, 2021

According to Cabegin and Gadd (2019) educational attainment is observed to affect the likelihood of a woman participating in the labor market. Acquiring a diploma and completing a college education boost employability, especially for a woman. A college-educated woman is at an advantage by seven, 10, and 14 percentage points relative to those who have primary, high school, and some college education, respectively.

In terms of tertiary education graduates, more women are enrolled in Business Administration and Related Studies, Education Science and Teacher Training, and Medical and Allied Courses; whereas, Engineering and Technology and IT-related disciplines are dominated by men (Philippine Statistics Authority, 2021). Meanwhile, in Technical and Vocational Education and Training (TVET), the most commonly enrolled and certified program for women is the Tourism (Hotel and Restaurant) sector.

Despite the progress made, the United Nations Children's Fund (UNICEF) reminded that "education for girls is about more than access to school" rather it also encompasses the issue of safe spaces and support for better representation "in subjects and careers they choose to pursue - including those in which they are often underrepresented" (UNICEF, n.d). Hence, strengthening education and training also magnifies the need to encourage women to take STEM-related courses and other traditionally male courses; employment opportunities in male-dominated sectors and occupations.

The adoption of new and emerging technologies as well as the impact of the COVID-19 pandemic has also revealed that lifelong learning is crucial for women.

Due to the pandemic, women, especially mothers were forced to remain at home or render a temporary break from work.

According to Chen (2021) COVID-19 “highlighted the dividing lines of education, digital skills, and implicitly gender” and this might negatively impact all the progress that women have made in the last decades. Meanwhile, PWC (2021) explained that based on research “career breaks have long-term impacts on women’s labour market prospects, and women will return to lower paid and lower skilled positions”.

Additionally, lower-paid and lower-skilled positions were proved to be more automatable and less likely to be transitioned into a work-from-home set-up. Since women tend to be more concentrated in the most affected sectors, “women’s jobs are 1.8 times more vulnerable to the crisis than men’s”; although women account for 39% of global employment, 54% of the overall job losses are also attributed to women (McKinsey, 2020 as cited in Chen, 2021). Furthermore, 4IR technologies are changing the nature of work at an unprecedented rate.

Thus, strengthening education and training means providing mechanisms for women to acquire and develop the critical skills needed to continue participating in the labor market. **STEM knowledge and skills are required for traditional and emerging occupations and often needed for future jobs** (UNESCO-UNEVOC, 2020). Further, despite the associated risks, “digital and internet technologies offer women a way to break down barriers by making reskilling more accessible” (McKinsey, 2019).

Therefore, whether currently employed, temporarily resigned, or looking for work, **women should be equipped with the necessary STEM-related, digital, and ICT skills to open more opportunities for high-value jobs.** As Chen (2021) reiterated, those who are part of the STEM workforce may be at an advantage, and unfortunately, only 36% of women have STEM degrees and only 25% are in the STEM workforce.

ADB (2013) stated that the human capital gap still exists because of the “gendered segregation in the types of training and tertiary education”. Moreover, McKinsey (2019) revealed that for women to remain productive and be better paid in the context of the future of work, navigating transitions in the face of 4IR and automation will be critical.

In this regard, there is an opportunity for both the public and private sectors to target women in the upskilling and reskilling initiatives. For instance, Eskwelabs delivered targeted upskilling programs for women online freelancers with a focus on data skills. Government agencies such as TESDA are also partnering with different stakeholders to prepare women for the changing market demands, including programs for artificial intelligence and data annotation.

E. Women empowerment through Technical-Vocational Education and Training

In the Women’s Month Celebration Webinar of IBPAP, the Board Director of the Contact Center Association of the Philippines (CCAP) summarized the Gender Equality and Women Empowerment Plan 2019–2025 as a plan containing the following strategies (Campos, 2022):

1. Concretize the implementation of the Magna Carta for Women;
2. Contribute to the inclusive human development goal of the Philippine Development Plan 2017–2022 and the collective vision of the *Ambisyon Natin 2040*; and
3. Move the country closer to the achievement of the long-term goals for gender equality and women’s empowerment, particularly the Convention on the Elimination of All Forms of Discrimination Against Women.

Additionally, Labajo (2020) as cited in ILO (2020) shared during the conference for the review of gender and inclusion in Philippine TVET that various Philippine laws were set in place as part of recognizing and promoting women empowerment, gender equality, and social inclusion. This is also highlighted in the list of relevant policies cited in the opportunities section of this study. Yet despite these laws, plans, and strategies (both internationally and locally) that pushed for gender parity, Sinha (2017) reiterated that in the Philippines “structural sexism remains the biggest obstacle to women’s empowerment”.

Provided this, Campos (2022) reminded that when women and girls are empowered, a ripple effect can be experienced; benefiting everyone including its relationship to the health and productivity of their families, communities, and the country.

One of the ways to empower women is through utilizing the Technical-Vocational Education and Training (TVET) sector. At the ILO (2020) conference, it was shared that women outperform men in terms of enrolment in TVET. The 2020 Study on the Employment of TVET Graduates of TESDA showed that female enrollees and graduates are still slightly higher than males with a 2% percentage difference (Technical Education and Skills Development Authority, 2021).

However, women still face greater challenges in terms of finding decent jobs compared to their male counterparts (International Labour Organization, 2020). There is a 1.84% point difference between males and females in terms of employment rate, favoring males at a 71.44% employment rate (Technical Education and Skills Development Authority, 2021).

In terms of the length of job search, the majority (82.7%) found jobs in less than six months following their completion of the TVET program; a few (5.22%), many of which are female, were employed after more than one year (Technical Education and Skills Development Authority, 2021).

To maximize the opportunities that TVET presents in empowering women for social inclusion, the following needs greater attention:

1. Productive participation

With the nature of TVET being highly practical than theoretical, TVET is helping bridge education and the labor market. Additionally, TVET may serve as a tool for women's empowerment through activating and encouraging the productive participation of women in economic activities. This may be done by “ensuring equal access to quality education, skills acquisition, and technical training, particularly in those occupations that are traditionally held by men” (UNESCO-UNEVOC, 2018).

Moreover, the strong linkages to employers, industries, and the labor market will strengthen productive participation; consequently being a “potent source of female empowerment” (UNESCO-UNEVOC, 2018). In essence, TVET has the potential to level the playing field for women, especially in underrepresented courses and those with high demand labor such as in Information and Communications Technology, STEM, and the Creatives sector.

2. Reskilling and upskilling programs for women

According to a McKinsey (2019) study, either the attainment of higher education or reskilling “might be necessary for women to remain employed”. Nunez (2019) as cited in UNESCO-UNEVOC (2019) highlighted that through TVET, unemployment may be reduced since it opens opportunities for the updating and acquisition of skills.

In this regard, women will have the chance to be qualified for positions or be reintegrated into the labor market, which is especially important for those who have been inactive in employment due to several reasons. As such, TVET increases employability and societal integration (UNESCO-UNEVOC, 2018).

3. Women entrepreneurship

Besides being employed by companies, institutions, or organizations, entrepreneurship may also be another avenue for women to participate in economic activities. TVET, in its aim to remain relevant and responsive to the needs of the industry, may also be instrumental in developing entrepreneurial and innovative skills.

Women entrepreneurs may be empowered for self-employment and provide women, particularly those in unpaid domestic care, with diverse livelihood options. It is important to create environments where “women are educated about entrepreneurship and can see how it can be a viable and appealing path for their employment and livelihood” (Asian Development Bank, 2013). For instance, Marsan-Ravindra Ngo (2021) also cited that women entrepreneurs should increase their participation in educational technology and health technology as these are strong drivers for post-pandemic recovery.

IV. SKILLS NEEDS FOR THE WORLD OF WORK

A. Top 10 jobs

Based on the ILOSTAT data (2020), the following jobs listed below are the top 10 occupations dominated by women.

1. Personal care workers
2. Health associate professionals
3. Cleaners and helpers
4. General and keyboard clerks
5. Health professionals
6. Teaching professionals
7. Customer services clerks
8. Other clerical support workers
9. Food preparation assistants
10. Personal service workers

It is interesting to note that most of the jobs listed would need human touch besides technical skills. The ability to provide human touch and personalization are some of the skills that companies and stakeholders (e.g. customers) are looking for; provided that these cannot still be easily substituted by machines.

The 2021 International Innovation Summit of IBPAP also pinpoints how new technologies such as Artificial Intelligence highlight the importance of human skills such as empathy, personalized conversations, and communication skills.

B. Technical in-demand jobs across various sectors/industries

Table 2 shows the technical jobs across the different sectors including Science, Technology, Engineering and Mathematics (STEM), Data Analytics, Creatives, and eCommerce. These sectors were selected as the focus of this LMIR as these provide a non-traditional career path for women as well as those that have few barriers for new entrants. Focusing on the positions in these sectors can help in strengthening policies and programs aimed at removing obstacles to high-skills and high-paying job opportunities, thus creating equal access for all.

Table

List of Technical Jobs across the Various Sector/Industry

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
STEM	Life and physical science, engineering, mathematics, and	Life and physical science	
		Agricultural and Food Science Technicians ^b	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
	information technology occupations ^a	Chemical Technicians ^b	
		Environmental Science and Protection Technicians	
		Geological and Hydrologic Technicians ^b	
		Nuclear Technicians ^b	
		Forest and Conservation Technicians	
		Biological Technicians	
		Geological and Hydrologic Technician ^b	
		Other Life, Physical, and Social Science Technicians	
		Engineering	
		Electrical and Electronic Engineering Technicians	
		Civil Engineering Technicians	
		Industrial Engineering Technicians	
		Chemical Technicians	
		Electro-Mechanical Technicians	
		Environmental Engineering Technicians	
		Mechanical Engineering Technicians	
		Surveying and Mapping Technicians ^b	
		Electrical and Electronics Drafters ^b	
		Nuclear Equipment Operation or Monitoring Technicians	
		Civil Technician	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Calibration Technologists and Technicians and Engineering Technologists and Technicians	
		Mathematics	
		Statistical Clerks ^b	
	Social science occupations	Bookkeeper ^b	Bookkeeping NC III
		Financial Clerk ^b	
		Administrative Assistant ^b	
		Paralegal ^b	
		Social and Human Service Assistants ^b	
	Architecture occupations	Architecture Drafter ^b	
		Architecture Technologist	
		Appraiser	
		Interior Decorator	
		Tile Setter	Tile Setting NC II
		Photographer	Photography NC II
		Construction Laborer	
		3D Modeler	3D Animation NC III
		Architectural Technician	
		Carpenter	- Carpentry NC II - Carpentry NC III
	Health Occupations	Public Health Nurse ^b	
		Staff Nurse ^b	
		Nursing Aide ^b	Health Care Services NC II
Nursing Attendant/Assistant ^b			

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Home Health Aides ^b	
		Caregiver/Home Health Care Nurse ^b	<ul style="list-style-type: none"> - Caregiving (Newborn to Pre-Schooler) NC II - Caregiving (Grade Schooler to Adolescent) NC II - Caregiving (Elderly) NC II - Caregiving (Clients with Special Needs) NC II
		Medical Records and Health Information Specialists ^b	
		Hearing Aid Specialists	
		Pharmacy Technician/Pharmacy Assistant ^b	Pharmacy Services NC III
		Pharmacist Aide	
		Laboratory Aide	
		Training Assistant	
		Clinic Assistant	
		Ward Assistant	
		Hospital Assistant	
		Birth Assistant	
		Social Welfare Assistant ^b	
		Assistant Midwife	
		Therapy Assistant ^b	
		Physical Therapy Technician	
		Medical Equipment Preparers	
		Radiologic Technologist/Radiology Technician	
		Medical Laboratory Technician	
		Medical X-ray Technician	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		2D Echocardiography Technician	
		Wheelchair Technician	Assistive Rehabilitation Technology Services (Wheelchair) NC II
		Mechanical Ventilator Technician	
		Dietetic Technicians	
		Medical Records Technician ^b	
		Diagnostics Related Technologists and Technicians ^b	
		Health Technologist and Technician ^b	
		Clinical Laboratory Technician ^b	
		Dental Laboratory Technician	- Dental Laboratory Technology Services (Fixed Dentures/Restorations) NC II - Dental Laboratory Technology Services (Removable Dentures/Appliances) NC II
		Dental Hygienists ^b	Dental Hygiene NC IV
		Dental Assistant ^b	
		Dental Technologist	Dental Technology NC IV
		Dental Equipment Laboratory Technician	
		Dental Aide/Dental Laboratory Aide	Dental Laboratory Technology Services NC I
		Barangay Health Worker	Barangay Health Services NC II
		Barangay Nutrition Scholar	TR is under Development- Competency Assessment Tools (CATs) are being developed
		Contact Tracer	Contact Tracing NC II
		Swabber	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Medical Secretary	
		Administrative Officer ^b	
		Administrative Aide ^b	
		Data Controller	
		Data Encoder	
		Ambulance Driver	
		Dispatch Officer	
		Ambulance Care Assistant	Emergency Medical Services NC II
		Call Taker	
		Customer Service Representative/Helpdesk	Contact Center Services NC II
		Purchasing Staff	
		Medical Coding and Billing	
		In-Patient Coordinator	
		Warehouseman/Warehouse Aide	Warehousing Services NC II
		Cook	
		Food Preparation Assistant ^b	
		Laundry Worker ^b	
		Seamstress ^b	
		Hospital Housekeeper	
		Sanitation and Disinfection Officer	
Data Analytics (1)	Data Steward	Data Privacy Officer	
		Data Security Officer	
		Data Curator	
		Data Librarian	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
	Data Engineer	ETL Developer	
		Data Architect	
		Data Warehousing Professional	
		Big Data Engineer	
	Data Scientist	Statistician	
		Statistical Modeler Advanced Analytics Professional	
	Functional Analyst	Research Analyst	
		HR Analyst	
		Marketing Analyst	
		Financial Analyst	
		Operations Analyst	
	Analytics Manager	Chief Data Officer	
		Analytics Translator	
	Creatives (Only includes the following domains: Design (graphic and digital design), Digital Interactive Media, and Creative Services)	Broadcast and Media Creatives - Digital Advertising	Art Director
Advertising Photographer			Photography NC II
Editorial Photographer			
Assistant Media Planner			
Digital Media Planner			
Interactive Media Planner			
Junior Account Planner			
Media Planner			
Advertising Buyer			
Assistant Buyer			
Interactive Media Buyer			

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Internet Advertising Buyer	
		Media Buyer	
		Print Traffic Coordinator	
		Advertising Coordinator	
		Agency Account Coordinator	
		Communications Coordinator	
		Marketing Coordinator	
		Media Coordinator	
		National Account Coordinator	
		Online Advertising Coordinator	
		Client Strategist	
		Target Marketing Strategist	
		Client Support Specialist	
		Digital Advertising Specialist	
		Media Specialist	
		Media Research Analyst	
		Preprint Analyst	
		Web Analytics Consultant	
		Illustrator	
		Production Artist	
		Assistant Account Executive	
		Brand Manager	
		Traffic Manager	
		Advertising Copywriter	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Ads Writer	
		Copyeditor	
		Copy Associate	
		Creative Technologist	
		Producer	
		Advertising Assistant	
		Assistant Account Executive	
		Content Marketer	
		Marketing Associate	
	ICT-Enabled Creatives (4,5,6)	Assistant Producer (games)	
		Producer (games)	
		Game Director	
		Game Technical Director	
		Quality Assurance tester	
		Lead Quality Assurance Tester	
		Live Operations	
		Video Editor	
		Digital Clean Up Artist	Animation NC II
		Digital In-between Artist	
		In-between Artist/In-betweenener	
		Traditional Animator	2D Animation NC III
		Motion Graphics Animator	
		Web Animator	
		Commercial Animator	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		AVP Animator	
		Animated e-learning Animator	
		2D Digital Animator	
		Animation Checker	
		Clean-Up Art Checker	
		In-between Checker	
		Digital Library Builder	
		3D Rigger	3D Animation NC III
		3D Asset Creator	
		3D Visualizer	
		3D Generalist	
		3D Layout and Animatic Artist	
		3D Render Artist	
		3D Texture Artists	
		3D Animator	
		3D Lighting Artists	
		Visual Graphic Multimedia Artist	Visual Graphic Design NC III
		Visual Graphic Artist/Designer	
		Creative/Art Director	
		Booth and Product/Window Display Designer	
		Junior Designer	
		Lead Game Designer	
		Package Designer	
		Senior Game Designer	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Senior Level Designer	
		Technical Game Designer	
		Lead Technical Artist	
		Technical Artist	
		UI/UX Game Artist	
		2D Game Artist	2D Game Art Development NC III
		2D Game Concept Artist	
		2D Game Animator	
		3D Game Artist	3D Game Art Development NC III
		Game Concept / Visual Artist	
		Texture Artist	
		Game Animator	
		Tools Programmer	Game Programming NC III
		Game Tester	
		Game Play Scripter	
		Game Programmer	
		Java Programmer	Programming (Java) NC III
		Java Programming Support Staff	
		Software Developer ^b	
		User Interface Developer	
		Applications Developer	
		Instructor/Professor (Programming)	Programming (.Net Technology) NC III
		Web Application Developer	
		PL/SQL Developer	

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		Porta Developer	Programming (Oracle Database) NC III
		Forms Developer	
		Technical Consultant	
		Functional Implementer	
		Reports Developer	
		3D Game Animation	
		Junior Programmer	
		Lead Game Programmer	
		Senior Engine Programmer	
		Senior Game Programmer	
		Senior Server Programmer	
		Web Designer	Web Development NC III
		Front End Game Developer	
		Full-stack Web Developer	
Ecommerce (11)	Marketing and Promotion	Customer Support/ Contact Center Specialist/ Customer Service Officer ^b	- Customer Services NC II - Contact Center Services NC II
		Content Creator	- Animation NC II - 2D Animation NC III - 3D Animation NC III - Visual Graphic Design NC III **TR for Scriptwriting qualifications were drafted under the sponsorship of NCCA. CATs development still for finalization. [Animation: Scriptwriting/Content Creation was prioritized in 2015]
		Copywriter	TR for Scriptwriting qualifications were drafted under the sponsorship of NCCA.

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations	
			CATs development still for finalization. [Animation: Scriptwriting/Content Creation was prioritized in 2015]	
		SEO Specialist		
		Multimedia Artist	- Visual Graphic Design NC III	
		Videographer and Editor	- Film and Video Postproduction NC III	
		Graphic Designer	Visual Graphic Design NC III	
		Social Media Marketing	**E-commerce and social media specialists pending for prioritization (Logistics)	
		Social Media And E-Commerce Site Advertising Specialist	**E-commerce and social media specialists pending for prioritization (Logistics)	
		Email Template Designer		
		Marketing Staff	Marketing Officer and Marketing Specialist are pending for prioritization (Footwear and Leathergoods)	
		Ads Specialist		
		Ad Buyer		
		Ad Marketer		
		Branding		
		Sales and Demand	Sales Specialist**	- Customer Services NC II - Contact Center Services NC II
			Account Executive	
	Product Management			
	eCommerce Specialist			
	eCommerce Associate/Assistant			

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		eCommerce Merchandiser	
		Ecommerce Merchandising Assistant	
		eCommerce Operation Specialist	
		E-Commerce Freelancer	
		Package Designer	- Visual Graphic Design NC III
		Customer Engagement	
		Demand and Sales Forecasting	
		Data Analytics	
		Business Intelligence	
	Operations	Business Registration	
		Collections Specialist	- Contact Center Services NC II
		Partnership Liaison	
		Cashier**	Customer Services NC II
		Accounting Clerk**	- Bookkeeping NC III
		Virtual Assistant (eCommerce)	**Virtual Assistant pending for prioritization (ICT)
		E-Commerce Web QA Specialist	
		Streamer	
		Livestream Production	
		Data Analyst	
		Data Collector	**Ongoing development of TR under Social, Community Development, and Other Services **Testing and Data Collection pending for prioritization (ICT)
User interface (UI) Designer	Visual Graphic Design NC III		

Sector/ Industry	Value Chain/Domain/ Job Families	Technical Skills/Jobs	Training Regulations
		User experience (UX) Designer	
		Inventory Management	
		Business Management	
		Business Planning	
		Business Analysis and Research	
		Product Delivery Management	
		Product Pricing	
		Taxes and Financial Management	

Note. ^aDoes not include Information Technology Occupations as those are already covered under Creatives,

^bWomen's representation in STEM Occupations

References. (1) Ligot et al. (2022), (2) Doyle, A. (2021), (3) New Jersey Institute of Technology, (4) Philippine Game Development Industry Roadmap (2022). (5) TESDA (2021), (6) TESDA (2022), (7) Minnesota State Colleges and Universities. (n.d.). (8) Funk & Parker (2018), (9) Indeed editorial team (2021), and (10) US Bureau of Labor Statistics. (2021), (11) International Labour Organization. (2020).

Aside from the technical skills, the following are the emerging skills/jobs, as well as the soft skills which are relevant across the different sectors/industries similar to that in Table 2.

C. Emerging skills/jobs

- Basic Counseling (listening, interviewing, probing)
- Complex Information Processing and Interpretation
- Computer Programming
- Cybersecurity and Forensics
- Data Privacy and Protection
- Data Privacy Compliance
- Data Science and Analytics
- Data Security
- Data Science
- Digital Adoption
- Digital Information Management
- Digital Marketing and Strategy
- Electronic Records Management
- Environmental and Occupational Health and Hygiene
- Waste Management
- Health Information System Navigation and Management

- Health Surveillance and Monitoring
- Information Security
- Information System Specialist
- Innovation on Equipment
- Internet of Things (IoT)
- Medical Technologist
- Metaverse
- Mobile Application Navigation and Use of Emails
- Online Assessment
- Online Learning
- Pharmacy Benefit
- Quality Control
- Design Engineering
- Mobile App Development
- Augmented/Virtual Reality
- Blockchain
- Using Streaming Services for Gaming
- Search Engine Optimization
- Artificial Intelligence and Machine Learning
- Cloud Computing"
- Robotics
- Social Science Research
- System Analysis and Evaluation
- Tech savvy
- Technical troubleshooting for hybrid and virtual learning
- Technology Use
- Use of virtual instruction software, polling, and digital formative assessment tools

D. Soft skills

- Emotional Intelligence/Emotional Quotient
- Communication Skills
- Negotiation
- Flexibility
- Teamwork
- Collaboration
- Problem Solving Skills
- Critical Thinking
- Ethical Mindset
- Statistical Techniques/Knowledge
- Interpersonal Skills

- Business and Organizational Skills (Domain Knowledge & Application, Data Management & Governance, Operational Analytics, Data Visualization & Presentation)
- Judgment and Decision Making

Qualifications (WTR)	Assessed					Certified				
	Male		Female		Total	Male		Female		Total
	Count	%	Count	%		Count	%	Count	%	
2D Game Art Development NC III	0	0	0	0	0	0	0	0	0	0
3D Animation NC III	0	0	0	0	0	0	0	0	0	0
3D Game Art Development NC III	0	0	0	0	0	0	0	0	0	0
Animation NC II	31	54.39	26	45.61	57	28	51.85	24	44.44	54
Assistive Rehabilitation Technology Services (Wheelchair) NC II	0	0	0	0	0	0	0	0	0	0
Barangay Health Services NC II	167	16	877	84	1044	144	16.61	723	83.39	867
Bookkeeping NC III	3084	23.62	9974	76.38	13058	1410	21.22	5236	78.78	6646
Caregiving (Clients with Special Needs) NC II	0	0	0	0	0	0	0	0	0	0
Caregiving (Elderly) NC II	5	26.32	14	73.68	19	4	26.67	11	73.33	15
Caregiving (Grade Schooler to Adolescent) NC II	0	0	0	0	0	0	0	0	0	0
Caregiving (Newborn to Pre-Schooler) NC II	6	35.29	11	64.71	17	5	45.45	6	54.55	11
Carpentry NC II ^a	6829	88.48	889	11.52	7718	6586	88.68	841	11.32	7427
Carpentry NC III	59	83.1	12	16.9	71	58	82.86	12	17.14	70
Contact Center Services NC II	0	0	0	0	0	0	0	0	0	0
Contact Tracing NC II	0	0	0	0	0	0	0	0	0	0
Customer Services NC II	134	30.52	305	69.48	439	122	30.73	275	69.27	397
Dental Hygiene NC IV	0	0	0	0	0	0	0	0	0	0
Dental Laboratory Technology Services (Fixed Dentures/Restorations) NC II	5	83.33	1	16.67	6	3	100	0	0	3
Dental Laboratory Technology Services (Removable Dentures/Appliances) NC II	3	100	0	0	3	2	100	0	0	2
Dental Laboratory Technology Services NC I	0	0	0	0	0	0	0	0	0	0
Dental Technology NC IV	0	0	0	0	0	0	0	0	0	0
Emergency Medical Services NC II	439	58.61	310	41.39	749	430	59.23	296	40.77	726
Film and Video Postproduction NC III	0	0	0	0	0	0	0	0	0	0
Game Programming NC III	0	0	0	0	0	0	0	0	0	0
Health Care Services NC II	863	21.46	3158	78.54	4021	825	21.35	3040	78.65	3865

Qualifications (WTR)	Assessed					Certified				
	Male		Female		Total	Male		Female		Total
	Count	%	Count	%		Count	%	Count	%	
Pharmacy Services NC III	115	21.46	421	78.54	536	108	21.56	393	78.44	501
Photography NC II	97	53.01	86	46.99	183	77	48.13	83	51.88	160
Programming (.Net Technology) NC III	0	0	0	0	0	0	0	0	0	0
Programming (Java) NC III	0	0	0	0	0	0	0	0	0	0
Programming (Oracle Database) NC III	0	0	0	0	0	0	0	0	0	0
Tile Setting NC II ^a	3286	77.85	935	22.15	4221	3,136	77.74	898	22.26	4034
Visual Graphic Design NC III ^a	640	56.49	493	43.51	1133	387	56.74	295	43.26	682
Warehousing Services NC II	0	0	0	0	0	0	0	0	0	0
Web Development NC III	9	64.29	5	35.71	14	6	85.71	1	14.29	7

Note: ^a Non-Traditional Trade Qualifications
 Source: TESDA Certification Office; TESDA Women Center

Table 5 shows the number of assessment centers, competency assessors, National TVET Trainers Certificate (NTTC) holders and registered programs. Bookkeeping NC III has the highest number of assessment centers, assessors, National TVET Trainers Certificate (NTTC) holders and registered programs. The second highest for the number of assessment centers, competency assessors and National TVET Trainers Certificate (NTTC) holders is Carpentry NC II while for the registered programs are Contact Center Services NC II and Health Care Services NC II.

Table 5
 Summary of the Number of Assessment Centers, Competency Standards, NTTC Holder, and Registered Programs per Qualification (WTR), FY 2021

Qualifications (WTR)	AC	CA	NTTC Holder	Registered Programs
2D Animation NC III ^a	4	16	74	34
2D Game Art Development NC III	0	0	0	1
3D Animation NC III	0	0	0	0
3D Game Art Development NC III	0	0	0	0
Animation NC II	10	17	53	21
Assistive Rehabilitation Technology Services (Wheelchair) NC II	0	0	0	0
Barangay Health Services NC II	0	0	0	16
Bookkeeping NC III	219	333	937	526
Caregiving (Clients with Special Needs) NC II	1	0	0	0

Qualifications (WTR)	AC	CA	NTTC Holder	Registered Programs
Caregiving (Elderly) NC II	0	0	0	0
Caregiving (Grade Schooler to Adolescent) NC II	0	0	0	0
Caregiving (Newborn to Pre-Schooler) NC II	0	0	0	0
Carpentry NC II ^a	91	222	590	193
Carpentry NC III	7	24	52	6
Contact Center Services NC II	0	0	0	207
Contact Tracing NC II	0	0	0	0
Customer Services NC II	7	23	80	9
Dental Hygiene NC IV	0	0	3	2
Dental Laboratory Technology Services (Fixed Dentures/Restorations) NC II	0	3	12	7
Dental Laboratory Technology Services (Removable Dentures/Appliances) NC II	0	2	9	6
Dental Laboratory Technology Services NC I	0	0	0	4
Dental Technology NC IV	0	0	2	2
Emergency Medical Services NC II	10	25	101	31
Film and Video Postproduction NC III	0	0	0	0
Game Programming NC III	2	1	3	4
Health Care Services NC II	60	151	402	207
Pharmacy Services NC III	13	51	91	15
Photography NC II	5	7	15	5
Programming (.Net Technology) NC III	0	0	0	0
Programming (Java) NC III	0	0	3	7
Programming (Oracle Database) NC III	0	0	0	0
Tile Setting NC II ^a	61	106	0	99
Visual Graphic Design NC III ^a	48	63	334	96
Warehousing Services NC II	1	2	1	0
Web Development NC III	6	7	13	15

Note: ^a Qualifications included in the list of TRs under NTT

Source: TESDA Certification Office

VI. TESDA INITIATIVES

The National Technical Education and Skills Development Plan (NTESDP) 2018–2022 envisions a “Vibrant Quality TVET for Decent Work and Sustainable Inclusive Growth” which will be implemented under a two-pronged strategy: 1) TVET for Global Competitiveness and Workforce Readiness, and 2) TVET for Social Equity.

One of the identified problems and challenges in the NTESDP 2018–2022 is addressing the Filipino workforce that is excluded and left behind. As such one of the aims of TESDA is to provide training on skills development, particularly for the marginalized and the vulnerable, including women.

TESDA has been actively involved in ensuring that women will be supported in terms of development and economic participation. For proactive and responsive strategies and programs, the Agency had spearheaded and been involved in the following initiatives:

1. Mainstreaming Gender and Development in TVET

The Magna Carta for Women described Gender and Development (GAD) as the “development perspective and process that are participatory and empowering, equitable, sustainable, free from violence, respectful of human rights, supportive of self-determination and actualization of human potential”.

In response to the achievement of gender equality, GAD is mainstreamed in TVET particularly through the following:

1. Inclusion of gender-related research as a priority in the implementation of the National Technical Education and Skills Development Research Agenda (NTRA) 2017–2022
2. Institutionalization on the use of gender-sensitive curriculum and gender-sensitive trainer’s manual to produce gender-sensitive TVET graduates and promote gender-fair education in the TVET sector
3. Integration of GAD components in the basic competencies of NC I and NC II Training Regulations
4. Introduction of GAD and women empowerment in Competency-Based Training of TESDA Technology Institutions
5. Enhancement of the TESDA GAD database including the sex-disaggregated data for Enrolled, Graduates, Assessed, Certified, and Employed TVET learners to aid policy formulation, planning, and monitoring and evaluation
6. Provision of training assistance for repatriated women Overseas Filipino Workers (OFWs) in support of the Republic Act No. 11469 or the “*Bayanihan to Heal as One Act*” and the Magna Carta of Women.

2. Creation of the TESDA Women’s Center

Originally named the “National Vocational Training and Development Center for Women”, the TESDA Women’s Center (TWC) was one of TESDA’s affirmative

action strategies in ensuring women's education and training for courses that are traditionally male-dominated (TESDA Women's Center, n.d.). As the first internationally accredited training institution that received a silver award from the Asia Pacific Accreditation and Certification Commission (APACC) in 2008, TWC continuously equips women with the necessary knowledge and skills that will nurture their innovativeness and strengthen competitive advantage.

The training institution prepares women both for employment and entrepreneurship. Under the Universal Access to Quality Tertiary Education Act (Republic Act No. 10931), TWC offers free competency-based training programs for full qualifications honed towards 21st-century skills such as Barista NC II, Motorcycle/Small Engine NC II, and Electrical Installation and Maintenance NC II.

Additionally, some of the gender and development programs of TWC include the lifelong learning webinar series where various topics are being discussed including safe spaces and gender sensitivity.

3. Increasing women's participation in Technical-Vocational Education and Training (TVET)

In the 2017-2019 TVET Statistics Report, it was observed that females slightly dominated the number of TVET enrollees and graduates, with an average of 53% of the total output (Technical Education and Skills Development Authority, 2019). Moreover, the majority (54%) of the certified individuals are female. In 2020, female enrollees and graduates are still slightly higher than males with a 2% percentage difference; however, the output for assessed and certified are slightly higher in males (Technical Education and Skills Development Authority, 2021).

The increasing number of women in TVET programs may also result from the Agency's conscious efforts to include women in the priority sectors. The gender and development agenda is likewise strengthened; concretizing the work plan and reinforcing the importance of women's social inclusion in the labor market. There are also efforts on tapping women to be part of traditionally men's courses such as welding, plumbing, and electrical installations. For instance, TESDA partnered with Procter and Gamble Philippines (P&GP) in 2016 "to contribute to the upliftment of the lives of women enrolled in tech-voc" (Technical Education and Skills Development Authority, 2016).

TESDA is also continuously highlighting women in TVET and their successes in the areas of non-traditional sectors/jobs including construction, welding, plumbing, automotive, and others. Such initiatives open employment opportunities for women, which is timely as more Filipinas pursue careers in these fields.

4. Forging partnerships for women empowerment

As mentioned in the NTESDP 2018-2022, "TVET programs can be designed and segmentized to meet the specific skills and learning needs of clientele deemed

marginalized and vulnerable.” One way to concretize this is through engaging various private and public sectors.

TESDA pursued public-private partnerships in view of developing policies and programs toward women empowerment, including:

a. Sari-Sari Store Training and Access to Resources (STAR) program

A special program called “Sari-Sari Store Training and Access to Resources (STAR) Program” was launched in the first quarter of 2014, that was collaborated with Coca-Cola Philippines, TESDA, and Alalay sa Kaunlaran, Inc., a microfinance institution. This program recognizes the significant role of women as potential engines of economic and community development (Business Mirror, 2020).

Coca-Cola has pledged to empower 5 million women by 2020 (5by20 Program), which will assist female entrepreneurs in overcoming the barriers to business success through (1) business and life skills training; (2) accessibility to finance and financial services; and (3) accessibility to merchandising support and business assets (Business Mirror, 2020). With this commitment, TESDA developed a program that will improve the business knowledge and skills of women who own and operate sari-sari stores.

b. 2017 Women in STEM workforce readiness and development program in the Philippines

With the need to improve the participation of women in STEM-related programs, TESDA joined forces with the ILO to train more women, particularly in animation, game, and software development (International Labour Organization, 2019).

The ILO launched in 2017 the Women in STEM workforce readiness and development program in the Philippines, focusing on the IT sector, particularly the Information Technology and Business Process Management (IT-BPM). Female employment in IT-related industries is considered to be low-skilled which is at risk of automation. Thus, TESDA partnered with ILO to support the career development of underprivileged female secondary or postsecondary TVET graduates (International Labour Organization, 2019).

c. Artificial intelligence and Data Annotation (AIDA) training

Concerning the Information and Communications Technology (ICT) sector, TESDA also forged a partnership with CONNECTED WOMEN for the digital training of Filipino women. In response, TESDA, through the TWC, implemented the Artificial Intelligence and Data Annotation (AIDA) training program for the benefit of 1,000 women (Technical Education and Skills Development Authority, 2021).

VII. WAY FORWARD

Considering the presented issues and challenges surrounding the productive participation of women in the labor market, as well as the opportunities that TVET provides in pursuit of women empowerment and mainstreaming gender and development, below are some of the recommendations to guide TESDA in its efforts towards social inclusion:

1. In view of the Fourth Industrial Revolution (4IR), the modernization of the Training Regulations is recommended by embedding the use of technology and digital-related skills in the competencies. The Qualifications and Standards Office (QSO) shall take the lead in making the Training Regulations responsive to 4IR skills/competency demands. QSO may start with reviewing and enhancing as necessary, non-traditional trades or courses/qualifications where women are underrepresented.

The adoption of technology and digital skills, especially in male dominated fields will help boost women's participation as it eases access for those who wish to be part of the industry. This is also consistent with the results of the previously conducted industry consultations where the adoption of technology is seen as a step in reducing the barriers to entry for women.

2. Several Training Regulations (TR) identified in Table 2 were unutilized or underutilized wherein opportunities for women in terms of employment are available. Below are the list of unutilized or underutilized TRs:
 - 2D Game Art Development NC III
 - 3D Game Art Development NC III
 - Assistive Rehabilitation Technology Services (Wheelchair) NC II
 - Caregiving (Clients with Special Needs) NC II
 - Caregiving (Elderly) NC II
 - Caregiving (Grade Schooler to Adolescent) NC II
 - Caregiving (Newborn to Pre-Schooler) NC II
 - Dental Hygiene NC IV
 - Dental Laboratory Technology Services
 - (Fixed Dentures/Restorations) NC II
 - Dental Laboratory Technology Services (Removable Dentures/Appliances) NC II
 - Dental Technology NC IV
 - Film and Video Postproduction NC III
 - Programming (.Net Technology) NC III
 - Programming (Oracle Database) NC III

Following this, the Planning Office and the QSO shall take note of these Training Regulations in the conduct of the TR review. Additionally, as many of these TRs

are also newly promulgated, the Regional and Provincial Office's role will be critical in encouraging Technical Vocational Institutions and Companies to undergo the registration process and offer the said programs.

Additionally, although the four non-traditional trades/qualifications are being utilized (2D Animation NC III, Carpentry NC II, Tile Setting NC II, and Visual Graphic Design NC III), only Visual Graphic Design NC III has a relatively equal number of male and female in the EGAC. Whereas, only about 25% of the EGAC in Tile Setting NC II and Carpentry NC II are female. Hence, there is a need to establish initiatives that would advocate the increase in the number of women participating in these programs. This includes the partnership through the Regional Industry Boards (RIBs) wherein these programs can be promoted and operationalized. Another consideration is the purposive implementation of these skills training under the scholarship programs wherein women will be given higher slots/opportunity in the non-traditional trades.

3. The Agency shall ensure that the implementation of the TVET programs across all training modalities (institution-based, enterprise-based, and community-based training) should include the gender component to ensure that gender concerns are being responded to. As Ilagan (2022) reminded during the IBPAP webinar, spotting gender bias is difficult and as such, people should be aware of situations where gender bias can occur and call it out when observed (IT & Business Process Association of the Philippines, 2022). Following this, it is also recommended that the National TVET Trainers Academy shall include gender sensitivity training/capacity-building programs for the TVET trainers. Furthermore, it is also suggested that gender sensitivity be observed in the conduct of assessment and certification for the trainers. This is to make sure that relevant competencies will be acquired and it will be reflected in the delivery of the training programs.
4. As cited in this report, marital status, pregnancy, and motherhood appear to be a penalty that prevents women from pursuing economic participation. Relative to this, more women are being engaged in freelance/digital platform work as it offers more flexibility in working arrangements. Hence, the TESDA Online Program and the conduct of community-based training should further be promoted and strengthened, while consciously targeting women as beneficiaries of TVET programs (e.g. stay at home moms, self-employed, and women entrepreneurs). The National Institute for Technical Education and Skills Development (NITESD) may also look at developing programs that target those who are part of the informal/digital economy for skills development. Moreover, NITESD shall ensure that the developed curriculum are gender sensitive (i.e. without gender bias and discrimination) and are geared towards encouraging more women to take an active economic participation.
5. TESDA shall strengthen the development and implementation of STEM-related courses as this is seen as one of the key drivers towards post-pandemic recovery

and one of the critical sectors that will allow women to move towards higher paying jobs. For instance, the Planning Office shall include STEM as a component in the development of labor market information, the conduct of consultations, and the prioritization of skills requirements. Moreover, the appropriate methodology for the identified STEM skills shall be determined to ensure the acquisition of the corresponding STEM related competencies.

6. As reflected in Table 2, several technical jobs/skills in the sectors considered as high-value sectors and whose women are underrepresented still do not have corresponding Training Regulations. It is recommended that consultations on corresponding sectors/industries will be conducted to further determine the requirements. Moreover, following the prioritization process, PO shall recommend to QSO the development of the programs whether as Competency Standards or a full-blown Training Regulation (*See Annex A for the list of the programs recommended for development*).
7. Based on studies that TVET can give advantage to women in the labor market, it is recommended that TESDA will ensure the responsiveness of its programs using corresponding tools like the Harmonized Gender and Development Guidelines which ensure mainstreaming of GAD in the policies and programs of the agency.

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ANNEX A

Note. Qualifications included in the list of TRs under NTT: 2D Animation NC III, Carpentry NC II, Tile Setting NC II, and Visual Graphic Design NC III

Creatives	Pending for Prioritization/ Ongoing Development of TR	Soft Skills	Emerging Skills
<p>Job/ Skills Requirements that do not have corresponding TR</p> <p>Broadcast and Media Creatives - Digital Advertising</p> <ul style="list-style-type: none"> Editorial Photographer, Assistant Media Planner, Digital Media Planner, Interactive Media Planner, Junior Account Planner, Media Planner, Advertising Buyer, Assistant Buyer, Interactive Media Buyer, Internet Advertising Buyer, Media Buyer, Print Traffic Coordinator, Advertising Coordinator, Agency Account Coordinator, Communications Coordinator, Media Coordinator, National Account Coordinator, Online Advertising Coordinator, Client Strategist, Target Marketing Strategist, Client Support Specialist, Digital Advertising Specialist, Media Specialist, Media Research Analyst, Preprint Analyst, Web Analytics Consultant, Production Artist, Assistant Account Executive, Brand Manager, Traffic Manager, Advertising Copywriter, Ads Writer, Copyeditor, Copy Associate, Creative Technologist, Producer, Advertising Assistant, Assistant Account Executive, Content Marketer, Marketing Associate, Marketing Coordinator, Illustrator <p>ICT-Enabled Creatives</p> <ul style="list-style-type: none"> Assistant Producer (games), Producer (games), Game Director, Game Technical Director, Quality Assurance tester, Lead Quality Assurance Tester, Live Operations, Video Editor, Junior Designer, Lead Game Designer, Package Designer, Senior Game Designer, Senior Level Designer, Technical Game Designer, Lead Technical Artist, Technical Artist, UI/UX Game Artist, 3D Game Animation, Junior Programmer, Lead Game Programmer, Senior Engine Programmer, Senior Game Programmer, Senior Server Programmer 	<p>Job/ Skills Requirements and Corresponding TR</p> <ul style="list-style-type: none"> E-commerce and social media specialists (Logistics); Social Media Marketing, Site Advertising Specialist (eCommerce) Marketing Officer and Marketing Specialist - Marketing Staff (Footwear and Leathergoods) Virtual Assistant (ICT, eCommerce) Testing and Data Collection - Data Collector (Social, Community Development, and Other Services) Scriptwriting qualifications were drafted under the sponsorship of NCCA. CATs development still for finalization- Copywriter Competency Assessment Tools (CATs) are being developed for Barangay Nutrition Scholar (Public Nutrition) <p>Visual Graphic Design NC III - Multimedia Artist, Graphic Designer, Package Designer, User interface (UI) Designer, User experience (UX) Designer, Art Director, Visual Graphic Multimedia Artist, Visual Graphic Artist/Designer Creative/Art Director, Booth and Product/Window Display Designer</p> <p>Warehousing Services NC II - Warehouseman/ Warehouse Aide</p> <p>Web Development NC III - Web Designer, Front End Game Developer, Full-stack Web Developer</p>	<ul style="list-style-type: none"> Emotional Intelligence/ Emotional Quotient Communication Skills Negotiation Flexibility Teamwork Collaboration Problem Solving Skills Critical Thinking Ethical Mindset Statistical Techniques/ Knowledge Interpersonal Skills 	<ul style="list-style-type: none"> Basic Counseling (listening, interviewing, probing) Complex Information Processing and Interpretation Computer Programming Cybersecurity and Forensics Data Privacy and Protection Data Privacy Compliance Data Science and Analytics Data Security Data Science Digital Adoption Digital Information Management Digital Marketing and Strategy Electronic Records Management Environmental and Occupational Health and Hygiene

Science, Technology, Engineering and Mathematics (STEM)

Job/ Skills Requirements that do not have corresponding TR

Life and physical science, engineering, mathematics, and information technology occupations

- Agricultural and Food Science Technicians, Chemical Technicians, Environmental Science and Protection Technicians, Geological and Hydrologic Technicians, Nuclear Technicians, Forest and Conservation Technicians, Biological Technicians, Geological and Hydrologic Technician, Other Life, Physical, and Social Science Technicians, Electrical and Electronic Engineering Technicians, Civil Engineering Technicians, Industrial Engineering Technicians, Chemical Technicians, Electro-Mechanical Technicians, Environmental Engineering Technicians, Mechanical Engineering Technicians, Surveying and Mapping Technicians, Electrical and Electronics Drafters, Nuclear Equipment Operation or Monitoring Technicians, Civil Technician, Calibration Technologists and Technicians and Engineering Technologists and Technicians, Statistical Clerks

Social science occupations

- Financial Clerk, Administrative Assistant, Paralegal, Social and Human Service Assistants

Architecture occupations

- Architecture Drafter, Architecture Technologist, Appraiser, Interior Decorator, Construction Laborer, Architectural Technician

Health Occupations

- Public Health & Staff Nurse, Hearing Aid Specialists, Pharmacist Aide, Laboratory Aide, Training Assistant, Clinic/Ward Assistant, Hospital Assistant, Birth Assistant/Assistance Midwife, Social Welfare Assistant, Physical Therapy Technician, Medical Equipment Preparers, Radiologic Technologist/Radiology Technician, Medical X-ray Technician, 2D Echocardiography Technician, Mechanical Ventilator Technician, Dietetic Technicians, Medical Records Technician, Diagnostics Related Technologists & Technicians, Health Technologist and Technician, Clinical Lab Technician, Dental Equipment Lab Technician, Barangay Nutrition Scholar, Swabber, Medical Secretary, Administrative Officer, Admin Aide, Data Controller, Data Encoder, Ambulance Driver, Dispatch Officer, Call Taker, Purchasing Staff, Medical Coding & Billing, In-Patient Coordinator, Food Preparation Assistant, Sanitation & Disinfection Officer, Medical Records & Health Information Specialists, Therapy Assistant, Medical Lab Technician, Cook (Ships Cook), Laundry Worker, Hospital Housekeeper

Job/ Skills Requirements and Corresponding TR

- **Animation NC II** – Digital Clean Up Artist, Digital In-between Artist, In-between Artist/In-betweener
- **2D Animation NC III**–Traditional Animator, Motion Graphics Animator, Web Animator, Commercial Animator, AVP Animator, Animated e-learning Animator, 2D Digital Animator, Animation Checker, Clean-Up Art Checker, In-between Checker, Digital Library Builder
- **2D Game Art Development NC III– 2D Game Artist, 2D Game Concept Artist, 2D Game Animator– 3D Game Artist, Game Concept / Visual Artist Texture Artist, Game Animator**– 3D Game Art Development NC III
- **3D Animation NC III**– 3D Rigger, 3D Asset Creator, 3D Visualizer, 3D Generalist, 3D Layout and Animatic Artist, 3D Render Artist, 3D Texture Artists, 3D Animator, 3D Lighting Artists, 3D Modeler
- **Animation NC II, 2D Animation NC III, 3D Animation NC III, Visual Graphic Design NC III**– Content Creator
- **Assistive Rehabilitation Technology Services (Wheelchair) NC II**– Wheelchair Technician
- **Barangay Health Services NC II**–Barangay Health Worker
- **Bookkeeping NC III**– Bookkeeper, Accounting Clerk
- **Caregiving (Newborn to Pre-Schooler) NC II, Caregiving (Grade Schooler to Adolescent) NC II/ Caregiving (Elderly) NCII, Caregiving (Clients with Special Needs) NC II**– Caregiver/Home Health Care Nurse
- **Carpentry NC II/ Carpentry NC III**– Carpenter
- **Contact Tracing NC II**–Contact Tracer
- **Customer Services NC II, Contact Center Services NC II**–Customer Support/Contact Center Specialist/Customer Service Officer, Collections Specialist, Cashier, Customer Service Representative/Helpdesk, Sales Specialist

Soft Skills

- Business and Organizational Skills (Domain Knowledge & Application, Data Management & Governance, Operational Analytics, Data Visualization & Presentation)
- Judgment and Decision Making

Emerging Skills

- Waste Management
- Health Information System Navigation and Management
- Health Surveillance and Monitoring
- Information Security
- Information System Specialist
- Innovation on Equipment
- Internet of Things (IoT)
- Medical Technologist
- Metaverse
- Mobile Application Navigation and Use of Emails
- Online Assessment
- Online Learning
- Pharmacy Benefit
- Quality Control
- Design Engineering
- Mobile App Development
- Augmented/Virtual Reality
- Blockchain
- Using Streaming Services for Gaming
- Search Engine Optimization
- Artificial Intelligence and Machine Learning
- Cloud Computing"
- Robotics
- Social Science Research

Data Analytics

Job/ Skills Requirements that do not have corresponding TR

Data Steward

- Data Privacy Officer, Data Security Officer, Data Curator, Data Librarian

Data Engineer

- ETL Developer, Data Architect, Data Warehousing Professional, Big Data Engineer

Data Scientist

- Statistician, Statistical Modeler Advanced Analytics Professional

Functional Analyst

- Research Analyst, HR Analyst, Marketing Analyst, Financial Analyst, Operations Analyst

Analytics Manager

- Chief Data Officer, Analytics Translator

E-commerce

Job/ Skills Requirements that do not have corresponding TR

Marketing and Promotion

- SEO Specialist, Email Template Designer, Ads Specialist, Ad Buyer, Ad Marketer, Branding

Sales and Demand

- Account Executive, Product Management, eCommerce Specialist, eCommerce Associate/Assistant, eCommerce Merchandiser, Ecommerce Merchandising Assistant, eCommerce Operation Specialist, E-Commerce Freelancer, Customer Engagement, Demand and Sales Forecasting, Data Analytics, Business Intelligence

Operations

- Business Registration, Partnership Liaison, E-Commerce Web QA Specialist, Streamer, Livestream Production, Data Analyst, Inventory Management, Business Management, Business Planning, Business Analysis and Research, Product Delivery Management, Product Pricing, Taxes and Financial Management

Job/ Skills Requirements and Corresponding TR

- **Dental Hygiene NC IV** – Dental Hygienists, Dental Assistant
- **Dental Laboratory Technician (Fixed Dentures/Restorations) NC II, Dental Laboratory Technology Services (Removable Dentures/Appliances) NC II** – Dental Laboratory Technology Services
- **Dental Laboratory Technology Services NC I**-Dental Aide/Dental Laboratory Aide
- **Dental Technology NC IV** – Dental Technologist
- **Emergency Medical Services NC II**- Ambulance Care Assistant
- **Film and Video Postproduction NC III** – Videographer and Editor
- **Game Programming NC III** – Tools Programmer, Game Tester, GamePlay Scripter, Game Programming (Java) NC III- Programmer Java Programmer, Java Programming Support Staff, Software Developer, User Interface Developer, Applications Developer
- **Health Care Services NC II** – Nursing Aide, Nursing Attendant/Assistant, Home Health Aides
- **Laboratory and Metrology/Calibration Services NC II** – Medical Laboratory Technician
- **Pharmacy Services NC III** – Pharmacy Technician/ Pharmacy Assistant
- **Photography NC II** – Photographer, Advertising Photographer
- **Programming (.Net Technology) NC III** – Instructor/Professor (Programming), Web Application Developer
- **Programming (Oracle Database) NC III** – PL/SQL Developer, Porta Developer, Forms Developer, Technical Consultant, Functional Implementer, Reports Developer
- **Tile Setting NC II** – Tile Setter

Emerging Skills

- System Analysis and Evaluation
- Tech savvy
- Technical troubleshooting for hybrid and virtual learning
- Technology Use
- Use of virtual instruction software, polling, and digital formative assessment tools



Office of the Deputy Director General for Policies and Planning
Planning Office - Labor Market Information Division
Planning Office - Policy Research and Evaluation Division

TESDA Complex, East Service Road, South Superhighway, Taguig City, 1630
www.tesda.gov.ph | (02) 8817-2675



Labor Market Information Division and Policy Research and Evaluation Division
Planning Office

Office of the Deputy Director General for Policies and Planning
Technical Education and Skills Development Authority
TESDA Complex, East Service Road, South Luzon Expressway (SLEX)
Fort Bonifacio, Taguig City 1630, Metro Manila