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Comparative Analysis of Policy Perspectives for Technical and Vocational Education

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Abstract

Skills-based education can provide a way forward to sustainable development in a developing country. It is a hopeful scenario that more than 60% of the population of Pakistan is less than 30 years of age and almost half of them are under 15 years of age. It is important for the policymakers and planners to learn from the societies where human resource development is integrated in educational planning at secondary and higher secondary schools level. The paper at hand presents the policy analysis part of a bigger study that was conducted for proposing changes in the current policies and practices of technical and vocational education in Pakistan. To fulfill this purpose three of the best models of technical and vocational education were reviewed and a comparative analysis was conducted to identify the adaptable policy measures in Pakistan. The three models reviewed and compared were from Germany, Switzerland, and South Korea. This paper presents the analysis of policies in the three aforementioned countries including the implementation strategy proposed; as well as lessons learned for improving the policy of technical and vocational education in Pakistan. This article is based on one part of a larger study.

Keywords: curriculum planning, manpower approach, policy planning, secondary school education, technical vocational education

Introduction

Education is considered to be a set of knowledge, skills, values, and attitudes (Schmidt, 2018). It is essential for a child who goes through the minimum required basic level of schooling to learn all these elements for at least the basic level. All around the world access to secondary education is now considered a right an education that should be ensured by the state (UNESCO, 2020). It is important to look at the curriculum of secondary schools to see how the required skills are instilled in the learners, which may enable them to fulfill their socio-economic needs. In the present scenario, possesses the second largest generation of youth in South Asia UNDP report (2017). Thus, there is a dire need to transform the existing human capital by providing them with quality and purposeful educational opportunities without any gender discrimination and generating jobs to facilitate them. For past many years, it has been emphasized that the education system in Pakistan is largely focused on theoretical knowledge instead of the provision of skills, therefore a meaningful change in curriculum is needed to provide the required set of knowledge, skills, values, and attitudes to the students (Siddiqui, 2007 & 2016).

Background

According to Medium Term Development Framework (MTDF) 2005-2010, the country's annual demand is 950,000 skilled workers but the enrolment in Technical and Vocational Education and Training (TVET) institutions is 350,000 only (Shah & Khan, 2017). The introduction of crafts and skill-based subjects at the secondary level in a developing country like Pakistan can be helpful to meet the annual demand for skilled workers. By integrating skill-based education into mainstream schools' curricula, students can get a chance to have knowledge of the application of theoretical concepts (Yang et al, 2018) . Through skills-based education, the problem of lack of engagement of students could also be solved, which then decrease the drop-out rate as well. According to the Strategy for Technical and Vocational Education and Training 2016-2021, skill-based education could help students to choose a career according to their capabilities and interest. Moreover, it will remove the stigma that is attached to technical education. In Pakistan, people think low achievers and children of non-affluent backgrounds go to technical education and that general education (GE) is of greater value than vocational education (VE). In Pakistan, primary education comprises five years

which begins at the age of five. After that the three years' education is given at the middle Secondary education is provided for two years in grades 9 and 10 and higher secondary education is given in grades 11-12 which is generally offered in colleges. Tertiary education is provided in universities (AEPAM, 2021).

Purpose of the Study and Research Question

This paper is based on one of the research questions in a larger study conducted for the purpose of reviewing and revising the policy and curriculum planning to improve the learning experience of students at the secondary school level by introducing technical and vocational programs and courses. The question focused in this part of the study was: How the successful education systems have planned technical and vocational education at secondary schools?

This study was conducted in 2019 and the comparative analysis was made through an extensive review of reports from different countries. Three cases were selected to be compared for proposing a useful model in the case of Pakistan. The three case studies chosen from various reports of UNESCO-UNEVOC, between 2012 and 2018, were from Germany, Switzerland and South Korea. Detailed documentary analysis was made on the basis of the following research questions:

1. How is technical and vocational education integrated in the education system?
2. How is technical and vocational education structured, governed and organized?
3. How is it ensured to have enough financing and human resource for technical and vocational education?

Methodology

This study was conducted in Pakistan to review the current policy and practices of mainstream education and the parallel stream of technical and vocational education. The researchers conducted this study in three stages. The methodology adopted for this part of the larger study was a literature review and document analysis. Initially, various global reports and research articles were reviewed, then three exemplary cases were selected to be analyzed in detail in comparison to each other and Pakistan.

To find answers of the questions listed above, the documents analyzed for each country were mainly the policy documents and annual reports as well as some research studies published between past 15 years (2005- 2019). Open coding and thematic analysis were conducted to review the documents and answer the three questions mentioned above. For the three international case studies, online available documents and reports were analysed. For Pakistan two focal persons were interviewed to get in depth information. One was the focal person of Rawalpindi District Education office and the other was focal person of Tecnical Education and Vocational Training Authority in Rawalpindi District of Punjab. These were elicited interviews conductet to discuss the findings of document analysis and to propose a theoretical model.

Findings

Based on extensive document analysis and literature review, following are the major findings regarding Germany, Switzerland and South Korea and then discussion on the current model of TEVT in Pakistan.

Germany

According to a report (UNDP, 2016, p. 198), "Germany has 4th position in Human Development Index (HDI) ranking of 2014 which shows the government has great concern about their common man's health, education and income." Germany is one of the European countries whose educational system is considered as profitable and flexible. The students have a lot of options for getting education of their own choice. Almost all the educational paths are designed to give knowledge and skills as well. The result of such system is that in 2012, as stated by Lanford et al, (2015), the unemployment rate of Germany was 5.5% while America's unemployment rate was 8.2%. Moreover, Cedefop (2017) stated that in 2015, the employment rate of people having medium level qualifications was 88.2% in Germany while the European Union had an average of 70.8%. That's why Germany is considered as an achiever of one of the highest employment rates in the European Union.

Educational System of Germany

Lanford, Maruco, and Tierney (2015) have reported that in the German education system, primary education is compulsory for every individual. After that, l, students have three educational tracks to follow according to their abilities and

choices. In the lower secondary level (Grades 5 to 9), the students are sent to one of the three schools: the Hauptschule, the Realschule, or the Gymnasium.

Lower-Secondary Level

The Hauptschule is the school where students of low abilities are sent to learn math, writing and reading skills. The students get certificates from such schools which make it easy for them to get employment. The Realschule provides an intermediate level of education. The students get general education along with technical subjects. The students of such schools have a wide variety of options to choose from in work and education. The Gymnasium is the most distinguished school of Germany. History, cultural studies, literature, Greek and Latin are taught to the students of such schools (Lanford, Maruco, & Tierney, 2015). Hippach-Schneider, Krause, and Woll (2007) stated that apart from above mentioned schools, there are comprehensive schools in Germany which offer courses according to level of proficiency and students are grouped in different qualifications as per their availability.

Upper-Secondary Level

Hippach-Schneider, Krause, and Woll (2007) reported that at the upper-secondary level (Grades 10-13), the students have two different tracks: either to go for higher education or to get vocational qualification, or to become qualified skilled worker.

Dual System

This system is called "dual" for the reason that it gives both learning and training opportunities to the students. According to Rindfleisch and Maennig-Fortmann (2015) theoretical knowledge is given at the vocational schools and training is given at companies. The duration of such education and training is of two to three and a half years' duration. The students are given three to four days of training and they attend vocational schools two days a week.

Vocational schools in dual system give education of general subjects related to German, religious education, business studies, social studies and sports. The training programs are designed to inculcate qualification and competence for the world of work to get job easily. The training is given in 330 job related to service

sector, manual skills and high-tech industry (Rindfleisch & Maennig-Fortmann, 2015).

Full Time Vocational schools

According to Hippach-Schneider, Krause, and Woll (2007), these schools are full-time vocational schools, Fachoberschulen, vocational grammar schools/ trade and technical grammar schools and vocational secondary schools. Full time vocational schools offer one to three year courses in which basic vocational training has been given in one occupation. Training is given in the occupations related to craft, household, healthcare, artistic, commercial and foreign languages. Fachoberschulen is a type of school where students of 11 and 12 are taught. In-company specialized practical training, general and specialized teaching are the dominant features of this school. Specialization is offered in the subjects of business administration, technical skills, healthcare, welfare, design, nutrition, home economics and agronomy. Whereas, the subjects of German, foreign languages, mathematics, economics, natural and social sciences and a specialized subject are taught there (Cedefop, 2017).

Vocational grammar schools/trade and technical grammar schools are the same schools but are called by different names in different Landers (states). These schools do not have lower or intermediate level. In these schools, vocational subjects are being taught along general education. The degree holders of such schools are able to get admission in any institute of higher education. Vocational secondary schools are helpful to the students of dual system in getting permission to enter higher education system. Two years of education in such schools where subject-based education and second foreign language is taught to make entrance in higher education. It is necessary for the applicants of such schools to have final certificate from intermediate or Realschule schools or to have at least five years' experience in a relevant occupation (Cedefop, 2017).

German Legislation System

According to UNESCO-UNEVOC (2012), German Technical Vocational Education and Training system comprises of following legislation policies. There are regulations on Craft Trades, ordinance on trainer aptitude, protection of Young People in Employment Act, Employment promotion, Career Advancement Training

Promotion Act, Law on the Protection of Participation in Distance Education and Directive on recognition and Licensing of Continuing Training. All of these Acts and Regulations are implemented for the improvement of German TVET system.

The Social Partners

According to Hippach-Schneider, Krause, and Woll (2007, p. 20), as quoted in the UNESCO report of 2018, German TVET, program has some social partners such as industry, commerce, agriculture, the liberal professions, public administrations, health services, and over 900 inter-company training venues. The Chambers have responsibility to advise companies, register trainees, certify trainers' aptitude, conduct examinations and to negotiate at local level.

Governance

UNESCO-UNEVOC (2012) reported that the educational system, including all levels of TVET, in Germany is governed by two main authorities: the Federal government and the Lander (state). There are two ministries of federal government which play vital role in the governance of education. The Federal Ministry of Education and Research is responsible for policy making, legislation and for making coordination among out-of-school vocational training, training assistance and continuing education systems.

The Federal Ministry of Economics and Technology officially recognizes training occupations and issues training regulations for training occupations according to their concerned legislative acts. The Federal Institute for Vocational Education and Training makes it possible for Federal Government and vocational training providers to have counseling with conducting in-company training research (UNESCO-UNEVOC, 2013).

The Lander Ministries of Education and Cultural Affairs play their role for school education at the regional level. There are committees for vocational training in the Lander where employers and employees are equally represented. The close partnership of employers, trade unions and the government has a great impact on the content and form of TVET. The curriculum of the dual training system is designed after the mutual consent of Federal and Lander authorities. (UNESCO-UNEVOC, 2018).

Financing

According to UNESCO-UNEVOC (2012) in Germany, the financing of TVET is the responsibility of the Federal Ministry of Education and Research -Bundesministerium für Bildung und Forschung (BMBF), the Federal Ministry of Economics and Technology, the Federal Ministry of Labor and Social Affairs, the Federal Employment Agency and Lander. Lander and local authority public funds are responsible to finance dual vocational training but the financing of the training in full-time vocational schools is the duty of the Lander only. According to the UNESCO report of 2018, the enterprises fund the out-of-school part of vocational training and they are bound to give allowance to their trainees. The financing of continuing TVET is done by enterprises, the State, the Federal Employment Agency, and private individuals.

Selection of Teachers and Trainers and Their Duties

According to UNESCO-UNEVOC (2012) in Germany, the selection of TVET teachers and trainers is done through the tests. The state examination offices and Lander examination commissions are responsible to conduct such tests for the entry of teachers and trainers in the profession. The theory-based part is taught by teachers in schools and trainers are appointed in companies to give practical training to the students.

TVET teachers are not required to have higher education. Normally those teachers are selected who have vocational background as a skilled worker, a foreman or a qualified craftsman. The trainer must have a qualification of a subject needed for a training occupation. That's why the trainers are required to appear in a test to become certified trainers. TVET teachers are qualified to teach in full-time vocational schools and in continuing TVET programs as well.

National Quality Framework (NQF)

According to Cedefop (2017), Germany's national qualification framework for lifelong learning comprises of eight levels of qualifications. The NQF is based on learning outcomes for lifelong learning -Deutscher Qualifikationsrahmen für lebenslanges Lernen (DQR). The NQF is designed in order to enhance German education and training system by maintaining the links and integration of various sub-systems. The DQR includes qualification mostly from VET and higher

education. The DQR has a complete list of qualifications for different levels. The learners' professional and personal competencies are examined to gain a specific qualification.

Switzerland

Vocational Education and Training system plays an integral role in the education system of Switzerland. This system is so powerful that according to Strahm (2010) it had the lowest unemployment rate during 1992-2005 among all the countries of Organization for Economic Cooperation and Development (OECD). Although the economic growth was low in that period, due to the VET system people were able to work and enter the labor market. According to UNDP (2016), Switzerland had 2nd position in Human Development Index (HDI) ranking of 2014 which indicates that Swiss people are having one of the best systems of health, education and income. Swiss youth has more focus on vocational education than academic studies which helps to gain job which alternatively raise their living standards as reported by Kof (2014) in the Center on International Education Benchmarking (CIEB) report (Hoffman & Schwartz, 2015).

Educational system of Switzerland

According to Bauer and Gessler (2016), in Switzerland, the education system is governed at regional level. There are 26 cantons (regions) in Switzerland. The compulsory education starts at the age of four at kindergarten level and ends at the age of fifteen at lower secondary level. In upper secondary level, the students have two options: either to choose vocational program or academic studies. According to (OECD, 2015), 66% students got admission in vocational education and training programs while 34% students were enrolled in general education which shows the preference of vocational education and training in Switzerland (Bauer & Gessler, 2016)

Case Management System

According to Hoffman and Schwartz (2015) in the report of Center on International Education Benchmarking (CIEB) report, in Switzerland there is a case management system at the local level to cope with the issue of students who are in danger of dropping out at lower secondary level or unable to enter the VET system at upper secondary level to give them individual attention and track their progress.

Network of Community-Based Career Centers

As stated by Hoffman and Schwartz (2015) in CIEB report, there is a network of community-based career centers in Switzerland. The staff of such career centers helps and guides the students in the transition from grade 9 by providing them information about various career opportunities. They offer different kinds of services i.e. interest inventories, resume writing, portfolio development and help in choosing short pre-apprenticeships to sample prospective apprenticeship sites.

Structure of the Dual VET system

According to Hoffman and Schwartz (2015) in CIEB report, there are 240 different occupations which are being offered in Swiss VET system. These occupations range from traditional trades and crafts to banking, insurance, IT, health and social care etc. According to SERI, 2016, as reported by Bauer and Gessler (2016), following are the different levels of VET system of Switzerland:

Transition Options

These are one year programs for those who are not able to enter the upper secondary level. Pre-apprenticeships and practical training are given to students to have enrolment in VET programs.

Two-Year VET Programs For The Federal VET Certificate (Level 1)

Short programs for simple occupations are offered and apprentice of this program can achieve higher degree by continuing apprentice onto the next level.

Three to Four Years VET Programs For The Federal VET Diploma (Level 2)

This program trains apprentice for specific and complex occupations. At the completion of this level, Federal VET Diploma is awarded and enable apprentice to enter in the Federal Vocational Baccalaureate

Federal Vocational Baccalaureate (Level 3)

At Level 3, the courses of general subjects are offered. The Federal Vocational Baccalaureate makes it possible for apprentices to continue education at a university of applied sciences or to avail the option of appearing in University Aptitude Test (UAT).

University Aptitude Test (Level 4)

This test enables apprentices to enroll in a cantonal university or a federal institute of technology.

Professional Education And Training* (*PET)

According to (Renold & Caves, 2017, p. 13), PET programs are also offered in Switzerland. The main purpose of formulation of such programs was to serve those people who want to have in-depth knowledge in a particular subject. That's why mostly adult learners get admission in PET programs to excel in their field.

Legislation

According to Gonon (2005), in Switzerland, the first legislation was introduced in 1930 and the professions in arts and crafts in industries were defined and it was mandatory for every apprentice to go for school courses for one day. In 1978, a new law was introduced which regulated the education in a majority of courses. In 2004, a new law was passed. That law was amended in order to expand the vocational training by emphasizing on-the-job-training and classroom learning.

Governance System

Renold and Caves (2017) stated that Swiss Vocational and Professional Education and Training (VPET) is governed by the Confederation (federal government), cantons (member states of Switzerland), and professional associations. The Confederation major tasks are to ensure training quality, to facilitate, compare and make all programs of VPET transparent throughout the country. Its responsibility is to enact VET ordinances, recognize PET exam ordinance and PET framework curricula. The cantons have the responsibility of implementation of legislation, operation of VPET schools, management of apprenticeship contracts, and establishment of career guidance and counseling centers.

More than 600 professional associations are responsible for VET and PET programs. Their important task is to revise occupation-specific VET ordinances every three to five years with the help of Confederation and cantons. These professional associations are responsible to define the curriculum framework, advertise for apprenticeship positions in companies, contribute and operate industry-

wide courses, prepare training materials for companies, supervise the workplace-related national examinations and much more.

Financing

In Switzerland, the financing system is almost the same as Germany's financing system. Bauer and Gessler (2016) stated that the cost of vocational schools is borne by public while the cost of training of apprentices is financed by companies. They mentioned that apart from the above mentioned financial contributions of companies, a new rule has been implemented in Switzerland as sectoral vocational training funds. This new practice demands that all the operational companies within the same sector have to contribute in the sectoral vocational training fund.

Teachers' Training

According to Bauer and Gessler (2016, , the institute of Swiss Federal Institute for Vocational and Training (SFIVET) gives training to teachers, trainers, instructors and examiners. In Switzerland, the confederation is responsible for the identification of training courses for all teachers of VET and PET system.

Quality Assurance

According to Hoffman and Schwartz (2015) in CIEB report, there are institutes of SFIVET and the State Secretariat for Education, Research and Innovation (SERI) which are responsible for the quality assurance of VET and PET systems.

South Korea

According to the World Bank (2015) as cited in the report of (KOF Swiss Economic Institute, 2017, p. 1), South Korea has the 13th biggest economy in the world. It is also reported in KOF report by OECD (2014) that consequently, South Korea has become the member of OECD Development Assistance Committee although formerly it was the aid recipient country.

The report discloses the reason of the drastically changed position of South Korea by giving the reference of OECD (2015) and CIA (2014) that prioritizing of education and rising exports, promotion of savings and investments by the government were the main initiatives by the Korean government which make it

possible to transform the status of the country in the world (KOF Swiss Economic Institute, 2017).

South Korean Education System

Kim (2005) describes the education system of South Korea by saying that the primary level is comprised of six years of schooling. The middle and high schools are of three, three years. Primary till middle schooling is compulsory for everyone. High schools are of two types: general or vocational schools. Two years of junior college or four years of college or university education is being offered there. There are four categories of higher education institutions where four-year undergraduate programs are offered: colleges and universities; teacher's colleges and colleges of education; air and correspondence universities (these are distance education institutions where tertiary level education is offered for college age population and adult learners as well) and open universities; and theological colleges, seminaries, and others.

The Korean TVET system

According to Ryu (2017), in Korea TVET is introduced at the upper secondary level. The general education is given at general high schools and special-purpose high schools while the vocational education is offered in Meister high schools and specialized vocational high schools.

Specialized Vocational High School

Heo (2014) stated as reported in KOF Swiss Economic Institute (2017) that in specialized vocational high school three years education is given. In the first year, regular subjects are taught which are offered in other high schools. In the second year, students are taught mixture of regular and specialized subjects (school-based vocational training) while in the third and final year, focus is on specialized subjects. In KOF report (Swiss Economic Institute, 2017) this system is further explained by adding the reference of KEDI (2013) that the students have five options to choose: industry, commerce, vocational home economics, agriculture and fishery and marine while according to Chung (2017, vocational education is given in the fields related to agriculture, technology, commerce and marine and fisheries.

Meister High School

High level of vocational education is given in this school to enable the students to join the workforce and to meet the requirements of industry (Swiss Economic Institute, 2017). According to Kim (2014) as written in KOF report of Swiss Economic Institute (2017) during the first year, school based education is given and the major focus is on the learning of basics. In the second and third year, practical oriented learning takes place.

Governance system

According to UNESCO-UNEVOC (2018) and Ryu (2017), Korean TVET system is governed by two main authorities: Ministry of Education and Ministry of Employment and Labor. The former ministry deals with the vocational education and the later deals with vocational training. Vocational education is mainly given at schools while vocational training is offered through programs to enter in the labor market. There are several departments related to Korean TVET system which work under the Ministry of Education and Ministry of Employment and Labor. These departments are related to skills development, human resource development, policy formulation related to skills, career education, examination and employment.

It is mentioned in the UNESCO-UNEVOC report (2018) that the conduction of research related to vocational education and training is the responsibility of the Korea Research Institute for Vocational Education and Training (KRIVET) and Korea Labor Institute (KLI).

Legislation

International Bureau of Education (2011) stated as cited in KOF report (Swiss Economic Institute, 2017 that in Korea, there is "Fundamental Law of Education" which defines the basic structure of education system. This law is further divided into "Elementary and Secondary Education Law" and "Higher Education Law". For Educational Training, there is law of the "Vocational Training Act".

Financing

Heo, 2014 as referenced in KOF report (Swiss Economic Institute, 2017) discloses the fact that in South Korea, education has great priority and this is evident because in 2013, 6.7 percent of GDP was spent on education. Specialized Vocational

High schools are sponsored by the local autonomous governments, industries and the Ministry of Education. Since 2011, students of Specialized Vocational High schools are getting free education. The same report mentioned Park and Chung (2013) stating that in Meister high schools, scholarship is given to the students. Before the establishment of Meister high schools, funds were given by metropolitan and provincial education offices, local offices and businesses. After establishment, Ministry of Education took the responsibility of granting funds to the students of Meister High schools (KOF Swiss Economic Institute, 2017).

Teachers and trainers of TVET

According to UNESCO-UNEVOC (2018) TVET teachers for upper secondary level must have teacher certificates along Master's degree or have successfully completed their teaching courses from industrial or vocational colleges or from universities. It is further mentioned that the trainers are required to have national technical qualification in their area of expertise along work experience. It is also mentioned that TVET teachers teach in high schools and vocational schools whereas trainers teach in vocational training programs and help in choosing career in TVET institutes and industries.

Qualification system and quality assurance

UNESCO-UNEVOC (2018) reported that there are 331 National Competency Standards (NCS) developed by Ministry of Education and Ministry of Employment and Labor. The maintenance of quality of TVET is the responsibility of Korea Skills Quality Authority (KSQA).

The development of Korea Qualifications Framework is in progress and it will be developed on the basis of National Competency Standards. There is Technical Qualifications Framework (TQF) in Korea which is divided in national and private qualifications. There are five levels of TQF: craftsman, master craftsman, engineer, industrial engineer and professional engineer. The TQF is managed by the Human Resources Development Service of Korea in 450 qualifications (UNESCO-UNEVOC, 2018).

Technical and Vocational Education and Training (TVET) in Pakistan

Education System of Pakistan

In the report of (UNESCO, 2009), it is stated that professional education is provided at university level in the fields of medicine and engineering. It is comprised of four to five years. Apart from medicine and engineering, the programs of home economics, agriculture, information technology and veterinary sciences are also offered.

There is another stream of vocational and technical education. Vocational courses are offered after middle level or secondary level. These courses comprise of six months, one year and one and a half year programs. The technical education is offered after matriculation for three years (UNESCO, 2009).

TVET System

UNESCO-UNEVOC (2013) stated that TVET system of Pakistan is divided into formal, non-formal and informal systems. Through the scheme of "Agro-Technical Studies", vocational courses are being offered from grade five to grade ten in general schools. Vocational subjects are offered side by side with the general subjects in selected schools. At post-secondary level, technical education is offered in specific polytechnic institutions and colleges of technology. Technical education is based on theoretical knowledge and practical skills. According to (UNESCO, 2009) the structure of formal TVET system is unable to provide the required number of skilled persons and further lack variety of skills according to the local needs of different regions within the country.

Technical and vocational education is also being provided through non-formal system. Vocational schools, agriculture and vocational training centers, technical training centers are categorized in the non-formal system. This system is run by the public sector autonomous organizations. The apprenticeship system is also considered a part of non-formal system (UNESCO-UNEVOC, 2013)

The informal system is also called Ustad-Shagird system. In this system, training is given under the supervision of the owner of the shop, small industry or mechanics. The majority of workforce is having employment in the informal economy (UNESCO-UNEVOC, 2013).

Apprenticeship Training

In (UNESCO, 2009) it is stated that there are many institutions which are preparing skilled workforce. State owned organizations such as Railways, National Airline, Pakistan Steel, Pakistan Air force etc. are also providing training facilities. The duration of training programs is of three years. Secondary / higher secondary school certificate is the requirement to have entry in this training.

Governance

According to the UNESCO-UNEVC Report (2013) the governance of TVET is the responsibilities of The Federal Ministry of Education (MOE), the four Provincial Education Departments (PEDs), The National Vocational and Technical Training Commission (NAVTTC), Technical Education and Vocational Training Authorities (TEVTAs) and Boards of Technical Education and Trade Testing Boards (BTE/TTB).

It is further mentioned in the UNESCO-UNEVOC report (2013) that the responsibility of the Federal Ministry of Education is policy planning and coordination regarding curricula, textbooks and standards of education. The implementation of the policies, programs and projects of MOE is the responsibility of four Provincial Education Departments.

Janjua and Mohammad (2008) stated that The National Vocational and Technical Training Commission have a charge to monitor, promote and provide the coordination for policies of TVET. National Vocational and Technical Education Commission (NAVTEC) is responsible to increase the role of private sector in the implementation and management and up gradation of TVET according to the new technologies, trades and training methods. Shah & Khan (2017) stated that NAVTTC has developed National Skills Strategy (NSS) 2009-2013 to reform the TVET system.

It is stated in the UNESCO-UNEVOC report (2013) that TEVTAs are responsible to implement the national TVET policies, programs and projects at provincial level. They have authority to set their own skill standards, develop curricula and certify courses at provincial level. Boards of Technical Education and Trade Testing Boards (BTE/TTB) have authority to conduct exams and do

certification at provincial level. They are responsible for affiliation of public and private institutions.

Legislation

According to UNESCO-UNEVOC report (2018) in the Article 37 of 1973 constitution, it is mentioned that it is the states' responsibility to ensure the equal accessibility of technical and professional education on merit basis. It is also stated that in 2009 The Apprenticeship Ordinance was passed. This Ordinance plays its role in monitoring, coordinating and directing the policies of TVET. It is further mentioned that in 2011 NAVTTC Act was approved. This Act explains the funding rules while Act No XV of 2011 shows that the main objective of Act is to monitor, coordinate and provide directions to the policies of TVET.

Financing

The financing of TVET is done through budget allocation which is insufficient for TVET system. The combine effort of NAVTTC and TEVTAs is to increase the involvement of private sector to open new resources for funding. TVET institutions are encouraged to introduce such activities which will be helpful to generate revenue. The NSS is also recommended to introduce training levy paid by employers (UNESCO-UNEVOC, 2013).

Since the education policy of 2009 in Pakistan had advocated for technical and vocational education in modern form, Khan and Pathan (2016) have reported that there is a Fund for Innovative Training (FIT) to reform the TVET system of Pakistan. This fund is helpful in diminishing the problems of quality, relevancy, accessibility and cost. 125,000 men and women are benefitted across the country due to the FIT-funded projects.

TVET teachers and trainers

According to UNESCO-UNEVOC (2013) teachers of TVET are trained in Staff Training institutes (STIs) which are only eleven. The establishment of National Technical and Vocational Teacher's Council (NTVTC) was in process till 2013 by NAVTTC. According to (Khan & Pathan, 2016), there are 15,000 TVET teachers in the public sector institutes and in-service training has been given to 8,500 teachers and instructors by using e-learning method. They further stated that Pakistan's first

post-graduate study Program B.Ed. in Technical Education has been introduced in 2014. The Karachi University has started the study program named as "Post-Graduate Diploma" in 2016 in cooperation with the Sindh Technical Education and Vocational Training Authority(S-TEVTA). These initiatives have been taken to have qualified teachers for TVET system.

Qualification framework and Quality Assurance

According to Khan and Pathan (2016), Pakistan has National Vocational Qualification Framework (NVQF) which is responsible for formation of qualifications, assessment and training systems. The NVQF is helpful in enhancing the quality of skills and knowledge which is needed for industries. The skills are recognized through NVQF by the integration of formal, in-formal and non-formal achievements. The NVQF help to design training program and assessment process by having the linkage with the industries. The framework for the delivery of Competency Based Training and Assessment (CBT&A) is also provided by NVQF in 142 TVET institutes in 60 different trades.

It is reported in UNESCO-UNEVOC Report (2013) that there are two bodies which are responsible of Quality Assurance. One is NAVTTC TVET Accreditation and Quality Evaluation Committee (TA&QEC) which is responsible to execute the evaluation of TVET institutions and assessment of different systems such as governance, management, faculty, teaching and learning and many other subsystems of TVET institutions. The other one is Expert Committee for Accreditation and Quality Evaluation in which panel of subject experts and program experts evaluate the programs. It is also stated in the UNESCO-UNEVOC report (2013) that for the acceleration of accreditation process, there is a National Accreditation Council for Technical and Vocational Stream Regulations (NACTVSRs).

Skill based Secondary Education in Pakistan

According to UNESCO (2010) there are four types of TVE institutions in Pakistan. Vocational institutes under Provincial Education Departments. Commercial training institutes under the Ministry of Education and Provincial Education Departments. Training centers operated by different departments such as labor and manpower, industries and agriculture or social welfare.

Technical streams at upper secondary schools

According to (GOVERNMENT OF PAKISTAN, 2017) in Pakistan, Technical High Schools, Comprehensive High Schools, Agro-Tech scheme and Matric Technical Stream scheme were introduced to enhance the TVET system. (UNESCO, 2010) stated that at upper secondary level, technical subjects were taught as elective subjects. Woodwork, IT, metal work and electricity were some of the subjects which were included in technical stream. After graduation, a matriculation certificates were awarded to successful students. According to Tirmazi, 2006 as cited in UNESCO (2009), Matric Technical Stream was started with the help of Japan International Cooperation Agency (JICA) and UNESCO. (Government of Pakistan, 2017) stated that due to various reasons, these schemes remained unsuccessful. JICA and UNESCO were in favor to continue these schemes after required modifications but Agro-Tech and Matric Technical Stream schemes were dropped from the school curriculum.

Several attempts have been taken to introduce vocational and technical stream at secondary level. It was planned to introduce 70 Model Vocational schools in several districts of a country but due to change of government that plan remained a dream and could not be implemented (UNESCO, 2009).

Different TVET schemes at secondary level

At the end of 20th century, the importance of TVET is realized by the government which is evident in the National Education Policy (NEP) 1998-2010. It is written in Para 8.5.12 of NEP 1998-2010 that Matric Technical Stream will be introduced in 10% secondary schools of the country (UNESCO, 2009).

Matric Technical Stream

This scheme was launched in 2001-02. This scheme was a program of Education Sector Reforms (ESR). 1100 secondary schools were selected from all over the country. As per scheme of studies for 9th and 10th grade, only two technical subjects were included in the Technical group. In Science and Humanities groups, one technical subject was included as an optional subject. Technical group was not introduced by any province but one technical subject was introduced against Biology and Computer Science only in those secondary schools where technical workshop/lab was developed during the Agro-Tech scheme in mid-seventies. The

released funds for the Technical stream were used in the construction of labs and workshops in the schools. National Institute of Science and Technical Education (NISTE) with technical and financial support of UNESCO Islamabad office developed the text books, teacher guides and practical manuals and curricula of 17 trades related to Industries, Agriculture and Girls trades. In 2006, after finding the progress on implementation of introduction of Technical stream, it was decided by the Curriculum Wing, Ministry of Education to eliminate the technical stream (UNESCO, 2009).

Technical School Certificate

It is stated in UNESCO 2009 that a new scheme entitled "Technical School Certificate" was introduced in the province of Sindh after the failure of Agro-Tech scheme. This scheme was started to facilitate the secondary level students with some technical skills. This scheme was formulated in such a way that the students holding this certificate will be able to go for higher education. The curriculum of this two-year course had a large component of trade training along the courses of mathematics, languages, science, religion and ideological education of general education. This scheme offers 16 different types of trades to the students. This program has similar value as matriculation. Successful students are eligible to choose Polytechnic Diploma Course or to get admission in college for further education (UNESCO, 2009).

Prevailing Policy Documents in Pakistan

The two policy documents entitled National Education policy of 2009 and Art and Culture Policy Framework for Punjab have been reviewed. . The conceptual framework, goals, objectives and policy provisions of these policies are discussed to know the existing situation and future policies of secondary education, TVET and Art and Craft sector. The policies were reviewed by using the open coding method. In National Education policy of 2017, the policies of Secondary education and TVET were available while the policies regarding Art and Culture were found in Art and Culture Policy Framework for Punjab.

Secondary Education Policy

Significance of secondary education is highlighted in the National Education policy of 2009 and also in the draft education policy 2017, as it provides

opportunities to them to get higher education, to prepare for the world of work, to choose profession and to inculcate life skills. In other words, secondary education serves as a junction where two railway lines meet: one line provides the chance to get higher education whereas the second line provides option to prepare the skilled manpower. It is a time to expand the academic disciplines. By prioritizing the need of the nation, the demand of public and global trends and by inclusion of diversity in higher education opportunities and giving importance to technical and vocational education stream, the expansion of academic discipline is possible (Government of Pakistan, 2017).

TVET Policy

According to Government of Pakistan (2017) Pakistan is having status of 6th most populated country in the entire world. 37% of population is between 15-34 years of age. If the young population is appropriately trained, it could be an asset of the country. Less than 20% youth complete secondary education and little percentage of youth adopt TVET.

There are number of socio-economic problems in the country. More than half population is facing multi-level poverty. Economy of Pakistan is not stable. The growth of service sector, manufacturing and agricultural sector is 53.1%, 21.6% and 25.3% respectively. (To make the youth productive citizens, there is a need to deliver quality technical vocational education and training. Due to the development of China Pakistan Corridor (CPEC), the demand of skilled and trained manpower has been increased. CPEC is playing significant role in the economic development of the country and it demands to have mixture of skilled workforce like skilled and trained workers, technicians, tradesmen, technologists, engineers and research and development scientists.

Cross Analysis of Various Policy Documents in Pakistan

Policy Goals

Goals of Secondary Education Policy. The goal of National Education policy of 2017 for secondary education is to make students productive citizens by enabling them for the job market and to get higher education of their own interest. (Government of Pakistan, 2017).

Goals of TVET Policy. The designing and delivery of a competency based education and training programs with the involvement of business and industry associations to make students skillful to adopt any job is the goal for TVET (Government of Pakistan, 2017).

Goals of Art and Culture Policy Framework for Punjab. The goal of Art and Culture Policy Framework for Punjab is to make Punjab a place where environment is peaceful, culture is vivid and rich and gradually development is going on. (Punjab Government, 2017)

Objectives Stated in Policy

Objectives of Secondary Education. To produce skillful students in order to make them capable to earn for themselves is one of the main objective of National Education Policy 2017. To make the curriculum globally compatible of secondary level is another objective of National Education Policy 2017 (Government of Pakistan, 2017).

Objectives of TVET Policy. The policy of TVET also has one of the main objectives to ensure the skills development relevant to the industrial and economy need for sustainable economic growth. To increase the access, assuring the quality of TVET and to enhance the social status of TVET are few other objectives of TVET. (Government of Pakistan, 2017).

Policy Provisions

Policy Provision for Secondary Education. The important strategies of 2017 Policy regarding secondary education are to introduce the technical and vocational stream in selected middle, high and higher secondary schools, to create links with the labor market. Counseling centers should be established for the guidance of students of secondary and higher secondary level. (Government of Pakistan, 2017).

Policy Provision for TVET. The strategy of National Education Policy 2017 is to assess the need and nature of skills training by the industry and service sector and to expand the training facilities in different districts by making profiles of all districts. Another strategy is to introduce the life skills courses in general schools

to broaden the narrow base of TVET and to explore non-traditional fields, trades and technologies. Provision of career counseling and vocational guidance services is also one of main strategy of National Education Policy 2017 (Government of Pakistan, 2017).

Recommendations

At the end of this discussion, we wish to propose a policy framework for secondary schools in Pakistan. The goal of secondary schooling is twofold- one is to prepare the students for further education and the second is to enable them to become independent and active citizens after completion of this compulsory education. Keeping in view the three cases and current policy and practice in Pakistan, it is evident that we can easily manage to provide at least one skill-based course at secondary schools through which they can begin a work life as a service provider, occupational helper, industrial worker, craftsman or an entrepreneur. In another part of this study, a whole range of skill set is proposed; here we are recommending changes for policymaking only:

1. Many previous reports and researchers reported that dropout rate is maximum at middle school level. Major reason is that students from low income backgrounds do not find any economic value in the current curriculum. Prepare and offer non-credit certificate courses in grade VIII and IX and advance course in grade X to finish diploma/certificate. Offering industrial and vocational skill based courses will help to improve the retention rate in middle schools and transition rate from middle to secondary schools.
2. Like in Germany, the students should be offered dual system, in which students will study their regular academic courses and may select one out of many skill based courses but should not be treated as optional.
3. Through the analysis of old policies and elicited interview it is clear that secondary schools do not offer locally identified courses. There is a dire need to identify local industrial skills, services, occupations and crafts at district level if not already known.
4. Previously schoolteachers were trained only for specific courses and once they transfer or retire there was no replacement; it is therefore proposed that the courses may be offered in flexible timings and days when instead of training schoolteachers; teachers of TEVT or local craftsmen can be

involved on part time contracts. Courses can be offered each year during summer schools or spread over the year in the form of weekend course. It should all be hands-on with least reading writing involved. The advance course in grade ten must include entrepreneur education.

5. Keeping in view the three cases, it is evident that financial input can be managed through Multiple ministries/departments. In Pakistan these can be departments and ministry of education; science and technology as well as human resource development; plus the industry and business community may sponsor scholarships for the specialized courses that are useful for them.
6. Governance may be in shared jurisdiction of District Education Offices and TEVT, but academic audit and quality assurance mechanism should be done through provincial and federal bodies or third part evaluation.
7. National qualification framework should also include vocational stream of education from secondary school onward.

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