
**COMPARATIVE ANALYSIS OF PUBLIC AND PRIVATE TECHNICAL
EDUCATION INSTITUTES OF SINDH AS APPLIED TO DIPLOMA OF
ASSOCIATE ENGINEER (DAE) (2010-2018)**

Qazi Arif Ali

*Ph.D. Research Scholar, Department of Education,
Hamdard Institute of Education & Social Sciences, Hamdard University, Karachi*

Dr Muhammad Akhtar Kang

*Department of Education, Hamdard Institute of Education & Social Sciences,
Hamdard University, Karachi*

Dr Ahmed Saeed

*Department of Education, Hamdard Institute of Education & Social Sciences,
Hamdard University, Karachi*

ABSTRACT

In this era of technology and industrialization Technical Education acquires great importance, particularly for developing countries like Pakistan. The first Polytechnic in Pakistan was established in Karachi in 1955, and a Diploma of Associate Engineer Programme was introduced. Initially technical education institutes were established in the Public sector, but with time the Private sector also came forward and established well-equipped technical institutes that started to produce skilled workforce. From 2011 onwards, a large number of private technical institutes were established in Sindh. The purpose of this comparative study was to investigate the difference of Public and Private sector institutes of Sindh in certain key areas. Public sector institutes face the problem of shortage of qualified staff, fewer financial resources and a poor infrastructure. Some private institutes have well-qualified staff and a solid infrastructure, including labs and workshops, but most private institutes do not have sufficient faculty or adequate lab, workshop and library resources. The student pass rate is increasing, reaching 88%, which creates doubts about the quality of examination system. It is recommended that the Government should take measures to check the assessment system and acts to stop the growth of mushroom institutes. It should also take steps towards recruitment of qualified staff and provision of financial resources.

Keywords: Public, Private, Institutes, Assessment, Diploma of Associate Engineer, Technical education.

INTRODUCTION

Fast moving industrial development demands a system of workforce and training to raise the productivity and maximize the

utilization of human resources. In the current labour market, Technical Education is considered the main source of development for a country. Without utilizing technology and technical education, which are adopted by developed countries, a developing country cannot reach the level of the developed world. Technical Education is a comprehensive term referring to those aspects of educational process that involve, in addition to general education, the study of technology, and related sciences, as well as acquisition of practical skills and attitudes, understanding and knowledge relating to occupation in various sectors of economics and social life. The aim of technical education is to provide instruction and training in skills that have a practical utility. It helps us to meet the needs of the industrial age. Science and Technology have introduced a new relationship between human beings and their work, and technical education is placed squarely between human being and their work. The socio-economic needs, the automation, mechanization in industry and agriculture and fast-growing industrialization demands a well-organized technical education system which can produce skilled workforce useful for an industrial society.

At the time of its independence in 1947, Pakistan inherited a very poor education system, including technical education. There were only two engineering colleges which used to produce graduate engineers. There was a need to produce middle level educated skilled workforce. Quaid-e-Azam Muhammad Ali Jinnah, who had a very far-sighted vision, in his message to the First Educational Conference emphasized the importance of technical education and stated that to compete in the fast growing industrial world there was a need to give scientific and technical education to the people.

In the light of the direction given by Quaid-e-Azam, a council of technical education was set up in 1948. In its report, the Technical Education Committee of the Council suggested the establishment of Polytechnics to promote skilled / trained supervisory staff. The objectives of Polytechnic Institutes were:

1. To produce skilled workforce
2. To provide job-oriented education as per industry need
3. To develop social skills and competence
4. To develop industrial work habits

5. To help one to develop interest and appreciation of the industrial process concerned with planning, production, operation and design

Technical Education stream was introduced through the establishment of polytechnics, monotechnics and technical education institutions based on the recommendations of the Council of Technical Education. The First Polytechnic Institute was setup in Karachi in 1955 and a three-year course ending up in a Diploma of Associate Engineers (DAE) was introduced. Diploma of Associate Engineer (DAE) is a post-matric three-year regular programme offered to SSC (Science) and TSC (Matric Technical) students passed by technical education institutes. The theory and practical examinations are conducted by Sindh Board of Technical Education. This programme has IBCC equivalency of HSC (Pre-Engineering). Those students who have passed DAE are competent enough to be employed or pursue higher education. They can get admission in any degree programme and four year BS (Technology) programme being offered by Colleges of Technology, and this degree certificate is issued by the Engineering University concerned. Previously B.Tech (Hons) was being offered in colleges of Technology. In engineering colleges and universities some seats are also allocated to students who have passed DAE. Presently this DAE programme is being offered in the morning and in the evening in 31 different branches of Technology, in 190 Colleges of Technology, Polytechnics, Monotechnics and Institutes located in Sindh, of which 72 are public and 118 are in the private sector, while in 2011 there were 97 institutes, of which 75 were in the public sector and only 22 were in private. The age limit for enrollment in DAE morning programme is 22, while for evening programme it is capped at 35 and enrollment is issued for 5 years with 12 consecutive attempts to clear this 3 year programme. Recently Sindh Board of Technical Education has enhanced enrollment period from 5 years to 7 years and the number of attempts has been increased from 12 to 14. The students are enrolled in DAE program with Sindh Board of Technical Education in their first year.

The objective of this study was to compare the performance of public and private sector institutes of Sindh offering DAE programme. The study specifically focused on weaknesses and strengths of public

and private technical institutes of DAE in Sindh. It also explored the opportunities for further advancement in future.

The following hypotheses were formulated:

- There is no significant difference in the teaching effectiveness of the teachers in public and private technical institutes of Sindh.
- There is no significant difference in the quality of teachers in the public and private institutes of Sindh.
- There is no significant difference in the quality of technical education in the public and private institutes of Sindh.
- There is no significant difference in available facilities in public and private institutes of Sindh.

The study yields the following benefits:

1. It will assist the policy makers in strengthening the technical education in Sindh.
2. It will provide useful guidelines for other researchers in this field.
3. The present research will reflect a holistic view of technical education in Sindh.

The study was limited to all technical education institutes with specific reference to DAE in Sindh.

LITERATURE REVIEW

The most important objective of technical and vocational education worldwide is to address the issue of youngsters unemployment, poverty and global competitiveness in skill development towards current and projected opportunities and challenges (UNESCO, 2009). Technical Education is a very important branch of education which imparts knowledge besides skills and training and makes people into skilled educated workers employable in industry and more beneficial for every sector of economic development (Finch & Crunkilton, 1999). Technical Education is the most important element and factor for eradication of poverty and uplifting of socio-economic standards of poor and less privileged groups of people in society (King, 2011).

While describing the importance of technical education, Shah referred to the message of Quaid-e-Azam Muhammad Ali Jinnah to the First Education Conference in 1947 (Shah, 2004). While discussing technical education in National Education Policy 2009, it

was observed that Pakistan has a large size of population having a comparative advantage in labour costs, but the low level of skills dampens the potential of labour force to contribute significantly to the economic growth. Improvements in skill levels of this large labour force will increase efficiency and competitiveness of the local industry, attract international investment and allow overseas employment opportunities to Pakistani skilled workforce. This policy identified three principal problems faced by TET system in Pakistan: (i) Weak linkage with other education sectors and labour market; (ii) Deficiencies in the governance of this sector, and (iii) The need to expand supply of technical skills of good quality (National Education Policy, 2009).

Ali states that for any technical institution, laboratories and works hops are significant working areas. In laboratories and workshops students receive a major part of their training that makes them qualify on completion of technician courses. The most important and basic objective of laboratory and workshop instructions is to familiarize the student with the limitations and characteristics of tools, equipment and machinery to develop skills in using and handling them (Ali, 1998).

Awan, Zia Asma observed that during the last two decades the private sector has grown as most important partners in education sector. It is evident with the fact that the proportion of private schools has increased to 69%. About 6 Million students were studying in private schools in 2000, while this figure raised to 12 Million in 2007-2008. Similarly, the number of teachers also doubled (Awan, Zia Asma, 2015).

It is very important that technical education institutions have good machinery and equipment for the training of their students. The class supervisor must be competent enough to handle the machinery and with the practical knowledge of industry. In-service training programmes for teachers should be implemented. There are a number of technical training programmes conducted by public and private sector institutions. It is observed that technical education in Pakistan has no encouraging linkage with industry (Alam, 2015). Kazmi maintains that despite the various efforts by the government for the development of Technical Education, the TEVT system in Pakistan is comparatively weak among the South Asian countries (Kazmi, 2007).

Shaberalyani and Asif are of the opinion that technical education programmes are more attractive to the population of rural areas and low income due to the fact that these courses are a source of employment, reduction of poverty and industrial development (Shaberalyani, Asif, Hamad, Haider, 2015). Ansari and Wu have observed that a number of efforts have been made for the promotion and development of technical education in Pakistan since its independence, but no remarkable progress is observed compared to other developing countries. As a result, Pakistan does not have a highly-skilled workforce to help the development sector (Ansari, Wu, 2013). Ali is of the opinion that nationalization of private education institutions damaged the development of technical education because private sector participation in this sector stopped (Ali, 1998). The role of private sector in education is on continuous increase and in most countries private sector's role in technical and vocational education has increased considerably. These private sector institutes of technical and vocational education mostly enroll low income students and provide good quality education (Atchoarena & Esquieu, 2000). Janjua and Irfan are of the view that the establishment of NAVTEC at federal level and TEVTAs at provincial level enhanced the efficiency of TEVT system in Pakistan (Janjua and Irfan, 2008).

RESEARCH METHODOLOGY

The strategy of the study was mix method research. The population of the study was comprised of all the teachers and facilities available in technical education in Sindh. Stratified random sample of 187 teachers was involved. Purposive sampling design was used to identify the themes of teaching and all the available facilities.

A tailor-made questionnaire, along-with proforma, were developed to generate data. Data was analyzed quantitatively and qualitatively.

COMPARATIVE ANALYSIS

The comparative study of the public and private sector institutes located in Sindh and offering the three-year programme ending in Diploma of Associate Engineer (DAE) was carried out for the period 2010 – 2018 in respect of: input-output ratio, number of teachers, their qualifications, experience, laboratories, workshops, classrooms and libraries. For this purpose, data was collected directly from the

institutes, through mail and personal visits, from Sindh Technical Education and Vocational Training Authority (STEVTA) and from Sindh Board of Technical Education. The collected data was examined and analyzed and the following results were obtained.

INPUT-OUTPUT RATIO

TABLE-1
TOTAL NUMBER OF STUDENTS, BOTH IN PUBLIC & PRIVATE
SECTORS, ADMITTED & PASSED

Year	Public Institutes			Private Institutes			Total		
	Admitted	Passed	Pass%	Admitted	Passed	Pass%	Admitted	Passed	Pass %
2010	10981	8111	73.86	3128	2420	77.37	14109	10531	74.64
2011	13098	10451	79.79	3296	2532	76.82	16394	12983	79.19
2012	8968	7546	84.14	3968	3431	84.47	12936	10977	84.84
2013	7715	6384	82.75	4612	3872	83.95	12327	10256	83.20
2014	8111	7101	87.55	5360	4630	86.38	13471	11731	87.08
2015	10001	8731	87.30	6493	5184	79.84	16494	13915	84.36
2016	11116	9588	86.25	6931	5861	84.56	18047	15449	85.61
2017	12104	10327	85.32	8207	6800	82.86	20311	17127	84.32
2018	12566	10926	86.95	8296	6863	82.73	20862	17789	85.27

Source: Sindh Board of Technical Education, Examination Result Gazeteeer year 2010-2018 (Compiled by Researcher).

The pass rates of both public and private sector institutes has been increasing gradually. In 2010, the pass rate was 74.64%, in which 73.86% was that of public sector institutes, while private sector institutes showed a pass rate of 77.37%. By 2018, the total pass rate has reached 85.27% overall, where public sector institutes showed a 86.95% pass rate and in the private sector 82.73% of students passed. In 2011, the total pass rate was 79.19%, of which 79.79% was that of public sector institutes and 76.82% was that of private ones. 2018 85.27%, 86.95%, 82.73% was total, public sector institutes and private sector institutes passed percentage respectively (**Source:** Data collected from the institutes, Sindh Board of Technical Education, Sindh Technical Education and Vocational Training Authority. Compiled by Researcher).

As the data above shows, there is no significant difference between the performance of public and private sector institutes in respect of their results. The increase in the pass rate is observed for both public & private sector students. This rather high pass rate leads to the following findings.

The input-output is that the pass rates have gradually increased reaching 84% - 87%, which is very high.

- a) There is no significant difference between the results of public and private sector institutes.
- b) In the view of insufficient numbers of qualified teachers and well-equipped workshops, this high pass rate in both public and private sector institutes indicates a poor examination system.
- c) It is observed that this upward trend in input-output ratio has increased with the increase in the number of students in private sector institutes.

Facilities: A comparative analysis of facilities was carried out in respect of number of teachers, their qualifications, experience, as well as laboratories, workshops, classrooms and libraries.

Teachers: Most of the public sector institutes face the problem of shortage of teaching staff. In almost all the public sector institutes, a large number of vacancies are unfilled and academic programmes are being run by a small number of teachers. The Government College of Technology SITE, Karachi is the first and largest Polytechnic institute in Pakistan, where out of 142 sanctioned posts of teachers for morning programme only 65 teachers are working and 77 positions are vacant. A similar situation can be observed in almost all the public sector institutes. The teachers in the public sector are also not as qualified as they should be: only 7% teachers hold a Master's degree, 5% M.Phil, 19% B.E./BS, 34% B.Tech, 21% DAE, and 5% BSC/BA. In public sector a large number of teachers have received in-service training and good numbers have teaching experience.

The private sector institutes can be divided into two categories. The first category institutes, which are about 35 in number, have a sufficient number of well-qualified regular teachers having multiple years' experience. In this category 2% hold M.Phil, 33% Masters, 17% B.E./BS/BCS, 20% B.Tech, 19% DAE, and 4% BSC/B.A. The other category in the private sector does not have a sufficient number of teachers. Most of the teachers teaching in these institutes are either part-time or visiting faculty. Such institutes usually hire less experienced teachers on low rate of remunerations. These institutes do not have regular permanent faculty: they hire teachers temporarily and

after some time replace them with new teachers. As a result, they do not have experienced and trained teachers.

Laboratories, Workshops and Instructional Resources: Diploma of Associate Engineer (DAE) is being offered in 31 technologies in different technical institutes. For every technology laboratories and well-equipped workshops are necessary. The quality of workshops and laboratories cannot be measured numerically, so this quality was assessed in accordance with the criteria laid down by Sindh Board of Technical Education (SBTE) and Sindh Technical Education and Vocational Training Authority (STEVTA) for different technologies: here they are placed in different groups given the ranks of excellent, very good, good, average/fair and unsatisfactory.

Most of the institutes in public sector have well-equipped workshops and laboratories, but, due to want of financial resources, these laboratories and workshops do not function properly, because they do not have sufficient funds to purchase raw material and other accessories to conduct practical's. The situation in private sector institutes is quite different. A few institutes of private sector have well-equipped workshop and laboratories, while the majority of private institutes have very poor and unsatisfactory workshops and laboratories facilities. Out of 118 institutes in the private sector, 6 institutes have excellent facilities of workshop & laboratories, 10 institutes have very good workshops & lab facilities, 12 have good ranking, 13 institutes have average/fair workshop & laboratories facilities, while the rest of the institutes have poor and unsatisfactory workshop & laboratories facilities.(Source: Data collected from the institutes, Sindh Board of Technical Education Affiliation/Inspection Branch, Sindh Technical Education and Vocational Training Authority (Compiled by Researcher).

Classrooms: The public sector institutes and a few well-reputed private sector institutes have a good number of classrooms. In the public sector institutes, the Government College of Technology of Karachi and Hyderabad has more than 30 class-rooms, 5 institutes have more than 20 classrooms, 12 institutes have more than 15 classrooms, 10 institutes have more than 10 classrooms, 12 institutes have more than 5 classrooms, while the rest of institutes have less than 5 classrooms. In the private sector, Aligarh institute has more than 30 classrooms, 2 institutes have more than 25 classrooms, 2 institutes

have more than 20 classrooms, 8 institutes have more than 15 classrooms, 11 institutes have more than 10 classrooms, 12 institutes have more than 5 classrooms, and the rest of institutes have less than 5 class rooms.(Source: Data collected from the institutes by researchers, Sindh Board of Technical Education Affiliation/Inspection Branch, Sindh Technical Education and Vocational Training Authority. Compiled by Researcher)

Libraries: Most of the public sector institutes and a few private sector institutes have a good number of books in the libraries. Most of the private institutes and a few public sector institutes have very poor numbers of books or even no library exists in some institutes. The top public sector institute GCT Karachi and Hyderabad, as well as the top private sector institute Aligarh institute have more than 25,000 books in their libraries, 2 institutes in the public sector and 3 institutes in the private sector have more than 10,000 books, 4 institute in the public sector and 2 institutes in the private sector have more than 5,000 books, 3 public sector institutes and 14 private sector institutes have very poor numbers of books, while many public sector and private sector institutes have no library in their institutes.(Source: Data collected from the institutes, Sindh Board of Technical Education Affiliation/Inspection Branch, Sindh Technical Education and Vocational Training Authority (Compiled by Researcher).

CONCLUSION

This study has revealed that technical institutes of Sindh both in public and private sectors are short of qualified teachers, and a large number of teaching vacancies remain unfilled in the public sector institutes of Sindh. Most of the institutes, especially in the private sector, do not have well-equipped labs, workshops and good libraries – in some cases, there are even no such facilities . both in public and private institutes. From 2011 onwards, a number of new institutes have been established in the private sector and the government authorities failed to check and maintain the minimum requirements/standards for the registration and affiliation of the institutes, which resulted in the mushroom growth of such institutes. The student pass rate has been increasing gradually, with the increase of private institutes, so it reached about 87% of those passed in 2018, which is very high and creates doubts about the whole examination and

assessment system. Undoubtedly, some institutes in the private sector have a very good infrastructure, well-qualified teachers and are imparting quality education. However, most private institutes have a comparatively poor infrastructure, no proper labs and workshops, and no good libraries. Despite all these discrepancies, they still exist and their students achieve good results with the connivance of the officials of concerned government bodies. Government authorities/bodies do not have a proper monitoring system. At the same time, public sector institutes are facing the problem of lacking financial resources required for training activities, and a weak administration of administrators has also been witnessed.

RECOMMENDATIONS

On the basis of these findings, the following recommendations are made:

- (i) Sufficient budget provision should be allocated by the Government to improve labs, workshops, libraries and the overall infrastructure of public sector institutes.
- (ii) Competent and well-qualified teachers should be recruited urgently to meet the shortage of teachers
- (iii) A vigilant monitoring system should be introduced to check the mushroom growth of private institutes in this sector.
- (iv) A fair and transparent examination system should be introduced by Sindh Board of Technical Education to ensure a high quality of graduates
- (v) A reasonable ratio between regular and part time / visiting faculty should be maintained in private institutes and government authorities should check teachers' strengths at the time of registration / affiliation and renewal of institutes.
- (vi) Keeping in view the importance of Technical Education, more new institutes should be established in the public sector.
- (vii) The private sector should be encouraged to establish quality education institutes in this sector.
- (viii) Public-private partnership should be encouraged for the development of technical education in Sindh.

REFERENCES

- Agrawal, T. (2013). Vocational education and training programme (VET): An Asian perspective, *Asia-Pacific Journal of Cooperative Education*, 14(1):15-26.

- Ali, M. M. (1986). Development of Technical Education in Sindh, Sindh Board of Technical Education.
- Alam, N. (2015). The Role of Technical Vocational Education and Training in Human Development: Pakistan as Reference Point, *European Scientific Journal* April 2015, edition Vol.II, No.10 ISSN 1857-7881.
- Ali, M. M. (1985). Themes of Technical Education, Sindh Board of Technical Education.
- Ali, M. M. (1998). Milestones Progress of Technical Education in Pakistan: 1947-1997, Sindh Board of Technical Education.
- Amjad, R. (2012). A Comparative Analysis of The Role of The Private Sector as Education Providers Improving Issues of Access and Quality, *Idara-e-Taleem-o-Agahi*, Development Policy Research Centre DPRC working paper.
- Ansari, B., Wu, X. (2013). Development of Pakistan's Technical and Vocational Education and Training (TEVT): An Analysis of Skilling Pakistan Reforms, *Journal of Technical Education and Training (JTET)* Vol.5, No.21.
- Atchoarena, D. & Esquieu, P. (2002). Private Technical and Vocational Education in Sub-Saharan Africa; Provision Patterns and Policy Issues. International Institute for Educational Planning, UNESCO. www.unesco.org/iiep.
- Awan, A.G. (2015). Comparative Analysis of Public and Private Educational Institutes: A Case study of Vehari-Pakistan, *Journal of Education and Practice*, Vol.6, No.16.
- Finch & Crunkilton, initials? (1999). Curriculum development in vocational and technical education: Planning, content and implementation, Allyn and Bacon (Boston) Book 5th Edition ISBN0205279023.
- GoP (2009). National Education Policy 2009, Ministry of Education Islamabad.
- GoP (2009). Research study on Technical and Vocational Education in Pakistan at Secondary Level, UNESCO Islamabad, National Institute of Science and Technical Education, Ministry of Education.
- GoP (2009). The National Skills Strategy 2009-2013. National Vocational and Technical Education Commission, Prime Minister's Secretariat (Public) Islamabad.
- GoP (2009b). Draft national education policy. Ministry of Education Islamabad, Government of Pakistan.
- GoP, (1959). Shareef Commission Report. Report of Commission on National Education, Ministry of Education.
- Hassan, H.M. (2007). Relevance of diploma of associate engineer curricula with the job requirement. Institute of Education and Research. Lahore: The University of the Punjab.
- Inamullah, H.M., Naseeruddin, M., H., I, & Shah, I.H. (2009). The development of technical education in Pakistan. *International Business & Economics Research Journal* 8(1):87-90.
- Janjua, Y., & Irfan, M. (2008). Situation analysis to support the programme design process for National Skills Strategy of the Islamic Republic of

- Pakistan. SEBCON (Pvt) Limited Socio-economic and Business Consultants, Islamabad.
- Jimenez, E., and Jee-Pang T. (1987). Decentralized and Private Education: The Case of Pakistan, *Comparative Education* 23(2):173-190.
- Kazmi, S.W. (2007). Vocational education and skills development: a case of Pakistan. *SAARC Journal of Human Resource Development* Vol.3, No.1.
- Kemal, A.R. (2005). Skill development in Pakistan. *The Pakistan Development Review*, 44(4):349-357.
- King, K. (2011). Eight Proposals for a strengthened Focus on Technical and Vocational Education and Training (TVET) in the Education For All (EFA) Agenda. UNESCO, Paris Commissioned for the EFA Global Monitoring Report 2012. (efareport@unesco.org)
- Memon, K.R. (2014). Strategic role of HRD in employee skill development: An employer perspective, *Journal Human Resource Management* 2(1):27-32. 15.
- Mustafa, U., Abbas, K., Saeed, A. (2005). Enhancing vocational training for economic growth in Pakistan. *The Pakistan Development Review* 44(4):567-584.
- Niazi, H. K. & Mace, J. (2006). *The Contribution of the Private Sector to Higher Education in Pakistan with Particular Reference to Efficiency and Equity*”, *Bulletin of Education & Research*, Vol.28(2):17- 42.
- Rashid, K. & Mukhtar, S. (2012). Education in Pakistan: problems and their solutions. *International Journal of Academic Research in Business and Social Sciences* 2(11):332- 343.
- Shaberalyani, G., Asif, M., M., Hamad, N. & Haider N. (2015). Propensity Towards Technical Vocational Education and Training (TEVT) in Rural Areas of Pakistan, *International Journal of Innovative Research & Development* Vol.4(I):147-153.
- Shah, I.H. (2004). Problems and prospects technical education in Pakistan. University of Arid Agriculture, PhD Thesis, Murree Road, Rawalpindi, Pakistan.
- Shah, I.H., Ajmal, M., Rahman, F. (2010). Structure of technical education and vocational training in Pakistan. *Journal of Technical Education and Training* 1:67-82.
- Shah, I.H., Ajmal, M., Rahman, F., Akhter, M.N. (2011). A Comparative Study on Vocational Training Structure of Pakistan with British and German Model. *International Journal of Business and Social Science* 2(1):162-169.
-