

# Need for Serious Planning in technical education in Pakistan

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## Outline

Technical education is different from professional education  
It is a skilled based education

### 1. Introduction:

- A nation's progress is not determined by the number of its universities but by the strength of its skilled workforce.
- In Pakistan, technical education holds immense potential to drive industrial and economic growth, yet its structure continues to suffer from poor planning and weak implementation.

**You have mentioned the contours of academic education**

Thesis Statement: Pakistan must address its major weakness in technical education, including outdated curriculum, poor infrastructure, lack of efficient human resource, weak industry-academia linkages, brain drain of talent, and financial barrier to education. These challenges can be effectively

resolved by introducing modern curriculum, improving infrastructure and facilities, hiring skilled human resource, strengthening industry-academia linkages, implementing retention policies, and providing scholarships and financial support.

## 2- Ills in Technical Education of Pakistan:

### i) Outdated Curriculum

The outdated curriculum emphasizes theory over practical skills, fails to incorporate modern technologies, and restrict graduates from meeting industrial demands.

### ii) Poor Infrastructure and Facilities

Many technical institutions suffer from poorly equipped laboratories and workshops, and outdated facilities, which hinder practical learning.

### iii) Lack of Efficient Human Resource

The shortage of efficient instructors, coupled with low wages and limited industrial experience, creates a cycle of inefficiency in sector.



#### iv) Weak Industry-Academia Linkages

The disconnection between technical institutions and the industrial sector limits students' practical exposure and reduces graduate employability.

#### v) Brain Drain of Talent

The brain drain of skilled engineers and technicians seeking better opportunities abroad deprives Pakistan of its trained workforce and weakens institutional capacity.

#### vi) Financial Barrier To Education

High fees and training costs make technical education inaccessible for many capable students, limiting inclusivity in sector.

### 3. Remedies for Improving Technical Education in Pakistan:

#### i) Introducing Modern Curriculum

Reforming the curriculum to include modern technologies, digital literacy, and practical skill development can align Pakistan's technical education with global standards.

## ii) Improving Infrastructure and facilities

Upgrading workshops and training centers with modern equipment and digital tools can enhance skill development and <sup>practical</sup> learning opportunities.

## iii) Hiring skilled Human Resources

Recruiting professionally trained instructors with industrial experience can bridge the theory-practice gap and improve practical learning.

## iv) Strengthening Industry-Academic linkages

Enhancing collaboration between technical institutes and industries through internships and practical projects can equip students with real-world skills.

## v) Implementing Retention Policies

Introducing effective retention policies can curb the outflow of skilled professionals by offering competitive incentives, career growth, and recognition programs.



## vi) Providing Scholarship and Financial Support

Expanding scholarships and financial aid programs can make technical education accessible to economically disadvantaged students, reduce dropout rates, retain talent, and promote inclusivity.

## 4. Conclusion:

Not interpreted the topic properly  
Rewrite the essay again

# Essay

A nation's progress is not determined by the number of its universities but by the strength of its skilled workforce that transforms knowledge into productivity. When a country fails to equip its youth with technical competence, it loses the power to compete in the modern world of innovation and industry. In Pakistan, technical education holds immense potential to drive industrial and economic growth, yet its structure continues to suffer from poor planning and weak implementation. Pakistan must address its major weakness in technical education, including outdated curriculum, poor infrastructure, lack of efficient human resource, <sup>weak</sup> ~~engther~~ industry-academic linkages, brain drain of talent, and financial barriers to education. These challenges can be effectively



by introducing modern curriculum, improving infrastructure and facilities, hiring skilled human resource, strengthening industry-academia linkages, implementing retention policies, and providing scholarships and financial support.

The foremost issue in Pakistan's technical education is an outdated curriculum that fails to meet modern industrial standards.

Most institutes follow an outdated curriculum that focus on theoretical knowledge while neglecting practical and hands-on skills. Students rarely gain exposure to modern technologies, digital tools, or innovative industrial practices. This outdated approach prevents graduates from meeting contemporary workforce demands. According to a study titled "Emerging Challenges in Technical Vocational Education and Training of Pakistan in the Context of CPEC", many TVET (technical

and vocational education and training) institutes in Pakistan continue to operate with out-dated equipment and training programmes because their curricula do not reflect current industrial needs. Thus, the outdated curriculum resists practical skill development and prevents students from becoming capable professionals ready to meet technological demands.

Another major ill is the poor infrastructure and inadequate facilities that hinder effective learning. Many technical institutions lack modern laboratories, functioning workshops, and digital classrooms. Students often practice skills on outdated or non-functional equipment, limiting hands-on learning. Without proper facilities, the gap between theoretical knowledge and practical application continues to widen. According to the National Institute of Public Administration (NIPA) Peshawar (2024-2025), the TVET sector suffers from



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inadequate infrastructure, insufficient funding, and outdated curricula. The report specifically highlighted "inferior infrastructure" and "poor equipped institutions" as factors diminishing the quality of technical education. Therefore, poor infrastructure prevents students from acquiring essential technical expertise and diminishes the overall effectiveness of education.

In addition to weak infrastructure, the shortage of efficient human resources severely undermines the quality of technical education in Pakistan. Most institutions depend on instructors who lack industrial experience and professional training. Their weak motivation often stems from low wages and poor working conditions, which push qualified professionals away from the field. As a result, outdated teaching practices continue, limiting students' exposure to real-world skills and innovations.

According to NIPA Peshawar (2024-2025)

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and IRJMSS (2024) reports, a major weakness in Pakistan's technical education lies in the shortage of qualified instructors. Many teachers lack formal training and industry exposure, while limited funding prevents institutes from offering competitive salaries or professional development. Consequently, the system continues to produce graduates without practical expertise, creating a cycle of inefficiency that weakens the technical education framework.



Building upon the shortage of efficient instructors, another major barrier to effective technical education in Pakistan is the weak linkage b/w academic institutions and the industrial sector. Most technical institutes operate in isolation from market demands, producing graduates who lack practical exposure and job-ready skills. Without collaboration with industries, students remain unaware of current technological trends and workplace expectations.

This dissonance reduces the employability of graduates and undermines the very purpose of technical education. A 2024 report by the British Council in Pakistan, conducted under the EU-funded TVET

Sector Support Programme, stated that only 10% of IT graduates are employable due to a severe gap between academic training and industry requirements. Therefore, without

bridging this gap, Pakistan's technical education will remain detached from real-world innovation and economic productivity.

Extending from the weak industry linkages, another major flaw is the persistent brain drain of skilled talent. Thousands of technically trained individuals leave the country each year in search of better salaries, modern research facilities and professional recognition.

The lack of incentives and limited opportunities within the local market discourages graduates from serving the national economy. As a result, Pakistan loses the very minds needed to strengthen its industrial and educational base. According to a report by the Pakistan Bureau of Emigration and Overseas Employment (BEOE), in the first quarter of 2025 alone, 1479 engineers and 3474 technicians from Pakistan secured overseas employment. Hence, the continuous brain drain of talent not only weakens institutional



capacity but also delays Pakistan's progress towards industrial and technological self-reliance.

Lastly, financial barriers restrict access to quality technical education for a large segment of the population. High fees have become the main barriers to technical education in Pakistan. Many technical institutions charges heavy amounts for admission, examinations,

and practical training materials, which are far beyond the reach of low income families. These rising expenses discourage capable students from enrolling in such programs and deepens the inequality between privileged and underprivileged learners. According to the Pakistan Education Statistic Report (2024), financial constraints remain one of the top three reasons for dropout rates in technical and vocational institutes. Many students cannot afford to pay fees or purchase required training materials. Therefore, persistent financial constraints undermine the inclusivity and expansion of technical education across Pakistan.

The persistent ills in Pakistan's technical education system limited its potential to contribute to national development. However, these challenges are not insurmountable. Through visionary planning and practical reforms, the technical education sector can



be transformed into a dynamic foundation for economic progress and human resource development.

To revitalize technical education in Pakistan, the foremost step is the introduction of a modern, skill-driven syllabus that reflects the rapid advancements in technology. A restructured curriculum should integrate emerging technologies, digital literacy, and hands-on training aligned with global standards. Regular curriculum reviews can ensure that technical programs remain relevant, practical and updated.

Such an approach would replace rote learning with practical competence and creativity. In this regard, NAVTTC (National Vocational and Technical Training Commission) has submitted recommendations to the federal government to update technical curricula in line with global benchmarks. This proposal was presented during a two-day international dialogue titled "TVET in the Shifting Socio-Economic Paradigms" held in Islamabad in October 2025.

highlighting Pakistan's struggle to modernizing its technical education sector. Accordingly, modernizing the curriculum can transform technical education into a productive, future-oriented system that nurtures innovation and skilled workforce.

Furthermore, strengthening the infrastructure of technical institutes is essential for enhancing quality and effectiveness of technical education in Pakistan. Modern workshops, laboratories, and training centers equipped with advanced machinery and digital tools enable students to gain hands-on experience.

Without proper facilities, even the best-designed curriculum cannot produce skilled professionals.

Therefore, improved infrastructure and facilities should be prioritized to create a productive learning environment. Countries like Malaysia have transformed their technical education systems by investing in modern infrastructure through initiatives such as the Malaysian Technical University Network (MTUN). The



government upgraded laboratories and digital workshops, linking institutions with industries.

This model shows how targeted investment can turn technical institutes into <sup>an</sup> innovation hub, a strategy Pakistan can effectively adopt. As a result, improving infrastructure and facilities would not only enhance learning but also help in producing a skilled workforce.

Another essential step is hiring skilled and professionally trained instructors who can deliver quality education and practical guidance. Competent instructors with industrial experience and updated knowledge can bridge the gap between theory and practice.

Training programs, certifications, and incentives can motivate teachers to improve their methods. These initiatives require adequate resources to hire skilled staff and provide professional development, as limited funding hinders skill enhancement and effective student training. However, Pakistan's budget

allocation for the National Vocational and Technical training Commission (NAVTEC) has remained less than 1-1.5% of the total education budget, severely limiting funds for teacher training and modern equipment. Therefore, recruiting skilled human resource, supported by adequate funding is vital in raising educational standards and preparing students to meet the demands of modern industries.

In addition to hiring skilled instructors, technical education in Pakistan can be improved by strengthening the collaboration between institutions and industries. Close coordination with industries allows institutions to design curricula that reflect current market demands and technological advancement. Internship programs, practical workshops, and industry-led projects expose students to real-world challenges, enhancing their skills and employability. By this linkage, technical institutes can produce a workforce ready



to meet national and global standards. In Germany, technical institutes maintain strong Partnership with industries through apprenticeship programs, where students spend up to 70% of their training period in industrial settings. This system ensures graduates acquire hands-on experience and are immediately employable. Therefore, promoting industry-linked programs can bridge the skill gap, making technical education practical & aligned with labor market needs.

Equally important is implementing retention policies to prevent the brain drain of skilled professionals from Pakistan's technical education sector. Many talented instructors and graduates leave for better-paying opportunities abroad, weakening the domestic workforce. Competitive salaries, career advancement opportunities, and recognition programs can help attract and retain skilled personnel in the country. Retention policies should also focus on creating a supportive work environment and professional growth paths.

As an illustration, Turkey's Reverse Brain Drain Project, launched by TÜBİTAK (The Scientific and Technological Research Council of Turkey), provides returning scientists with research funding, housing support, and positions in national universities. This program has successfully attracted many Turkish researchers back, strengthening the country's scientific and technological innovation base. Thus, implementing such effective retention policies can help preserve skilled human resources.

Lastly, an essential measure is ensuring financial accessibility for students through scholarships and financial support programs. High fees and training expenses discourage many capable students from pursuing technical education. Expanding need-based and merit-based scholarships can help bridge this financial gap. By supporting economically disadvantaged students, the system can retain talent that would otherwise be lost due to



monetary constraints. Several initiatives, such as the Prime Minister's Youth Skill Development Program, have begun offering stipends and free technical training to thousands of students nationwide. These efforts demonstrate that financial assistance and government-backed scholarship programs can significantly reduce dropout rates and make technical education more inclusive. Consequently, consistent financial support and accessible scholarships can transform technical education into an opportunity open to all, rather than a privilege for a few.

In conclusion, technical education stands as the backbone of Pakistan's economic and industrial progress, yet its potential remains underutilized due to persistent structural and financial weakness. The ills regarding this sector are outdated curriculum, weak infrastructure, lack of efficient human resource, poor industry-academic linkage, persistent brain drain, and financial barriers.

However, these ills can be effectively addressed through the adoption of a modern curriculum, improved infrastructure, competent human resource, strong industry-academia linkage, effective retention policies, and financial support programs. A well-planned visionary approach to technical education will not only equip the youth with employable skills but also accelerate industrial growth and national progress. If Pakistan seriously commits planning and reforming this sector, it can transform its workforce into a driving force of innovation and self-reliance.

Improvement suggestions = ?

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