Technical Education: Egypt's Portal for comprehensive industrial development

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ECHRD **April 2023**

Technical Education: Egypt's Portal for comprehensive industrial development

Egyptian Coalition for Human Rights and Development

It is an initiative launched by Forum for Development and Human Rights Dialogue Foundation, and consists of 500 development associations and organizations in 9 Governorates, in order to promote Human Rights conditions in Egypt, strengthen partnerships, and exchange experience.

The NGOs and institutions participating in the initiative were distributed in 9 governorates: Cairo, Gharbia, Beheira, Alexandria, Beni Suef, Sohag, Luxor, Qena and Aswan.

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- **Introduction:**

  In light of the scientific and technological progress and in the era of the knowledge economy, human capital and investment in it is one of the most important elements in the production process, which must be prepared through a group of institutions. **The most important of which are technical education schools**, and their link to the needs of the labor market.

  Technical education has a fundamental and effective role in meeting the needs of society from the qualified workforce to deal with modern technologies and facing the rapid changes and their repercussions on the nature of the changeable labor market needs. These changes prompted many developed countries to seek to develop this sector of education and invest in it through integrating technical education programs, providing higher education opportunities for its students, linking them to the needs of the labor market, and ensuring its response to scientific and cultural changes, social transformations, and emerging economic conditions.

  For many years, the prevailing image of technical education was that it is less important and valuable in society than academic education, whether represented in high school or specialized universities. In light of escaping of many students from technical education, its importance has increased sharply, to the point of opening schools and universities specialized that qualify students directly for the labor market in very rare and important specializations, whether in nuclear energy and mining or agricultural and economic aspects, in addition to the gold industry and electronic parts in devices. Technical education has become the guaranteed future for a large percentage of young men and women, not only who have not been lucky enough to enter practical colleges, but also who are outstanding and want to excel.

  Investing in the development of the technical education system would encourage outstanding students to enroll in this type of education, and raise the level of its graduates to meet the needs of the labor market of skilled labor that helps in the development of the economy and competition at the regional and international levels. It also limits the entry of large numbers of education outputs into the labor market that are unqualified and do not have the necessary professional skills and experience for the labor market, which leads to a relative decrease in competitiveness in the global economy.

Therefore, since education represents the essence of the development process, which in turn depends on the extent of the state's interest in the national industry, its promotion and the expansion of its area, it can be said that the relationship between various types of education and the national industry represents a relationship of mutual influence. As some believe that education represents an important input from the entrances to the industrial renaissance with its human cadres and advanced ideas, and this is undoubtedly true.

It can be said that the Egyptian experience over the past few years after the revolution of 30 June 2013, revealed serious attempts by the Egyptian governments, which have been in power since then, to emphasize the correlation between education and national industry.

Therefore, the report addresses all topic related to technical education and its relationship with comprehensive industrial development, especially at the Egyptian level, through some axes, which are:

1. Definition of Technical or Vocational education.
2. The Importance of Technical education.
3. The most important fields of technical education.
4. Challenges facing technical education.
5. Technical Education Schools in Egypt.
6. The Objectives of technical education in light of Egypt's Vision 2030.
7. The relationship between technical education and industrial development.
8. The Egyptian efforts towards technical education and Industrial development.

1. Definition of Technical or Vocational education:

Technical or vocational education: The education prepares students to master a craft that requires manual and training skills more than academic knowledge. It includes professions dealing with electricity, cars, water, nursing, trade, industrial, and agricultural matters through specialized and efficient schools in order to qualify the learner to join professions with a greater financial return in many cases than academic professions such as medicine or engineering, and there are types of them available for study online.

The law establishing the Egyptian Authority for Quality Assurance and Accreditation in Technical and Vocational Education and Training, defines technical education.

According to the law, technical education is a pattern of formal education carried out by regular educational institutions for a period of three or five years after the completion of the preparatory stage or two years after the end of secondary school and enables the student to acquire the competencies necessary to prepare him to work in a profession. It includes all schools and technical and vocational centers of all kinds and stages of the Ministry of Education, dual schools and apprenticeship centers affiliated to the Department of Productive Efficiency at the Ministry of Commerce and Industry, secondary nursing schools affiliated to the Ministry of Health and Population, technical institutes above intermediate affiliated to the Ministry of Higher Education and Scientific Research and technical schools affiliated with the private sector and civil society, whose curricula are accredited by the Ministry of Education and Technical Education.

2. **The Importance of Technical education:**

Learning the craft, when it coincides with the study at the same time, it transports its owner to much higher levels than academics or craftsmen, **so the importance of technical education lies in**:

- **Focus on specialization:**

Technical schools usually run their programs throughout the year. This means that students will not have to wait until the new academic year to start their career program. Technical schools often provide practical and field-specific training. Technical schools and colleges qualify students for a specific specialization in which they learn about everything related to this specialization of techniques and be able to develop over time. This is unlike university education, from which students get a more general field, and the specialization is usually in the last year or even after graduation and perhaps after joining the job.

- **Lower Cost:**

Technical education does not take as much time as academic education, so its cost is cheaper, and the lack of demand for it until the current era makes the number of students in the classroom less, and thus a greater increase in the absorption of information.

- **Smaller class sizes:**

Unlike other schools, art schools usually have small classes, so students will not have to sit in a classroom with hundreds of other students. The advantage of this is that by attending the technical school, students will have the opportunity to be acquainted with their colleagues from the same field, as this is useful for group study and joint projects. It also allows practical training, which is especially useful in some fields such as cosmetology and computer

technology. Small class sizes also mean that professors will have time to give individual attention.

- **Combination between practical and theoretical education:**
  Universities tend to follow curricula that are more theoretical and may be only one or two subjects that are concerned with the practical side. This is unlike technical education, in which the focus is on training hands and learning skills on the ground and not only from reading books, while not neglecting the theoretical aspect as well, which makes a big difference in the personality of technical school graduates.
- **Direct qualification for the labor market:**
  Few colleges qualify students directly for the labor market without studies after it. While, technical education even from high school allows students to join a guaranteed job while completing their studies in the same field if they wish, which make students much better than graduates of colleges and theoretical institutes, and student will not just be a non-student craftsman, but will combine the two advantages.
- **The unemployment rate among technical education students is much lower than among university graduates:**
  According to the annual bulletin of the combined labor force research 2020, the unemployment rate among those with an intermediate technical qualification (15-64 years) reached 7%, divided as follows: (5.6% for males, and 15.8% for females). While the unemployment rate for those with a university and post-university degree was about 15.7%, divided as follows: (10.3% for males and 27.6% for females). Therefore the unemployment rate among technical education students is much lower than university graduates..

  As for the **rates of contribution to economic activity according to educational status**, it is about 54% for those with an intermediate qualification, distributed as follows: (83.6% for males, and 16.3% for females), while it is 63.4% for those with a university and post-university qualification, distributed as follows: (80.4% for males, 43.4% for females).

  The employment rate for individuals (15 years and over) who obtained an intermediate technical qualification was about 50.3%, divided as follows: (78.9% for males and 13.7% for females), while the employment rate for those with a university and post-university qualification recorded 53.5%, distributed as follows: (72.1% for males and 31.4% for females).

3. **The most important fields of technical education:**
   The fields of technical education vary greatly in the third millennium, not only learning industrial matters with their importance and development, nor

agricultural methods with their extreme effectiveness, but innovative areas have emerged that can be joined immediately after preparatory school, the most important of which are:

- ✓ **Nuclear Energy Schools:**

  It is present in some Arab countries such as Egypt and the United Arab Emirates, there are currently only 31 countries in the world that have nuclear plants that produce safe and clean energy and are used for peaceful purposes. This field is considered one of the very rare specialties so far, not all workers in reactors and power plants are scientists, but there is a need for a large amount of technicians and professionals who are able to operate and work efficiently in this highly developed and widespread field.

  Many studies predicted that 25% of the electricity produced in 2050 would depend on nuclear energy, which means that this field will become one of the most prosperous in the coming years. These schools can be enrolled immediately after preparatory school without enrolling in high school to work in government or private energy projects, whether in your country or a foreign country.

- ✓ **Mining and Petroleum Schools:**

  Such as industrial education that prepares you directly for the academic faculty of engineering if you succeed with a good score, there are secondary schools that specialize in qualifying you directly for the field of mining, petroleum detection, soil analysis and other fields such as petrochemicals, refrigeration and air conditioning departments, electronics departments, and others. Petroleum schools are one of the most important schools in Egypt as an alternative to high school, which may be characterized by the method of technical and vocational education in addition to their theoretical education through developed curricula, as it will open a field and opportunities for work after graduation.

- ✓ **Technical Nursing Schools:**

  It is one of the most popular technical education professions of both genders, which the labor market needs a lot. The duration of the study is either usually 5 years after the preparatory stage for the student to graduate to the Faculty of Nursing to obtain a high qualification or to the labor market directly, as schools, universities, villages and mobile health units need a medical nursing staff present all the time. Sometimes transportation allowances are usually rewarding, especially when Work in remote areas.

  It may require a slightly lower total than high school with tests for admission, so you may need training for a period before joining it, and it includes

psychiatry, dentistry and various branches, where the nurse's tasks vary from preparing the patient, obtaining his data, preparing him to meet the doctor, observing instructions, and others.

- ✓ **Pharmacy Technician:**

  It is one of the technical professions that are not widely spread in the Arab world, but it has several advantages, schools and educational courses that qualify students as a pharmacy technician. These schools allow students to distribute medicines in pharmacies, retail chains, nursing homes and other medical facilities, in addition to helping to pack medicines, contribute to naming them, supervising their manufacture and extraction from natural and chemical materials, and it usually requires a one-year program to pass the certificate exam.

  Its importance lies in the advances of pharmaceutical technology, which are leading us on the path towards more medicine that can cure a myriad of diseases and ailments, and which results in a constant need for people who can understand the intricacies of the medicines we take and help dispense them safely and effectively.

- ✓ **Legal Technical Education:**

  While lawyers and judges receive all the attention, there is a range of vital technical functions associated with cases and transactions in court, conducting legal research, drafting correspondence, obtaining client statements, and even in courts, there is a legal assistant, a network analyst, an operations manager, a case organizer, and others..

  In addition to writing trial reports and hearings based on shorthand machines to record each spoken word and prepare literal texts, which is one of the unique fields that can be enrolled through legal courses for a period of 6-12 months..

- ✓ **CT and ultrasound technician:**

  It is one of the highly developed areas in the medical world and has great importance in the accurate diagnosis of the disease. As dealing with these devices does not need an academic doctor, but a specialized technician and an expert in controlling and monitoring them and even repairing them in order to carry out their task. These schools can be enrolled from industrial and technical education schools spread around the world, as in every industrial school you will find a department for electronics and devices, and you may also need specialized training after this.

- ✓ **Computer and mobile technician:**

  They are experts in computer software and equipment, provide a range of auxiliary functions within giant technological organizations, and contribute to solving computer problems, networks, connections, the way systems work,

repair malfunctions, and the preparation of computer equipment and devices, and they can also be customer service support staff.

Any student can be qualified for this job from industrial technical schools specialized in electronics, and universities also qualify for it, in addition to a variety of courses, whether free or paid, that may not take more than 6 months to study.

- ✓ **Carpentry Technician:**

The carpentry profession is one of the oldest and most important professions ever known, but whoever studies it and learns its new techniques and innovative methods of cutting and preparing furniture reaches international levels of professionalism. In Egypt, for example, there is a school specialized in teaching the furniture industry and helps you start a small project or join one of the major factories.

According to the latest statistics from the Manufacturers Association, there is a growing need for carpentry professionals with at least 600,000 jobs annually globally to meet the growing need in this field and implement mega projects globally.

- ✓ **Automotive and Mechanical Technician:**

It is the most well known in the world of technical education, although it has been viewed inferior by some on the basis that those who resort to it are failures. However, in the third millennium as global auto dealerships spread around the world, an automotive technician or mechanic can be a very guaranteed and profitable job with a craft in hand with which you can start a small car repair project according to the latest technological methods that qualify you for learning varied art schools.

4. Challenges facing technical education:

Technical education suffers from many challenges that affect the quality of its outputs, hinder the achievement of its goals, and prevent it from reaching its goals. These challenges can be classified in several areas: (curricula and study plans, professional growth of teachers, management and organization, funding for the vocational education sector, capabilities and equipment, and society's view of the field of vocational education**), and these challenges can be presented as follows:**

- ✓ **First: Curricula and study plans, including:**

- Curricula and courses fail to keep pace with modern requirements for development.
- Weak systems of evaluation, follow-up and incentives, which leads to a low level of quality in technical education.

- Weak curricula of rich education, lack of modernization and integration, and the existence of disconnect between the needs of industry and the curricula of technical schools.
- Neglecting technical education programs to develop the tendency towards specialization among students.
- The weakness of the graduate preparation program in developing its ability to adapt to advanced work methods.
- Poor scientific knowledge and inadequacy of graduates' skills to the requirements of the labor market.

✓ **Second: Professional growth of teachers, including:**

- The great shortage of teachers of scientific subjects in technical education and the lack of interest in their training.
- The scarcity of teachers in some disciplines and the poor efficiency of their distribution.
- The weak professional competence of some teachers in different disciplines, and their failure to keep pace with modern and rapid technological developments.

✓ **Third: The field of administration and organization, which includes:**

- Lack of sufficient data on the current and future needs of labor and technical frameworks at different levels and specialization that does not allow proper planning.
- The multiplicity of bodies based on technical education.
- The system of coordination and admission to technical education schools, and the distribution of the student to his specializations according to grade groups without regard to tendencies and preparations, or taking into account the actual needs of the labor market of different disciplines.
- The absence of a mechanism linking different disciplines in technical education and the geographical and qualitative distribution of industries, which resulted in the disproportion of specializations to the conditions of society, especially for females in Upper Egypt.
- The current quality system is not suitable for technical education, and there are no special standards in the Quality Assurance and Accreditation Authority for technical education schools, whose nature differs from basic education schools (pre-university).

✓ **Fourth: The field of financing for the technical education sector, capabilities and equipment, including:**

- The number of students in schools has swelled beyond the capacity of buildings, resulting in high-class sizes and insufficient opportunities for practical training for students.

- Lack of equipment, equipment and training hours relative to the number of students.
- Weak budgets allocated to vocational education in its branches.
- The high cost of graduates of well-qualified technical education.
- The small number of specialized vocational schools and the high student density in them.
- Weak funding and lack of sources, which leads to a lack of material resources available to educational institutions and a shortage of technical schools.
- The deterioration of the infrastructure of most schools, where the lack of funding leads to the weakness of the infrastructure of most schools, which hinders the provision of a healthy and attractive environment for students.

✓ **Fifth: The field of technical education relationship with the labor market, including:**

- Unemployment among graduates in various types of technical education due to the abundance of numbers and their increase in the need of the labor market, and the weak skill level for them.
- The absence of the necessary legislation to prevent the practice of the profession for those who are not qualified for it has made many non-specialists crowd out technicians.
- Many technical education graduates do not work in their fields of specialization.
- The absence of a unified national body to approve qualifications and give licenses to those who practice the profession, and to ensure their skills, competencies and ability to upgrade the national economy.
- Weak linkage of technical education outputs with the environment and contribution to development programs such as participation in the completion of development and national projects.
- Weak correlation between technical education in terms of specializations, curricula and labor market requirements, which leads to an imbalance between the number of workers on the one hand and the needs of the labor market on the other.
- Weak competitiveness in local markets and dependence on imported goods due to their low prices.
- The desire of professional institutions to employ old workers without fresh graduates, as they are Production-ready labor.
- The policy of professional syndicates and their failure to perform their roles and functions for which they were established contributes to limiting the effectiveness of efforts to provide qualified professional cadres in quantity and quality.

✓ **Sixth: The community's view of the field of technical education, including:**

- Ignorance of society and students of the value of vocational technical education, their reluctance to do so, and the inferior view of it.
- The deterioration of the societal view of professional and technical work and the community's view of technical education as a means of accommodating failed middle school students.

5. Technical Education Schools in Egypt:

Technical education has different types, the most prominent of which are:

➢ **Industrial Technical Education Schools**

Industrial technical education schools are one of the famous high school alternatives that specialize in qualifying students for the industrial technical field, and they are widely spread at the level of the Republic, and the departments vary according to the system, where there are: 3-year system

The system is called intermediate education, and it includes 10 study sections, namely:

1) Mechanical
2) Vehicles
3) Navy
4) Electrophoresis
5) Textile
6) Architect
7) Timber
8) Minerals
9) Refrigeration and air conditioning
10) Decoration

The 5-year system is called upper-intermediate education, and here the system includes 11 divisions; the same divisions as the 3-year system, but more than the electronics division.

✓ **Advantages of industrial technical education schools:**

Industrial technical education offers many advantages to students, and this is what makes it an important alternative to high school, for example:

- Allowing students to enter various colleges such as the College of Education, Engineering, Fine and Applied Arts, Modern Technology, and others.
- Providing job opportunities in various companies and factories.

➢ **Commercial and hotel technical education schools:**

It is a pattern of technical education. However, people think that studying in technical education schools after commercial preparatory is purely academic,

but this is an incorrect concept because it is one of the alternatives to high school that depend on the development of the student's professional, cognitive, social and self-skills, in addition to life skills through the curriculum of vocational guidance and entrepreneurship.

Commercial technical education includes important divisions, namely:

1) General Division (including advanced computer science and commercial sciences)
2) Legal Affairs Division
3) Procurement and Warehouses Division
4) Marketing and Labor Market Division
5) Insurance Division
6) Banking Division
7) Administration and Secretariat Division
8) Division of Port Management and Maritime Services.
9) Advantages of Commercial Technical Education Schools

✓ **One of the advantages of the commercial technical education schools system is that it helps to:**

- Qualifying students for the needs of the labor market, especially because it is involved in all disciplines and fields.
- Provide different fields of work for the graduate such as commercial chains, and sales via the Internet.
- It gives the student many jobs such as: secretarial, insurance representative, bookkeeper, sales representative, cashier, court clerk and others.
- The student is allowed to work after obtaining a diploma without the need to enter a college.
- The student qualifies that he is doing his own project and managing it.
- The student is allowed to work in restaurants and major hotels.

➢ **<u>Agricultural Technical Education Schools:</u>**

Agricultural education is one of the most famous types of alternatives to high school and technical education in Egypt, its goal is to qualify the student to work in the various agricultural education sectors, and it includes a group of multiple departments, namely:

1) Animal and poultry production
2) Land reclamation and agricultural mechanization
3) Production of horticultural crops
4) Beekeeping and silkworms
5) Food processing
6) Dairy and cheese processing

7) Fisheries.

✓ **Advantages of agricultural technical education schools:**

As a result of the increase in agricultural projects initiated by the state and other various food projects, the advantages of these schools became apparent, which are:

- Increasing job opportunities in the various agricultural and livestock sectors, such as animal farms and poultry
- Qualifying the student to make a special project for himself, such as rooftop cultivation.
- Qualifying the student to work as a food-processing technician in dairy products and a food processing and pastry technician.

➢ **Mubarak Cool Schools or Dual Education:**

Mubarak Cool Schools are among the post-preparatory technical education schools, which were established in cooperation with the German government in 1996. Dual education is a combination of theoretical education and practical training, with a period of study in which there are 3 years, and the student obtains a technical education diploma and a local certificate from the party that trained followed during the study, but it provides job opportunities for graduate students in factories and companies.

Mubarak Cool schools include many disciplines such as:

1) Mechanics
2) Electronics
3) Electricity
4) Textile
5) Food Industries
6) Print
7) Administrative Technician
8) Plumbing
9) Carpentry
10) Heavy equipment

➢ **Applied Technology Schools:**

Applied Technology Schools is one of the technical education schools, which are applied to after preparatory school, and follow international standards and an advanced educational system in delicate and important disciplines such as:

1) Mechatronics
2) Architectural finishes
3) Architecture Trading
4) Computing and Information Technology
5) Run restaurants
6) Electrical manufacturing

7) Technology of cultivation and irrigation
8) Animal production
9) Jewelry industry

The Ministry has taken care of this type of school and has established approximately 38 schools throughout the Republic.

6. **<u>The Objectives of technical education in light of Egypt's Vision 2030:</u>**

In light of Egypt's Vision 2030, the state seeks to improve technical education by providing high-quality education at the level of the teacher, curricula and training activities, based on the technologically enabled learner, and in line with teaching and learning systems to international standards, which increases the competitiveness of technical education in Egypt. **The main strategic goals and the sub-goals that technical education is expected to achieve until 2030 can be identified as follows**:

- **Improving the quality of the technical education system in line with international systems, including:**
  - Enhance learners' abilities to understand scientific principles and technical applications used in various fields of work and production.
  - Developing the creative abilities of students on the one hand and positive attitudes towards professional work on the other hand, and looking at it as one of the main values from which society derives its growth and development directions.
  - The learner's mastery of the skills and requirements necessary for the labor market.
  - Activating the rules of accreditation and quality in technical education to keep pace with international standards.
  - Comprehensive and sustainable professional development of technical education teachers.
  - Continuous development of study plans and programs.
  - Developing an integrated and advanced technical education system according to the needs of development plans and the labor market.
  - Deepen the student's understanding of economic, social and professional relations and the prevailing legislation in the fields of work and prepare him for integration into practical life.
- **Providing appropriate education for all students without discrimination, through:**
  - Providing attractive technical schools to increase the desire to enroll and achieve discipline.
  - Improving the societal outlook for technical and vocational education in active participation with the community.

- Achieving a balanced development of the learner's physical, mental and emotional abilities and his moral and aesthetic values.
- Allow technical education students to enroll in upper intermediate and higher education in the same fields of study up to bachelors, masters and doctoral degrees.
- The existence of educational institutions (or universities) linked to important strategic industries in Egypt, provided that access to them is available to all without being restricted to certain tracks in the pre-university education stage.
- Harmony with the principle of continuing and sustainable education, considering vocational education as a link of continuous individual growth.

- **Improving the competitiveness of technical education systems and outputs through:**

- Activating the dynamic relationship between education outputs and labor market requirements.
- Improving Egypt's position in the global indicators of the quality of technical education.
- The existence of advanced curricula compatible with internationally recognized curricula.
- Keeps pace with the percentage of workshops updated in technical schools with the new curricula proposed to be applied.
- Alignment between the skills obtained by the student through vocational education and the needs of society and the requirements of social and economic development, as well as the alignment between existing and expected needs of different levels and disciplines and vocational preparation programs in general.
- Availability of information systems on the labor market and available professions to encourage students to join them.

7. **<u>The relationship between technical education and industrial development:</u>**

   Technical education is one of the main reasons for the industrial progress of a number of developed countries, such as Germany, Japan, China, Korea, and others, and Egypt is one of the countries that have been the first to pay attention to technical education, especially industrial, since the Pharaonic era. Despite the importance of paying attention to the development of public education, technical education plays an equally important role in the industrial development process, by providing young people with technical skills and knowledge in order to prepare a skilled workforce in engineering and technological **disciplines:**

- Technical education encourages workforce development and equips people with skills that will enable them to establish, develop and establish industry in various fields.
- It promotes competition between manufacturers of goods and services, leading to better technologies.
- Better technologies lower the cost of producing the product and increase the entrepreneur's profit, meaning more profits, more money available to the entrepreneur to invest this money in setting up a new company or expanding an existing factory.

  General education is deeply rooted in our society than those in technical education, and it is clear that public education is more widely accepted than technical education. However, the development of a solid foundation in technical education is also urgently required in order for the state to compete effectively with other countries.

8. **<u>The Egyptian efforts towards technical education and industrial development:</u>**

   The Egyptian administration has been alerted to the need to follow flexible government policies in order to achieve economic development and has taken the development of technical and technological education as the first step to provide a qualified human resource to participate in governmental and private economic activities, followed by other steps, including localization industries and the trend towards setting incentives for industrial investment. **It is expected that during the next decade, Egypt will become a prominent position on the industrial world map, which is what the Egyptian state sought by launching two experiments for technological education, as follows:**

- **Experience of specialized vocational training centers:**

  It is affiliated with the Ministry of Commerce and Industry through the Department of Productive Efficiency and Vocational Training, which is concerned with developing scientific and academic curricula, providing teachers and trainers, and everything related to the educational process, and qualifying students to join a number of factories according to the requirements of each factory.

  This comes in line with the Ministry's strategy, which stems from two dimensions: development and Emiratization, and if these two dimensions are achieved, the human resource must be active in this regard.

- **Experience of the Ministry of Education in technical and technological schools** that play an important role in the localization of major industries, through their contribution to the advancement and advancement of

the technical education system in Egypt and the preparation of qualified graduates for the labor market, whether locally or internationally. While creating decent, sustainable and accessible job opportunities for all, which in turn contributes to expanding the labor market for Egyptian youth.

- **Issuing a law establishing the Egyptian Authority for Quality Assurance and Accreditation in Technical and Vocational Education and Training (Itqan):**
  - It stipulated the establishment of a public authority called the "Egyptian Authority for Quality Assurance and Accreditation in Technical and Vocational Education and Training" concerned with ensuring the quality and accreditation of technical educational institutions and programs and training centers. This authority enjoys independence, has a public legal personality, follows the Prime Minister, is based in Cairo Governorate, and may establish branches in the governorates.
  - This body also aims to improve the quality of the technical education and vocational training system, including institutions and programs, in accordance with accreditation standards and labor market requirements, and to serve the plans and policies of sustainable development of the state.
- **Egypt has collaborated with many international bodies to develop technical education curricula and improve the skills of its workforce so** that it can compete at the international level, especially in areas where modern technologies are used.
- **Signing of the protocol of the comprehensive initiative for the reform of technical education between Egypt and Germany**, which will see in the first phase of this 10-year initiative, see Germany allocate the necessary funding to support technical education in Egypt until 2024.
- **Launching a project to support technical education with the participation of the United States Agency for International Development (USAID).** This project focuses on supporting schools teaching curricula related to new and renewable energy in the Red Sea and Aswan governorates and logistics schools in the Suez Canal area. The United States is involved in curriculum development and teacher training.
- **Launching of the national initiative for the development of Egyptian industry "IBDA":**
  - The objectives of the initiative are integrated with the national goals of the Egyptian state, its international commitments and efforts towards achieving sustainable economic and social growth, providing clean energy solutions, innovation in the industrial field, and responsible consumption and production.

- The National Initiative for Industry (IBDA) also contributes to the promotion and implementation of the largest number of industrial projects with high benefit. Empowering the private sector by integrating with the state's efforts to create strong economic entities capable of competing globally.
- The strategy depends on several main objectives to form the base on which Egypt's industrial future will be built, which are: providing job opportunities for young people, localizing modern industries and reducing the import gap.
- The initiative deals directly with industrial projects, monitors their various needs and provides full support to them, whether by removing obstacles or increasing the volume of activity, and granting many investment advantages to projects benefiting from the initiative.

- **Cooperation between "IBDA Company and the Federation of Industries and Education" in projects to develop technical education schools**.
- **During 2021, 12 applied technology schools were opened** in partnership with major companies and ministries such as the Ministry of Communications and Information Technology, the Ministry of Petroleum, and the Egyptian Natural Gas Holding Company. So, the total number of applied technology schools to 28 schools in 10 different governorates of the Republic, namely Cairo, Giza, Alexandria, Qalubyia, Monofyia, Sharqyia, Suez, Minya, Dakahlyia and Port Said, with a target of reaching about 100 schools by 2030.
- **In March 2023, the Ministry of Education announced the establishment of** 5 international applied technology schools in 4 governorates.
- **Launching the second phase of technological universities, which includes 6 universities, namely:**

1) Gharbyia Technological University.
2) 6 October Technological University.
3) Borg El Arab Technological University.
4) East Port Said Technological University.
5) New Assiut University of Technology.
6) New Tyba University of Technology.

These six universities are added to the three universities that have already been established, namely: (New Cairo University of Technology, Delta Technological University, and Beni Suef Technological University). The three universities include (8) faculties of technology and 45 technical institutes above average, which increase the number to nine universities with about five programs on average for each university. All of which are related to renewable energy and technology in various disciplines within the state's plan to promote technical and technological education as a main entrance to promote the national industry.

Here, we point out that the state's advancement of the level of technical education graduates, raising the efficiency of its students, and providing training on modern technology contributed to improve Egypt's ranking in the global knowledge index for technical education and vocational training of the United Nations Development Program from 113th place in 2017 to reach 80th place in 2020. Moreover, Egypt jumped 48 places in the technical education and technical skills index according to the Global Talent Competitiveness Index 2021 issued by the French "INSEAD" Institute of Management business, ranking 56th in 2021, compared to 104th in 2020.

- **Conclusion:**

Attention to education in general and technical and vocational education in particular, aims to graduate a new generation of creators and thinkers on intellectual, value, professional and productive bases in accordance with international quality standards, which go beyond the limits of meeting the needs of the local interior to outside the borders. So that the Egyptian product becomes competitive regionally and globally.

Despite these government efforts to enhance the capabilities of the industrial sector, it remains dependent on overcoming obstacles for new small and medium industrial enterprises and clusters to be supportive of large industries in the short term to compensate for local gaps as a result of turmoil in global markets.

- **Recommendations:**

1. Establishing a central body that acts as an umbrella to support industrial technical education projects, and this body enjoys full independence, as it reports to the Council of Ministers and is chaired by the Minister of Education and Technical Education.
2. Develop an urgent national plan to raise the performance of the current level of technical education, taking into account the priority of bridging the deficit in the number of teachers needed for the current schools, by involving universities and the industrial sector to prepare them in a specific period.
3. Establishing committees and workshops under the supervision of the Ministry of Education, in cooperation with other relevant ministries, with the aim of identifying the competencies and skills that technical education students must acquire, in order to prepare them to be skilled technical cadres capable of integrating into the labor market.
4. Making a map that includes vocational training centers in all governorates, the location of each center, as well as the nearby industrial secondary schools, and the specializations that exist in these centers, to determine the possibility of benefiting from them in training students of industrial schools.

5. Assigning agricultural education to faculties of agriculture and agricultural research centers, provided that agreements are made with the Ministry of Agriculture and agricultural companies, and focusing on the practical aspect and agricultural mechanization.
6. Assigning commercial education to the faculties of commerce, through the concluding of training and operating agreements with the Ministry of Commerce and commercial companies with continuous training, and assigning tourism and hotel education to the faculties of tourism and hotels. Through these agreements, the required numbers are determined in each technical specialization, in a way that provides job opportunities for graduates, with continuous training for each governorate of the Republic established for this school.
7. Transforming technical schools into educational production units that serve the community, provide opportunities for Egyptian workers to improve their skill, artistic and cultural levels, and create a new generation of trained workers capable of joining the labor market directly.
8. The enrollment of students in one of the types of technical education is not limited to the total grades in the certificate of completion of the basic education stage, but rather by measuring the tendencies of students to the quality of education, they wish to enroll.
9. Asking students to conduct a graduation project at the individual and group levels, so that students acquire many knowledge, skills and desirable characteristics suitable for the needs of the labor market.
10. Paying attention to summer training during the school year vacation in technical education schools, and focusing on environmental crafts and industries, through which raw materials and products available in the surrounding environment can be used.
11. The contributions of all ministries and authorities concerned with industry in raising awareness of the technological incubators affiliated with the importance of training, raising skills and increasing links with industrial technical education schools, which helps to provide skilled graduates in the labor market.