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**Education emergency**

For Pakistan to progress rapidly in the 21st century and take advantage of new opportunities offered by the 4th Industrial Revolution, we need to focus our efforts on establishing a strong knowledge-based economy.

This requires diversion of national resources to education, science, technology and innovation (ESTI), resulting in the creation of an ecosystem where new ideas can be quickly translated into commercial products and processes. With 67 percent of our population below the age of 30, we have a huge demographic advantage as compared to many technologically advanced countries. To unleash this creative potential, technology must be used to improve the quality and access to primary, secondary, technical and higher education.

I have recently proposed to the prime minister to consider launching a National Education Emergency, so that our socio-economic development can be founded on high quality education at all levels. Through the integration of Information and Communication Technologies using content available in various Massive Open Online Courses, Pakistan can quickly leap forward.

To address issues of basic education, a TeleEducation TV system can be launched with different channels broadcasting lectures at primary, secondary, technical and higher education. Such a television system can have hundreds of channels so that all levels of education and most disciplines are covered. The cost of running such a TV channel can be mostly met by advertising, and entertainment programmes broadcast on it after 7.00pm to make it financially viable. All ISPs must be bound to make these channels available free of charge as a part of national service in every part of Pakistan.

There are tens of thousands of courses available at school, college and university levels through Khan Academy, Udemy, Coursera, Udacity, MIT Open Courseware, OpenLearn and others. Television sets can be installed in schools, colleges and universities across the country and exams organized based on an integrated system of education. This will address the key issue of quality of education – lack of highly qualified good teachers. We must become a world leader in using technologies to empower our youth.

In addition to television, the internet can play a powerful role in education. This will require our rapidly connecting remote areas by laying fiber adjacent to railway tracks and creating hotspots in all remote areas that provide fast access to a free national intranet system (NIS). Programmes can then be streamed to students with cheap robust smart devices without access to the internet, and interactive Q and A sessions held with live specialist teachers.

School, college and university education can be imparted either entirely through online mechanisms or through a ‘blended learning’ approach in which the teacher is assisted by technology and digital content to transform and enrich the teaching-learning practice inside the classroom. Blended learning classrooms require appropriate ICT equipment and learning management platforms to host the content, which is viewed on a large screen format. YouTube Live, Facebook Live, Instagram Live and other online social media channels can be utilized for this purpose where the internet is available.

In more remote areas of Pakistan where access to internet and power availability is limited, schools can be transformed into ‘Learning Hotspots’ so that students and teachers can access digital learning content and other services employing low-power offline content server, content, smart TV, limited tablets for students’ self-study, tablets for teachers and low-speed internet. The Open School Programme (OSP) can be very useful for the 20 million or so out-of-school children. To persuade parents to enroll students in schools, meals for children and other incentives can be introduced.

To accomplish the above nation-wide, a number of funding sources can be employed. The Universal Service Fund operates under the Ministry of IT/Telecom and is funded by mandatory contributions by telecom operators. Its purpose is to extend telecom services to remote and unserved areas, and it can be employed to spread fiber nation-wide. This can be combined with the ICT R&D Fund, established by me during my tenure as federal minister. The federal and provincial governments will be expected to increase their contributions to education by 0.5 percent of GDP annually so that it reaches 5 percent of GDP in five years, and 7.5 percent of GDP in 7.5 years. A detailed proposal has already been prepared in this respect by the Knowledge Economy Task Force.

Successive governments of Pakistan have only paid lip service to education, science, technology, innovation or high-tech manufacturing. This has resulted in our country being ranked among the lowest in the world in education, science, human development index or poverty. Even Bangladesh has forged ahead in almost every indicator. The implementation of the programmes suggested above can be promoted through public-private collaborations and financing so that the desired levels of scalability are achieved. Indeed, the private sector can play a critically important role in this effort, as the government has limited capabilities of implementing large national projects of this nature.

Our prime minister now needs to declare a National Education Emergency. This declaration must be accompanied by allocation of substantially increased funding for education in the next budget from the sources indicated above. The major focus of the government must then be to transition from a low-level agricultural economy to a strong knowledge economy by tapping into our real hidden strength – the 100 million young people below the age of 20.

The 4th Industrial Revolution is already upon us and disruptive innovations are transforming the way we communicate, manufacture, travel or do business. Artificial Intelligence, materials engineering, next-gen genomics, industrial biotechnology, quantum computing, regenerative medicine and a host of other such fields are changing the landscape of civilisation in a manner never witnessed before in human history.

Knowledge is now the single most important factor for socio-economic development and science & technology have become the great equalisers between haves and have-nots. Countries that have invested heavily in developing their human resources to the highest possible levels have leapt forward. The time to change has now come, and we must act quickly and with determination.

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