

# Importance of quality education

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**H**UMAN civilization has seen several technological revolutions that have changed our society altogether, our way of thoughts and life. However, no technology has had the versatility with which Information and Communication Technology, in a pace of less than half a century, has brought about revolution in all walks of life, in all spheres of human activities. ICT has by now empowered us to lay the foundation of what will be termed as knowledge-based society or information society. No nation will survive without creating knowledge-based society and facilitating its growth. This is a big challenge for developing nations that fall short of appreciating the importance of this new paradigm, and thus do not invest adequately to pave the way of transition to this new society.

This is not only dearth of physical resources in developing countries but also appreciation of the leadership that are standing on the way to smooth transition to a qualitatively different society. For countries that are struggling to satisfy the minimum demand of its citizens for survival, investment in projects of far reaching consequences presupposes due appreciation of the matter involved. Under the circumstances, developing countries have to find out cost-effective methods of investing on such projects.

We cannot possibly mention a single field in which human beings have excelled in absence of a healthy competition, be it sports, education or culture. Even the most genius and dedicated scientists get inspiration from Nobel prizes and similar other recognitions. We would not have stars like Tendulkar, Bjorn Borg, Pele, Kasparov or truly speaking even possibly an Einstein had there been no way of measuring excellence in relevant fields. Competition appears by far the most cost effective tool for attaining excellence. We recognize one individual or two; only a few are rewarded but thousands join the race for attaining excellence thus increasing the world product by manifolds. No other means is as cost effective as a healthy competition is. The craze with which Americans are driven to baseball, or Spanish people to bull fighting, or Australians to horse-race, Japanese to Sumo wrestling or even wrestling in general does not find a parallel. Very unusually sports requiring excessive intelligence do not attract people as much. While chess is said to be king of all sports even a television broadcast of world chess championship has not been able to attract a fraction of audience in spite of the fact that everybody will agree that chess requires enormous intellectual capability. For developing countries like Bangladesh with insignificant natural resources and enormous population, the only way of national development might be through developing human resources, for which we cannot expect to have reasonable allocation in foreseeable future. The only cost effective way of creating stimulating environment in education, science and technology is healthy competition and its massive media publicity.

## Education for creation of a knowledge-based society

For a knowledge-based society the most important item is knowledge and that has to be made available to the appropriate group of people in right time

and possibly share it amongst a group located in different geographically distributed areas. Developing countries had always been lagging in terms of knowledge resources having libraries with inadequate books, unequipped laboratories and so on. Fortunately, by virtue of the internet technology limitations in physical resources is not too much of a binding provided we can make good use of this versatile technology and the huge

forums are only convincing the world of our indifferent development. So both lack of appreciation and adequacy of physical resources are making it a daunting task for developing nations to join the march for creating knowledge-based society.

## Appreciation of education in our society

It is amazing that even in colonial

success compared to academic institutions of other countries. A lion's share of the Nobel prizes of each year is obtained by scientists living in the land of less than 5% population of the Earth.

## Competition among educational institutions

Universities are in the forefront of creating knowledge in the society and hence an important

Table 1: Ranking criteria and weights used by Shanghai JiaoTong University			
Criteria	Indicator	Code	Wt
Quality of Education	Alumni of an institution winning Nobel Prizes and Fields Medals	Alumni	10
Quality of Faculty	Staff of an institution winning Nobel Prizes and Fields Medals	Award	20
	Highly cited researchers in 21 broad subject categories	HiCi	20
Research Output	Articles published in Nature and Science	N&S	20
	Articles in Science Citation Index-expanded, Social Science Citation Index	SCI	20
Size of Institution	Academic performance with respect to the size of an institution	Size	10
Total			100

repository of knowledge available in the internet. In order for us to be part of the knowledge-based society, where knowledge is losing its grounds for significance, we must make an about turn and ascribe knowledge and knowledge-based activities utmost significance to create a knowledge base that will allow us to be members of that society. With the introduction of the knowledge-based society, it will be extremely difficult for a part of the world to survive without generating new knowledge and assimilating knowledge already available. Creation in a knowledge-based society will be largely dominated by availability of knowledge workers. The larger is the share of knowledge workers the larger will be the share of resources of the society. With globalization knocking at the door no nation can stay aloof from this transition, and must create an education system that will provide quality education comparable to advanced nations. Otherwise, effects of globalization will be serious on these countries that will lose quality jobs of the land to more qualified foreigners. This is why participants of the World Class University Conference, held in Shanghai in 2005, cautioned developing nations, and equated survival of these countries to producing world class universities. Leaders of developing nations is suffering not only from dearth of adequate physical resources necessary for creation of world class universities they also suffer from lack of appreciation of the knowledge-based society and its significance for our nation. This unfortunately fact has a due reflection in the quality of representation of our country in the World Summit on Information Society. In such distinguished summit we failed to appreciate the presence of those who deal with information, study information, research on information. While I do not have statistics or information on the delegation, I am sure lack of knowledge of the leadership, and their appreciation of the usefulness of knowledge, has resulted in constituting a delegation without proven knowledge in the field. This must be true in our representation everywhere else in respect of events around information and communication technology. As a nation we have unfortunately failed to impress upon the world of our mission, vision, sincerity and fairness. Inappropriate representations in international

days education was highly appreciated in our society. In our country once upon a time people used to travel miles to see a person who passed BA or MA, or see in person a brilliant student having place in the merit list. This land has witnessed two independences, and very sadly that appreciation for education is almost non-existent now in our society. Rather muscle power and wealth have taken over education. We have further reduced any interest in education by diluting popular events in it. Once upon a time students across the country, in particularly good students, worked hard to capture a position in the merit list and make parents, guardians, relatives, teachers and local people proud. Unfortunately, with the introduction of GPA system this zeal is not there anymore. Now thousands of students are getting golden GPA with the inevitable undesirable event of not making it to any good educational institution. Run for golden GPA is confining our students to go for 80% marks in a subject like Mathematics, and for this to achieve, it is sufficient to know only about 50% of the material. Thus our students are simply going for a knowledge that is sufficient to guarantee the highest grade in every subject even though it cannot ensure excellence of knowledge in the field. While competition in sports is very common and popular among peoples of all walks of life, competition is becoming popular in other areas as well. Olympic sports have universal popularity. This has possibly inspired people in education to introduce with considerable success similar competition through International Mathematical Olympiad, International Physics Olympiad, International Chemistry Olympiad, International Olympiad in Informatics, and Olympiads in other subjects. Popularity of these events has grown significantly although yet to be able to attract attention of not only common people but also people of the field as much as Olympic games do. However, competition for excellence among academic institutions of the United States has particularly been popular. Each university is ranked not only overall but also according to their performance in different subjects and different activities like research, undergraduate education and so on. By virtue of this competition American colleges and universities are earning much more

player for creating knowledge-based society. In order to foster educational excellence advanced nations are creating healthy atmosphere for competition amongst universities. This

Table 2: Statistics by region						
Region	Top 20	Top 100	Top 200	Top 300	Top 400	Top 500
North and Latin America	17	58	98	138	164	197
Europe	2	34	80	123	172	208
Asia/Pac	1	9	24	42	64	100
Africa				1	2	5
Total	20	101	202	304	402	510

competition has proved very effective in raising quality of education quite cost effectively. Americans are publishing ranks of different academic institutions based upon different criteria. Similar ranking has been introduced in other countries as well. Ranks of UK, German, Canadian and universities of other advanced nations are already well known. Australian, Chinese, Korean, Indian and Pakistani universities are also being regularly ranked. This has had a good impact in raising the overall level of the universities of these countries. These efforts have been complemented through ranking universities of the world thus inspiring competition among them. Ranking made by Institute of Higher Education, Shanghai JiaoTong University and by Times Higher Education Supplement have caught attention. About a decade ago Asiaweek ranked not only universities but also cities of Asia in order to inspire them to do well. Although this effort unfortunately could not be continued for some unknown reason and thus closed an opening for Asian academic institutions to excel. Leiden University is continuing to publish a list of topmost 100 universities of Europe, so is the case with US News America's best colleges.

Interesting fact is that Shanghai JiaoTong University started ranking of world universities primarily to assess position of Chinese universities. They want to have world class universities in China. It may be mentioned here that in particular Shanghai JiaoTong University already proved by becoming champion in ACM ICPC World Finals for two years that their education is already World Class in addition to astounding perfor-

mances in International Mathematical Olympiad, International Olympiad in Informatics and other educational competitions. This mission of theirs and their allocation of resources for this purpose does indicate to the direction Chinese society is moving. The other countries are not lagging behind. University Teknologi Malaysia is planning to be a world class university by year 2010. The 2nd International Conference on World-Class Universities was held during October 31-November 3, 2007 at the Center for World-Class Universities and Institute of Higher Education, Shanghai JiaoTong University. Delegates from 32 countries including many from Europe, Latin America and Asian countries including Saudi Arabia, Malaysia, Thailand participated in the event with enormous enthusiasm. Necessity of world-class universities for survival of developing countries was underscored in the 1st conference held in 2005. In this era of globalization unless developing countries equip themselves with world class knowledge, scientific and technological know-how, they will be bereft of the jobs in their own country. So creation of world class universities has become essential for our own survival.

This is not only uplifting the quality of education in universities, this is needed in every level of education. In fact if quality of education in primary and secondary levels is not good enough it will be extremely difficult to have quality in post-secondary levels. However, since with significance of education going down all the time, we are unable to attract quality graduates for teaching positions in primary and secondary levels. So our society is not able to provide our young people teachers of quality

kids do not like fall behind in competition. Moreover, since our education is memory intensive and does not develop creativity, we should actually develop an organization that can cross check quality of evaluation done in public examination system and make it answerable. It is possible to organize Olympiad activities on almost all subjects and classes, and can be organized in different geographical grouping like in upozillas, districts, divisions and nationwide, and publicize in mass media in a way so that all stakeholders of education give adequate importance to it and be a player in the game of achieving educational excellence.

## Ranking criteria used by Shanghai Jiao Tong University

It is needless to say that no ranking is perfect. In every evaluation at the end there must be some subjectivity. Even the names of Nobel Prize winners will change had there been a different jury. What is expected of a good ranking system is that it selects ones from the very top class. One can also argue on the selection criteria chosen for the job. The ranking [1] adopted by Institute of Higher Education, Shanghai Jiao Tong University, China is based on the following criteria and weights (Table 1):

Inclusion of single event criteria like Nobel Prizes and Fields Medal changes the ranking drastically. Most of the universities scored 0 in the top two ranking criteria. For example, Cairo University got into the ranking by virtue of having a Nobel prize winner while many other universities having earned similar or better scores could not make into the top 500. Since we are talking about world-class universities the top two criteria have been given due weight.

Alumni- The total number of

obtains more than one degrees from an institution, the institution is considered once only.

Award- The total number of the staff of an institution winning Nobel prizes in physics, chemistry, medicine and economics and Fields Medal in Mathematics. Staff is defined as those who work at an institution at the time of winning the prize. Different weights are set according to the periods of winning the prizes as mentioned in the previous paragraph. For Nobel prizes, if a prize is shared by more than one person, weights are set for winners according to their proportion of the prize.

HiCi- The number of highly cited researchers in broad subject categories in life sciences, medicine, physical sciences, engineering and social sciences. These individuals are the most highly cited within each category.

N&S- The number of articles published in Nature and Science between 2002 and 2006. Only publications of article type are considered.

SCI- Total number of articles indexed in Science Citation Index-expanded and Social Science Citation Index in 2006. Only publications of article type are considered. When calculating the total number of articles of an institution.

Size- The weighted scores of the above five indicators divided by the number of full-time equivalent academic staff. If the number of academic staff for institutions of a country cannot be obtained, the weighted scores of the above five indicators is used.

If we analyze the criteria mentioned in the table we will find that the only measure of scores is excellence in research. Even size of an institution has been defined by the weighted scores of the above five indicators, each of which is directly related to research output, divided by the number of full-time academic staff.

## Ranking statistics and impacts

Shanghai JiaoTong ranking also does some analysis to show regional and country performance, and how quality universities has implication on national development as shown in the following table.

Table 3: Percentage distribution of top universities by country with their share of global population and GDP

Country	% of Top 100	% of Top 500	% of GDP	% of Population
USA	53.5	32.5	27.4	4.6
UK	10.9	8.2	4.9	0.9
Germany	5.9	8.0	6.0	1.3
Japan	5.9	6.5	9.0	2.0
France	4.0	4.5	4.6	0.9
Canada	4.0	4.3	2.6	0.5
Sweden	4.0	2.2	0.8	0.1
Switzerland	3.0	1.6	0.8	0.1
Australia	2.0	3.3	1.6	0.3
Netherlands	2.0	2.4	1.4	0.3
Israel	1.0	1.4	0.3	0.1

who will act as role model for them and show dream. Under the circumstances, especially students in schools and colleges located in rural areas suffer most. The situation cannot be improved in near future. So we must open up opportunities for these students to have better education through putting them in competitions like Olympiads in different subjects. If even their teachers fail to give them adequate support for doing well in these competitions they will find their way out since at young ages

the alumni of an institution winning Nobel Prizes and Fields Medals. Alumni are defined as those who obtain bachelor, Master's or doctoral degrees from the institution. Different weights are set according to the periods of obtaining degrees. The weight is 100% for alumni obtaining degrees in 1991-2000, 90% for alumni obtaining degrees in 1981-1990, 80% for alumni obtaining degrees in 1971-1980, and so on, and finally 10% for alumni obtaining degrees in 1901-1910. If a person

Table 3 shows how closely related national development is with the presence of world class universities in a country. The table indicates to the strong position Israel is holding in education even though its population is much smaller compared to the Arab world. So is the case with single city state of Singapore and Hong Kong all of whose universities are in the top 500. Exceedingly high percentages of GDP of USA, although with considerably low percentage of

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