

Pakistan's Higher Education System – What Went Wrong And How To Fix It?

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ABSTRACT: Starting with a brief backgrounder on the history of higher education in Pakistan, this essay surveys current college and university enrollment and capacity. Its main part is a performance index, created to capture the main determinants for ascertaining the quality of universities and colleges in a relatively precise manner. This framework could enable more precise thinking on “good” and “bad” higher education once data becomes available on the suggested lines. Finally a key question will be posed and an answer attempted: how can the free-fall of academic standards in Pakistan be arrested, and what should be the priorities of higher education in the next decade?

INTRODUCTION

How future Pakistanis will live, the quality of their lives, the kinds of employment available, the future political system, the manner in which citizens will resolve conflicts between themselves, and the country's relationship to the global community of nations, will ultimately be determined by the content and quality of their education. University and college level education plays a crucial part in this.

Common wisdom is that increased funding can solve all, or at least most, of the systemic problems that bedevil higher education in Pakistan. But Pakistan offers an instructive counterexample: a many-fold increase in university funding from 2002-2008 resulted in, at best, only marginal improvements in a few parts of the higher education sector. This violation of “commonsense” points to the need for some fresh thinking.

This chapter will analyze the progression of Pakistan's higher education system. It divides naturally into three parts:

First: a brief backgrounder on the history of higher education in Pakistan. From a single university in 1947, the number has increased to well over one hundred. This impressive expansion has still not changed the fact that, relative to other countries of South Asia, a smaller proportion of Pakistanis are enrolled in higher education. This has made it urgent to rapidly create new universities and colleges. The growth of enrollment, future projections, necessary financing, and the factors limiting still greater increases will be touched upon.

Second: how is one to judge the quality and usefulness of colleges and universities? It is often said – perhaps rightly so – that the real crisis in higher education is that of quality. But can one go beyond personal, subjective, assessments of the quality and usefulness of individual institutions? In an attempt to make a framework for quantitative assessment, I shall devise a quality factor index that is tailored to the Pakistani situation, although it probably has wider applicability. One hopes that some such framework will someday be used to assess the health of Pakistan's HE system on a national scale. Large international organizations, such as the World Bank and USAID, which have loaned billions to Pakistan may – instead of merely rubber stamping official documents – actually want to invest in an effort to make a meaningful assessment of quality for a wide range of

Pakistani colleges and universities before committing further resources. This would help develop policies that will address actual needs and put a brake on wasteful spending.

Third: what must be done to arrest the manifest decline in academic standards? I shall argue that solutions must be sought at three distinct levels – re-apportioning resources towards immediate and urgent needs, efficient and responsible implementation of approved plans and projects, and, most importantly, inducing attitudinal changes towards education and its values.

I. HIGHER EDUCATION ENROLLMENT AND GROWTH

In the early 20th century, Muslims of the Indian subcontinent were, in general, poorly educated relative to Hindus. This was both because of British prejudice against Muslims, as well as resistance by orthodox Muslims to modern scientific ideas and to the English language. Poor education made it difficult for Muslims to get high-level government jobs. This was historically one of the most important reasons that led to the demand for Pakistan.

Compared with much of India, the areas that currently constitute Pakistan were educationally backward. In 1947, Pakistan had only one teaching university, Punjab University in Lahore, with a student enrollment of 644. It lost its best faculty members, who were mostly Hindus, to the migration following the Partition. Although the University of Sindh also formally existed at this time, it was only an examining body and began its role as a teaching university after relocating from Karachi to Hyderabad in 1951. Karachi University was established in 1950. University level education in Pakistan clearly had a very modest beginning.

Expansion followed in subsequent years. Table I shows the growth in the number of universities, as well as other degree awarding institutions (DAI's), over a period of about 60 years¹. The first major increase in the number of public universities was initiated by Zulfikar Ali Bhutto, whose populist regime (1971-1977) promised to spread higher education widely. This was subsequently eclipsed by a much faster expansion in the public sector.

Year	Universities		DAI's	
	Public	Private	Public	Private
1947	1	0	0	0
1960	5	0	1	0
1970	8	0	2	0
1980	19	0	2	0
1990	20	2	3	0
2000	32	14	5	8
2007	50	37	9	18

Table I. Universities & Degree Awarding Institutions (DAIs)

¹ Higher Education Commission, <http://www.hec.gov.pk/new/QualityAssurance/Statistics.htm>

The first private Pakistani universities were the elite Lahore University of Management Sciences in 1984, followed by the Aga Khan University Hospital in 1985. The tally in early 2007 was as follows:

- 50 public universities (several upgraded from college status)
- 9 public Degree Awarding Institutes (DAIs)
- 37 private HEC recognized universities
- 18 private Degree Awarding Institutes

This makes a grand total of 114 universities and DAI's, an apparently impressive achievement given the low starting point. Student enrollment increased correspondingly². According to the Higher Education Commission the year-wise enrollment in 101 universities/DAIs (including distance-learning institutions) was 276,274 in 2001-2002, 331,745 in 2002-2003, and 423,236 in 2003-2004. Of the total enrollment in 2003-2004, 48% was in public sector universities and DAI's, 38% in distance learning, and 14% in private sector institutions. The latest³ presently available enrollment statistics are for 2004-2005. They amount to 534,000 or 2.5% of the eligible age group. If affiliated colleges are included, the number of students the higher education sectors increases to 807,000 which is about 3.8% of the eligible age group. A regional distribution is shown in Table II.

Sector	Distance Learning	Federal	AJK	Balochistan	NWFP	Punjab	Sindh
Public	159257	31843	2005	5217	30815	86032	46959
Private	-	4720	379	564	5865	16749	32831
Total	159257	36563	2384	5781	36680	102781	79790

Table II. Enrollment at Universities/DAI + Constituent Colleges during 2003-04

Let us briefly reflect upon the province-wise enrollment. The populations in Punjab, Sindh, NWFP, and Balochistan are roughly 55%, 23%, 16% and 5% of the total population respectively. *If Balochistan had the same population as Punjab the enrollment there would be only 63,591 instead of Punjab's 102,781, showing that this province has much lower access.* Sind appears to have far greater access – it would have 190,802 for equal population with Punjab. But this is deceptive because Karachi, with a population of nearly 16 million, has the overwhelming number of higher education institutions in Sindh.

To put these figures in context: the university enrollments of NWFP and Balochistan put together is less than the enrollment at a single large US university. The University of Maryland, for example, has over 50,000 students. Pakistan does not compare favorably even in comparison with its neighbors – Iran and India. Iran with a population of about

² *ibid*

³ World Bank Report No. 37247, *Higher Education Policy Note. Pakistan: An Assessment of the Medium-Term Development Framework*, June 28, 2006. Human Development Sector, South Asia Region, The World Bank.

65 million in 2004 had over 2.2 million students in its universities⁴. India has approximately twice as much of its eligible population enrolled in comparison to Pakistan. Such comparisons put pressure upon policy makers to show fast results.

Constraints upon increasing enrollment still further come principally from the following:

- a) Availability of formally qualified faculty
- b) Availability of formally qualified students
- c) Funding

We shall consider each in turn.

a) **Faculty:** Tables III, IV show the number of full-time faculty members, classified by their last degrees. A large number of Pakistani university teachers hold only bachelor's degrees but teach at least at the BA/BSc level. The average number of PhD teachers per university works out to roughly 30. Assuming 10 departments per university, this is only 3 PhDs per department. The "PhD deficit" has frequently been emphasized, and plans to increase the number of PhD holders several fold were announced but with little consideration for suitability⁵. Clearly, even without insisting upon any quality standards of teachers with PhDs (i.e. a person with a PhD is to be considered a "real PhD" for counting purposes), a simple consideration of the numbers available in Pakistan puts a definite limit to expansion of the university system.

Sector	Bachelors	Masters	Master (H)	M. Phil.	Ph.D.	Total
Distance Learning	9	110	0	22	41	182
Public	1059	4525	1319	1019	2549	10471
Private	1151	1480	508	284	540	3963
Overall	2219	6115	1827	1325	3130	14616

Table III: Full Time Faculty Members Classified by their Highest Qualification, 2003-04.

⁴ Ministry of Knowledge, Research, and Education, Government of Iran, <http://www.irphe.ir/fa/statistics/Statistics%20Forms/w-br.bruoshoor83-84.pdf>

⁵ *Aim to have 1,500 PhDs every year:* Atta-ur-Rahman, Dawn, 20 June 2004.

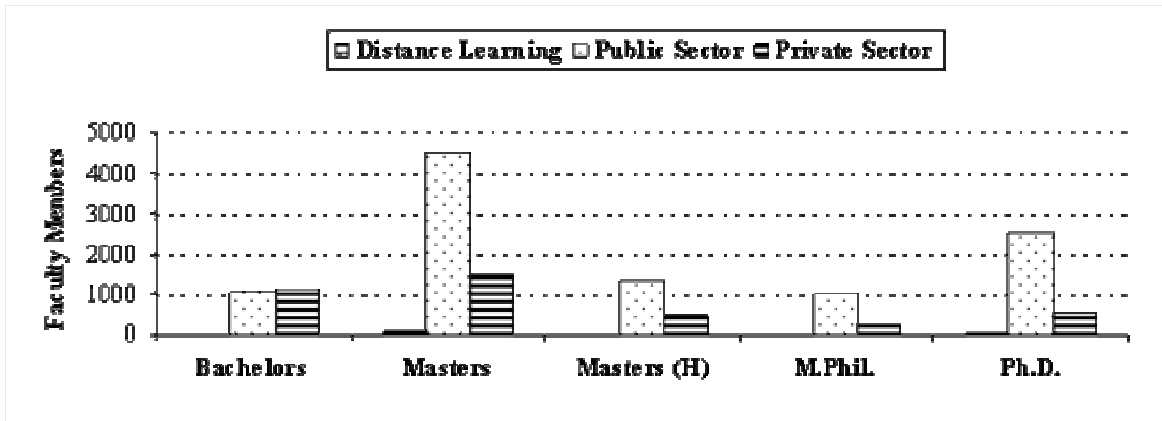


Table IV: Full Time Faculty Members, classified by their Highest Qualification.

b) **Students:** Those who complete their Higher Secondary Certificate (FA/FSc) have gone through 12 years of schooling. Subsequently, they are formally eligible for entering colleges or universities. Currently, only 2 out of 10 students taking the HSC exams pass, and only one makes it to a university.

c) **Funding.** The total higher spending for higher education increased from Rs. 3.9 billion in 2001-2 to Rs. 33.7 billion in 2006-7. (Breakup: Rs. 15.7 billion for recurring expenses, and Rs. 18.00 billion for development.) Per university student, the average expenditure up from around Rs 30,000 in 2001-2 to Rs 135,000 in 2006-7. This is about \$2100 per student which, while small by western standards, is substantially larger than for corresponding levels in India even without the large increases in the last several years⁶

The above may be summarized as follows: enrollment in higher education has increased many-fold over the last six decades; access is nevertheless limited to only a small fraction of the eligible population; provincial disparities are substantial; the number of formally qualified teachers is low; and funding for universities has increased enormously since 2002. But the real problem – higher education quality – has so far not entered the discussion. It will be taken up next.

II. MEASURING UNIVERSITY QUALITY

Every country wants universities, and the more the better. There is a clear utilitarian goal behind this: universities have become the engines of progress for knowledge-driven economies in the age of rapid globalization. They are the fountainheads of modern science, and of technologies that have changed the world more in the past fifty years than the previous ten thousand years.

⁶ *Indian Higher Education Reform: From Half-Baked Socialism to Half-Baked Capitalism*, Devesh Kapur and Pratap Bhanu Mehta CID Working Paper No. 108, Harvard University, September 2004.

But higher education requires much more than just building structures and calling them universities or colleges. There is little to be gained from a department of English where the department's head cannot speak or write a grammatically correct non-trivial sentence of English; a physics department where the head is confused about the operation of an incandescent light bulb; a mathematics department where graduate students have problems with elementary surds and roots; or a biology department where evolution is thought to be new-fangled and quite unnecessary to teach as part of modern biology. Nor does putting a big signboard advertising a "centre of excellence" make it one.

There are countless places in Pakistan where the above is not far from the truth. On the other hand, there are also examples of high quality such as a world-class medical university and business school, some good quality engineering and fine-arts colleges.

Ultimately, one must ask: what does "quality" of higher education mean? Equivalently, how may one differentiate between HE institutions on the basis of quality? This then translates into measuring "real access" to higher education and separating it from mere enrollment. Of course, judging quality is always controversial. Comparing universities across countries, or even within a country, is fraught with difficulties. No international agency has yet done a proper global comparison of universities. There have been a few attempts by newspapers and journals but with only some success. Many find their results unconvincing, and different surveys differ sharply in their assessments. This applies even to the widely quoted results of the Times Higher Education Supplement, as well as those of Shanghai Jiao Tong University, both of which are widely quoted in the literature. Their criteria for assessment and weighting factors, breadth of surveys, techniques of analysis etc. are quite different. This leads to a wide spread of results. The problem is the lack of a sound theoretical basis for doing comparisons.

II.a The Ideal University

As a tool that could help us frame the issues better and guide us towards a reasonable answer to the questions posed above, let us create for ourselves a hypothetical *ideal university*. Freed from practical constraints, this artifact allows us to imagine all that a university should be⁷ and provides a datum against which actual universities can be assessed.

First, the ideal university should be a bastion of critical inquiry covering every conceivable field of human endeavor. It has first-rate faculty that does first-rate research on super-massive black holes and discovers new extra-solar planets, figures out quantum computation and the folding of proteins, documents the mating habits of macaws and tarantulas, and deciphers the extinct languages of Sumeria and Mesopotamia. The professors are widely cited and known for important discoveries. Their fame attracts talented researchers and students from across the world.

Our university also spawns high-tech companies that create more powerful computers and data compression techniques. It generates products and ideas upon which

⁷ *World-class universities: a new holy grail*, Pervez Hoodbhoy, 6 June 2007, SciDev.Net, <http://www.scidev.net/opinions/index.cfm?fuseaction=printarticle&itemid=617&language=1>

civilizations' progress and survival depend, such as new crop varieties and renewable energy sources. It also does a splendid job at training engineers, doctors, economists, business managers, and other professionals.

Most importantly – this ideal university creates a modern citizenry capable of responsible and reasoned decision making. Its graduates can think independently and scientifically, have an understanding of history and culture, can create discourses on social and political issues, and are capable of coherent expression in speech and writing. They are in demand everywhere – both in academia and industry – nationally and internationally. A tall order indeed! Harvard, MIT, Cambridge, Oxford, Sorbonne are considered among the world's best universities. But even these are poor approximations to an impossibly high ideal.

Coming down to earth: one would like to know what constitutes a reasonable expectation from a public university in Pakistan. If, for example, Khairpur University, deep in the backwaters of Sind, or Quaid-e-Azam University, in the heart of Pakistan's capital, are to be called real universities then by what criteria should they be evaluated?

A perfectly objective assessment is simply impossible. Value judgments are inevitably involved. Even more fundamentally, ideology and purpose play a crucial role. For example, Soviet and Chinese universities concentrated largely on utilitarian goals whereas western universities – or at least the better ones among them – seek a balance between scholarship and utilitarian needs. Nonetheless, the need to judge and assess is one that cannot be avoided.

Why does quality have to be reflected in numbers? The fact is that resources and finances are always finite. The world we live in demands that hard choices be made. If you are a planner in a high position, finances have to be allocated in a manner according to some rational policy. This means one simply must have numbers. The thoughtful educational planner is inevitably presented with a dilemma: hard numbers reflecting a sufficient measure of truth are essential for decision making. But at the same time, he or she is aware that behind these numbers can be hidden subjective judgments.

What I propose here is a research strategy that would yield some quantitative measurements of quality. A new measure, called "Institutional Teaching Quality Factor", purports to be a measure of the teaching performance of a given university or college and can be used to define genuine access as follows:

$$\text{Genuine Access} = \text{Institutional Teaching Quality Factor} \times \text{Enrollment}$$

The Institutional Teaching Quality Factor (ITQF) must take the following factors into consideration:

- A) Quality of teaching and teachers
- B) Quality of student body
- C) Adequacy of basics
- D) Governance and ethics

E) General ambience

A numerical calculation of ITQF should be based upon a formula that gives an agreed upon importance to each of the above:

$$\begin{aligned}
 (\text{ITQF})_{\text{total}} = & W_{\text{teachers}} \times (\text{QF})_{\text{teachers}} \\
 & + W_{\text{students}} \times (\text{QF})_{\text{students}} \\
 & + W_{\text{basics}} \times (\text{QF})_{\text{basics}} \\
 & + W_{\text{governance}} \times (\text{QF})_{\text{governance}} \\
 & + W_{\text{ambience}} \times (\text{QF})_{\text{ambience}}
 \end{aligned}$$

The weight W of each Quality Factor (QF) component is a number between zero and one. W is a measure of the importance that one chooses to assign to each determining factor. The sum of all weights is, of course, one. An ITQF of one means that all enrolled students in that institution have real access to higher education. Conversely a non-functional university would have an ITQF equal to zero – enrolling any number of students does not amount to any real access at all.

The W 's cannot be mechanically generated by a computer – they reflect the individual judgment of those who have been tasked with planning. How much importance should one give to having good teachers as compared to, for example, good administrators? There can never be an answer that is fully satisfactory and one might end up by saying they should given equal importance, or perhaps that teaching is twice as important as administration, etc. Then, one could make a strong argument that, specifically for Pakistan's case, teaching needs to be taken much more seriously than what goes as research.

Since individual opinions and judgments are inevitably involved, is it worth the effort to compute numbers requiring so much detailed knowledge? The answer is yes. The very fact that one must work through details makes individual whim less important. And what about research? Should it not be part of the figure-of-merit of a teaching institution? If so, why has it been excluded from the above formula? We shall return to this important matter later.

To concretize matters, a hypothetical calculation of the ITQF for a university might look like the following:

$ \begin{aligned} (\text{ITQF})_{\text{total}} = & \frac{1}{5} \times (\text{QF})_{\text{teachers}} + \frac{1}{5} \times (\text{QF})_{\text{students}} \\ & + \frac{1}{5} \times (\text{QF})_{\text{basics}} + \frac{1}{5} \times (\text{QF})_{\text{governance}} + \frac{1}{5} \times (\text{QF})_{\text{ambience}} \end{aligned} $ <p>The weights are chosen as: $W_{\text{teachers}} = W_{\text{students}} = W_{\text{basics}} = W_{\text{governance}} = W_{\text{ambience}} = 1/5$. This gives equal importance to these five factors. Numbers, hypothetically reported by researchers who thoroughly investigated and evaluated the institution, give:</p> $ \begin{aligned} \text{ITQF} = & \frac{1}{5} \times 0.4 + \frac{1}{5} \times 0.64 + \frac{1}{5} \times 0.3 + \frac{1}{5} \times 0.8 + \frac{1}{5} \times 0.6 \\ = & 0.55 \end{aligned} $
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In this imagined evaluation, governance is found to be very good (0.8) but basics are rather poor (0.3) because of limited space, facilities, internet connectivity, etc.

In the following, I shall take up the considerations that are needed for giving a numerical value to each constituent of the overall ITQF. One must not be discouraged by the work involved. Looking for numbers may or may not be the primary task. Nevertheless, the discussion around each QF component will help one understand the current state of Pakistani higher education and point towards remedies.

II.b Quality of teachers and their teaching

The ignorant must not teach the ignorant. This cardinal principle is beyond dispute. It is not our intent here to discuss philosophical questions of what constitutes ignorance or wisdom. Instead, one wishes to address a practical question: how can one decide whether an individual is adequately knowledgeable, or perhaps unacceptably ignorant, to function as a university or college teacher?

Requiring formal qualifications is the first step. It is a sensible first-order approximation to assume that an individual with a higher university degree possesses a higher degree of knowledge, and is hence relatively more suitable as a teacher in a higher education institution. In much of the world this works. But the premise is valid only when an educational system has sufficient integrity; after it is corrupted beyond a certain point the correlation between university degrees and the quantum of subject knowledge becomes uncertain. There are a large number of examples to be found in Pakistani universities and colleges, some of which were quoted earlier, where there is only a weak correlation between formal qualifications and subject competence. Nothing can be done about a 50-year old English professor who speaks or writes ungrammatical English, or a physics professor unable to solve a simple quadratic equation. But does such basic incompetence exist at the 20, 50, or 70 percent-level? Higher? Lower?

Such a question is unanswerable unless one creates yardsticks, and then proceeds to use them for performing measurements.

At least in the sciences, criteria are possible to devise. As one possibility: a college or university teacher should know adequately the material in a reasonably good quality international textbook, in the subject that he or she is currently teaching or has taught in the past. A sufficient measure of the teacher's adequacy would be if he or she can solve at least a certain percentage of the problems and exercises at the end of the book chapters. Textbook writers and experts strongly recommend, and even require, problem solving. This encourages analytical thinking and requires the student to acquire a certain minimum understanding. One can imagine more stringent tests, but at even this basic level one expects that a majority of Pakistani college and university teachers would simply not make it in the natural sciences. This calls for appropriate corrective action that shall be discussed later.

A second possibility for assessing the competence of a college or university science teacher is to use some standardized subject test. Such tests are frequently used for entrance into US universities. The Graduate Record Examination (GRE), administered by

the Educational Testing Service in Princeton, is the most commonly used one. Subject areas include a number of scientific disciplines: biology, biochemistry, cell and molecular biology, chemistry, physics, mathematics, and computer science. In 2006, the GRE subject test was officially declared mandatory for obtaining admission into a Ph.D program in Pakistani universities. However, much confusion surrounds this condition, no pass criterion has been set, and there appears to be no example as of 2008 where this condition has been rigorously imposed.

A locally devised so-called GRE substitute also exists. In Pakistan, a private company, the National Testing Service, offers specialized subject testing in 10 areas: agriculture sciences, computer engineering, economics, electronics, electrical engineering, education, geography, Islamic studies, management sciences, and veterinary/animal sciences⁸. Unfortunately, although NTS claims to provide “efficient and credible evaluation”, a large number of spelling and grammatical mistakes on its website, as well as poorly constructed sample questions, puts this claim in some doubt. One hopes that professional management of the company, and oversight by suitably capable academics, will eventually change the situation.

In the humanities and social sciences, assessment of a university teacher’s adequacy or otherwise is harder and more controversial. One must resort to such criteria as whether the teacher is capable of holding an intelligent discussion in the subject he or she is teaching; has adequate verbal and quantitative skills; is reasonably fluent in oral and written expression; and has adequate capacity to think analytically and abstractly. In principle, one would like such abilities of a general academic nature, which are independent of specialization, to be measured by some kind of standardized test. The general part of the GRE is one such test that is widely used.

While the GRE general test – or others like it – can and should be used as a screening mechanism for new college and university faculty, its use in Pakistan should be tempered by some important considerations. Culturally specific English language terms put test-takers from an Urdu-medium educational background at a disadvantage. Another critique of the general GRE is that the quantitative part is unfamiliar to all but a minority which has studied in the O-A level system. The importance of quantitative reasoning for disciplines like history, anthropology, international relations, etc. is questionable.

Standardized tests do offer a possible means of discrimination, provided they are designed for the local environment. Unfortunately, the Pakistani clone of the general GRE, the general NTS, is marred by sub-standard scholarship but it does offer a potential solution to this problem. Currently, the difficulty experienced by Pakistani students is evidenced by the fact that many government scholarships for foreign study have been offered to in-service university teachers provided they achieve reasonable scores in the GRE. Few have met this condition.

Standardized subjects tests could also be used to either screen new applicants for college and university teaching positions at the lecturer or assistant professor level, or determine

⁸ National Testing Service website, <http://www.nts.org.pk/>

the quality of existing faculty, or both. In every case, one expects that there will be resistance from a substantial portion of the existing teaching community, as well as aspiring teachers.

Apart from standardized tests, there exist other determinants of teaching quality that, after being assigned sensible numerical weights, could be used to give quantitative meaning to “Access Factor” in a higher education institution. We identify these as:

- *The extent to which teachers actually teach concepts rather than use rote learning.* Rote learning is the dominant learning mode at the high school and intermediate levels, and remains so in all except the very best departments of universities⁹. A possible way to quantitatively research this would require a scrutiny of past examination papers in order to identify the frequency of questions that are:
 - a) Repeated from past exam papers.
 - b) Lifted directly from the prescribed text.
 - c) Simply demand repetition of materials contained in the text.
- *The extent to which teachers use modern textbooks rather than old notes.* Most university and college teachers in Pakistan teach from notes taken when they were students. In earlier years, only a small minority used some modern textbook published internationally. This was either because suitable textbooks were not available or expensive, or because they were unfamiliar and difficult to follow. To an extent this has changed because of the ready availability of textbooks, mostly by Western authors, published in India as cheap South Asian editions¹⁰.
- *The time that teachers of a particular institution spend on their jobs rather than moonlighting.* Many college and university teachers, usually secretly and illegally, have jobs that are unrelated to their main occupational position. Some teach at private institutes, others give tuitions to students. A few look after family businesses. In 2003/4 out of a total of 37428 university and DAI teachers, 22812 were part-time only. Most of these were probably moon-lighting from their parent institutions. Financial needs, as well as lax institutional rules, have contributed to this phenomenon. This is a major reason why teachers generally spend little time on the campuses.
- *The frequency with which new courses are introduced, old ones updated, term papers and problem sets regularly assigned, and class or individual projects given.*

⁹ The well-known English chemist, J.B.S.Haldane (“*Is Science a Misnomer*”, *The Hindu Weekly Review*, August 31, 1959.) recounts an instance that particularly impressed upon him the manner in which science is generally taught and learned in Pakistan: “I was walking near my house one Sunday afternoon when I heard a male voice raised in a monotonous chant. I supposed that I was listening to some mantras, and asked if my companion could identify them. The practice of repeating religious formulae is, of course, about as common in Europe as in Pakistan. But my companion stated that the language of the chant was English and the subject organic chemistry. We returned and I found he was right. The subject of the chant was aliphatic amines, with special reference to various precautions.”

¹⁰ The Indian edition of a typical textbook published in North America listed at \$60-70 (Pakistan Rupees, Rs. 3600-4200) can be bought in Islamabad for as little as Rs. 400-500

Only in a handful of university departments – and almost never in colleges – is regular student work handed out and then marked. This is in spite of the fact that the current student-to-teacher ratio of 19:1 in Pakistani universities is fairly reasonable, although in colleges this is higher.

- *Adherence to basic principles of teaching, grading, and fairness.* Two outstanding questions need to be researched and quantified:
 - a) How much do teachers encourage, tolerate, or discourage class participation and questions asked in class?
 - b) How often do teachers allow their grades to be checked and challenged by students?

The situation is relatively better in the more progressive American-type “semester system”, as compared to the more common British-type “annual system”. Both systems operate in Pakistan. College and university authorities should make it mandatory for all semester tests to be returned to students, and establish the right of students to view their examination answer sheets. This reduces the chances of abuse considerably, and allows students to understand where they might have gone wrong. In the “annual system” it is next to impossible for a student to view the marked exam paper; at most the marks obtained in individual questions can be re-totaled.

To summarize this point: assigning roughly equal numerical weights to each, the “teacher quality” contribution to the Access Factor, called $(AF)_{\text{teachers}}$ earlier, can be estimated using the categories below:

1. Whether teachers actually teach concepts rather than use rote learning.
2. The extent to which teachers use modern textbooks rather than old notes.
3. The time that teachers of a particular institution spend on their jobs, rather than moonlight.
4. The frequency with which new courses are introduced, old ones updated, term papers and problem sets assigned, and class or individual projects given.
5. Adherence to basic principles of teaching, grading, and fairness.

A hypothetical numerical evaluation of an individual teacher is shown below. The $(AF)_{\text{teachers}}$ for the entire college or university could be obtained by averaging over a sufficiently large representative group of teachers, spread over different departments.

A Typical Teacher Evaluation

$$\begin{aligned}(\text{QF})_{\text{teacher}} = & \frac{3}{10} \times (\text{QF})_{\text{understanding}} \\ & + \frac{1}{10} \times (\text{QF})_{\text{books used}} \\ & + \frac{1}{5} \times (\text{QF})_{\text{regularity}} \\ & + \frac{1}{5} \times (\text{QF})_{\text{innovation}} \\ & + \frac{1}{5} \times (\text{QF})_{\text{ethical behaviour}}\end{aligned}$$

The weights are chosen to give the greatest weight to the teacher's understanding of the subject and pedagogy (3/10), quality of textbooks used (1/10), time on job (2/10), the degree of innovation shown in teaching (2/10), and indifference to extraneous – ethnic, religious, and political – factors (2/10).

$$\begin{aligned}(\text{QF})_{\text{teacher}} &= \frac{3}{10} \times 0.9 + \frac{1}{10} \times 0.8 + \frac{2}{10} \times 0.7 + \frac{2}{10} \times 0.75 + \frac{2}{10} \times 0.8 + \frac{2}{10} \times 1.0 \\ &= 0.86\end{aligned}$$

This teacher, hypothetically evaluated, is rated perfectly for ethically grading papers and being fair to students, but is not very highly rated for introducing new courses or introducing innovative approaches to teaching.

II.c Quality of Student Body

Student admission into higher education institutions determines the quality of the student body. Countries with a properly functioning higher education system take this very seriously. US universities admit students on the basis of their grades, recommendations, and SAT/GRE scores; British universities place heavy emphasis on O-A level scores; the well-known Indian Institutes of Technology have fiercely contested national competitive examinations; Iranian universities require a centralized nationwide university entrance examination and select roughly 150,000 out of 1.4 million high school graduates who take a tough 4.5 hours multiple-choice exam.

Student quality is fundamental to the success of a university. But how is this to be defined? Traditional societies educated their young to be replicators and reproducers of existing wisdom. This was as true for traditional Islamic societies as for classical education of Victorian times in England. But creating a modern citizenry capable of responsible and reasoned decision making imposes very different demands.

Critical inquiry is fundamental. This attitudinal trait is essential for generating new knowledge of the physical world, as well as of human societies. The traditional concept of knowledge will simply not do. Knowledge is not something to be acquired because of a divine command nor can it be acquired once and for all; rather it is the result of an incremental process and the outcome of exercising critical intelligence.

From this standpoint, there has probably been significant deterioration in the student quality of Pakistani public higher education institutions, and perhaps in private ones as well. But there is no “smoking gun” proof of this, just partial indicators.

One hint comes from the number of Pakistani students studying in the US. Generally, only students with sufficient academic background succeed in getting admission to a US university because, in contrast to some European universities, many require credible proof of academic achievement. The situation is complicated by the fact that visas for studying in the US are relatively hard to get, and expenses are greater as well. Nevertheless, it is interesting to look at some current trends.

From the International Institute for Education, which publishes a year-wise report for every country¹¹, one learns that in academic year 2008/09, 5,298 students from Pakistan were studying in the United States (down 0.9% from the previous year). The majority of Pakistani students study at the undergraduate level. In 2008/09, their breakdown was as follows:

- 48.5% undergraduate
- 41.8% graduate students
- 1.7% other
- 8.0% OPT (Optional Practical Training)

According to the IIE, following a period of decline in the 1990s, Pakistan experienced significant growth in the first two years of the 2000s. Since 2001/02, the number of Pakistani students in the U.S. has dropped significantly, pushing Pakistan out of the top 20 sending places of origin in 2006/07. The number of students from Pakistan continued to decline, by 1% in 2007/08 and again by 0.9% in 2008/09.

Year	# of Students from Pakistan	% of Total Foreign Students in U.S.	# of U.S. Study Abroad Students Going to Pakistan
2008/09	5,298	0.8%	n/a
2007/08	5,345	0.9%	4 (down 20%)
2006/07	5,401	0.9%	5
2005/06	5,759	1.0%	13
2004/05	6,296	1.1%	3
2003/04	7,325	1.3%	5
2002/03	8,123	1.4%	9
2001/02	8,644	1.5%	9
2000/01	6,948	1.3%	3
1999/00	5,905	1.1%	3
1998/99	5,821	1.2%	5
1997/98	6,095	1.3%	8
1996/97	6,427	1.4%	0
1995/96	6,989	1.5%	3
1994/95	7,299	1.6%	21

¹¹ <http://opendoors.iienetwork.org/>

Country	# of Students in US in 2006/2007
India	83,883
Turkey	11,506
Indonesia	7,338
Nigeria	5,943
Nepal	7,754
Pakistan	5,401

Foreign students in United States universities from different countries¹².

Most students in the US from Pakistan study at the undergraduate level, which indicates that they mostly come from elite Pakistani private high-schools and not public higher education institutions, where the student body is manifestly of poorer academic quality. Countries with stronger universities have a greater fraction of students in US graduate programs: compare India (73.7%) and Turkey (59%) with Pakistan (37.1%).

Let us now return to the question: how should one seek to determine student quality at a particular institution? A combination of all four determinants below with appropriately chosen weights could provide an adequate gauge.

- *Quality of the standardized test that checks reading, writing, and math skills for selecting incoming students.* Ideally, one would like to know how the typical student entering a Pakistani college or university institution compares in reading, writing, reasoning, general knowledge, and mathematical skills relative to a student of equal age in other institutions within Pakistan, as well as in other countries. Standardized nationally administered tests offer the best hope of improving student intake. This task must be undertaken but it is not easy. There are two difficulties: First, as mentioned earlier, the US-centered SAT is expensive and unsuitable for the ordinary Pakistani student while the local equivalent – the NTS test – is of poor academic quality and currently not sufficiently credible. Secondly, strong political will is needed because there is strong opposition to standardized tests. In the Frontier Province, street demonstrations in 2005 demanded scrapping a proposed test for university admissions because students from tribal areas would suffer a disadvantage if they had to compete against students from urban areas. Similar protests have taken place at various times in the interior of Sind. The Punjab Law Department has already opposed a proposal to declare the NTS test as mandatory for admissions to public sector universities in Punjab¹³.

At the graduate level, the Graduate Record Examination (GRE), administered by the Educational Testing Service in Princeton, is considered a relatively reliable tool for testing basic subject competence. Subject areas include a number of scientific

¹² <http://opendoors.iienetwork.org/?p=89245>

¹³ The Daily Times, Lahore, 5 June, 2007.

disciplines: biology, biochemistry, cell and molecular biology, chemistry, physics, mathematics, and computer science. GRE results for Pakistani students are fragmentary. Nevertheless, there is reason to be disturbed. In 2007, as an experiment, 54 students in the best physics department in Pakistan (at Quaid-e-Azam University), took the GRE physics subject test. The best individual score obtained was 63 percentile – meaning that that student had done better than 63% of all students world- wide. Most scores ranged in the 15-30% range. US graduate schools rarely accept students with scores below 70%. However, several students from the same department have performed well in US universities. The poor scores may indicate unfamiliarity with the testing mode since most had appeared in the test for the first time.

But there is some good news: the HEC has made GRE subject tests mandatory for the award of a PhD degree from every public university. Of course, the passing mark set by the HEC is ludicrously low (40 percentile) and most PhD students cannot make even this low grade. But performance is steadily improving. About 15 physics students from the physics department at QAU have cleared this hurdle, and the best has scored 80 percentile. Much more importantly, students are being confronted head-on with a hard fact: science is about problem solving and they will have to shape up if they want to play ball. The fact that students cannot cheat or cram is doing a huge amount of good.

- *The quality of the student selection mechanism used in a particular institution.* The more an institution worries about how it will select its students, the better the rating it deserves in this regard. In Pakistan, elite private universities – LUMS, AKU, GIKI, NUST, etc – either conduct their own entrance tests or require the Scholastic Aptitude Test (SAT). But in public higher education institutions, with the exception of a few scattered departments, the selection of students is done using rigid mechanical rules based on “merit”. This term is a misnomer because it is only determined by marks obtained in local board examinations where rote memorization, predictable exam papers, massive cheating, and poor marking practices is rampant. Reform of these boards has been much discussed but little progress has actually been made¹⁴.
- *Employer satisfaction with graduates.* Graduates from higher education institutions are ultimately absorbed into businesses, industry, and government jobs. Do they perform well? This is a hard question to answer: landing any of these jobs often means using patronage, family or political connections, and religious or ethnic affiliations. However, employee competence and merit are given high priority in large organizations. Among these are Pakistan International Airlines, Pakistan Atomic Energy Commission, Kahuta Research Laboratories, Pakistan Telecommunications Corporation, Public Services Commission, etc. These organizations have selection tests and exams, and do not consider college or

¹⁴ *Public Examinations in Pakistan: A System in Need of Reform*, Vincent Greaney and Parween Hasan, in *Education and the State – Fifty Years of Pakistan*, edited by Pervez Hoodbhoy, Oxford University Press, 1998.

university grades sufficiently reliable. It would be significant to check the correlation between the results of their selection exams and formal grades. A possibly significant indicator is that the pass rate on the Federal Public Service Commission examinations has declined from 33% to 7.5% over a period of 15 years.

- *Student intellectual activities outside the classroom.* Ideally one would also like to include student participation in the nation's intellectual life. This includes production of campus newspapers, academic journals, dramas, and films as well as dancing, music, poetry, participation in cultural events, etc.

A Typical Student Quality Evaluation

$$\begin{aligned}
 (QF)_{\text{student body}} = & \frac{4}{10} \times (AF)_{\text{test quality}} \\
 & + \frac{2}{10} \times (AF)_{\text{selection mechanism}} \\
 & + \frac{3}{10} \times (AF)_{\text{employer satisfaction}} \\
 & + \frac{1}{10} \times (AF)_{\text{extracurricular}}
 \end{aligned}$$

The selection test quality has been given the highest importance (4/10), followed by employer satisfaction with the university of college graduates (3/10), the adequacy of the admissions process (2/10), and extracurricular activities (1/10).

$$\begin{aligned}
 (QF)_{\text{teacher}} &= \frac{4}{10} \times 0.9 + \frac{2}{10} \times 0.7 + \frac{3}{10} \times 0.7 + \frac{1}{10} \times 0.5 \\
 &= 0.76
 \end{aligned}$$

In the above, the test quality was good but students were insufficiently engaged in work outside of the classrooms. However, the small weightage given to the latter made the impact of the latter rather small.

II.d Adequacy of Basics

Every college or university has certain basic infrastructural and operational requirements. An assessment should involve the following key factors.

- *Land and buildings:* It is impossible to lay down hard and fast rules as to what is adequate. Functionality must suffice as the bare-bones criterion. Rural land is relatively cheap whereas land is extremely expensive in crowded urban environments. Most public universities were given large amounts of land in earlier decades by the government. Today these assets are under threat from encroachers, profiteers, and even that university's own faculty. Quaid-e-Azam University, Punjab University, and Karachi University are examples.

- *Period of actual university operation:* How many days of the year, and how many hours of a working day, does a given university actually function? Is there a schedule that is adhered to? A survey could uncover unknown, but easily knowable, facts. University working hours are generally short with many breaks during the day (lunch, prayer, unscheduled). There are many unscheduled holidays – typically a semester’s teaching begins 1-2 weeks after the announced date, 3-day Eid holidays actually mean 8-12 days, various disturbances and unscheduled holidays add to non-working days. During evenings most campuses have unutilized building capacity. Universities do not publish an operating schedule. Only a few private universities announce in advance student application deadlines, dates for start of the next academic session, courses to be offered etc.
- Adequacy of library facilities: As a crude measure, it may be enough to know the total number of books in a university library and the library budget. A finer measure would consider library organization, adequacy of shelving and lending records, fraction of new books purchased yearly, etc.
- Adequacy of science teaching laboratories: While this is an important element, it is difficult to assess except through field visits by trusted experts. Anecdotal evidence indicates that experimental methodology is poorly taught even where adequate equipment and supplies exist.
- Internet access and average number of computers per students: this may be the easiest parameter to estimate. Usage would certainly be a useful but difficult quantity to know. It could presumably be estimated by looking at downloads of academic materials.

II.e Institutional Governance and Ethics

Universities are microcosms of the society in which they exist. As such they necessarily reflect values and practices in the rest of society. The successful functioning of a higher education institution depends critically upon adherence to basic norms of academic values and behavior. Conversely, any institution that violates its own rules is unlikely to have collective self-respect.

When rating a university, one must seek answers to questions such as those below:

- *Are faculty appointments and promotions done by subject experts, fairly, and transparently on academic grounds alone?* The traditional Pakistani public university recruitment system relies upon a selection board appointed by the university’s highest body, the syndicate. Apart from the department’s chairperson, this board has minimal representation by subject experts. Starting in the early 1980’s, and continuing for over twenty years, prospective faculty were often required to answer questions completely unrelated to their subject such as various Quranic prayers, on the ideology of Pakistan, their political preferences, etc. In some universities this practice was never discontinued. Candidates would often lobby fiercely, seeking political and personal connections by which to influence the

selection board members. Comparatively speaking, the Tenure Track System (TTS) offers better protection against political tampering. It requires that applications be sent for review to subject experts outside Pakistan. While TTS has been partially implemented in a few universities, it has been rejected by most because of opposition by their faculty. Many teachers feel threatened and insecure at the thought of being judged by experts over whom they have no control.

- *Is the university head chosen by a credible process or a political appointee?* All public university vice-chancellors are political appointees. Some are well-chosen, but most are poorly equipped in terms of intellectual and administrative capability. Having military officers as university heads was a disaster. Some attempt has been made to address this issue, but until a more stable national political system comes about, it is likely that university heads will not be well chosen.
- *Is the reward and punishment structure for faculty helpful in creating a better academic body?* The old system was time-bound and had no challenges or incentives. Promotions and regularizations were more or less automatic; with time everyone rose together. There is no known case of a Pakistani academic who has been fired for not knowing his or her subject. The new system (TTS) is better in this regard. But it has been implemented in a way that has generated new problems: even trivial research is rewarded with cash and promotions, creating a plagiarism pandemic on campuses. The arrival of the internet has raised the problem to new levels of complexity.
- *How common is unethical behavior among students, faculty, and administrators?* Institutional ethics are essential to successful performance. In the university context the key issues are:
 - a) Cheating by students in examinations.
 - b) Plagiarism by students and teachers.
 - c) Fake or forged degrees.
 - d) Unfair grading where a student is either favored or victimized for ethnic, religious, or political reasons.

There is little doubt that these issues are of grave importance in Pakistan, but they need quantitative investigation for every individual institution that is to be considered. It has been estimated that 30-40% of students cheat in one way or the other at the matric and intermediate levels; plagiarism is tolerated and results in penalties only in exceptional situations; fake degrees are common to the point where even members of the national assembly are well-known for having these dubious credentials; and grading abuse is common because the teacher wields enormous authority.

- *Does there exist a community of scholars reasonably familiar with the work of other colleagues, respectful of the other's professional accomplishment, and able to self-govern?* A university is not a factory where each worker performs a narrow

specialized task about which others have little or no idea. By virtue of his or her education in a university, a university teacher is well rounded and able to understand at least the broad outlines of the work carried out by colleagues. This is crucial for creating an environment where academic work receives the level of recognition it deserves, new programs can be sensibly discussed, courses prescribed, etc. Collegiality is essential for the successful performance of university departments and academic bodies. Conversely, adversarial politics – which is all too common on campuses – can be severely detrimental if it exists to an extreme degree. Therefore, in assessing university quality, a qualitative estimate of this factor is needed.

II.f Campus Ambience

The learning environment matters in an educational institution. The “feel” of a campus is necessarily subjective – different individuals will assess the ambience differently, and different kinds of institutions create different environments. The atmospherics of a well performing technical training school are unlikely to be suitable for a liberal arts college, etc. Hence, weights for the criteria below must be adjusted appropriately.

- *How much academic and personal freedom is permitted?* While students study at a university primarily to get a degree, they need to have the right to question, to raise unpopular issues, or to put forward controversial views without being penalized. In Pakistan, the restrictions on thought, speech, and actions are imposed both by the state as well as the cultural milieu. The authority of the teacher is so dominating that few students dare ask questions in class. Most students often have an impoverished view of their genuine academic rights. The amount of personal freedom varies from place to place. This reflects in how students may dress, whether they may listen to music or see films, meet or talk to members of the opposite sex, etc. In conservative parts of the country, the choice for women is between the burqa and hijab – showing her face is not an option on many campuses.
- *How common are campus colloquia, seminars, workshops, etc? Do international visitors come to the campus? Are there research collaborations with foreign universities?* For a university, mere classroom teaching is insufficient. Intellectual variety and diversity are critical to the growth of ideas, and regular academic activities are important. A university that is capable of absorbing inputs from the world at large has much to gain. The more common situation in Pakistan is where foreign visitors are rare, and even visitors from other Pakistani institutions are few.
- *Is the campus law-and-order adequate? Are professors and students reasonably secure in physical terms?* Contrary to popular perception, most universities have not been closed for extended periods. However, some campuses are run by gangs of hoodlums and harbour known criminals, while others have Rangers with machine guns on continuous patrol. On occasion student wolf packs attack each other with sticks, stones, pistols, and automatic weapons. Student gangs organize mostly on ethnic lines, but also sometimes on the Shia-Sunni divide. The student groups

associated with the Jamaat-i-Islami and MQM are known for their strong arm tactics. A survey is needed to reveal correct facts.

Well-functioning universities are the products of a complex organic and evolutionary process that is internal to a society. Facilities matter, but it is much more important for a university to have a forward looking world-view, an open environment, high ethical standards, a sense of collegiality and shared sense of purpose, and good governance practices.

Finally, let us ask: should university research be counted in assessing university quality? In principle, the answer is: yes. There are excellent reasons for this. A university should be the place where new knowledge grows, new questions are asked, and curiosity is encouraged as a matter of principle. The best teachers are often those who have created new concepts and worked at the cutting edge of their field. They can create a genuine sense of excitement in their students.

II.g The Uselessness of Research

For Pakistani public universities – in the condition that they exist in today – a culture of corruption has made the value of research uncertain at best. Research is a seriously misunderstood concept in much of Pakistan’s academia, and the criteria for assessing its worth are often wrong.

Research in any professional field – mathematics or physics, molecular biology or engineering, economics or archaeology – defies a unique, precise definition. An exploratory definition might be that research is the discovery of new and interesting phenomena, creation of concepts that have explanatory or predictive power, making of new and useful inventions and processes, etc. The researcher must certainly do something original, not merely repeat what is already known. But merely doing something for the first time is not good enough to qualify as research. So, for example, one does not do meaningful research by gathering all kinds of butterflies and listing the number caught of each kind in a particular place at a particular time, etc. Nor is it “research” if one finds the spectrum of one kind of atom after another, or merely categorizes the compounds found in certain plants, or note wind speeds at different geographical locations. Unless there is a valid and interesting reason for doing so, to gather data is essentially valueless. It is not research – even if it is published in some journal, whether international or national.

The success of research is judged by its importance. For research of an applied nature, the impact can be measured by its effect upon industrial or academic production, jobs created, rise in company stock, etc. The number and type of patents that follow from the research give an important indication of success.

For academic research, only the specialist in that exact field can be entrusted with the evaluation. Of all imperfect measures, the least imperfect one is to count the number of citations in refereed journals. However, this ignores the contribution of university faculty to specific national needs, as judged by importance given by decision makers in government or industry. Clearly, judging research quality involves many different criteria.

Nonetheless, one cannot abandon the task of judging research quality, importance, and impact. Else, every kind of nonsense with pretensions to research would proliferate, and demand reward in some shape or form. Pakistan provides an example. Here, counting journal publications, and rewarding individuals proportionately, has worsened the state of corruption. An environment, where unethical behaviour was regrettably common to begin with, has been made yet unhealthier.

Although research quality is always difficult to exactly evaluate, numbers related to academic research in Pakistan are, like research elsewhere, relatively easy to obtain in the age of the internet. Below, Pakistan, together with the seven most productive Muslim countries, is compared against some other countries. The results are not flattering.

	Physics Papers	Physics Citations	All Science Papers	All Science Citations
Malaysia	690	1,685	11,287	40,925
Pakistan	846	2,952	7,934	26,958
Saudi Arabia	836	2,220	14,538	49,654
Morocco	1,518	5,332	9,979	35,011
Iran	2,408	9,385	25,400	76,467
Egypt	3,064	11,211	26,276	90,056
Turkey	5,036	21,798	88,438	299,808
Brazil	18,571	104,245	128,687	642,745
India	26,241	136,993	202,727	793,946
China	75,318	298,227	431,859	1,637,287
USA	201,062	2,332,789	2,732,816	35,678,385

The seven most scientifically productive Islamic countries in 2007 compared against a selection of various other countries. This data is from the Philadelphia-based science information specialist, Thomson ISI.

In 2005/2006 research funding totaled Rs 0.342 billion – an enormous sum considering how badly the colleges are funded. The policy of monetary rewards for publishing research papers, given by the PCST and HEC, led to an outbreak of plagiarism without improving the quality of the research. Research projects need to be evaluated much more carefully than at the present time. Unfortunately, this is easier said than done.

In the current state of Pakistan’s universities, throwing money on equipment is easily done but achieves nothing. An example: A “Pelletron” accelerator worth Rs.400 million was ordered in 2005 with HEC funds. It eventually landed up at Quaid-e-Azam University, and was installed in 2008 by a team of Americans from the National Electrostatics Corporation that flew in from Wisconsin. As of 2010, nobody – including the current director – has the slightest idea of what research to do with it. Its original proponents are curiously lacking in enthusiasm and are quietly seeking to distance themselves from the project

The equipment fetish can be followed all the way to the much-advertised HEJ Institute for Chemistry. HEJ consumes the lion's share of research funding in Pakistan today and boasts of the finest and most expensive equipment. For example, even good chemistry departments in the US rarely have more than one or two NMR spectrometers but the HEJ Institute has twelve. Well, why not, if that is the price of excellence? Isn't the 3000+ research papers proof of public money well spent?

The answer is, no. There is little evidence to support HEJ's claim that it has strongly impacted the Pakistani pharmaceutical industry. Readers may have more luck than I did in searching the otherwise elaborate HEJ website for its role in discovering new drugs or processes. But without this, all else is hot air. Only one international patent, registered in UK and Germany, is listed. Two processes are mentioned as submitted for a US patent. This is not a high record for an institution that has been in existence for over 40 years and claims to be world-class. A good US or European applied science university department typically files several patents every year.

As for the thousands of HEJ research papers: the question is how many of these really matter? A paper is considered important by other scientists only when it contains new ideas or facts. Significant papers are cited frequently in professional journals. But an overwhelming number of HEJ publications, which are largely based upon routine aspects of natural products chemistry, have zero or few citations. The reader may find citation counts by accessing the free database www.scholar.google.com, or other more comprehensive databases.

My point is not to denigrate the HEJ, or other academic research in Pakistan, but to make the case that such research is consuming a disproportionate amount of resources at the cost of our desperately impoverished educational system. The real problem is that Pakistani students in government schools, colleges, and universities – as well as their teachers – are far below internationally acceptable levels in terms of basic subject understanding.

To conclude: Setting aside a small minority of good professionals, the poor state of subject knowledge that public university teachers currently have simply does not warrant the current government strategy of hugely rewarding research. It leads, on the contrary, to distorted priorities and immense wastage. Today, what goes under the name of "research" is largely done to increase publication numbers of individual teachers. It adds little to the stock of existing knowledge. Nor does this reflect in new inventions, patents, etc.

To summarize: a methodology for evaluating university quality has been presented here. The primacy of faculty and student quality has been stressed. As yet there is no data, only the framework could be discussed. Although it calls for considerable effort, an attempt at measurement would, at the very least, focus on the key elements needed for creating universities that actually work. Else one will continue to shoot in the dark.

III - What is to be Done?

Six decades of consistent failure in creating a viable higher education system forces us to search for reasons that go beyond fiscal and administrative issues. A key challenge for every government in Pakistan will be to sort out, in all the areas of public policy, the facts on the ground from the intricate fictions offered over the eight years of General Pervez Musharraf's regime that paraded for success.

This means going beyond the standard blame game. Governments have come and gone without setting Pakistan on a clear way forward. So what sets it apart from the developed world, or even India? At the deepest level, it is the value system that shapes modern education and a modern mindset built upon critical thinking. Pakistan's educational system, shaped by deeply conservative social and cultural values, discourages questioning and stresses obedience. Progress demands that ultimately the dead hand of tradition be cast aside.

More specifically, in seeking change of values, it will be important to break the absolute tyranny of the teacher, a relic of pre-modern social values. Closed minds cannot innovate, create art and literature, or do science. Modern education is all about individual liberty, willingness to accept change, intellectual honesty, and constructive rebellion. Critical thought allows individuals to make a revolutionary difference and to invent the future. Else they will merely repeat the dysfunction of the past. But Pakistani students memorize an arbitrary set of rules and an endless number of facts and say that X is true and Y is false because that's what the textbook says. (I grind my teeth whenever a master's or Ph.D student in my university class gives me this argument!) Minds must be opened.

To develop thinking minds, change must begin at the school level. Good pedagogy requires encouraging the spirit of healthy questioning in the classroom. It should therefore be normal practice for teachers to raise such questions as: How do we know? What is important to measure? How to check the correctness of measurements? What is the evidence? How to make sense out of your results? Is there a counter explanation, or perhaps a simpler one? The aim should be to get students into the habit of posing such critical questions and framing reasoned answers.

On a more practical level, there is urgent need for better academic planning and management at the national level. This will be amplified upon below.

Revise spending priorities: Currently these are the haphazard expression of individual whims, not actual needs. For example, most Pakistani students in higher education (about 0.8 million) study in about 800 colleges. These colleges receive pitifully small funding compared to universities. During 2001-2004, the funds annually allocated to colleges averaged a miserable sum of Rs 0.48 billion and the spending per college student was only one sixth that for a university student. Subsequently this has become worse. It is no surprise then that public colleges are in desperate shape with dilapidated buildings, broken furniture, and laboratory and library facilities that exist only in name.

The beggarly treatment of colleges compared to universities is often justified on grounds that universities perform research while colleges do not. But, notwithstanding a few honorable exceptions, this “research” has added little to the stock of existing knowledge as judged by the international community of scholars. Nevertheless, in 2005/2006 university research funding totaled a whopping Rs 0.342 billion. Past experience shows that much of the money will be used to buy expensive research equipment that will find little if any real use.

Meanwhile, many public universities are awash in funds. They have gone on a shopping binge for all kinds of gadgetry – fax machines, fancy multimedia projectors, and electricity-guzzling airconditioners. But it would be hard to argue that any of this has served to improve teaching quality even marginally. Worse, the availability of “free money” has led to the pursuit of expensive but unworkable projects such as the attempt to bring in hundreds of fearful European university professors to teach in a country where suicide bombers kill at will.

Concentrate upon faculty development. Because bad teaching quality largely comes from having teachers with insufficient knowledge of their subject, it is important both to have better teacher selection mechanisms and to create large-scale teacher-training academies in every province. Established with international help, these academies should bring in the best teachers as trainers from across the country and from our neighbours. It is hard to see any trainers coming from western countries, although one should try to get them. This effort will cost money and take time – perhaps on the order of a billion dollars over 5 years. These high-quality institutions should have a clear philosophy aimed at equipping teachers to teach through concepts rather than rote learning, use modern textbooks, use distance-learning materials effectively, and emphasize basic principles of pedagogy, grading, and fairness. They should award degrees to create an incentive for teachers to enrol and to do well. Until a sufficiently large number of adequate university teachers can be generated by the above (and various other) means, the practice of making new universities must be discontinued.

Institute national level university entrance examinations. These would separate students who can benefit from higher education from those who cannot.

Qualifying tests for university faculty must be made mandatory. The system has remained broken for so long that written entrance tests for junior faculty, standardized at a central facility, are essential¹. Teachers will surely resist this but without such tests, universities will continue to hire teachers who freely convey their confusion and ignorance to students. No teacher has ever been fired for demonstrating incompetence.

Be harsh and uncompromising in matters of academic fraud and corruption: Academic crime flourishes in Pakistan’s universities because it is almost never punished. Even when media publicity makes action unavoidable, the punishment amounts to little more than a slap on the wrist.

Implement better, more transparent, and accountable ways to recruit vice-chancellors and senior administrators. Pakistan has a patronage system that appoints unqualified and unsuitable bureaucrats or military men as vice-chancellors, and that staffs universities with corrupt and incompetent administrators. Fortunately, there seems to be some indications of positive change and, at least for the appointment of a number of vice-chancellors, search committees were set up.

Permit students to self-organize. It is crucial to bring back on to the campuses meaningful discussions on social, cultural and political issues. To create the culture of civilized debate, student unions must be restored, with elections for student representatives. They will be the next generation of political leaders. Such a step will not be free from problems – religious extremists rule many Pakistani campuses although all unions are banned. They would surely try to take advantage of the new opportunities offered once the ban is lifted. Political parties have also been less than responsible. But the reinstatement of unions – subject to their elected leaders making a pledge to abjure violence and the disruption of academic activity – is the only way forward towards creating a university culture on campus. Ultimately, reasonable voices, too, will become heard. As an interim step, the government should allow and encourage limited activities such as community work, science popularization by students, etc. To condemn Pakistani students as fundamentally incapable of responsible behaviour amounts to a condemnation of the Pakistani nation itself. If students in neighbouring countries can successfully study, as well as unionize and engage in larger issues, then surely Pakistan's can do so as well.

Remove nationality restrictions on foreign faculty hiring. It is a good thing that the Higher Education Commission has initiated a program for hiring foreign faculty with attractive salaries. There are simply not enough qualified persons within the country to adequately staff the departments. But the success of this program is uncertain, and programme management is poor. Jealousy at salary differentials, and a fear that local incompetence will be exposed, has led local teachers and university administrations to block the hiring of faculty from abroad.

Pakistan's image as a violent country deters most foreigners from wanting to come and live in Pakistan for any considerable period of time. Therefore, westerners are almost totally absent from the list of those who have applied under the foreign faculty hiring program. Apart from Pakistani expatriates in the Middle East, the bulk of applicants are Russian speakers from the former Soviet Union countries. One wishes it could be otherwise. It would be a major breakthrough if Indian and Iranian teachers could be brought to Pakistan. Indians, in particular, would find it much easier to adapt to local ways and customs than others and also have smaller salary expectations. The huge pool of strong Indian candidates could be used to Pakistan's advantage – it could pick the best teachers and researchers, and those most likely to make a positive impact on the system. In the present mood of rapprochement, it is hard to think of a more meaningful confidence building measure.

Pakistani higher education will turn around only if Pakistan can be turned around. This can't happen while our cities, towns, army, and police are attacked by maniacal terrorists

day after day. Expatriate Pakistanis, as well as others of high academic accomplishment, are vital to the uplift of our universities and colleges. In these circumstances they do not feel safe enough to work in Pakistan. Without winning peace, the country will just continue to stagger along.

ⁱ In Italy, passing the centrally administered “concorso” examinations is necessary for the appointment of junior faculty. A sample lecture must also be delivered on a topic given to the candidate a day earlier.