

THE WEAKEST LINK

A Report on Undergraduate Education In Pakistan

December, 2006



PEP

PROMOTION OF EDUCATION IN PAKISTAN FOUNDATION, INC.

166 Fifth Ave, 5th Floor, New York, NY 10010 , USA

Tel: (212-255-5399) • Fax: (212) 633-2220 • Email: info@pepfoundation.org • website: www.pepfoundation.org

THE WEAKEST LINK

A REPORT ON UNDERGRADUATE EDUCATION IN PAKISTAN
DECEMBER, 2006

Produced by
Promotion of Education in Pakistan Foundation, Inc.
New York

based on

The Second International Symposium
on Issues in Higher Education in Pakistan
Rawalpindi, Pakistan

organized in collaboration with

Higher Education Commission (HEC), Islamabad,

and

University of Arid Agriculture (UAAR), Rawalpindi

Contents

Foreword.....	page 5
Acknowledgments.....	6
Executive Summary.....	7
Supporting College Education Through Higher Education Reforms.....	14
Atta-ur-Rahman, PhD, FRS, N.I., H.I., S.I., T.I., Chairman HEC and Adviser to Prime Minister for Science and Technology, Islamabad	
Problem Lies with Students or with Faculty?	15
Rukhsana Zia, PhD, Director, Directorate of Staff Development, Punjab	
A Review of the Policy-Reform Nexus in Higher Education in Pakistan....	23
S. Zulfiqar Gilani, PhD, Director, Centre for Higher Education Transformation (CHET) Islamabad	
Colleges as academic Clusters - Developing Strongest Link.....	25
Nasim Raza, PhD, Advisor Business Development, Askari College for Entrepreneurs (ACE) AWT, Rawalpindi	
Undergraduate Degree: The Weakest Link.....	30
Abdur Razzaq, MSCE, P.E., NYC, DOT, New York, USA	
Some Aspects of Curriculum Development and Designing of Science Education for Pakistan.....	34
Muhammad Iqbal, PhD, Senior Lecturer, School of Education & Professional Development, The University of Huddersfield Queensgate, UK	
Higher Education and Teacher Training.....	46
Nikhath Khan, PhD, Dean, Post-graduate Studies, Kinnaird College for Women, Lahore	
Content and Pedagogy: Learning to Teach at the Undergraduate Level.....	51
Fareeha Zafar, PhD, Director, Teacher Education & Training, Society for the Advancement of Education, Lahore	

State of College Education – strategies and opportunities	52
Humala S. Khalid, PhD, Head of Education Planning and Development Dept. Lahore College for Women University (LCWU)	
Upgrading Faculty and Student Development with Innovative Methods....	55
Fakhra Haq, PhD, Board of Education, City of New York, New York	
Undergraduate Education: A Closer Look at the Case for Liberal Arts Education in Pakistan	56
Marcia A. Grant PhD, Planning Head, Faculty of Arts and Sciences, Aga Khan University, Karachi	
College to University Education Bridge.....	57
Rasul Baksh Rais, PhD, Head, Social Sciences Department, Lahore University of Management Science, Lahore	
“Undergraduate Degree: the weakest link in Higher Education in Pakistan The Medical Perspective	59
Masood Hameed Khan, PhD, Vice Chancellor, DUHS, Karachi	
How Private Partnerships Can Help Higher Education.....	62
Sartaj Aziz, Vice Chancellor, Beaconhouse National University, Lahore	
How Private Partnerships Can Help Higher Education.....	66
Syed Babar Ali, Pro-Chancellor, Lahore University of Management Sciences, Packages Limited, Lahore	
Impact of Private Institutions on Engineering Education in Pakistan	67
Asrar U. H. Sheikh, PhD, Rector, Foundation University Islamabad	
One Approach to Strengthening Undergraduate Education	75
Peter H. Armacost, Vice Chancellor, Forman Christian College University, Lahore	
Private Higher Education Institutions as an Alternative	79
Syed Tahir Ali Hijazi, PhD, Dean, Muhammad Ali Jinnah University, Islamabad	
Assessments Evaluation and Accreditation: Process and Procedure	80

Mansoor-uz-Zafar Dawood, PhD, Associate Dean, Faculty of Computer Science and IT, Institute of Business and Technology, Karachi

Under Graduate Degree the Weakest Link in Higher Education88

Zafar Mueen Nasir, PhD, Chief of Research Pakistan Institute of Development Economics, Islamabad

Quality Management of Educational Institutions: A Missing Link89

Mukhtar Ahmed, PhD, Member O & P, HEC, Islamabad

Foundation for a New Technical University in Pakistan.....92

Kazi Zulkader Siddiqui, PhD, Metupak Foundation, Chief Executive Officer of the Techcorp Group of Companies, Islamabad

Foreword

In the 21st century the nations fittest for survival will be those that invest in education, especially higher education, and make it freely accessible to the masses. Pakistan, unfortunately, has been seriously neglecting its education sector since achieving its independence in 1947 up until the last several years. The current government in Pakistan has taken the bold step of demonstrating its will to invest in higher education by creating the Higher Education Commission (HEC), an independent agency to oversee higher education in the country. However, while the HEC is focusing on university education and postgraduate research, and the Ministry of Education on basic education up to high school, the colleges where most students receive their undergraduate education have been completely neglected in the development plan, putting colleges essentially in an orphan state.

The objective of the Second International Symposium was to focus on the undergraduate education, which was identified at PEP Foundation's First International Symposium as the weakest link in higher education in Pakistan. We are most delighted to have put together the present report, which resulted from the presentations and discussions of speakers who took part in the second symposium, and from written communications.

We hope that the President, the Prime Minister and other policy makers in Pakistan as well as international donor countries and agencies interested in helping Pakistan in the education sector will find this report useful.

Khalid Iqbal, Ph.D.
President, PEP Foundation Inc.

ACKNOWLEDGMENTS

We are most grateful to the HEC, especially its Chairman Prof. Dr. Atta Ur Rahman, and the Vice Chancellor of the University of Arid Agriculture Prof. Dr. Khalid Mahmood Khan for their support and collaboration in organizing the Second International Symposium.

We also acknowledge the help of Prof. Dr. Sohail Naqvi, the Executive Director, and Prof. Dr. Mukhtar Ahmed, Operation and Planning, both from HEC for their help and guidance in the selection of the venue and for their input into the selection of some of the speakers, and of Dr. Tariq Mahmood of the University of Arid Agriculture for all logistical arrangements.

Thanks to Rudina Xhaferri for overseeing all aspects of the organization of the Symposium and the present report.

Executive Summary

“Undergraduate colleges in Pakistan suffer from inappropriate infrastructure, insufficient resources, under qualified and demotivated faculty and non-committed students”

Dr. Rukhsana Zia

The First International Symposium on Issues in Higher Education in Pakistan held at the United Nations in New York in December 2005 identified undergraduate education in Pakistan as the weakest link. “Leaping Forward”, the report resulting from this symposium, identified undergraduate education, which is mostly provided at colleges, as one of the most neglected sectors of higher education in Pakistan: *“There has to be a holistic approach to education. In all the policy planning so far, the thrust of all initiatives has been directed towards the universities, and in that, primarily public universities to the neglect of colleges. Public universities are heavily, if not entirely, dependent on public colleges for their in-take of students. They are the weakest link in the whole chain of education in Pakistan. In all initiatives and planning these colleges have been ignored. Their infrastructure is in poor condition and equipment and libraries almost non-existent. Most of the college faculty has little, or no training and only a local Masters degree, no incentives for improving their qualification, and no facilities for research. Relying on outdated textbooks and learning by rote, they produce students who are ill prepared for university.”*

Pakistani colleges produce students who are ill prepared for university education. Even after graduation from universities, these students remain in a considerably disadvantaged position. An effective reform of the higher education system in Pakistan requires a down-up approach; without the improvement of colleges, it will be very difficult to improve the quality of university graduates. The international norms of college education are not being met by the intermediary nature of the Pakistani colleges. The Steering Committee on Higher Education (SCHE, 2002) recommended upgrading college degree education into 4-year colleges in order to increase the quality of bachelor degrees.

At present, college education in Pakistan suffers from severe issues of dual control, financial management, quality, and methods of teaching. The administrative and financial decisions are often blocked in a gridlock between the district governments on one hand and the Provincial Education Departments on the other. While the Ministry of Education is focused on elementary and high school education, and the Higher Education Commission (HEC) on University and postdoctoral research, college education has acquired orphan status in Pakistan. According to the HEC, colleges are also deprived financially with per capita spending on students that was only one-sixth of university spending in 2002. While funding for public universities has increased several-fold, colleges have been left behind. Most of the governmental funding for higher education goes to universities, neglecting the colleges. During 2001-2004, the funds that the HEC allocated to over 600 colleges totaled 480 million Rupees compared to 2,525 million rupees for about 30 universities.

According to the HEC's 2006 statistics, approximately 4% of the age group 17-23 is enrolled in a college/university in Pakistan, which is less than 10% of the corresponding participation rate in the developed countries. The current enrollment (in public plus private colleges) is over 600,000 at the intermediate level and 326,000 at the bachelor's level.* There is an overwhelming need to increase the number and, moreover, the quality of public institutions offering higher education in Pakistan. Motivation and encouragement of participation are only ensured through quality education and accessibility to it.

While the standard of education in public colleges and universities has markedly declined up until recently, the growth in the private sector in higher education during the last 20 years has been most dramatic, and in fact has saved the education system in Pakistan from catastrophe. At present about 25% of enrollment in higher education is in private colleges/universities, and this number is expected to grow to about 40% over the next ten years.

At the Second International Symposium, educationists and educators from Pakistan and abroad and as well as policy makers and non-profit organizations in Pakistan discussed in depth the nature and causes of the problems responsible for the deteriorating state of college education in Pakistan, and of various approaches and models to upgrade this sector of education to the level required standards. They drew the following conclusions.

A. Substandard Education and Low Enrollment

1. Low Standards

The major causes of the low standard of college education in Pakistan have been identified as (i) lack of college autonomy, vision and poor administration, (ii) lack of sufficient funds and facilities, (iii) outdated curricula, (iv) inadequate basic education, (v) outdated methods of teaching, learning, & faculty development, (vi) lack of assessment and quality improvement mechanisms, and (vii) lack of learning techniques that require and inspire critical and creative thinking.

- (i) **Lack of college autonomy and vision**
Colleges lack the capacity to design curricula. Instead, this responsibility lies with the universities with which the colleges are affiliated. This lacking impacts both the efficiency and productivity of faculty, curricula and students. The curriculum of each public university lacks vision, and it doesn't challenge students at all. There is no national body that oversees and provides guidance and resources.

* This figure does not include 80,000 students enrolled in professional colleges/bachelor's programs, www.hec.gov.pk

- (ii) **Lack of Sufficient Funds and Facilities**
Lack of sufficient funds to colleges has resulted in underpaid teachers; and unavailability of modern tools, access to computers, Internet, latest publications, and properly equipped libraries and laboratories. Colleges in Pakistan receive only a very modest percentage of funding from the government compared to the funding distributed to universities. The small amount of funds to colleges negatively impacts both the quality of education and its accessibility to students from economically disadvantaged families.
- (iii) **Outdated Curricula**
The curricula of both basic-level education and colleges are outdated and offer a very limited knowledge base. Especially in colleges, the subject matter of most disciplines continues to be outdated and irrelevant, allowing no room for changes in the context of education inclusive the content or improvement of inefficient teaching methods. Attempts at adding new concepts and information have been inconsistent, consequently, students lack clarity of thought and the ability to relate to the national or local context. The lecture/theoretical learning method dominates the classroom, with no exposure to other pedagogical methods. The combination of authoritarian attitudes and poor language skills discourages questioning and discussion. The assessment system rewards a regurgitating of textbook content, and the teacher is unable to transcend his/her role of facilitating student learning and understanding.
- (iv) **Inadequate Basic Education**
It has been observed that students who enter the college level have poor language and communication skills. College students are not prepared to articulate either in Urdu or in English in a satisfactory manner. Neither do the college training and curricula offer methods for development of clear and effective communication skills.
- (v) **Outdated Methods of Teaching and Learning & Faculty Development**
College teachers have inadequate and limited exposure to the fields in which they are teaching. Given the poor pay-scales, time-based promotion and absence of incentives, they don't develop their abilities. Lack of programs that enhance learning by practice and the lack of teacher motivation discourage the introduction of new methods, active discussion, and critical thinking and learning processes.
- (vi) **Lack of Assessment and Quality Improvement Mechanisms**
Quality control, assessment and quality improvement mechanisms are by and large not in place. If they are present, they are not being upgraded regularly or in an institutional manner, only on an *ad hoc* basis. The current annualized calendar system instead of the semester system further impedes improvement.

- (vii) **Lack of Learning Techniques that Require and Inspire Critical and Creative Thinking**
College graduates in Pakistan lack the motivation to think critically, and reflective responses are not encouraged. The current education system does not provide a foundation to explore, analyze and be critical about the situations and creative about solutions. The system is geared to automatic memorizing without challenging the views being taught. In addition, theoretical learning is not translated to practical training. Internship opportunities are non-existent, and students are not being prepared for “real world” practice experience. Practical training during the study period would give incentives to students to explore new ideas and innovative methods to help industry, and the public and private sectors.

2. Reasons for Low Enrollment

Three major reasons have been identified for the low enrollment in colleges: (1) Poor administration and governance of colleges, (2) lack of financial means of students from economically disadvantaged families, and (3) lack of practical skills gained during college-level education.

- (i) **Lack of outreach by colleges and vocational training programs**
Currently, no structured outreach program exist at the national or the college-level to inform high school students of the various educational programs available at colleges towards development of vocational and professional skills or pursuit of higher education programs.
- (ii) **Absence of a financial assistance program for youth education**
A major reason for low enrollment is poverty. An average family of six with a total income of less than Rs. 6,000 (\$100) per month, a large majority of the Pakistani families, cannot afford college education tuition fee and other expenses for Internet use and books.
- (iii) **Lack of practical skills gained in college-level education**
The theoretical platform used in college education does not give the “hands-on” option to students, hence limiting their incentives for enrollment and undertaking internships and developing skills during their training with the prospective of being employed in the future.

B. Recommendations for Improving Undergraduate/College Education Status

Policy and attitude changes towards a better college education

In Pakistan, the emphasis of the reforms has been on basic education, and during the last five years, on the universities. Little attention, however, has been paid to undergraduate degree/college education. The main recommendations of this symposium require policy changes that prioritize the quality of educational services offered at all levels in Pakistan, especially at colleges.

1. Administration

- a. Establish, by a President's or Prime Minister's Executive Order, a Commission on Undergraduate Education (CUE). Like the HEC, the CUE should be autonomous from the Ministry of Education, with its own budget and its own independent Board of Advisors. The CUE should set up a nationwide policy and guidelines and define the aim of undergraduate education in Pakistan.
- b. Increase the capacity of colleges into autonomous institutions
- c. Establish minimum national standards for college education
- d. Improve academic/administrative college leadership based on a national competition and merits
- e. Train college administrators on accountability and transparency

2. Faculty

- a. Raise the qualification bar for college teachers
- b. Annual training workshops for the faculty
- c. Offer better incentives to college teachers (i.e., increase in salary)
- d. Encourage the reappointment of meritorious faculty in the public sector
- e. Conduct refresher courses for teachers every two years
- f. Making appointments on the basis of requirements and not individuals

3. Curriculum

- a. Broad based education needed
- b. Establish a core curricula consisting of mathematics, English, Urdu, communication, history of world civilization and world culture
- c. Research and 1-2 semester of internship programs should be included in the undergraduate degree curriculum
- d. All textbooks should be assessed and revised every three years
- e. Curricula must be updated yearly but no more than every three years to meet the future needs, such as teaching of molecular biology, neuroscience, genetics and preventive medicine at medical schools
- f. The undergraduate curricula should be based/categorized on a semester not an annual system

4. Funding

- a. Increase funding from government; the funding of these colleges to be based not only on the number but also the quality of graduates and the academic programs
- b. Involve public/private partnerships
- c. Invest in and upgrade libraries, especially implementing free and easy access to Internet, and providing basic student resources for research

5. Methods of Teaching

- a. Update college curricula
- b. Introduce internship programs
- c. Introduce new methods of teaching, encouraging reason-based learning and critical and creative thinking

6. Accessibility

- a. Promote community financial plans as grants and loans on a needs basis
- b. Government could provide grants to colleges to expand their scholarship programs. Government must ensure that every student who has the merit and wishes to pursue higher education receives sufficient financial aid for his/her education.

7. Increase Private-Public Partnership

Promote private-public partnerships to increase the capacities of existing public colleges and in establishing new institutions.

8. Alumni Resources

Motivation of alumni to organize themselves at home and abroad to contribute to their alma mater is also significant not only as a source of funding but their involvement in governance of the institution and improving the quality, legacy and reputation of public institutions.

9. Promote and support private colleges/universities

While government has primary responsibility to public institutions; it must also encourage, promote and appropriately support private colleges/universities. Government should:

- (i) Adopt a public policy that encourages the development of a vital and private sector of higher education with freedom to develop

curriculum and educational programs according to their best judgment, and are only held responsible for the quality of their results.

- (ii) Provide land on lease for the establishment of colleges/universities on the condition that infrastructure is established within a ten years period.
- (iii) Provide to the needy students attending a private college/university the same financial aid as in a corresponding public institution conditional to the host private college/university cover the remaining required financial assistance.
- (iv) Provide access to the HEC Foreign Visiting Faculty Program, whereby the host private college/university covers 50% of the salary/expenses of the foreign scholar.
- (v) Accept proposals from scholars from private sector institutions for funding by the HEC on merit with a condition that the host institution provides matching funds.
- (vi) Provide unconditional access to digital library and to international bandwidth for Internet access to faculty and students from private sector colleges/universities.
- (vii) Provide annual grants to private sector colleges/universities based on per enrolled student but 15% of the amount awarded per public sector college/university, student.

Supporting College Education Through Higher Education Reforms

**By Atta-ur-Rahman, PhD, FRS, N.I., H.I., S.I., T.I.,
Chairman Higher Education Commission and Adviser to Prime Minister for
Science and Technology**

We now live in a world in which only those countries are able to march forward and progress rapidly which invest in their human resources, tap into the creativity of their young and harness their potential for development. Human resources therefore need to be adequately trained so that they can play their due role to develop a knowledge economy in the highly competitive global environment.

Stunning advances made in the last few decades in the fields of information technology, biotechnology, material sciences, health sciences, renewable energy and other disciplines are rapidly changing the face of the globe, leading several countries on the path of social and economic development, leaving others behind. Knowledge is today the key to socio-economic development.

The colleges represent the weakest link in the higher education sector. It is therefore important not only to improve the quality of our universities but also to focus on the improvement of colleges in Pakistan. The major problem with colleges is the lack of high quality faculty. The higher education reforms that are underway are directly involved in improving the quality of education in our universities and since college teachers are the output from our universities, an improvement of quality education and research in universities will therefore directly impact the quality of college education. The major reforms that have been launched by the Higher Education Commission are directed in improving the quality of education and research in the universities.

The Higher Education Commission has undertaken a systematic process of implementation of an agenda for reform outlined in the HEC Medium Term Development Framework (MTDF), in which Access, Quality and Relevance have been identified as the key challenges faced by the sector. To address these challenges a comprehensive strategy was defined that identified the core strategic aims for reform as (i) Faculty Development (ii) Improving Access (iii) Excellence in Learning and Research and (iv) Relevance to National Priorities.

Problem Lies with the Students or with Faculty: Undergraduate Education in Punjab Pakistan

Rukhsana Zia, PhD
Director
Directorate of Staff Development, Punjab
Wahdat Colony, Lahore, Pakistan.
Office no. 042-5432907
rukhsanazia@gmail.com; ziarukhsana1@hotmail.com

Abstract

Most provinces have initiated various levels of quantity and quality related inputs to upgrade school education. Higher Education Commission has restructured university education. But college education that is by and large, undergraduate level remains neglected in the reforms underway in Pakistan. The conference theme establishes undergraduate (Ug) education as the weakest link of a 'weak' education system.

The topic clearly identifies that Ug education is a cause for concern and very simplistically places the onus as on the students and/or faculty. The paper will briefly discuss these two main elements of Ug education, but will also add another important factor that is, the status of institutions themselves, since it provides the environment/setting for either a positive or a negative interaction between the students and faculty. The discussion is validated with existing data in Punjab. A major limitation is utter lack of related data or incomplete data with accompanying issues of its accessibility. This limits the discussion by circumventing many significant factors related to students and faculty that add to the quality of education. The paper hence does not delineate many other factors that impact on quality of education in Ug institutions. For example, many factors like professional growth, professional integrity and autonomy are an integral component of faculty quality. Further more qualifications alone do not say much about the content and pedagogical skill of the faculty. Similarly for students factors related to the family like socio-economic status, parental aspirations, and personal factors like personal motivation, self esteem etc effect quality of student learning.

The paper assumes that the reality will not pinpoint either the faculty or the student as the single factor contributing to this 'weakness' in the system. It will be a sum total of both, plus quite a few other factors. One most significant factor clearly is the lack of **a defined aim of undergraduate studies**. There is no national consensus either on the direction as to the 'type of undergraduate (qualified) student we want to produce'. It is obvious that unless we decide 'why?' we will stay clue less as to 'what to teach?' and 'how to teach?' at the undergraduate level.

Factors affecting quality of education in under graduate colleges

Many factors impact upon the quality of teaching and learning in educational institutions, in this case, Undergraduate (Ug) colleges. The three main factors, by and large are:

1. Institutional

Many factors related to institutional fitness impact upon the quality of education and student learning in Ug colleges. These are, among others, appropriate infrastructure and structural frameworks; policymaking and governance patterns; availability and utilization of resources i.e. both financial and human; type of curriculum, co- and extra curricular activities; student appraisal / testing/ examination system; leadership qualities of the academic head/ VC and the administrative support personnel; international, regional and national and local community linkages.

Quality of Ug colleges, and, how campus resources are managed, generally speaking, translates to quality of learning by students. Stage et al (1998) talk of student centred campuses which are developed on basis of knowing how students learn best, understanding barriers to student learning and promoting classroom techniques that promote learning in college students. In the same vein, Barr and Tagg (1995) talk of paradigm shift from the concept from mere student learning to 'learning centred campuses' that maximize students learning. This would entail a resource rich campus not the least, of which would be an appropriate infrastructure, furnishings and equipment in keeping with modern, 'connected-to –the –world' feel. For improved student outcomes improvements through institutional change are being proposed (Braxton and Brier 1989); institutions offering greater satisfaction to students like involvement in outside-class-social activities (Bean 1983); residential institutions offering better academic and social integration/involvement for its students than 'commuter colleges', (with larger institutions offering it more than smaller sized institutions) (Chapman and Pascarella 1983); there is a relationship between institutional resource allocations and retention and graduation rates (Bowen 1980; Gansemer-Topf and Schuh 2004). Clearly expenditures and financial strategies potentially are important elements of student engagement but it is not merely the size of spending but also how effectively money/ resources are being utilized that makes a basic difference (Gansemer-Topf *et al* 2004).

1.1 Institutional infrastructure and facilities of Ug Colleges in Punjab

There are a total of 416 colleges in Punjab, with 159 male, 213 female only, and another 44 are mixed gender. All are located in urban areas. The infrastructure is quite poor as only 347 have toilets, and only 285 have a boundary wall. The facilities are quite poor too with since only 326 colleges have libraries. Less than one third (161) have computer labs, which show weak technology support. How many of these meager facilities are actually being used or even effectively used is another matter. Only 150 have playgrounds raising valid concerns of accessibility of physical activities. The total budget for colleges for the year 2005-6 was Rs. 3,516 million, with Rs. 2852 million as salary component and a meager Rs. 109 million being non-salary allocation. It is clear that the colleges have poor infrastructure, while various facilities are very poorly provided. Further more there is no / or very poor allocation of development funds for these colleges. It does not take long to realize that the institutional environment is not physically appropriate, nor conducive to student engagement and learning. One can

safely assume that other areas of support that add to a conducive institutional ethos like democratic governance, guidance and counseling for students, would by and large be missing.

2. Staff and Academic Faculty

Generally speaking the faculty is given the main responsibility for affecting the quality of education imparted in an Ug college. This paper accepts the fact that faculty plays an important role in the development of Ug students (Astin 1993). It also accepts the contention that teaching is not only the delivering of teaching alone but also includes engaging and fostering student learning (Schulman and Hutchings 1998; Boyer 1990). The next point in our discourse then is 'what precisely is it about faculty' that engages students effectively. Literature review suggests that different authors perceive the available evidence in very different ways. Some propound higher faculty performance with higher qualifications (Darling-Hammond and McLaughlin, 1999, 377-378; Hanushek, 1992, 107) while others discount it totally (Friedman, 2000, pp. 20; Thomas B. Fordham Foundation, 1999, 1; Goldhaber and Brewer, 1999, pp. 97). Taken as a whole, research studies are unable to provide evidence that teacher education courses, programs or certificates have a clearly visible influence on teacher practice (Kennedy 2003 TQQT Project). In fact Kennedy (2003) cites out of class factors as showing more effect (that is, 49 % for home and family related factors) on quality learning than do faculty qualifications and experience (43%). If we accept that faculty qualification is the single largest factor among 'in-school' factors that affects student learning, and if Punjab statistics are taken as a normative indicator for all of Pakistan, then there is little cause for optimism for provision of quality education in Ug colleges.

There are other factors apart from faculty qualifications that are known to effect student learning. Considerations like commitment to institution and work (status, pay and humane qualities of attitudes and belief system); induction/probation; qualifications and its quality (intellectual and ethical rigor); continuous professional development activities; assessments/ appraisal and promotions (career path); focus on teaching, research, and institutional management; academic freedom and mobility; teaching competence, pedagogical skills and methodology used by the faculty, that impact upon quality of teaching in the classroom.

Research in the west further shows that faculty behavior and attitudes show a dramatic effect on student learning and engagement (Umbach and Wawrzynski 2004). Faculty practices like active learning and high order skills provide a conducive environment for student engagement. The interaction of faculty with students in or out of the classroom also shows a profound impact on student learning. The attitude and belief of faculty regarding student experiences is important since it has a significant affect in creating an environment that fosters student learning. Though establishment of an enriching environment on the campus may, sometimes, demand more than what the faculty can provide, nevertheless the impact of faculty attitudes cannot be discounted. It is clear that there is a lot more complexity involved in student engagement and quality of teacher student interaction than mere faculty effort. Need for data and research in Pakistan is required to provide credible statements and solutions.

2.1 Roles of Ug Faculty

Functions of faculty in colleges and universities are typically described in terms of the tasks of teaching, research, and service. The organizational "units" to which these functions are assigned, however, are individual, multidimensional faculty, who perform all three functions in product-type, discipline-dominated departments. Within the teaching function, moreover, there are many sub functions, for example, planning of pedagogy, gathering information for teaching, lecturing, holding discussion classes, evaluating, mentoring, and working with other institutional personnel etc. And even within these sub functions, there are smaller subdivisions. As with the overall three functions faculty perform (teaching, research, and service), similarly within the teaching function, traditionally speaking, all of the functions and sub functions are assigned to individual faculty members, each of whom is responsible for integrating the lot into the preparation and delivery of teaching services. At times faculty experience a role overload that reduces the quality of their work and hence the effectiveness of their contribution to their institution. They suffer also from personal anguish when they see that the often considerable time required to be spent on work in which they have little interest or little talent does not either advance them toward their professional goals or result in personal satisfaction. Such phenomena point to the need for a reorganization of faculty into narrower and smaller functional sub specializations. While we in Pakistan are still battling with the concept of appropriate infrastructure and faculty profiles the education in the western world has progressed to understanding of the various roles of faculty in Ug education. And realizing the diversity of the tasks and roles expected, the future demands a paradigm shift in organizational structure of teaching and teaching institutions. Teaching by means of teams of experts in the tasks, rather than (or in addition to) the subject matters, must be considered as the organizational paradigm of the future (Bess 2000). Lack of data does not allow us to comment on the roles awarded to Ug faculty, nor the effectiveness of the job done in Pakistan. Given the lack of competency standards for teachers, and a very poor appraisal system any comment on the quality of UG faculty and their teaching would be inappropriate.

2.2 Ug Faculty Profile in Punjab

The data collected by PMIU in early 2006, regarding Ug (college) faculty that teaches in these institutions of Punjab is not segregated by qualifications or even by new or experienced teacher category. It is neither name specific. There are some 4,956 sanctioned posts for science subjects (Biology, Botany, Chemistry, Computer Sciences, Mathematics, Physics, Statistics, and Zoology) of which 23% are unfilled. For Arts/ Humanities subjects (27) there are a total of 10,781 posts with 25% lying vacant. (It should be noted that vacancy is maximum, 45%, for English teaching staff). Of the present 11,878 posted teachers, 1,117 (9.4 %) are M. Phil qualified (692 males and 425 females) while only 427 (3.5 %) are Ph.D.s (287 males and 140 females). There is also the issue of the status of university awarding M.Phil. and Ph.D. degrees. There is a clear dichotomy in the perception of the status of a foreign qualified or a locally qualified faculty and also the country of the institution awarding the degree makes a difference in this perception. It will not be wrong to assert that faculty qualifications in Pakistan in general and Punjab in particular, are low. It can be safely asserted that:

General standards of national education are poor. Only recently the accreditation system of degree awarding universities is being streamlined; there is non-existence of teacher competency standards and relevant teacher appraisal systems. The above coupled with lack of system of licensing and continuous professional development tied to career progression, that is pay and grade structure makes for low motivation for professional growth and improved teaching; Poor selection criterion makes it easy for persons with ineffective teaching skills to become teachers. A masters' degree in the relevant subject area is required but no additional professional qualification is expected.

Given the above, it is clear that those who join as UG faculty are not expected to be highly qualified, nor expected to grow on the job. In fact the few numbers that have acquired higher qualifications are to be lauded for their intrinsic motivation to grow.

3. Students

How students learn is a very complex question. Factors effecting student learning are vast and varied, for example, accessibility; admission policy; mobility both, national and international; support in learning (remedial courses etc.); mainstreaming of minority and disadvantaged groups; guidance, counseling; peer support. Needless to add personal aspirations, self-esteem and family /home factors (socio-economic status, parents' education, family support etc) have a significant impact upon learning in the classroom and its quality.

3.1 Student Information for UG colleges in Punjab

In the 416 colleges of Punjab the student's data is as follows:

Intermediate Level: The total student enrolment for intermediate level is 320,532 of which 45% are males and 55 % are females. In the science group though there are 58% males to 42 % females while the ratio is reversed for arts/humanities group, which has more females (63%) than males (37%).

Degree Level: At this level there are a total of 173,206 (note that the number of students drops by nearly half) of which 34% are males and 66% are females. At this level the male female ratio evens out to around 49: 51%. But in arts/humanities group the predominance of women is obvious (70% to men who are 30%). But male enrolment in arts is more than double than in science when seen in absolute numbers (17,386 to 41,727

Post Graduate Level: There is a total of 12, 141 students at MA/MSc level in these colleges, of which 34% are males and 66 % are females. In both, Arts/ Humanities and, Science Groups there are more females (66% and 67% respectively).

The ratio of male and females is in keeping with the over all-number of institutions. Also chances of men going to universities are more probable (universities which are located in big city centers are more accessible for boys than for girls who might have family pressures not to stay away from home). It could be one possibility why girls tend to be more in numbers in colleges close to their homes station.

The student teacher ratio for Science subjects 1:38 while it is more for other subjects (1:45). All colleges are affiliated to one public university or the other. Depending on the university requirements, the colleges like wise follow the semester (75 colleges) or the Annual examination system (341).

What is taught i.e. content matter (which means curriculum, translated to syllabus and then text books), and then 'what students learn' and 'who decides what should be taught'

is another matter but is not considered here. Nevertheless, most colleges have their Boards of Studies under the aegis of their affiliated university and most decisions for changes in course content, examination schedules, examiner selection etc are taken by these boards. The mechanism of this decision-making is another area that needs to be discussed in detail.

Clearly, an important step in delineating effective student learning would be the definition of ‘what is meant by effective student learning?’ and, ‘how best to measure it?’ which would then lead to the question of understanding of “what variables would negatively or positively contribute to student learning and as such Ug education?”.

4. Measures of quality of Ug education

The traditional measures, like selectivity in admissions; higher qualifications of faculty; library and availability of other learning resources; institutional standing in the academic community (be it due to financial strength or faculty quality, or faculty research or any other rating) are generally considered as measures of quality of Ug education but these are now being increasingly questioned in the west (Kuh 2001). The contention is that these criteria do say something about ‘input’ factors but then there are many other elements that shape the ‘output’ and especially impact factors for quality of student learning and performance. The other factors that are being increasingly recognized are, among others, quality of students’ engagement in the learning process, nature of student teacher interactions, focus and intensity of students learning experiences or in other words generally termed as, *the overall level of student engagement in the process* (Pascarella 2001). Researches are finding no meaningful relationship between quality of college teaching and selective admissions (Pascarella 2001); but, quality of student engagement is found to be positively linked with desirable learning outcomes as critical thinking and grades, though relationship is found to be weak (Carini *et al* 2004). In certain cases benefit was found to be different for different categories of students e.g. the lowest-ability students benefited more from engagement than classmates, first-year students and seniors convert different forms of engagement into academic achievement, and also certain institutions convert student engagement more effectively into higher performance on critical thinking test.

Summary and Conclusion

West has moved beyond simplistic answers to quality of teaching/learning in Ug institutions, which we are still doing in Pakistan, and this is clearly couched as ‘faculty or student’ discourse for this paper. Student engagement is now propounded as an indicator of quality of Ug education. Student engagement is dependent, among others, on the *interlinked and interactive nature of the three main components that is, the institution, faculty and the student*. Considering the prevalent condition of Ug colleges and the meager data profile available to us, it would not be wrong to contend that the Ug colleges in Pakistan in general and Punjab in particular, suffer from inappropriate infrastructure, insufficient resources, under qualified and de-motivated faculty and non-committed students.

Seven principles of 'good practice' in UgE are being propounded and is the way to go for us here in Pakistan as well. We should aim for high quality Ug education which: encourages contact between students and faculty; develops reciprocity and cooperation among students; encourages active learning; gives prompt feedback; emphasizes time spent on task; communicates high expectations, and respects diverse talents and ways of learning (Chickering and Gamson 1987).

But it is clear, as Chickering and Gamson (1987) contend that, "There are neither enough carrots nor enough sticks to improve undergraduate education without the commitment and action of students and faculty members. They are the precious resources on whom the improvement of undergraduate education depends."

References

Barr, R.B., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27, 6, 12-25.

Bean, J. P. (1983). The application of a model of turnover in work organizations to the student attrition process. *Review of Higher Education*, 6, 129-148.

Bess, J. L. (2000) *Teaching Alone, Teaching Together: Transforming the Structure of Teams for Teaching*. San Francisco: Jossey Bass Inc.

Bowen, H.R. (1980). *The costs of higher education: How much do colleges and universities spend per student and how much should they spend?* San Francisco: Jossey-Bass.

Braxton, J. M., & Brier, E. M. (1989). Melding organizational and interactional theories of student attrition: a path analytic study. *Review of Higher Education*, 13, 47-61.

Carini, R. M.; Kuh, G. D. and Klein, S. P. (2004) *Student Engagement and Student Learning: Testing the Linkages*, A version of this paper was presented at the Annual meeting of the American Educational Research Association, San Diego,

Chapman, D. W., & Pascarella, E. T. (1983). Predictors of academic and social integration of college students. *Research in Higher Education*, 19, 295-322.

Chickering, A. W. and Gamson, Z. F. (1987) Seven Principles for Good Practice in Undergraduate Education, *American Association of Higher Education Bulletin*, 39,7, 3-7.

Darling, H. L., and McLaughlin, M. W. (1999). Investing in teaching as a learning

profession: Policy problems and prospects. In L. Darling Hammond & G. Sykes (Eds.) *Teaching as the Learning Profession: Handbook of Policy and Practice*. San Francisco: Jossey Bass.

Friedman, S. J. (2000). How much of a problem? A reply to Ingersolls: The problem of underqualified teachers in American Secondary Schools. *Educational Researcher*, 29, 5, 18-20.

Gansemer-Topf, A., & Schuh, J. (2004, November). *Institutional selectivity and institutional expenditures: Examining organizational factors that contribute to retention and graduation*. Paper presented at the meeting of the Association for the Study of Higher Education, Kansas City, Mo.

Gansemer-Topf, A; Saunders, K.; Schuh, J. and Shelley, M. (2004) *A Study of Resource Expenditures and Allocation at DEEP Colleges and Universities: Is Spending Related to Student Engagement?* Iowa State University

Goldhaber, D. D., & Brewer, D. J. (1999). *Does teacher certification matter? High school certification status and student achievement*. Washington DC: Urban Institute.

Hanushek, E. A. (1992). The trade-off between child quantity and quality. *Journal of Political Economy*, 100,1, 84-117.

Kennedy, M. (2003) *The Value of Teacher Qualifications as seen through Qualitative Research*, Teacher Qualifications and Quality of Teaching Project: Michigan State University.

Kuh, G. D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change*, 33, 3, 10-17.

Pascarella, E. (2001). Identifying excellence in undergraduate education: Are we even close? *Change*, 33, 3, 19-23.

Stage, F.K., Muller, P., Kinzie, J., Simmons, A. (1998). *Creating Learning Centered Class rooms: What does Learning Theory have to say*. Washington, DC: ASHE-ERIC Higher Education Reports.

Thomas B. Fordham Foundation. (1999). The teachers we need and how to get more of them: a manifesto. In M. Kanstoroom & C.E. Finn, Jr. (Eds.), *Better Teachers, Better Schools*. Washington DC: Thomas B. Fordham Foundation.

A REVIEW OF THE POLICY-REFORM NEXUS IN HIGHER EDUCATION IN PAKISTAN

S. Zulfiqar Gilani, PhD
Director, Centre for Higher Education Transformation (CHET)
First Floor, Waheed Plaza, 52-W Blue Area, Islamabad
Fax: 92-51-227 4039; E-mail: director@chet.edu.pk

It is self-evident that the processes of institutional reform and policies are deeply and dynamically intertwined. Efforts for positive change are unlikely to succeed unless policies have clarity of purpose, are firmly grounded in existing realities, not overly focused on outputs, and most importantly mindful of the dynamics of managing change. The institutions of higher learning also have to have capacities to implement them, appropriate and flexible structures that can adjust to new challenges, and key individuals to have a buy-in (of the policies and reforms).

In Pakistan we are confronted with deep problems at the policy, structure, and institutional ends. At the policy level the vision or purpose of education, including higher education is deeply contested. Temporary lids are put upon these contests either through arrogance of power rather than a process of informed debate, and/or outright denial that the problem exists. This vision deficit has resulted in confusion, uncertainty, and policy swings. The confusion and power-mongering permeates down to the institutions, which by and large meet bare requirements, and lack meaningful institutional policy, purpose, or planning. There also are structural distortions and anomalies, best illustrated in the incoherent academic, financial, and administrative set-up of Government Colleges in Pakistan: Academically, they follow the respective Board for students in years 11 and 12, and the affiliating university for years 13 and 14. Financially and administratively they are under the Provincial Education Ministry and its relevant line department. Besides annual examinations, the affiliating university has no mechanism by which to hold the College responsible for the quality of instruction and learning, which remains extremely poor.

As presently constituted, the capacities of institutions are seriously challenged with regard to implementing policies and reforms that could contribute to enhancing quality of learning. There is a counterproductive vicious circle in operation. On the one hand Universities lack adequate leadership, management, and Professorate; and their governance and administrative arrangements do not foster efficiency, transparency, or performance-based accountability. On the other hand national policies are formulated without much consultation, consideration for institutional or human resource capacities, or concern for ensuring buy-in. The policy-makers ignore that while they may deem a policy 'right and good' that does not automatically ensure acceptance or adoption. Because of the lopsided power arrangements and our deeply ingrained hierarchic culture, individuals may apparently demonstrate obedience and conformity. But the unfortunate

militaristic 'command and obey' approach is a recipe for eroding self-esteem, independence, and creativity of individuals, and autonomy of institutions. Instead it creates the psychology of exclusion, helplessness, resentment, and resistance by those who are expected to champion and implement the policies. Getting people on board is a complicated psychosocial process that is equally, if not more, important than having the 'right' policies, and lots of money. And on that score the reform efforts have badly floundered. However, it is also true that the reform task is doubly onerous because over half a century of inattention and mismanagement of higher education has created deep and widespread distortions in institutions, a disabling milieu, and undesirable individual work habits and attitudes.

Colleges as academic Clusters - Developing Strongest Link

Ch. Nasim Raza, Ph.D.
Advisor Business Development
Askari College for Entrepreneurs (ACE-AWT)
Rawalpindi
E-mail: lalguddy@yahoo.com

The world economy is changing as knowledge supplants physical capital as the source of present (and future) wealth.... As knowledge becomes more important, so does higher education.... The quality of knowledge generated within higher education institutions, and its accessibility to the wider economy, is becoming increasingly critical to national competitiveness.... This poses a serious challenge to the developing world.... Quite simply, many developing countries will need to work much harder just to maintain their position, let alone to catch up.

It gets worse: The now-famous World Bank / UNESCO report on Higher Education in Developing Countries: Peril and Promise(3) aptly describes the economic importance of higher education to developing countries thus:

The globalizing economy places a premium on the breadth, depth and adaptability of knowledge. As global economic activity moves its emphasis from purely manufacturing to the service industry, countries increasingly require a minimum mass of people with competitive knowledge, skills and entrepreneurship to develop. The World Bank report (TFHE) stresses the threat / opportunity facing developing countries, particularly as they enter into global competition with other nations who are investing in higher education.

The report of the Pakistan Task Force on Improvement of Higher Education(2) (2002) estimates that of a population of 140 million in Pakistan, 18 million are in the age cohort of 17 to 23 years, eligible for tertiary education. Of these 18 million, only 475,000 (or about 2.6%) are actually enrolled in higher education institutions. This proportion is among the lowest in the world: India (in 1990) had a tertiary enrolment ratio of 6.2%, while Iran (in 1994) had 12.7%.

The Higher Education Triple-Whammy

Pakistan's investment in public sector higher education (catering to over 85% of all enrolled tertiary students) fell from 19% of the educational development budget in 1972 to 10% in 1988, despite an overall increase in the educational budget. The country is actually spending less and less on higher education even though it continues to pump in more money into primary education (with questionable results). As salt on the wound, the cost of higher education in Pakistan is far higher than comparable countries (TFHE). Pakistan's expenditure per student on tertiary education was 123 percent of GNP per capita in 1990, and 94 percent in 1996. By contrast, the S Asian averages were 91.4 percent of regional GNP per capita in 1990 and 72.8 percent in 1996. So, Pakistanis actually pay more for tertiary education than they can afford compared to other developing countries in the region, who end up producing more capable and competitive

graduates. Recent data collected by private sector shows that the cost ratio has gone further higher in 2004-5. Private university sector is looking unapproachable for middle class citizens.

The second higher education twist is what some have referred to as "*educational apartheid*". Parallel systems have evolved to prepare different classes in society for different levels of education and, hence, for different positions within society. Private sector tertiary education, although still lagging behind regional standards, involves a greater investment in students and produces better graduates to compete in the market.

The growing disparity between a minority elite and majority dispossessed in the country is expressing itself in various ways in the country, some of them violent. Security experts have argued convincingly, and sometimes with empirical evidence that the rise of militancy in the country is a direct, virtually inevitable consequence of developmental inequality, particularly in the education sector.

A third, slightly more complex, argument can be made with respect to the definition of Pakistani "society" and where it is going. In a sense, the TFHE brings out the fact that the "highly" educated are now forming a global elite, drawing their strength from a globalizing, service-based economy and engaged in defining where humankind goes in the next generation or two. Part of this definition is to place a premium on higher education itself, at which the TFHE points out the promise for developing countries who begin to invest in higher education now. But at a deeper level, the well-recognized cultural crisis Pakistani society is facing now emphasizes the need for intellectual direction and leadership, which may be provided by the "highly" educated.

This last can be placed in the context of socio-linguists, such as Dr. Tariq Rahman, who argue convincingly of the social distinction inherent in a literacy-based society. The extension of this argument, which is what TFHE propounds, is that a society based on knowledge will create its own social distinctions on the basis of higher education. "Social distinctions" take the form of power structures embedded in societal norms and transmissions, constructing a definition of "the way things are".

Almost as an addendum, the post-modern condition of ideas needs to be added to the higher education challenge looming above Pakistani society. Today's world, characterized by the unprecedented rate of information and communication flows, has reduced the half-life of popular concepts to about the time it takes to switch to a new cable channel or say "www". The speed at which knowledge is produced and disseminated is itself a feature of this age, more than just the variety of ideas. In this post-modern feeding frenzy, more and more emphasis is being placed on so-called "process skills": communication, adaptability, negotiation-ability and the like, to complement a basic knowledge set. Everybody is forced to compete in the world, whether from their "home" or outside. Pakistani graduates, too, must compete in the world armed with a basic set of knowledge and process skills, if they are to adapt to this pace.

A lights in the dark

The triple-whammy is a fact. Higher education institutions, as preservers, creators and transmitters of knowledge are more important than ever before. There is no doubt that Pakistani higher education institutions have to reform themselves radically to meet the challenge, or submerge the nation in yet another global tidal wave.

In a society fighting for survival as it is, there is little hope that Pakistan can help define global events and thoughts over the next couple of generations. What we can do is to decide whether to sink or swim.

The list of problems in the higher education sector, particularly with a view to coping with the global challenge, is legion. Wide-ranging reform is needed just to bring institutions somewhere in the neighborhood of international compatibility. A very promising efforts has been made in the past such as Steering Committee on Higher Education, as a follow-up to the Task Force on Improvement of Higher Education and the Study Group on Science & Technology. The Steering Committee developed a comprehensive implementation plan for the recommendations of the Task Force and Study Group, aimed at improving the governance, management, resource handling and academic quality of higher education institutions.

In the short time Steering Committee aimed the University level in priority. The Steering Committee and related efforts were based on an assumed commonality of a broader vision among the change agents and just fixing what is obviously broken. What such efforts can't do without developing significant public momentum, is to initiate a debate on where Pakistan as a society places higher education, and what role higher education has to: firstly, define how Pakistan engages with globalization; secondly, influence our domestic power structures; and thirdly, use a basic set of knowledge and skills to benefit from the rapidly changing global environment. The onus of that definition belongs to civil society.

The critical feature of higher education is thus that institutions no longer simply serve their students or some abstract Truth. Rather, the very scale of these institutions along with some of the other factors, mean that these institutions serve their society, however they choose to define "their" society. Hence the growing emphasis on research and training in partnership with the civic, public and private sectors.

The point, then, is that higher education institutions in Pakistan must not only be "patched up", but must also be situated in an appropriate context with respect to what goals the Pakistani society sets for itself. Any such arrangement, relying on the interaction and cooperation of various sectors and sections of society and, more importantly, any such effort which must be led by the civic sector, require some form of a contract to be drawn up. A social contract, such as that which makes a nation into a state through a constitution, is needed. A contract between higher education institutions and society is not proposed as a static solution in and of itself, but to initiate a process through which Pakistani society comes to grips with the rest of the world's direction, and then decides how it is to cope. A national debate can be encouraged, led by civil society itself,

to define the relationship of higher education institutions with the rest of society: the roles and responsibilities of both.

The Pakistani academia never actually got into an ivory tower - it was more like a paper plane - but they were, and still remain, isolated from the rest of the country and indeed the rest of the world. Recent political events in Pakistan are a case in point. The small federal cabinet constituted by the military government (different from a martial law in some vague, undefined way), although composed of professed technocratic experts, has only one academician (loosely defined at that). The military take-over on 12 October, 1999 was not formally debated, discussed or addressed at a single campus across the country. Not one university held even one workshop, seminar or conference on the direction of Pakistani governance. Even after September 11, and the consequent unilateral decisions of the Chief Executive, not a single campus held a single major event to debate the looming crisis or Pakistan's new opportunities.

Which is not to say that these issues are not being discussed in Pakistan, even institutionally. It's just that those with the responsibility of leading the nation into the globalizing 21st century are ... simply not interested. As a result, civil society has distanced itself even further from universities and colleges, parents dread the time they will have to subject their children to the system, and students and faculty both are looking for the shortest, cheapest ride out.

Endgame

As universities and colleges in Pakistan thus prepare themselves to lead the nation into a positive, beneficial engagement with globalization, they must relate more closely with the society that is coping with globalization. Overcoming this alienation, it is being argued, will require pro-active steps towards a clear understanding of what role, responsibility and authority higher education has within society. For this, it has been suggested, the civic sector can lead a process of developing a social contract between higher education and society at large.

The bottom line- Establishment of College Clusters

Clusters are geographical concentration of enterprises, which produce and sell a range of related or complementary products and are, thus, faced with common challenges and opportunities. In this paper I will establish that if colleges are used as source for higher education/jobs and quality at this level is improved and subjects offers at college level are segregated, higher education will dramatically improve. There is ample evidence that universities operating in the same or in related medical/engineering sectors tend to cluster close to one another.

This tendency to bunch in well-defined areas has been observed in different academic environments in both developed and developing countries, and in different historical periods. There are sound economic reasons for this phenomenon. Universities & Colleges operating in such clusters derive a clear competitive advantage from:

- Proximity to sources of raw inputs,
- Availability of suitably selected academic disciplines development
- Abundance of students attracted by the cluster tradition in colleges/universities

- Presence of skilled students.

College Cluster Development Approach

College Cluster development is basically supporting and strengthening the clusters by creating networking among the stakeholders to reduce the cost of education services, bringing them on a single platform for more voice among policy makers, create new lifetime job opportunities, reducing risk of academic failure and capacity building of the universities.

College Clusters in Pakistan have huge potential but are critical to higher education.. Any initiative in this regard will bring positive results in following areas.

- Establishment of Common Facility Centers
- Access to Formal Finance for SME clusters
- Establishing/strengthening cluster associations
- Removal barriers in regulatory procedures
- Support in establishing Business Incubation Centers
- Capacity Building
- Academic Up-gradation
- College to College and University relations
- Academic support
- Improving HRD skills through support to strengthening/establishing sector specific institutions, conducting training workshops/seminars and provision of consultants.
- Awareness on International College Cluster Certification (Social, Environmental and Health & safety), Testing and other regulations.

Undergraduate Degree: The Weakest Link

**Abdur Razzaq, MSCE, P.E.
New York City Department of Transportation
74 Grant Avenue, Albertson, NY 11507, USA**

1. Abstract

Undergraduate degree is the first link of a student to be prepared to step into this competitive world. It should provide the foundation to explore, analyze and be creative. But it depends on the education system adopted. Our current education system does not open up a student to broaden its horizon. It is only geared to push the students to memorize books, pass the exam to get a job and start making money. Exams format is such that they are required to answer cookbook questions only. This has an adverse impact on their job performance and productivity. They are not motivated to utilize their knowledge for the betterment of the society. They are not challenged for new ideas and innovative methods. There is no concept of students' summer jobs to get a feel of the expectations of the industry. Government also has a responsibility to finance Research and Development projects at college level. In this way students will get an opportunity to work with their teachers on different projects, thus creating a link between teacher and student to work as team and also get the needed guidance to prepare them for the practical approach. It will also provide incentives to the colleges and students to explore new ideas and innovative methods to help the industry, public and private. It will give students sense of contribution through the knowledge they gained. Competition at national level in different fields is not encouraged to motivate the students for prominence and pride. Moreover some undergraduate degrees are granted for only two years of study after 12th grade, which is not enough to prepare for the challenges ahead. Unless we tie all these links properly, the undergraduate degree will remain as a weakest link. The detailed discussion in the paper will help find various ways and techniques to improve this weakest link. Also we should not forget the mandatory elementary education to every child.

2. Introduction

For higher education, the undergraduate degree is the first step. In Pakistan, it requires minimum two years of college studies. It helps an undergraduate to explore further to contribute to the society and build his own career on sound footing. To determine whether Pakistan's undergraduate degree is the weakest link or not, we have to analyze the whole education system and improve it within our social and cultural values instead of adopting the Western system as a whole. Government and private sector have to play a major role in improving the system and implementing the proposed recommendations for this effort. In addition, it is to their advantage to have home grown highly qualified professionals and scholars instead of depending on foreign consultants, thus saving foreign exchange and dependency. But we cannot improve any system until we fix the

foundation, which is mandatory elementary education to every child in every corner of the country. This will provide a big pool of talented students to the undergraduate studies, preparing them well for higher education. We will have a competitive intelligent work force ready to take challenges and intellectuals for research work. In addition, positive link between student and teacher will help. After this symposium, all different ideas and proposal need to be reviewed, finalized and hopefully, implemented.

3. Problems

Initially, we have to evaluate our education system thoroughly as to why our undergraduates are not performing as their counterparts in the other countries. This undergraduate degree is a very important beginning to build the whole career and the country's future depends on this. During this undergraduate period, the knowledge gained provides tools to explore for further advancement.

First of all, we have to look at our textbooks. Are we using the same pattern of "old fashion" books or have they been updated to prepare students for the current technological advancements? The reason our undergraduates are not performing well is that these books do not challenge their thinking to explore further to ask why. The kids are grown up in an environment that they are not encouraged to ask questions. This ruins their thinking power. Their curriculum only includes textbooks without any extra thinking activity in the class like small handy projects to make them creative at the elementary level or with critical thinking. Also, these textbooks are very expensive and the majority of the population is poor. They cannot afford to buy these books.

It is imperative to evaluate our exam format. Students are pushed to memorize books for the final exam. They do not have time to think about the material. The exams do not challenge a student to use critical thinking skills. Furthermore, testing is not spread throughout the whole academic year on a weekly basis to keep the students engaged in the learning environment throughout the year. Even in high school, students are not assigned any projects to utilize their knowledge for new ideas and innovative methods. This approach has an adverse impact on the job performance and productivity. In addition, by sending the exams to other districts for grading takes two months for the results to come, this does not allow the student to assess their knowledge for that course because two months later, the student does not even remember what was on the exam. During my last visit to Pakistan in 2001, I noticed that most of the students have private tuitions. It makes them dependent and discourages them to learn at schools. There is a financial aspect too for the teachers who are not paid well with respect to inflation. Hence, tuition at home is being encouraged.

Some of the undergraduate degrees require only two years of studies after 12th grade. This is not enough to prepare a student to the challenges of the competitive world. With this limited knowledge, it is very hard to advance further in global projects. Furthermore, there is no incentive to compete at national level in various fields, thus discouraging colleges and students for advancements in academic or scientific field. Moreover, with

the limited industrial base, a large number of professionals are not needed resulting in little incentive from government and private sector for the time being.

There is no concept of paid summer jobs to learn about the requirements of public and private industry. The student does not learn how to apply textbook knowledge to practical situations. After graduation, the students are not familiar with the expectation of the employers. This leads to frustration and the result is bad performance and less productivity.

Research and Development (R&D) projects at the college level are not financed by the government and private sector to the extent to have meaningful results and to establish a link between teacher and student to work as a team. Due to the lack of R&D projects, we are dependent on foreign consultants, draining resources and not producing trained professionals at home.

Quality of higher education depends on the quality of educated students entering higher education. Our literacy rate is so low that it is not producing quality students because of limited elementary education, not available in most of the rural areas where most of the population lives.

4. Recommendation and conclusion.

My recommendations are as follows:

For quality higher education, we have to prepare a large pool of talented students to be admitted for higher education. Just like in the computer, we will get good output for good input. It is only possible if we have mandatory mass elementary education to every child in every corner of the country. This can be implemented at the Union Council level with the sub-inspector of school responsible for the operation and then, the elementary school system can be upgraded to higher district level. At the same time, we have to concentrate on improving the existing education system at all levels. We have to evaluate our text books to be compatible with the outside world. Now the world is so small, it is a global village. We have to compete every moment. Our text books should reflect our social and cultural values. We should include regional languages in our curriculum. Our exam system is very outdated. Exam format should be such that student do not have to memorize the whole book but should be tested for critical thinking. There should be a semester system with a test every week. At the end of the year, the final exam should be considered as one semester. The final exam should be only considered as one part of the academic year. Grading should be done for each quarter with a Grade Point Average, GPA, and system. At the end of the year, the cumulative GPA should be calculated. College admission should be granted on the basis of cumulative GPA of the required years and not just on 10th or 12th grade scoring. There should be an entry exam for each college for any remedial courses needed.

We should give special attention to girls' education, which is equally important. An educated mother will raise intellectual children who will want to pursue higher education. The educated mother will be able to help their children with their studies.

Starting from elementary school, every student should be given a project to nourish his/her thinking, to be creative and to present it to the class. Everybody should be able to do presentation. The student will work hard to prepare the presentation and learn from other classmates' presentations. These projects aid in practical life by applying textbook principles in a creative manner. It will produce new leadership in the country.

Public and private sector should finance Research and Development projects at the college level. It will provide incentives to colleges and students to explore new ideas and innovative methods to help the industry. It will also give opportunity to students to work under the guidance of their teacher as a team, thus creating a positive link. In addition, there should be an award at the national level for the secondary school students for their work on research projects to prepare them for higher education.

Paid summer jobs help a lot to learn about the functioning of the public and private sector. Every summer, I have summer students that I train them. By the time schools are open, they exactly know what is expected of them after their graduation.

Unless we tie up all these links properly, the undergraduate degree will remain as the weakest link. A college degree gives power to think, promote business and awareness of various issues. When many people start thinking, formulate educated opinions, they will definitely find solutions to all the problems, elect capable representatives and real democracy will flourish.

Some Aspects of Curriculum Development and Designing of Science Education for Pakistan

Muhammad Iqbal, PhD
Senior Lecturer
School of Education & Professional Development
The University of Huddersfield, Queensgate
Huddersfield, West Yorkshire
HD1 3DH, United Kingdom

Abstract

With the accelerated technological advancement and interest in science, the National Curriculum Council (NCC, 1993) of UK and Miller and Osborne (1998, p12) regard teaching of science as a core subject right from primary through to year sixteen as paramount in order to prepare them for a satisfying life in the world of the 21st Century. The curriculum should aim to:

- “sustain and develop the curiosity of young people about the natural world around them and build up their confidence in their ability to inquire into its behaviour. It should seek to foster a sense of wonder, enthusiasm and interest in science so that young people feel confident and competent to engage with scientific and technical matters.
- “help young people acquire a broad, general understanding of the important ideas and explanatory frameworks of science and the procedures of scientific inquiry which had a major impact on our material environment and on our culture in general.”

Based broadly on the above aims, the paper attempts to explore the traditional methods of teaching which are to be supplemented by the student observations of the environment for learning and construction of ideas through posing problems and asking questions. The curriculum should, therefore, build for a programme of activities besides the body of knowledge. The rote and recall are the outmoded methods of learning, reified in to the process of search and inquiry.

In line with the suggestions of (Driver & Oldham, 1986), to promote the pupils’ understanding and learning there must be the on-going and concurrent assessment which the paper delineates in its methodology and curriculum development. The project Science Processes And Concept Exploration (SPACE, 1996) concurs with the suggestion and asserts assessment as the integral part through questioning and the pupils’ responses. The science textbooks should take these factors in to cognizance and their contents to abound in concrete knowledge rather than be exclusively concerned over quality of printing and illustrations.

The National Curriculum has had a major impact on science in the UK. The paper highlights the Key Stages 1 (Foundation), 2, 3 & 4 curriculum and text books to go with, both considered as the cornerstones of the educational system, which have been in practice now for nearly two decades from primary to secondary levels of education. (Jenkins, 2000) favours teaching science post sixteen for ‘A’ Levels through the Nuffield Scheme, the most vibrant alternative developed over a period of time through pilot

projects and trials and broad based new curriculum for School Science – Twenty First Century Science.

According to the British Council recommendations of qualifications equivalence, ‘A’ Levels are held just at a par with the pass degrees from any Pakistani University. The paper seeks to explore the possible introduction of the system of honours degrees in the affiliated Degree Colleges after the Higher Secondary Certificate, its pros and cons, thus enabling students after four years to gain the honours degree followed by in one year the master’s in a special subject; for example industrial, pharmaceutical, analytical, forensic specialisation in chemistry. The paper makes references to viable short sharp cognitive research projects and assignments in the aforesaid fields of chemistry.

If the Key Stages Scheme of learning is emulated in a developing country like Pakistan, the text books hitherto available can help develop the learning processes. The books produced indigenously can be examined for the aims, the contents, evaluation activities *vis-à-vis* such factors as clarity of explanation of concepts, syntax, organisation of contents, illustrations, colours, vocabulary which are some of the parameters considered and methods used in text book development.

In the end, the paper makes brief but some cogent suggestions for text books in English at different levels of science education when English language seems to be introduced at very early stage of learning in Pakistan where the English language is currently the medium of instruction at degree level. The books are indeed the repository of knowledge and the important tools for learning.

1. Preamble

This study has taken in to consideration only briefly the documentary analysis of existing text books in use in Pakistan as also it lacks any informed survey with teachers and students of science. However, it has attempted to take in to account the factors that contribute to the successful design and use of science text books in general, thus helping with an effective and improved teaching.

2. Science textbooks and factors considered in their designing

The textbooks in their contents, in general, must reflect the following factors:

- Clarity of aims
- Different individual intelligence
- Progressive building on previous student knowledge
- Relationship with the very day life
- Development of process skills
- Design around activities and experiments
- Relationship between science, technology and society
- Learning based on child
- Textbook layout

2.1 Contents and co-ordination

The science text books in the UK and the developed countries are built around the constructivists’ theories and viewpoints as against the traditional methods and approaches in Pakistan and other developing countries of the world. In the developed countries the corpus of science books promote child centred activities and learning, and the teachers have a choice of books that help with preparation of lessons and the teaching process. Although science textbooks in Pakistan are revised periodically, still they incorporate both intrinsic and extrinsic shortcomings related to text

book themselves and class size and shortage of material respectively. This paper affords conclusions and recommendation, most importantly more effective initial teacher training and more regular in-service provisions of science co-ordinators with inspecting and advisory role at the district level. It is imperatively most necessary to provide teachers at all levels to provide teachers' guides at all levels along side.

2.2 Aims of science teaching

The aim of effective science teaching is twofold; firstly to produce the human resources to cater for the indigenous consumption and secondly to work overseas for foreign exchange for Pakistan. In order to fulfil this aim a multi-facet approach in-as-much-as development of academia, their skills and vocations, the infra-structure, the buildings, materials/equipments needs to be pursued and developed, and, above all, align their relevance to the teaching techniques and practices as in the developed countries. In this equation the science textbooks are the most important entity, which according to their eleven case studies of science teachings and Stake and Easley (1978) have revealed, is used by teachers in USA ninety per cent of their teaching time.

It would be interesting to study and explore how the Text Books Board in Pakistan improve the throughput of science textbooks and who do they seek the help from and what their main criteria of development and designing of textbooks are. It would be a worthwhile attempt for Higher Education Commission (HEC) of Pakistan to commission such comparative studies for more effective technological and scientific advancement, thus eliminating any shortcomings of the graded textbooks as they do not always inter-relate and, therefore, the most subtle and abstract concepts and perspectives are lost on students. At the same time, a surfeit of textbooks should be regarded as healthy, for in Britain the science teachers use a wide range of textbooks, and learning materials, besides that, have been prepared through several science initiatives e.g. Children Learning in Science (CLIS).

2.3 Aims of education

According to Ibn Miskawaih (d. 1030 AH), a Muslim historian and sociologist, the aims of education in general are, regardless of any religious denomination, to help the child acquire knowledge, fulfil herself/himself and become an instrument of social reform. In the case of a Muslim child, his/her educational fulfilment amounts to align her/his will with the Will of Allah the Almighty which is contained in the *Holy Qur'an* and explained in the *Hadith* of the Holy Prophet ﷺ. For acquisition of knowledge in general and science education in particular from very primary age as such, it is highly desirable to make children aware of the world around them; the natural phenomena and resources and their understanding and value. This is all brought about with the help from school curriculum as guided by the projects and initiatives in the UK, such as Learning Through Science (LTS, 1980) and Children Learning in Science (CLIS).

3. Aims of designing textbooks

3.1 Designing of text books depends upon the aims and objectives to be achieved in science teaching and have been recommended by British Association for Science Education as paraphrased by Brown Cooper, Horton, Toates and Zedlin (1986). These are:

- The children should acquire and understand scientific concepts, generalisations, principles and laws via their science teaching.
- The children should acquire cognitive and psychomotor skills and use science processes in carrying out scientific activities.
- To enable children to contribute to autonomous learning.
- To enable children to comprehend that scientific knowledge and experience that are one of the means of building personal and social identity.

- To enable children to understand the interaction between science and society and the role of science in their cultural heritage.

3.2 The Association's strategy

The Association made several recommendations for achievement of these aims successfully. The strategy of the Association to achieve successful science teaching is as follows:

1. Education through science is an important component of general education and as such continues to be organised as part of the core, or protected, element of the curriculum.
2. All pupils should have the opportunity to benefit from full and effective programmes of science education throughout their period of compulsory schooling.
3. All should have a strategy that enables aspects of the aims of science education to be achieved through appropriate work in science.
4. All schools should develop an approach to science studies based on the notion of science across the curriculum which sees science as essential to the development of a common or core curriculum at the primary and secondary levels of schooling.
5. The Association remains fully committed to the development of effective provision of science education in the early years of schooling.
6. A strong case exists for the redefinition and restructuring of introductory courses at the lower secondary level.
7. The Association accepts that a policy of science education for all has many pedagogic implications and strongly recommends increasing the levels of self-evaluation on the part of science education.
8. The Association regards it as critical that teachers of science should adopt a wider and more flexible range of teaching styles in their science education programmes.
9. The Association attaches great importance to the role of written and spoken language in effective science teaching.
10. The Association also attaches importance to the careful definition of the relationships between mathematics and science in the school curriculum.
11. The Association welcomes the decision to implement a common system of examining at 16+ and attaches great importance to the creation of a system that increases educational opportunity and leaves schools free, within nationally agreed criteria and organisation frameworks, to measure student performance against their own detailed criteria and across the full ability range (Brown *et al*, 1986, pp. 286-288)

3.3 Setting up of NCC in the UK

Since teaching has become the worldwide process, the UK undertook five years programme in 1982 to review its secondary science curriculum. The USA followed suit in 1983 and Malaysia in 1985. Not only that the Education Reform Act 1988 established National Curriculum Council (NCC) in England and Wales, the council of assessment and examination (Sherrington, 1995). As a result science education has been enhanced as is claimed by Morrison and Webb (2000, p15): *“The major benefit of the National Curriculum has been the raised profile of science as a core curriculum subject, so very different from the earlier inclusion of science activities in the curriculum.”*

3.3.1 Introduction of National Curriculum (NC)

Accordingly, an introduction of National Curriculum brought in its wake twofold types of understanding. These are:

1. Conceptual understanding: Herein scientific knowledge is drawn together into a series of over-arching ideas, the concepts.

2. Procedural understanding: in this the scientific skills are combined as part of overall strategy. This enables children to carry out investigations to find answers to problems set in everyday and scientific context (NCC, 1993, p. 6).

The NCC (1993) considers it imperative to maintain continuity and progression from primary to secondary education which must have common objectives to seek and contribution to make in science teaching throughout the period of compulsory full time science education. The Council identifies that continuity relates to a '*clear and logical sequence of work between and within key stages*'. It concentrates on extending children's knowledge rather than unhelpful repetition. Progression has been defined as follows:

1. A sequence of increasingly demanding activities, like a route through programme of study or statements of attainment
2. Development in learning, such as the way a particular child moves from one understanding to another deeper or broader understanding (p. 8)

4. Development of science textbooks

In the light of the above aims and objectives and the attendant statements, science textbooks have been developed in the UK which present a catalogue of potential activities performed through open-ended and problem solving techniques as against the traditional contents of information and list of facts to be taught and memorised by children through rote and recall. Consequently, many and various paradigms and approaches have been proposed, the well known amongst them being 'constructivism' for its greatest impact.

4.1 What is 'constructivism'?

As Harlem (1995) puts, 'constructivism' entails building around the children's ideas that:

1. emerged from a process of reasoning about experience, rather than from childish fantasy or imagination.
2. would not, however, stand up to rigorous testing against evidence that was often available for the children to use had they wished to do so.
3. sometimes required additional evidence to be made available if they were to be tested in practice.
4. were influenced by other information than that which came from evidence of actual events, these other sources including the media, conventions of speech and ways of representing things, influential adults and peers.
5. were often expressed in terms of words which seemed scientific, yet had, for the children, a meaning which was ill-defined, difficult to pin down and not apparently consistent with the scientific meaning (p. 44)

Long before Driver and Oldham (1986) reported that a review of the 'outmoded' teaching methods at secondary level science curriculum led to setting up of CLIS in order to revise teaching approaches. To this effect constructivism that revolved round two main considerations was utilised. Firstly, its philosophy is that our observations and prior experience help build our concepts and ideas about the world around us, thus constructing meanings for our surroundings. The traditional approach in science teaching was based on observation of phenomena alone, hence accepting or rejecting them. The former is less clinical and more human. The children's perceptions and ideas are utilised to interact with new ideas and experience. Secondly, constructivism is developed through interaction between previous experience and ideas and mental constructs. This approach has received much currency as a result of Piaget's 'cognitive theory' which 'underlined that children construct knowledge as a result of interaction with the environment and the construction of suitable representations and interpretations' (Osborne and Wittrock, 1985). All in all practical activities underpin science teaching as Harlem (1999a) concludes:

“Approach to changing pupils’ ideas all begin with some activities which are designed so that pupils express their ideas and make them available to the teacher (p. 40).”

4.1.1 The constructivist learning

The constructivist learning, therefore, differs from traditional in the following according to Fensham *et al* (1994):

- It provides children with opportunities to explore and understand their natural world.
- It employs children’s ideas by effective action.
- It creates co-operation among children.
- It makes science more enjoyable, fruitful and plausible.

4.1.2 Science textbooks and progressive learning

The process of learning involves orientation of previous ideas, elicitation to develop them further, restructuring and modification of ideas, their application to a variety of contexts and finally review to make comparisons and contrasts.

The process of constructivism has its implication to take in to consideration in the propagation of science textbooks, e.g. practical scientific activities, resources, science process skills, observations, comments, raising questions, predicting outcome, measurements, investigation and problem solving. The new learning model afforded by constructivism is in its import essentially co-operative and group-work.

4.1.3 Pitfalls in the process of learning

The difficulties presented in implementation of this or for that matter any model of learning can be summarised as follows:

- Employing traditional methods
- Ineffective planning which does not achieve the required aims
- Time problems
- Lack of teaching resources
- Shortcomings in textbook design
- Laboratories’ inappropriateness for carrying out practical activities
- Teachers’ insufficient science knowledge
- The weak quality of teacher education programmes
- Teachers have an overload of responsibilities which is a barrier to effective teaching.

4.1.4 Traditional and modern views

We propose to only deal with shortcomings in textbook design. Al-Farhan *et al* (1984a) have made comparison between traditional and modern views about school textbooks; these comparisons are presented in the table here below:

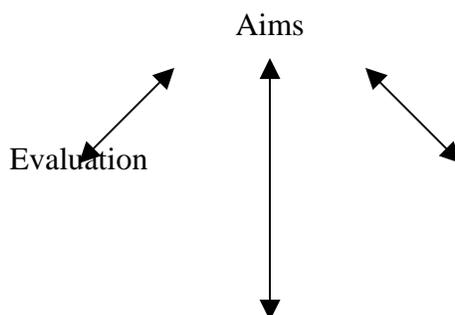
Comparison between traditional and modern views about school textbooks

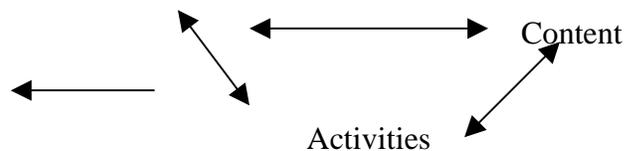
Areas	Traditional view	Modern View
School life	<ul style="list-style-type: none"> • Practical work does not exist in school • School Knowledge is not related to children’s daily life. 	<ul style="list-style-type: none"> • Children practise many diverse activities which suit their needs, attention, wishes and abilities. • Children learn co-operative work, self-confidence and self-reliance.

Textbook content	<ul style="list-style-type: none"> • Textbook content focuses on knowledge only. • Learning by rote and acquisition of knowledge is textbooks main objective. 	<ul style="list-style-type: none"> • Textbook content considers learners' needs, and at the same time does not omit scientific knowledge. • Organisation of textbook content in the light of emerging scientific knowledge by modification and revision to cope with new knowledge. • Acquisition of scientific knowledge through practical skills and scientific thinking.
Teacher's role in textbooks	<ul style="list-style-type: none"> • Transferring of prescribed information to students. • Assessment of students by recalling information. 	<ul style="list-style-type: none"> • Teachers use various instructional resources to teach students. • Assessment is used as a tool to identify students' level. • The teacher does not concentrate on cognitive aspects only but emphasises other areas.
Students	<ul style="list-style-type: none"> • Textbooks do not consider individual differences between students. • Textbooks discourage students' autonomous learning. • Omitting students' role in teaching and learning process. 	<ul style="list-style-type: none"> • Textbooks consider individual differences between students. • Textbooks provide students with diverse teaching opportunities. • Designing and constructing textbooks in the light of students' needs.
Social Environment	<ul style="list-style-type: none"> • Textbooks deal with the students as an independent individual who has no link with the social environment. • Textbooks omit the social environment as a learning source. • Text books do not establish relations with the social environment. 	<ul style="list-style-type: none"> • Textbooks deal with the student as an active person in his or her society. • Textbooks consider the social environment one of the most important teaching resources. • Textbooks establish and construct relationships based on interaction with the environment.

5. Necessity of science textbooks: different parameters

The importance of textbooks cannot be more emphasised in that 85% of science classes in USA rely on the (Sethna & Fillman, 1991) to supplement and supply additional support and child centred active programmes. Wellington (2001) in the UK corroborates this statement in so far as the newly qualified teachers are concerned and who are not literate in science. In developing countries they are not the source of knowledge for students, but an important instructional tool for teachers. The best science textbooks would present an optimum synthesis of scientific knowledge designed as a set of activities by which children can enquire and research scientific information. (Marie, 1996) has highlighted the important elements of the structure of a science textbook and their relationship in the following configuration.





The good practice in the design of science textbook must take into account these elements the details of which can be gathered from such studies as undertaken by Al-Farhan et al (1984a), Spiegel and Wright (1984), Newton (1984 a), McLeod (1979), Jenkins (1992a) and Marei (1996) to name but a few. This corpus of books highlights and underpins the important characteristic of science curriculum that developers bear in mind, such as readability, the factors related to the reader's linguistic ability and written textbooks. The written factors appertain to print, clarity of concept, syntax and sentence structure, organisation of text, paragraphs and sub-headings and illustrations and choice of vocabulary depending upon the pupils' age. An easy reading requires the use in books of familiar and concrete rather than abstract words, use of terms only if necessary, active rather than passive verbs, and appropriate words for emphasis. With respect to illustrations Holliday (1990) has many helpful suggestions. Constable, Campbell and Brown (1988) claim that illustrations, by way of photographs, drawing and charts, serve threefold function; attentional, retentional, and explicative. They explain the explicative function further: *"It is generally thought that it is in the latter, explicative role, that illustrations are particularly powerful learning aids. They explain a given aspect of the topic being presented or they add something which is not clearly expressible in words (Constable et al, 1988, p. 90)"*

6. Designing and developing science textbooks

Development of textbooks in the developed countries as has previously been mentioned is through projects and initiatives like CLIS, NCC, Nuffield Foundation, School Council, Salters' Company, Chemistry Club and even leading educational publishers. In developing countries, the textbooks are designed by and large through Textbook Boards which are more often than not the government quangos which work via three pronged methods, commission, competition and committee. There are several difficulties in the production of textbooks, mainly the production and distribution. A large investment of funds is required for designing and printing which are extremely skilled jobs. The literature reviews would reveal that there are differing practices in different countries, e.g. Jordan, Taiwan, and Caribbean Islands. Ideally, the science textbooks must conform to the contents, illustrations and questions in chemistry textbooks in the ratios and proportions as found in the USA by Chiapetta et al (1991). Their study showed the following:

- 26% of the textbook content focused on science as a body of knowledge, 43% focused on investigative knowledge, 1% on describing ways of thinking and 30% on the interaction between science, technology and society.
- The activities attempted to stimulate students' thinking, reasoning and exploring.
- The text focus on questions that can be deduced from tables included in the textbooks.
- Performance of practical activities was confined to activities closely specified in the textbooks.

7. Recent approaches in science textbooks

The most recent initiative undertaken in the UK is Twenty First Century Science that is "an innovative suite of GCSE science courses studied by students aged 14-16. Trials for the course began in 75 schools across England and Wales in September 2003 with the first examination sat in June 2004. This jointly produced new course by the University of York and Nuffield

Curriculum Centre is available as from September 06 in all High Schools. Some salient features of the course as found on the project web site are as follows:

- Schools are supported by the project team, training meetings and new multimedia resources.
- The core science course aims to develop scientific literacy for all students.
- Core science teaches both key science explanations, and an understanding of the nature of science.
- Students should be prepared to engage with scientific debate and decision making in their daily lives.
- The curriculum must also prepare the next generation of professional scientists. Twenty First Century Science provides students seeking this route with a firm basis for future study through Additional Science courses.
- There are two options for Additional Science, via either a concept led or vocational route.

8. Different routes to Higher Education in the UK

Burden and Hall (2005) come up with similar outcomes of C21 and the scientifically literate scientists in future as the end product. The remit of the Nuffield Foundation incorporates beyond GCSE at 16+ and A Levels at 19+ the task of producing 'next generation of professional scientists. The post 16+ education is either vocational or academic. The former is carried out in the technical colleges where the National Vocational Qualifications (NVQ), 1, 2, & 3 grades teaching that is at a par with A Levels in all major subjects, the core curriculum of which is laid down and addressed by many different examining boards as co-ordinated by QCA in the UK. The students are led in to one stream or the other depending upon their interests and ability to finally enter in to the University education or a certain vocational careers for living as in industry, commerce, agriculture, nursing, and hotel management vehicle maintenance. The education fairs and open days as organised by the universities in the UK aim to attract students to their folds thus fulfilling the demand of qualified educationists, professionals, or scientists in different fields of industry, manufacturing as also service, and research and development. For example, the Department of Biological and Chemical Science at the University of Huddersfield offers for A level students a couple of day's practical activity of preparation of aspirin in order to engender the students' interest in applied chemistry. But for the limited scope of and space for this paper, many more examples of project work and assignments for students could be quoted.

The projects and initiatives regarding all aspects of science textbooks are continually in operations and their progress closely monitored by Qualifications and Curriculum Authority (QCA), an active Wing of the HM Government Department of Learning and Skill (London).

9. Emulation of the UK model:

The concepts and ideas as above must be studied in depth in order to initiate a considered and erudite emulation of the same in Pakistan. There might be some in practice already, but further innovative approach could only be beneficial and profitable.

10. Conclusions and Recommendations:

The conclusions and recommendations are sporadic and in no order of preference, and some of them need to be studied in depth before implementation.

- to facilitate a study to compare and assess science textbooks at all levels as teaching and learning resources in the UK and Pakistan
- to introduce teacher training in the use of modern teaching and learning methods and technology of inquiry and discovery and class room discussion

- to re-examine the instructional media once for all
- to revise science textbooks, remove all traditional approach of expressions and presentations and incorporate practical activities
- to blend in to the scheme of course studies the projects and assignment such as preparation of the main three mineral acids industrially, water treatment, sewerage and sewage disposal, pre-treatment of industrial effluents etc.
- to appoint a committee of scholars well versed in the state of art of 'constructivism' in all disciplines of science with the brief to review all the current science textbooks in vogue in Pakistan and initiate assignments of writing of textbooks in collaboration with the funding entrepreneurs and publishers
- to consider pro and cons in that the medium of instructions and textbooks must be complementary to the state language of Pakistan thus helping with easy grasp of scientific concepts
- to introduce after intermediate the Honours Degree (Sandwich) with a year in industry for work experience for altogether 4years of study for a single subject in the feeder colleges entering the Universities where Masters and research degree programmes were the main business
- to help include in the science textbooks the activities for assessment of pupils' performance thus frustrating the opportunists, publishing précis and summaries to simply pass the exams rather than learning for life
- the science textbook writers and designers to attend to the job regardless of any financial constraints
- the science textbooks to afford material, practical as also theoretical, in order to help teachers to design their own lessons from
- to encourage practising teachers to attend periodic retraining programmes to keep breast with the rapid pace of scientific advancement
- to make appointments liberally of highly qualified co-ordinators of science teachers at an appropriate level of education hierarchy

11. Summary

In sum, the paper has reviewed the literature on the subject, quoting the aims of education in general and teaching and learning of science in particular and endeavoured to maintain that these aims could only be realised successfully if there were science textbooks abounding in information complemented by activities. It has been shown clearly that outmoded traditional learning by rote and repetition is redundant and modern investigative practical activities are the current methods for teaching science. Both the traditional and modern views have been incorporated. Also, it has been shown that an ideal science textbook can be prepared by the recent technique of 'constructivism' via the Piaget's 'cognitive theory' which the various initiatives and projects in the UK are using for preparation of core science curriculum. The belief that once a firm

foundation of science teaching/learning has been laid by means of efficacious science textbooks at primary to secondary levels of education in Pakistan, there will certainly be a tremendous push through to science education at under- and post- graduate levels at degree colleges and universities, thus rearing the competent scientists/researchers. Towards the end the paper affords a list of conclusions and recommendations for consideration by the appropriate authorities in Pakistan in order to achieve this end.

12. Acknowledgements

The author wishes to express his heartfelt gratitude to the authors and publishers whose works he has benefited from in preparation of this paper, quoted where appropriate and referred to here under. He is equally grateful for a useful sight of Ali Al-Barkat's PhD thesis (2001), Huddersfield University, on his study of science textbooks at primary level of education in Jordan.

The author firmly believes that good science textbooks for all primary, secondary and the higher secondary levels of education in Pakistan can help with laying a firm foundation of science education and research at higher echelon in the Higher Education institutes.

He records his thanks to the School of Education and Professional Development at this University for using their computing facilities

Acknowledgements are due to PEP Foundation (USA) and HEC (Government of Pakistan) for a travelling bursary thus enabling to attend and present this paper.

13. References:

- Al-Farhan, A. (1978). *The School Textbooks*, Amman, MoE, Jordan
- Al-Farhan, A. Marie, T. and Balgis, A. (1984a). *Education Curriculum between Originality and Contemporaneous*. Amman: Dar Al-Fargan
- Burden, J. and Hall, A. (2005). Biology in the Twenty First Century: a new curriculum for school science. *Journal of Biology Education*, Vol.40(1), pp.6-10
- Chiapetta, E. Sethna, and Fillman, D. (1991). A Quantitative Analysis of High School Chemistry Textbooks for Scientific Literacy Themes and Expository Learning Aids. *Journal of Research in Science Teaching*, 28(10), pp.939-951
- Constable, H. Campbell, B. and Brown, R. (1988). Sectional Drawing from Science Textbooks: An Experimental Investigation into Pupils' Understanding. *British Journal of Education Psychology*, 58(1), pp 89 -102
- Driver, R. and Oldham, V. (1986). A Constructivist Approach to Curriculum Development in Science. *Studies in Science Education*, 13, pp.105-122
- Fensham, P. Gunstone, R. and White, R. *The Content of Science: A Constructivist Approach to its Teaching and Learning*. London: Falmer
- Harlen, W. (1999a). Effective Teaching of Science: a Review of Research. Edinburgh: SCORE
- Harlem, W. (1995). Children's Learning in Science. In Sherrington, R. (ed). *Science Teachers' Handbook*. Cheltenham: Stanley Thorne
- Holliday, W. (1990). Textbook Illustrations: Fact or Filler? *The Science Teacher*, 57(9), pp.27-29
- Jenkins, E. (1992). School Science Education: Towards a Reconstruction. *Journal of Curriculum Studies*, 24(3), pp.229-246
- Marie, T. (1996). *Curriculum Theory*. Irbid: Yarmouk University, Curriculum and Instruction Department
- McLeod, R. (1979). Selecting a textbook for Good Science Teaching. *Science and Children*, 17(a), pp.14-15
- Morrison, I. and Webb, L. (2000). The Development of Science and the Impact of National Curriculum. Warwick, P. and Linfield, R. (ed). *Science 3-13: the Past, the Present and Possible Futures*. London: Routledge Falmer
- NCC (1993). *Teaching Science at Key Stages 1 and 2*. York: NCC

- Newton, D. (1984a). Textbooks in Science Teaching. *School Science Review*, **66** (235), pp.388-391
- Osborne, R. and Wittrock, M. (1985). The generative Learning Model and its Implication for Science Education. *Studies in Science Education*, **12**, pp.59-87
- Spiegel, D. and Wright, J. (1984) Biology Teachers' Preferences in Textbook Characteristics. *Journal of Reading*, **27** (4), pp.24-62
- Stake, R. and Easley, J. (1978). *Case Studies in Science Education*, **Vol. II**, University of Illinois of Urban Champaign: Centre for Instructional Research and Curriculum Evaluation.
- Wellington, J. (2001). School Textbooks and Reading in Science: Looking Back and Looking Forward, *School Science Review*, **82**(300), pp71-81

Teacher Education at Tertiary Level

Nikhat Khan, PhD
Dean
Post-graduate Studies
Kinnaird College for Women
Lahore, Pakistan
cav239@yahoo.com

The world is changing more rapidly and dramatically at the start of the 21st century than ever before in the history of the planet. Drugs, crimes, diseases, information, pollution, entertainment, goods and money now all travel the globe at an unprecedented scale and speeds never seen before. People's lives at one corner of the earth are affected and shaped by events and decisions on the other side. The advent of satellite TV, mobile phones and Internet means that communications across the globe are instantaneous.

With global competitiveness, all progressive and smart nations have to look ahead. How are we preparing our next generations for the future? It is generally accepted that we must do something about the malaise in our education.

Teacher education is an important ingredient in improving the quality of education not only primary and secondary levels, but also at tertiary/higher education. The teacher's role of promoting the intellectual, physical, ethical and aesthetic potentials of young adults is a difficult and crucial task.

What makes an effective teacher? Qualifications, that is formal education and professional training but other characteristics as well. These can be broadly categorized as personal, professional, intellectual, attitudinal, and psychological. Teacher education must encompass all of these. Communication skills, using audio visual aids, teaching methodologies are all useful in improving the quality of teaching. All these can develop if an effective teacher education program is pursued.

In Pakistan there are generally no trained teachers at the tertiary level. The initial question which today's topic 'Higher Education in Pakistan _ Undergraduate the weakest Link' poses: Is it necessary for teachers of higher education to pursue teacher education programs? Well, many educators would agree whole-heartedly, many would be skeptical while the rest may not see the necessity. Various responses are understandable. Those who are in doubt, and those whose attitude is negative contend that after all, these teachers without any training have, for all these years taught many students who have done well in examinations and later in life. They would point out that many luminaries of international fame are products of this very system of higher education. This is indeed true.

WHY? I can at least give two primary reasons.

One: Many teachers are born teachers, talented teachers. They are devoted to the profession and are always willing to help solve their students' problems. They are highly respected by their pupils.

Two: The brilliant and highly motivated students do not need teachers. They can learn from books, media and experience. Coupled with inborn intellectual ability, creativity and pursuit for excellence, they excel in their respective fields.

However, the majority of students are average or below average. Due to their school experiences many students lack motivation and have hardly any desire to study at college level. Many teachers/professors do not know how to teach. They have mastery of the subject matter but no knowledge of educational psychology and teaching methodology. They read from books/notes or deliver boring lectures in class. Students become inattentive, some even daydream or get into mischief. Their performance on tests/examinations is adversely affected. This may be one of the main reasons for the high rate of failures. Sadeef an intelligent student got 90% marks in Electricity and Magnetism but barely managed to scrap through in Heat and Thermodynamics. When questioned she complained that the teacher read from the textbook and she could not understand anything let alone the basic concepts. I think all educators would agree that most students need well-trained teachers.

Formerly the best and brilliant female students joined the teaching profession. But now less capable, less knowledgeable and less talented students take up teaching careers. Now women are moving away from adopting teaching as a career because teaching is an underpaid and less respected profession. Thus a majority of the young teachers may not also have mastery over their subject.

Some years ago I used to teach Refresher Courses for Physics college lecturers and assistant professors. They were given a Pre test on concepts in the subject we were going to revise. Invariably 50% did not get passing marks.

In my BSc Environmental class we were discussing global warming. I asked the students Why do you they think the northern hemisphere would get warmer than the southern?

Seeing some blank looks, on the spur of the moment I asked: Where is Pakistan? In the northern or Southern hemisphere? To my surprise a number said Southern. This is from what is termed: the cream!

The system of formal education is grossly defective. Right from the primary school level to tertiary level rote memory is promoted. The students are expected to reproduce the subject matter taught in class. Interestingly, even some of the trained teachers use centuries-old strategies of making their young pupils passive listeners while the teacher lectures most of the time. Even teaching of science is reduced to learning facts from the book – no direct observation of natural phenomena and experimentation. Fareeda was being taught about trees in Class 3 __ trees that need support and those that do not. She did not understand the idea of a tree that needed support. I took her outside and asked her what would happen to the creeper tree if she removed it from the wall. She said it would

fall. Her school has huge grounds with many trees and creepers, but the teacher had never taken the girls outside the classroom. They are not given opportunity to observe and discover. Their natural instinct of curiosity is suppressed.

At the higher-level students are conditioned to memorize and reproduce in examinations, which is the easiest and least desirable teaching technique. This practice sadly inhibits the natural instinct of curiosity as well as creative and critical thinking.

The need for training teachers is imperative in the context of the positive change in the educational system and curriculum development envisaged by the Higher Education Commission (HEC) and the demands of the times. Recent researches have revealed that investment in teacher education improves the performance of the average student.

It is a universal phenomenon that educators, as a group, are more conservative and cautiously slow in accepting new ideas. It takes years of exposure to accept updated curriculum embodying content and teaching methods, new teaching and testing systems, etc.

I would like to cite the case of Kinnaird College. The BA/BSc 4-year program was started in September 2003. A majority of teachers, who were in a rut teaching the same course for the last 25 years or more, found it very tough to teach an up-to-date syllabus in the semester system. They had an aversion for giving regular assignments and projects, grading and evaluating them, which requires effort and time. Teachers refused to understand credit hours and grade point average (GPA). They were disinclined to take make-up classes __ felt it was extra work.

Teacher training in these areas is an important task that the government would have to initiate if a 4-year graduate program following the semester system is to be implemented universally and successfully.

This discussion leads to another important question. What are the implications for the teacher education program?

A well thought out teacher educational program, besides the conventional disciplines of psychology and teaching methodology, must focus more on trainees observing competent teachers in classrooms and allocating more time to actual teaching practice. Greater emphasis needs to be placed on application, developing problem solving abilities and research techniques.

Another issue we are facing at Kinnaird is Research Methodology. Research is an area lacking in our educational system. Kinnaird's curriculum and courses were designed to promote research. BA/BSc and masters students are required to undertake research work (6 credit hours) and write a thesis. Instructors who do not have exposure or higher degrees (M Phil and PhD) are at a loss of how to cope with this important component of the curriculum, although most of them have a master's degree with first division. In Science the situation is worse because of a dearth of well-equipped laboratories particularly in colleges. Science equipment is very expensive. The government needs to

allocate funds to equip laboratories with the latest instruments if research and proper experimental work is to be promoted and teacher training in this area is to be conducted.

Pakistan is fertile ground for research in sociology and the humanities. What is required is to train teachers in research methods. This can easily be done during the summer vacations.

Teachers who are not exposed to modern facilities will themselves be marginalized and their students would suffer.

Women's access to IT is limited. Due to the efforts of the government, the Higher Education Commission and the private sector IT institutions, internet facilities have mushroomed in big cities. Even then access to the Internet is severely limited. The ratio of Internet facility to number of people is 1:100. Many educated women cannot go to Internet cafés due to social constraints and are consequently unable to benefit from them.

In a recent survey conducted at three women colleges in Lahore I found barely 2% teachers using internet for improving their knowledge and lectures; a majority did not have access to internet facilities; a few chatted with their sons who were working or studying abroad.

A majority of colleges do not have adequate laboratory and library facilities. Computers and Internet connections are non-existent.

With globalization however, an international dimension can be added to the classroom. Existing methodology can be modified. Our teachers are likely to improve from the experiences and researches of foreign universities. As a result, more women in higher education will gain knowledge, benefit from the exposure and form partnerships with western universities to generate new projects and activities

Teachers can benefit by exchange of views with experts around the world. They are exposed to international benchmarks and standards. This would help in improving the curriculum and teaching practices in their own institutions, exploring areas of research and pursuing other joint activities. Kinnaird College has such linkages and twinning programs with universities in UK, USA and France.

But colleges that lack funds, facilities and vision, will remain outdated and over a period of time get marginalized. Some colleges and universities have already suffered. Resourceful institutions on the other hand, have shown a significant improvement in their curriculum, faculty development, research output and collaborative programs with western universities. The government and the Higher Education Commission will have to revise their existing policies on education and provide the necessary funding for facilities and research development across the board. Dedicated and enlightened leadership is essential in educational institutions.

Financial constraints are one of the reasons why 4-year universally recognized undergraduate programs have not started in a majority of colleges. Institutions that have the

funds and qualified faculty have been able to start 4-year programs, but institutions that lacked both are still offering 2-year bachelors programs. This will further increase the chasm between elitist institutions and those that cater to the majority. This is a major issue of concern that needs to be addressed.

The impact of globalization on a limited number of teachers in higher education has been generally positive. It has created more awareness, opened international avenues; resulted in exposure to diverse cultures and multidimensional issues and to collaborative research projects; it has given them more options and possibilities, promoted personal and institutional benefits, and fostered greater understanding and cross-cultural benefits. In a nutshell exposure to knowledge and empowerment of women are major results. It is difficult to ascertain what would happen in future. If the government can improve the current situation in academic institutions more women would benefit.

Self-improvement, drawing proper benefits from Internet and computer facilities need to be stressed and incorporated in teacher training programs. Master trainers in various disciplines must be prepared first and initially 6-week crash courses should be given to all tertiary teachers. Follow-up and evaluation too needs to be carried out to determine that the new ideas are brought to the classroom. Evaluation and grading criteria be taught and teachers need to keep pace with current research and trends in education. Incentives must be given to teachers who incorporate these new notions in the classroom and conduct research.

Teacher education program is the key to continued success and future improvement of public education.

This talk may have sounded critical of teachers but we have to remember they are products of the decades' old, obsolete, prevalent education system. I appeal to the government to initiate educational reforms with modern curricula and techniques, to promote application of knowledge, critical, analytical and creative thinking; to conduct teacher training programs; to provide funds to all colleges rural and urban for improving their teaching and laboratory facilities; and to teachers to improve the quality of their teaching and ensure that the classroom is student friendly. This implies motivating and encouraging students to apply themselves; and prepare students to be productive, to have interactive sessions, so that they enter the mainstream well equipped for which ever occupation or profession they may pursue.

Well-trained teachers at the tertiary level can play a key role in upgrading the standard of education and scientific development of Pakistan.

Content and Pedagogy: Learning to Teach at the Undergraduate Level

Fareeha Zafar, PhD

Director

Society for the Advancement of Education

65-C, Garden Block, New Garden Town, Lahore Pakistan

Fax: 92 42 5839816; E-mail: fareehazafar@hotmail.com

The changing context of education inclusive of the content, teaching methods, assessment and role of the teacher has yet to affect the domain of teaching in Pakistan especially in public sector institutions at the undergraduate level. The subject content of most disciplines continues to be outdated and irrelevant. Attempts at adding new concepts and information are patchy, consequently students lack clarity of thought and the ability to relate to the national or local context. The lecture method dominates the classroom with no exposure to other pedagogical skills. The combination of authoritarian attitudes and poor language skills discourages questioning and discussion. The assessment system rewards a regurgitating of textbook content, and the teacher is unable to transcend his/her historical role of stating facts, often incorrect, instead of facilitating student learning and understanding.

While it is easy to state the problems of teaching and learning at the undergraduate level, it is next to impossible to suggest what can be done certainly not in the short term. Conceptual and content knowledge has to be acquired during school, college and the university. Is it possible to meet the knowledge deficit through training? How can we get qualified and competent teachers at the undergraduate level? Creating effective teachers through a process of teaching assistantships requires good teachers for them to work under. But, who becomes a college teacher and should there be accreditation procedures at this level? Some of the areas require innovative and radical solutions.

State of College Education – strategies and opportunities

Humala S. Khalid, PhD
Head of Education Planning and Development Department
Lahore College for Women University (LCWU)
Jail Road, Lahore

State of College Education – strategies and opportunities

At present College education consists of:

- Higher secondary education** --- 2 years
- Undergraduate Degree** ---- 2 years

Undergraduate B. A. / B. Sc. (Hons.) 4 year Degree program was introduced in Universities in 2006 and students were enrolled for 3 years degree program in 2005 were informed that they will have to spend 4 years to complete 4 year B. A./ B. Sc. (Hons.) degree.

Higher Secondary Education

- F. A.
- F. Sc.
- A Levels

Teaching Learning Issues at College Level Education –Research Needed

- The general observation is that science students (F. Sc. & B. Sc.) work hard and do written assignments and particles than arts students (F. A. & B. A.)
- Usually teachers just rush through the course material without ensuring conceptual understanding of the subject. Hence students mostly attend Academies to secure good marks in Board and University exams.
- Teachers teaching in colleges are mostly Master level having no training in teaching methodology.
- The percentage of students enrolled in Arts subjects is more than those enrolled in science subjects

Findings of an ongoing study on the State of College Education in Arts stream Pakistan

- Many 1st year students of LCWU and GCU securing more than 75% marks in Matric examination were not willing to study in English medium subjects like Psychology,

Education, Commerce, Economics, Geography, Political Science, Philosophy, Mass Communication etc.

- College teachers think that the competence level of English Language is extremely low among 1st year students
- Students enrolling in 1st year have no idea about the subjects they study, the career they want to follow and the career opportunities available at various terminal stages of education
- Stakeholders: Students, Teachers, and Institution
- 200 students studying M. A. level courses, at Punjab University and LCWU, were asked how many written assignment they did during 4 years of college education? Only 40 (20%) students replied maximum 8 and minimum 2. 80% Students never submitted any assignment to the teachers
- Only 20% to 30% students used college libraries during their 4 years of education
- More than 50% students took only send up exam as first and final test during 2 years of college education
- Many students percentage of obtained marks decline from matric level at F.A / B.A due to non conducive environment
- Regarding study habits the students are facing huge problems in the semester system
- Very few students read extra material, many attend Academies to prepare for Board / University exams
- Limited time for teacher student interaction (September to February/March 150 days approx) compel students to join academies

Teacher Related Factors in Colleges

- Teachers attend college only for the time they teach, they are rarely available outside the class room to provide academic support to the students
- Very little supervision of teachers in colleges,
- Teachers start teaching in colleges after Master's Degree without any training in teaching methods
- It takes teachers two to three years to get use to teach the courses. After that they usually do not prepare lessons
- Many teachers do not care to look at Board/University exam papers
- Lack of teacher commitment and competence

Institution Related Factors

- Very little check on teacher regularity
- No student support services for academic / career guidance
- Arrangements to replace teachers on casual leave
- Poor systematic arrangements to require teacher to give assignments and tests to students
- No character building / moral education arrangements
- Over crowded classes: usually class size exceeds 100 students in many subjects in urban prestigious colleges
- Many colleges lack proper size classrooms with adequate furniture

Strategies and Opportunities

- Proper planning and management of courses and exams
- Physical facilities in colleges must be made available
- Maximum class size should be decided as a policy matter
- Teacher training in teaching methods, use of libraries, class management program should be developed and introduced
- Academic and career guidance centers should be established in colleges
- Research oriented courses should be introduced to inculcate critical and analytical abilities among students

- 2 year degree program needs to be equated with 4 year to enable students to continue further education
- Enhancing teacher competence and commitment is important through:
 - Proper Management of service delivery system
 - Opportunities for teacher development
 - Opportunities and encouragement for further education
 - Better salary packages
 - Performance oriented incentives for teachers
- Eliminating preparation leaves from colleges, students should be required to attend college for maximum period
- Semester system may be introduced in colleges
- Challenging courses should be introduced to sustain student interest
- Elevate standard of education and teaching by knowledge based examination
- Character building through sports and social activities

Upgrading Faculty and Student Development with Innovative Methods

Fakhra Haq, PhD
New York City Department of Education
New Jersey City University, USA
100 Grandview Terrace, Staten Island, NY, 10308,USA
Fax: (718) 948-2393; E-mail: drfakhra@yahoo.com

Faculty Development and introduction of "hands-on" methods of teaching and learning, implementing programs that enhance learning by doing.
I would also like to train teachers at graduate level and show them how to use art, technology and multi media to activate multiple intelligences of students.
These methods and materials that are currently being used very successfully in the United States would bring students in Pakistan to work at par with other advanced countries.

Undergraduate Education: A Closer Look at the Case for Liberal Arts Education in Pakistan

Marcia A. Grant, PhD
Planning Head
Faculty of Arts and Sciences
Aga Khan University
Stadium Road, P.O. Box 3500
Karachi - 74800, Pakistan
Fax: 92214934294

E-mail grantmarcia@yahoo.com <Marcia.grant@aku.edu>

In recent years Pakistan has been moving to four-year under-graduate programs, and some universities have adopted the liberal arts under- graduate model. While we may think of this model as “traditional” and not easily adaptable to Pakistani realities, the case may be made that it is the most innovative of undergraduate programs. The Aga Khan University is planning the undergraduate section of its Faculty of Arts and Sciences as a liberal arts college. There are several reasons for this choice. The liberal arts model helps students:

1. to acquire intellectual skills in a new way – very different from traditional rote learning;
2. to understand multiple modes of inquiry and approaches to knowledge;
3. to develop a broad context of understanding their field of choice that spans societal, civic and global knowledge;
4. to gain self-knowledge and a better understanding of their intellectual and career interests, in a context of grounded values;
5. and to achieve a depth of knowledge of one field or interdisciplinary area.

What is exciting about the liberal arts today is that the way students learn is being flattened, and their understanding and mastery of intellectual skills is more in partnership with faculty members. Adapting the work and discussions of Dr. Carol Geary Schneider, President of the AAC&U, and ideas generate through such organizations as Project Kaleidoscope and the National Council of Undergraduate Research (NCUR), the paper will discuss five forms of learning that have now become central to liberal arts education and that could have a major impact on how young Pakistanis see their country and its needs and possibilities:

1. Undergraduate research, both in-class and during the semester and summer;
2. Collaborative learning in teams;
3. Service learning through volunteering or internships with non-profits
4. Reflective experiential learning through internships and field work

5. Integrative learning throughout the four years of the BA program through interdisciplinary seminars, development of writing skills, quantitative analysis and a senior capstone experience.

College to University Education Bridge

Rasul Baksh Rais, PhD
Head
Social Sciences Department
Lahore University of Management Science
Lahore, Pakistan
rasul@lums.edu.pk

I wish to raise three questions in this presentation: Does the college education in Pakistan today prepare our students to pursue graduate program (MA, PhD) meaningfully and effectively at university level? If not, what are the major issues in the college education that keep far below acceptable international standards? Finally, what are the remedies, solutions, and strategies that we may try to reform the college education?

I don't think there are any two opinions about the steady decline of college education in Pakistan. I will focus only on the teaching of humanities and social sciences because that has been my main area of teaching and research for well over thirty years. For analyzing the level of preparedness of students entering the university system, my reflections are based on personal observations. In my view our students graduating from colleges have serious learning problems. Let me summarize them as follows:

1. Students have poor language skills. I have found them inarticulate both in Urdu as well as in the English language.
2. They have poor communication skills. Colleges today don't prepare students to communicate clearly or effectively.
3. Our college graduates don't have critical thinking or reflective understanding of societies, systems and the world. Consequently, they form a narrow, parochial and irrational world view.
4. They have very limited knowledge base.

I believe this characterization of college graduates is true. Most of my colleagues would agree with this prognosis. The question is why we have poor standards at college level education, which I believe, is the key stage in the intellectual developments of the students? Here are some of the reasons, though the list is not exhaustive:

1. Colleges have no autonomy to design curriculum. Nor have they any capacity to do so. This responsibility lies with the universities that affiliate them. I don't think the universities have taken any pains to redesign curricula in humanities and

- social sciences. The curriculum of each public university lacks vision, and it doesn't challenge our students at all.
2. One of the important reasons for decline is the quality of college texts. They are mostly written by college professors, who themselves are not familiar with the contemporary debates and discourses in their respective fields.
 3. The college teachers have inadequate and limited exposure to the fields of their teaching. Given the poor pay-scales, time-based promotion and absence of incentives, they don't develop themselves.
 4. Governance of the colleges is extremely poor. The college education has no effective system of academic accountability.

In my presentation, I will recommend the following strategies to make college education an effective bridge for higher education:

1. Raise the qualification bar for college teachers.
2. Offer better incentives.
3. Gradually increase capacity of colleges to become autonomous.
4. Establish minimum national standards for college education.
5. Better academic/administrative college leadership based on national competition and competence.

“Undergraduate Degree: the Weakest Link in Higher Education in Pakistan The Medical Perspective.”

Masood Hameed Khan, PhD
MBBS (Dow) FCPS (Pak) FRCP (Edin) PhD (Hon Causa)
Vice Chancellor, Dow University of Health Sciences, Karachi

Higher Education in Pakistan:

Current Status

- Currently, the best of times since independence
- A chain is said to be as strong as its weakest link
- Early education needs shift to produce active thinkers & brilliant creative intellectuals.
- MBBS degree: opportunities for improvement/ challenges, as they are future scholars and PhD Students

PRESENT SCENARIO OF UNDERGRADUATE TEACHING

- **EXAMINATION:** taken at the end of year
- **THEORY PAPERS:** mostly based on checking:
 - (a) Recall (C 1 Level)
(Not analytical, C2 C3 Level)
 - (b) Essay type writing.
 - (c) MCQs
- **PRACTICALS:**
taken now, are not relevant to practical requirements

Issues in Undergraduate Medical Education

(to be addressed)

As per Recommendations of International Conference on “Recent trends in Medical Education” – August 2006 DUHS

- Till recently curriculum not conducive for independent thinking, but on recall of memory
- HEC/PMDC guidelines to inculcate development of skills need implementation.
- Integrated teaching i.e. behavioral sciences, communication skills, research, ethics and critical thinking skills need greater emphasis
- Teaching/ Learning methodologies need to be updated.
- Interactive teaching sessions instead of didactic lectures
- Advanced teaching skills training for teachers to be mandatory

- Large group / small group teaching preferable
- Life-long learning to be promoted
- Practical need to be updated & made relevant to current practical needs.
- Student: Teacher ratio in Public Sector Medical Colleges needs review.
- Teacher to be facilitated for greater interest in intensive teaching
- Assessment & Evaluation of Students must be of high quality

TEACHERS / LEARNERS

- Presently the word teaching is 'Teacher focused' i.e. WHAT and HOW the teacher is teaching whereas: it should be 'Learner focused' i.e. whether the students has understood or NOT.

LEARNERS ASSESMENT

- Assessment and Evaluation techniques should be comprehensive, forcing students for,
 - Self Learning
 - Peer Learning

Besides teaching by teachers

FAMOUS SAYING

If teaching is of high standard BUT assessment of substandard level the, knowledge of students, may be of LOW QUALITY where as if the assessment is of high standard than despite substandard teaching, the knowledge of students will be of HIGH QUALITY

FORMATIVE AND SUMMATIVE ASSESSMENT

- About seventy percent of structured assessment & evaluation of students should be continuous--- on daily / weekly / monthly basis, this is known as: (FORMATIVE ASSESSMENT)
- Only thirty percent of evaluation to be done at the end of the year (Annual Examination) this is known as: (SUMMATIVE ASSESSMENT)

ADVANTAGES OF FORMATIVE ASSESSMENT

- Not only the knowledge of students can be judged, but:
- The caliber of the teachers could also be easily assessed

Current issues of Undergraduate Medical Education

- Lack of Quality assurance department in the institutes / universities
- Need of vibrant and dynamic department of medical education --- fully updated – to be a stronger link in higher education

TODAY'S EDUCATION SHOULD MEET TOMORROW'S NEEDS:
MEDICAL STUDENT IN 2006-----MBBS IN 2011

FURTHER TRACKS:

(a) FAMILY PHYSICIAN }

(b) SPECIALIST. } 2015

Which needs Curriculum to be more focused on:

- Molecular Biology
- Genetic Studies
- Preventive medicine
- Research in various basic and clinical sciences etc.

Public Private Partnership in Higher Education

Sartaj Aziz
Vice Chancellor
Beaconhouse National University, Lahore
E-mail: sartajaziz@hotmail.com

May I begin by thanking PEP Foundation for organizing this second International Symposium on Issues in Higher Education in Pakistan?

In his inaugural address Dr. Atta-ur-Rahman has already presented a very comprehensive review of the policies and measures adopted by HEC in the past four years, under its Medium Term Development Framework (MTDF) to deal with three main problems of higher education: access, quality and relevance.

While very good progress has been made in these three areas, backed by a substantial increase in the financial allocations, there is need to identify certain supplementary areas, as a kind of “second generation priorities”, to ensure that the objective of the MTDF can be fully achieved. These might include: (a) more balanced priorities for the use of available financial resources, (b) governance and management issues at university and college level, (c) a clear roadmap for public-private partnership.

In my presentation, I will deal with item (c).

The role of the private sector in higher education has increased dramatically in the past two decades, after the ban imposed on the setting up private universities in 1972 was removed under the 1979 National Education Policy. In the 1980s, only two private universities were set up (Agha Khan and LUMS), but in the 1990s, 17 additional universities were set up, taking the total to 19 by 1999-2000. The last six years have seen rapid growth with 35 new universities, taking the total number of private universities to 54, with an enrollment of 23% of total enrollment in higher education in Pakistan.

The Strategic Plan under the Education Sector Reforms has set a target of increasing the share of private higher education from 23 to 40% of total enrollment in higher education in the next 10 years. At the same time total enrollment is also expected to increase, according to the target fixed under the HEC's Medium Term Development Framework, from 2.6% of eligible population (17 – 23 years age) to at least 10% in ten years. This will mean an enrollment target of 2.87 million by 2015 in both public and private universities, or a three-fold increase. Of this the private sector's share of 40% will mean a total enrollment of 1.16 million or a five-fold increase. This is a very ambitious target and would be difficult to achieve unless and until the scope of public sector support to private universities can be expanded on a substantial scale and a clear roadmap is developed for this purpose. So far the regulatory side of private universities has received some attention but not the positive and promotional aspects.

Present incentives

Under the existing policy approved by the Chancellors' Committee in May 2006, the following incentives have been announced for public sector support for universities in the private sector:

Provision of land for the establishment of new universities on leases on the condition that infrastructure will be established within a specified period of time.

- (a) Federal grants to set up departments in areas that are important for socio economic development of Pakistan.
- (b) Matching grants for foreign faculty hiring only in new areas supported by government funds.
- (c) Proposals from researchers in Private sector institutions to be funded by the HEC on merit.
- (d) Matching grants for digital library access to selected journals and for international bandwidth for Internet access.

A careful review of these incentives will show that they are restrictive, vague and somewhat difficult to implement. Under this scheme, HEC will not be able to transfer even 1% of annual budget to private universities.

In addition the Special Committee set up by the Chancellors' Committee to lay down a criteria to determine the eligibility of private universities for assistance under the new policy has recommended, in October 2006, that only private universities categorized, as 'W' will be considered for public support/funding. This recommendation, if accepted, will limit public sector support to only 12 or one fifth of private sector universities / institutions. These are, in any case, well-established older universities, most of which were in any case set up with substantial public sector support.

Need for a New Incentives Policy

If the private sector is expected share at least 40% of the proposed higher education access target of 2.87 million by 2015, the overall concept of public sector support for private universities will have to be reviewed and re-formulated:

- a) To start with the criteria for eligibility to receive public sector support should be extended to include HEI, categorized as 'X'. 28 Institutions or more than 50 percent of all HEIs are currently categorized as "X, "which according to official definition"has only minor shortfalls". To deprive these universities from public support on account of these minor shortfalls is neither fair nor in line with the

- overall objective mentioned above. In fact a high priority objective of the new policy should be to assist universities in 'X' category, to move to "W" category in the shortest possible time, by providing them matching grants for PhD faculty, for scholarships and some funding to upgrade their Library and other facilities.
- b) The policy framework through which public sector support is to be provided should be extended and made more objective and as automatic as possible to eliminate discretion.
 - c) HEC, for example, could provide matching grants to private universities to expand their scholarship programmes. At present all private universities are expected to provide scholarship to at least 10% of its students. If HEC would provide additional funding, equal to the amount earmarked by private universities from their own resources, it will not only provide some financial relief to the universities but also enable a larger proportion of students from low-income families to join private universities for their preferred courses of study. This will also be easy to administer.
 - d) HEC could meet one third of the construction costs of physical facilities for new not-for-profit universities on the condition that sponsors provide at least one third of the total cost and raise the remaining one third from other donors. This will be a more effective and convenient way of supporting new universities than the present policy of providing land or "grants for adding departments in areas considered important for socio economic development." where the PC-I procedures will take years to process.
 - e) Eventually HEC could also meet a part of the recurring teaching costs of private universities by providing an annual subsidy on per student basis as is done in many other countries. At present HEC is providing through its grants budget a subsidy of Rs.46000 per student in public sector universities. Once the principle of providing uniform treatment of universities in both public and private sector is accepted, HEC could provide similar per student grants to private universities that are not-for-profit though on a much smaller scale, say one third or one fourth of that provided to public sector universities (i.e. Rs.10,000 per student).

These proposals, if implemented, will improve incentives for opening more private universities and also channel resources in a speedy and transparent manner, compared to the present incentives scheme involving lengthy procedures and vague conditionalities. In the medium run, if HEC could earmark 10% of its total budget for private universities, its target of achieving 40 percent enrollment in these universities would become more realistic. If private sector can't meet the 40% target, it will cost HEC many times more per student to make up the shortfall, and the contribution of private sector instead of increasing might go down.

The World Bank in its recent report Pakistan (Higher Education Policy Note): "An assessment of the Medium Term Development Framework" has also said that 40% enrollment target would not be possible without additional incentives. It has emphasized that in providing quality education, HEC should "supersede institutional borders" by providing a level playing field.

How Private Partnerships Can Help Higher Education

Syed Babar Ali

Pro-Chancellor

Lahore University of Management Sciences

Advisor, Packages Limited

Higher education cannot be isolated from what precedes it. Quality of primary and secondary education influences the quality of tertiary education.

Many private sector and non-profit organizations in Pakistan and AJK are successfully promoting quality education at primary and secondary levels. Private-public partnerships through School Adoption Programme are also contributing to improvement in quality of education.

LUMS is a not-for-profit institution chartered in 1985. Our efforts at LUMS will be used to portray the impact of private sector on standards of education in Pakistan through improvement of academic quality, curriculum flexibility and international academic linkages. Motivation of our alumni to organize themselves at home and abroad to contribute to their *alma mater* is also significant not only as a source of funding but also their involvement in governance of the institution.

Impact of Private Institutions on Engineering Education in Pakistan

Asrar U. H. Sheikh, PhD
Fellow IEEE, FIEE
Rector
Foundation University Islamabad
H 198, Street 50, F10/4, Islamabad
rector@fui.edu.pk

Abstract

This paper traces the history of private universities and degree awarding institutes (DAI) in the country. Establishment of private institutions of higher learning is not new; it has a long history with an interruption when the private educational institutions were nationalized beginning in 1972 and lasting nearly seven years. Nationalization of educational institutions had a disastrous effect on education as a whole because the successive governments were unable to allocate sufficient funds to the public and the nationalized institutions with the result that once thriving private institutions deteriorated beyond recognition.

A significant progress was made in 1983 when Aga Khan University, the first private university, was awarded a charter. It was followed by the establishment of GIK and LUMs. In 1998, the government initiated a major task of reformulating educational policy and made a number of recommendations to raise the profile of the country in education and research. With the creation of Higher Education Commission (HEC), the door for rapid expansion of privately controlled institutions became wide open. Coupled with the open door policy to establish private universities, the government realizing long term positive impact of education on the economy, standard of living, and health care of the citizens substantially increased the education budget for public universities. The number of private universities and degree awarding institutes grew from one in 1983 to 57 in 2006, which is nearly half of the total number of universities and DAIs.

This paper focuses on the role of private universities and DAIs in engineering education. The contributions to higher education by the private institutions are highlighted. In particular, the role of the private universities and DAIs in enhancing the standard of engineering education are discussed. The impact of private institutions on the public sector universities is also discussed. It is concluded that the impact has been very positive in raising the standard of education overall and in particular that of engineering. Currently, twenty three universities/DAI out of 57 offer engineering degrees at bachelors, masters and doctoral levels. The seven universities that responded to our request for information employ 51 Ph.D. and 119 holding Masters and Bachelors degrees for teaching and have awarded 1808 undergraduate and 108 post-graduate degrees in engineering.

The private universities/DAI have concentrated in electrical, telecommunications and computer related engineering fields and have mostly ignored other engineering disciplines; the choices seem to be dictated by the market forces rather than the national

needs. Pakistan is rapidly moving into an industrial age and soon we will be needing engineers in disciplines other than telecommunications and computers. It is suggested that selection of engineering programs be made with an eye on the pattern of the future development in the country. It is proposed that the Pakistan Government hold an engineering forum to discuss the requirement of engineers in the next 10 to 20 years.

1. Introduction

In this age of technology, higher education has gained importance never seen before. It is universally accepted that education is a right of every citizen and it is the duty of the state to create environment that provides access to education to all without any discrimination on the grounds of race, religion, color and ethnic background. The education is divided into two distinct categories – secondary and post-secondary or higher education. The responsibility of the government is to provide education to its citizens at least to secondary level and create opportunities to the citizens to enter higher education.

The higher education is the backbone of technical advancement of a country. In Pakistan less than 4%, of the number of persons in the age group 17 to 23, enter higher education. This is substantially lower than the figure of over 50% in the developed world. Two reasons behind low participation are identified. The first relates to the inadequate number of places in the institutions of higher education and the second relates to the cost. To study for higher degree is relatively more affordable at the public universities as compared to at private institutions. However, due to limitations in the budget allocations for higher education imposed in the past by successive governments, the number of institutions offering higher degrees and the level of intake of students remained low and only students with very high academic standing could enter these institutions. As the public domain institutions are unable to meet the existing and the future demand, establishment of privately controlled universities or expansion of the existing institutions emerged as a suitable solution. The demand for higher education could only be met through diversity of public and private institutions. To fill this number gap between the number of available spaces and the students desiring to study for higher degrees, several privately controlled institutions have been established. Privately controlled institutions have also been established in other countries of the world. It is estimated that the world wide privately controlled higher education sector stands at approximately \$350 Billions. The privately controlled institutions are generally rated higher than the state controlled universities because of several reasons, which are discussed in the following.

This paper traces the history of private universities and degree awarding institutes in Pakistan. The practice of establishing private institutions of higher learning is not new; it has a long history with an interruption when the private educational institutions were nationalized in 1972 and the private sector virtually disappeared. At the time of nationalization, 19,432 educational institutions were operating. These included 18,926 school, 346 madarassas, 155 colleges and 5 technical institutions. Prior to nationalization, privately managed educational institutions constituted a sizable portion of the total educational system. Most of these institutions operated at school and college levels. Such institutions were administered and managed by voluntary organizations and apart from generating their own funds through fees, attached property and donations, the institutions also received grant-in aid from the government. Some private institutions became reputable for high academic standards they maintained in delivering quality education.

The nationalization of educational institutions had a disastrous effect on education as the successive governments were unable to allocate sufficient funding with the result that the thriving sector of privately managed education system virtually disappeared. The government recognized that it could not support higher education alone and participation of private sector is essential if the number of trained persons in the emerging technologies is to improve. The government rightly decided to encourage once again the participation of the community in educational development. The following policy measures were proposed [National Education Policy]:

- i. Private enterprise will be encouraged to open educational institutions particularly in the rural areas.
- ii. Permission to setup educational institutions will be granted by the Ministry of Education or the respective Provincial Educational Departments. A set of criteria for according permission to setup educational institutions and their recognition will be developed to ensure academic standards and provision of qualified staff and their terms and conditions of service and adequate physical facilities.
- iii. The existing legislation on nationalization of privately managed educational institutions will be suitably amended to allow opening of private educational institutions and to ensure such institutions setup with the permission of the government will not be nationalized in future. Regular instructional supervision of these institutions will be undertaken by the educational departments and relevant statutory bodies.
- iv. Income tax relief will be allowed to the individuals and the organization for their donations to the institutions.

As a result of the enactment of the above policy measures, the private sector reappeared again in 1979. The idea has been to strengthen the sector as long as it relates to the government policy. As a consequence of recommendations, nearly 30,000 privately managed institutions at all levels with almost 3 million students were functioning in 1998.

The demographic picture of the country (shown in Table 1) also enforced this view that without the participation of privately controlled education it will be impossible for the government to provide access to higher education to its citizens at a desirable level. It is observed from Table 1 that by 2010, the educational infrastructure will be subjected to an immense pressure from the number of persons in 17-23 age-group. Even if the envisioned low participation rate of 7% is considered, Pakistan will need 1.75 million spaces in the higher education. This is more than four fold increase over the 2005 enrollment of 0.4236 million.

Table 1 Pakistan Demographic (1995-2010)

Year	Population Demographic				
	Total Population (In Millions)	17-23 age group (In Millions)			
		Males	Females	Total	% of the total
1995	130	8.113	7.498	15.61	12.10%
1997	137	8.875	8.295	17.17	12.50%

2000	149	9.822	9.372	19.194	13.09%
2005	168	11.226	10.965	22.191	13.30%
2010	187	12.919	12.457	25.377	13.60%

Source: National Education Policy (1998-2010)

Some of these schools were established on community basis, while the others are owned by individuals. The concentration of these schools is in urban areas. High fees are charged by these schools. As far as the higher education was concerned, a significant progress was made in 1983 with the award of a university charter to Aga Khan University. It was followed by the establishment of LUMs, Hamdard University, GIK and others as listed in Table 2.

In 1998, the government initiated a major task of formulating an educational policy. The National Education Policy made a number of recommendations with an objective of raising the standard of education and research profile of the country.

Table 2 Time Line of Establishment of Privately Managed Higher Education Institutions

Sr. No	University	Charter Year	Sr. No	University	Charter Year
1	Aga Khan University of Health Sciences	1983	28	University of Central Punjab	2002
2	Lahore University of Management Sciences	1985	29	The Newport Inst. Of Comm. & Economics	2002
3	Hamdard University	1992	30	Hajvery University	2002
4	GIK Institute of engineering Sciences and Technology	1994	31	University of Faisalabad	2002
5	Al-Khair University	1994	32	University of Lahore	2002
6	Ziauddin Medical University	1995	33	Riphah International University	2002
7	Sir Syed University of Engineering & Technology	1995	34	Foundation University	2002
8	Shaheed Zulfiqar Ali Bhutto Inst of Science and Tech	1995	35	Kinnaird College for Women	2002
9	Baqai University	1996	36	Northern University	2002
10	Lahore School of Economics	1997	37	Gandhara University	2002
11	Isra University	1997	38	Preston University	2002
12	Greenwich University	1998	39	National Textile University	2002
13	Institute of Business Management	1998	40	Preston university	2002
14	Jinnah University for Women	1998	41	University of South Asia	2003
15	Mohammad Ali Jinnah University	1998	42	Dadabhoj Institute of Higher education	2004
16	Mohiuddin Islamic University	2000	43	Institute of business Technology	2004
17	Iqra University	2000	44	The GIFT University	2004
18	Nat. Uni. of Comp. and Emerging Sciences (FAST)	2000	45	The University of Management and Technology	2004
19	Textile Institute of Pakistan	2000	46	The Superior College	2004
20	Khadim Ali Shah Bokhari (KASB) Inst. Of Tech	2001	47	Preston University, Karachi	2004
21	Preston Institute of Management	2001	48	Forman Christian College	2004
22	CECOS Univ. of Info. Tech. & Emerging Sciences	2001	49	Indus Institute of Higher Education	2004
23	Sarhad University of Science & Tech	2001	50	The university of the East	2004

24	Qartaba University of Science & Tech	2001	51	DHA Suffa University	2005
25	Institute of Management Sciences	2002	52	Beaconhouse National University	2005
26	Imperial College of Business Studies	2002	53	Nazeer Hussain University	2005
27	National College of Business Administration & Busi.	2002	54	Minhaj University	2005

With the creation of Higher Education Commission (HEC), the door for rapid increase in the number of privately controlled institutions became wide open. Coupled with the open door policy to establish private universities, the government realizing long term positive impact of education on the economy, standard of living, and health care of the citizens the education budget was substantially increased. The number of private universities and degree awarding institutes has grown from one in 1983 to 57 which is nearly half of the total number of universities and DAIs in the country. It is seen from Table 1 that the year 2002 was a landmark year for establishment of privately managed institutions of higher education. Out of 57 private universities and DAI, 16 were established in that year.

2. Engineering Programs at Private Universities

This paper focuses on the programs in engineering offered by the private universities and DAIs. The contributions to higher education by the private institutions are highlighted. In particular, the role that private universities and DAIs are playing in enhancing the standard of engineering education is brought in focus. The impact of private institutions on the public sector universities is also discussed.

In 1998, the engineering education at degree level was offered by one private and seven public universities and two constituent/affiliated colleges. In all these institutions, F.Sc. (pre-engineering) is the general requirement for admission to first degree courses. Approximately 60 to 80% of the total numbers of students admitted to the engineering institutions go to the traditional fields of civil, electrical and mechanical engineering. It is estimated that by the year 2010 the enrollment would increase to 37.6%, a double the percentage that existed in 1998.

Privately owned or managed institutions were first to recognize the importance of areas like computer science, business management and Information technology. It is also seen that the private institutions are quicker to seize opportunities in emerging fields compared to the public domain universities. It is also observed that the private universities have a better feel of the market trend than the public universities. The areas identified above were chosen after thorough market survey. One difficulty with this approach is obvious void created by the private institutions in the areas where market demand does not make business sense.

The privately owned or managed universities have been criticized for charging high fees. Does it mean that these institutions are after making money rather than providing accessibility to higher education? This point is hotly debated between the HEC and the privately managed universities. It is recognized that the privately owned universities should be run on no-profit-no-loss basis and the government should not expect the entrepreneurs to keeping sinking funds into loss making proposition. It should be noted that even to break even, the private universities have to meet expenses, which include the attractive packages offered to high quality faculty. Furthermore, the temporal fluctuations in the admission levels dictate that there should be some surplus to cater for these

fluctuations and future developments. The figures available from HEC documents give the breakdown of male and female students enrolled in engineering programs is given in Table 3.

Table 3 Enrollment in Private Sector Universities/DAI

Year	Enrollment					
	Male	Female	Total Private	% increase	Total Enrollment & Share Private Sector	
					Total	% in Private Sector Inst/DAI
2001-2002	32935	10938	43874	-	276274	15.886
2002-2003	41271	13989	55260	25.95	331745	16.650
2003-2004	44960	16148	61108	10.58	423236	14.438

From the table it is observed that due to creation of several new universities the enrollment increase by approximately 26% in one year. The enrollment increased by 11386 students whereas in the following year it saw a further increase of only 5848; nearly half of the increase in the previous year. One can only speculate the reasons behind this drop. One possible reason may be the increase in the intake of students in the public universities. Over the three years period 2001-2002, the enrollment of male students increased by 36.5% while the female students increased by 39.3%. The greater increase in the female enrollment may be due to increased accessibility to female students in private governed education. These statistics show that the share of private education is between 14 and 17%, which is substantial considering that the boom in privately managed degree awarding institution is a recent phenomenon and most universities/DAI do not have fully developed campuses.

We conducted a survey among the privately managed universities on their program offerings in engineering. Currently, twenty three universities/DAI out of 57 offer engineering degrees at bachelors, masters and doctoral levels. The seven universities that responded to our request for information have 51 Ph.D. and 119 non-Ph.D. on their faculty rolls and have awarded 1808 undergraduate degree and 108 with post-graduate degrees.

3. Impact of Private Universities on Engineering Education

The impact of privately managed universities on higher education has been significant. The creation of GIK, LUMS, AKU and others backed by enormous funding attracted high caliber faculty. Many well known persons in their respective specialty moved to Pakistan either permanently or temporarily. With their arrival, the education sector definitely benefited due to much improved quality of instructions at these universities. With the opening of private universities, the education scenario changed dramatically. The success of GIK, LUMS and AKU demonstrates that public is ready to pay higher cost but demand quality education.

With creation of new universities, the demand for qualified faculty dramatically increased, which resulted in migration of faculty from the public universities to private institutions while migration from private to public universities was rare. The drain of faculty from public university to private universities reached an alarming level within a short period, which forced the public universities to look into their pay packages. Also, the existing faculty in the public universities started to become mercenaries in education going from one institution to another looking for better pay package or visiting

assignments. This resulted in very healthy trend in paying more to educationists but it also resulted in disruptions and falling standards as the instructors became overloaded. The public universities had to improve their salary structure by introducing tenor track options and inducting new faculty through HEC's Foreign Faculty Hiring Program.

Another question whether the private universities resulted in increased accessibility has a positive answer. At least from the statistics presented in Table 3 it is observed that over sixty thousand more places were occupied at the new universities. This increase is quite good considering many new institutions do not have fully developed campuses and in certain cases further increase in their intake was not possible.

The improved packages offered at private and public universities reduced somewhat the transition rate. The induction of visiting faculty still remains higher because of high demand. Furthermore, the creation of many private universities has resulted in a severe shortage of trained faculty. This may have a negative impact on the quality of teaching. The frequent faculty transitions from one institution to another has another disadvantage of the absence of the sense of belonging and therefore their interest in participation in the development or revision of curricula, innovative teaching methods and development of proper standard operating procedures (SOP) has been minimal. The situation likely to improve after four or five years when the students sent abroad for higher degrees and enrolled in the indigenous Ph.D. programs assume role of teachers at the universities in this country.

The private and public domain universities compete for high caliber students but considering a global picture, these institutions complement each other. The students at the very top of the academic ladder usually opt to enter public universities due to much lower cost. The private universities usually accept students who could not get a placement in lower cost public universities and are willing to pay higher fees to enter a program. It is observed that the admission standard at the private universities is generally lower than that of the public universities.

The impact of the private universities on quality of education is also of some concern. The shortage of trained faculty and induction of visiting faculty in the institutions of higher learning have both negative and positive impact. On one hand their minimal contributions to the development of the institution while on the other the loss of this privilege may result in better quality instructions. Also, the graduates of private institutions are more disciplined because of their eagerness to graduate as soon as possible due to cost pressures. The discipline at the public universities is relatively lax. The private institutions are building modern campuses and therefore have opted for facilities that use as much technology as possible. With implementation of continuous assessment at the private universities, the public universities have stepped into modern era.

The private entrepreneurs were first to identify the emerging fields of management sciences, computer science, software engineering, telecommunication engineering, computer engineering. Introduction of programs in these areas of study was the result of the market forces. The public universities were relatively slow to react to the changing taking place in education around the world. The inertia of public university could not match the rapid initiatives of the privately managed universities.

The private universities/DAI have concentrated in electrical, telecommunications and computer related engineering fields and mostly ignored other engineering disciplines; the choices seem to be dictated by the market forces rather than the future national needs. Pakistan is rapidly moving into an industrial age and the need for engineers in disciplines other than telecommunications and computers is likely to be strong. It is suggested that selection of engineering programs be made with an eye on the pattern of the future development in the country. I propose that the Pakistan Government should hold an engineering forum to discuss the requirement of engineers in the next 10 to 20 years.

4. Conclusions

The demand for engineers and technologist is increasing as the country moves towards industrialization. The public and the private universities complement each other in providing engineering education. The private universities enroll 14 to 17% of the total student intake, which is substantial. The engineering institutions should concentrate on emerging fields at under-graduate levels. It is concluded that the impact has been very positive in raising the standard of education overall and in particular that of engineering. It is also suggested that an engineering forum be established to discuss issues of engineering education in this country. Several new engineering institutions are being established in Pakistan in cooperation with several countries in Europe and Asia. This will further strengthen the engineering profession in this country.

5. References

- Ministry of Education, Islamabad, "National Education Policy – 1998-2010", Government of Pakistan, 1998.
- Ahmad Yahya Khan, "Statistical Booklet on Higher Education," Directorate of Statistics, HEC, Islamabad, Pakistan, 2005

Keys to the Development of Effective Undergraduate Education

**Peter H. Armacost
Rector
Forman Christian College**

Mission of Undergraduate Education

- To make a positive difference in peoples lives, and to improve society, over time, through the works of those persons it educates
- To educate persons to live a life of quality no matter how they make their living
- To be prepared for their role as citizens
- To be prepared to earn a living and be a productive member of the work force in a global economy

What are the needs of an educational individual student?

- To be prepared for citizenship and career
- Cognitive skills (verbal & quantitative)
- Intellectual tolerance
- Rationality
- Intellectual Integrity
- Wisdom
- Capacity for lifelong learning
- Assistance with emotional & moral development
- Practical competence
- Personal self-discovery
- Refinement of taste & good manners
- (From the Carnegie Commission Mission of the College Curriculum)

What are the educational needs of Pakistan?

For its Political Well Being

Wise & Effective Leaders and an Informed Citizenry

For its Economic Well Being

Able & Imaginative Men and Women

For the direction and operation of its institutions

For the production of goods and services

For the management of its fiscal affairs

Alert and informed consumers

For its Cultural Advancement

Creative talent

Appreciative and discriminating readers, listeners & viewers

People who understand the common culture and its antecedents in other parts of the world

For its Survival

Persons who understand the dependence of humans on the natural resources provided in the environment and on one another

For its Moral and Ethical Integrity

Tone setting models and persons who as parents and teachers and in other capacities are able to pass the nation's ideals and heritage along to future generations

We must graduate persons who are:

Empowered Learners
Informed Learners
Responsible Learners

[from Association of American Colleges and Universities panel report Greater Expectations]

Steps to Improve Undergraduate Education

1. The degree requirements and curriculum must provide both breadth and depth of learning

Premises:

- We must change our curriculum and pedagogy
- Students must learn how to learn
- The “lock step approach” is not a wise way to develop human resources

Breadth and Depth

- General Education (breadth)
 - Three purposes
 - Options and structure
 - About 1/3 of graduation requirement
- Academic Majors (depth)
 - Generally between 30% and 40% of courses
 - Must have coherence and provide real experience of depth
- Electives
- Advising

2. Pedagogy that develops “higher order thinking skills”

- Premises
- The emphasis must be on student learning not teaching
- We can learn much from the research on effective practices in higher education

Research on Effective Education

Three central conditions for excellence in education and seven principles of good practice in teaching

- A. High Expectations
 - Communicates high expectations
- B. Student Involvement
 - Encourages active learning
 - Emphasizes time on task
 - Encourages cooperation among students
 - Respects diverse talents and ways of learning
 - Encourages Student/Faculty contact
- C. Assessment and Feedback
 - Gives prompt feedback

Conditions that enhance impact on student values

- Clear mission & high expectations, clearly stated and widely understood
- Faculty who define their role broadly
- Provision of many opportunities for students to make meaningful decisions
- Provision of “value laden” experiences (e.g. volunteer service, internships)

3. A supportive educational environment

- Teaches and reinforces positive values
- Gives students opportunities to make meaningful decisions
- Provides active learning experiences

4. An effective program of faculty professional development

- Expectation that faculty will stay current in their discipline
- Effective programs to teach about how students learn and new approaches to pedagogy
- Pakistan needs to develop a larger pool of highly qualified faculty [An HEC priority]

5. Access to needed learning resources

- Text books in adequate supply
- Library resources
- High speed access to Internet

6. Effective strategies for Program and Faculty Assessment

7. An educational system that encourages and supports diversity and innovation, but holds universities accountable for the quality of their results

Public policy that encourages the development of a vital and vibrant private sector of higher education with freedom to develop curriculum and educational programs

according to their best judgment, and are only held accountable for the quality of their results

Three Critical Conditions for Excellence in Education & Principles of Good Practice in Teaching

- A. High Expectations
 - Encourage High Expectations
- B. Student Involvement
 - Encourage Active Learning
 - Emphasize Time on Task
 - Encourage Cooperation Among Students
 - Respect Diverse Talents and Ways of Learning
 - Encourage Student – Faculty Contact
- C. Assessment and Feedback
 - Give Prompt Feedback

Faculty dissatisfaction circumstances in Pakistani Colleges

Syed Tahir Hijazi, PhD
Professor and Dean
Faculty of Business Administration & Social Sciences,
Muhammad Ali Jinnah University, Islamabad, Pakistan
Email: hijazi@jinnah.edu.pk

Tahir Masood Qureshi, PhD
Faculty member
Faculty of Business Administration & Social Sciences,
Muhammad Ali Jinnah University, Islamabad, Pakistan
Email: tahirmasood@jinnah.edu.pk

This study comprehensively evaluated the relationship between faculty dissatisfaction level and different activities, behaviors and poor facilities provided by the management. Currently educational institutions are facing an increasingly competitive and rapidly changing environment. Faculty dissatisfaction is considered as a major hurdle in institutional growth by different research scholars. For observing dissatisfaction level of Pakistani private educational system's faculty members, 300 questionnaires were mailed to faculty members of 12 different institutions. 210 faculty members against 6 different factors responded back. Analysis concluded that all tested factors are contributing towards faculty dissatisfaction but contribution of workload is highest, in addition to Regression Analysis, Chi Square Test is used to ascertain the dissatisfaction intensity for Male and Female faculty members, Study indicated that male faculty members are comparatively more dissatisfied than Female faculty members.

ASSESSMENT, EVALUATION & ACCREDITATION: PROCESS AND PROCEDURE

Mansoor-uz-Zafar Dawood, PhD
Professor and Associate Dean
Faculty of Computer Science & IT
Institute of Business & Technology (BIZTEK)
Main Ibrahim Hydri Road, Korangi Creek
Karachi, Pakistan
Fax: +92-21-509-1930
E-mail: mzdawood@biztek.edu.pk

1. Abstract: The growing competition among the educational institutions, the newer and changing needs of the industry demand diverse set of qualities in graduates, thereby educational institutes need to be more sensitive and dynamic in their educational processes. The implications of assessment process are to assure that any institute is producing outstanding young men and women, who will become productive citizens by working in industry, government or any other sector of society by Looking to the needs of the assessment and to understand the intricacies of the accreditation and assessment processes, along with the task of educating the faculty. The objectives of this paper are: to bring about the issues of quality implantation processes in the curriculum, identify the processes and practices for assessment and improvement in teaching-learning experiences. This paper points out that the real focus of accreditation bodies is not only assessment but program and processes continuous improvement. This paper presents the important assessment consideration with key factors for successful assessment and underlines the importance of preparing self study report and emphasize that every faculty member has his share in the self-study report with the importance of data collection related to the objectives, which must be routinely collected and documented, and used in program assessment.

2. Introduction: The world is already changing faster than it has ever done before, and the pace of change will continue to accelerate. Increasing use of information technology, and Knowledge capital are replacing physical capital as source of wealth. Higher

education becoming more important and in greater demand and it must expand to meet rising skill needs. The quality of professional education is going in to decline and the rising dissatisfaction of the industry over the quality of graduates is of great concern. The reasons attributed are the Poor Faculty Development, outmoded instructional technique, and poor laboratories condition handled by weak, unprepared uncertified laboratory technicians. Most of the faculty seems to view their work only as a job, a means to earn a living. They commit neither their lives nor their know-how to achieving the university's transformative mission. The higher education is far from an opportunity to develop student's cognitive and social powers; instead, it is simply a means to acquire credentials. The higher education is facing hard choices on funding, quality and management and Universities are struggling to employ the best academics. Education has become a multi-billion dollar business and will continue to grow. Also, Competition for students from other providers (profit and non-profit) is fierce and will continue to grow. Economic growth of any region will require a synergistic approach among higher education, government, and the corporate sector.

There are five pillars for reforming: i.e. Quality Control Cooperation and Competition, Responsibility and Accountability, Assessment, Evaluation & Accreditation, Partnerships with Industry and Management Training.

3. Assessment, Evaluation and Accreditation: Assessment, evaluation and accreditation are of foremost importance as it will provide feedback and initiate correction process in others also.

Assessment is a continuous feed backed evaluation process aimed at understanding and improving student learning [Marry et.al. (2000)]. The process of assessment is to identify, collect, and prepare data to evaluate the achievement of program outcomes and program educational objectives. However, no one greets a request for assessment with enthusiasm. For faculty, assessment often seems, as the academic equivalent of death. However, quality assessment will provide the necessary evidence to guide effective decision-making in many areas like, programmatic changes, classroom teaching modifications, support service modifications, policy or procedure changes, and structural reorganization etc. An assessment cycle must be a cyclic process of setting goals, selecting methods, gathering evidence, drawing inferences, taking action, and re-examining goals and

methods. The Self-Assessment Report (SAR) preparation should involve broad and appropriate groups in its preparation and process. The report should provide detailed information on all aspects of the program including qualitative and quantitative assessment of the strengths and limitations of the program. The assessment should include the achievements of institutional and program educational objectives and assessment of outcome-competencies. The Assessment Key Success Factors are Commitment, Participation (involvement) of all constituents, Listening to voices, Actions for improvement, Feedback, Relating assessment to the world of work, Continuity and flexibility, Consistency of reporting format over time, History of results, Responsibility, Resources and Rewards.

The process of accreditation is to make sure that the educational programs; services, staff, and facilities meet or exceed essential standards of educational quality. This quality is validated by both a self-study and an onsite team of evaluators, and is further reviewed by a commission of educators.

The process of accreditation serves the programs to: Maintain high standards of quality in their fields of study and compete with similar private and governmental institute in the area, Establish national and international recognition of expected graduate qualifications, Assure that graduates of an accredited program are adequately prepared to enter and continue the practice of engineering, IT or other fields, Provide potential students a quality education which will lead to a wide range of job mobility, Identify accredited programs to the public, Provide cost effective means of impartial feedback on program assessment and development, Motivate regular comprehensive review of programs by institutions creating an expectation of continuous improvement.

The results of evaluation will assist the process of accreditation, accorded by a trustworthy and upright body thereby, giving legitimate recognition [Yigit (2004)]. Any program evaluation is done on the basis of the SAR prepared for a degree program.

The accreditation body assures that the graduates are satisfactorily prepared for professional practices and the main objectives of accreditation by such bodies are to serve the public, industry, and the profession by stimulating the development of better-quality education. Further, it encourages new and innovative approaches to education and assures

that the graduates of an accredited program are effectively geared up to join up and continue the professional practices. Many countries have setup their own bodies to strengthen such processes of assessment and accreditation. The international accrediting body, Accreditation Board for Engineering & Technology (ABET) is carrying out this responsibility of providing leadership and quality assurance for more than 70 years [Smith M (2003)].

ABET Criteria are well publicized and are on www.abet.org. Typically the criterion of program educational objectives calls for well-published and consistent objectives followed by a process in place to determine and periodically evaluate them. These objectives are based on constituencies needs, and there is an appropriate curriculum, and processes to ensure their achievements. Further there is an internal evaluation to determine achievement, and its results are used to improve effectiveness of the program [Huggins (2002)].

The student can demonstrate the identified skills before graduation/end of term. At this point, it is also important to review the evaluating tools & their use for continuous improvement [Banta (1996)]. Any program outcome and on assessment, a graduate must show ability to:

- a) Apply knowledge of math, engineering, and science
- b) Design and conduct experiments
- c) Analyze and interpret data
- d) Design system, component or process to meet needs
- e) Function on multi-disciplinary teams
- f) Identify, formulate, and solve engineering problem
- g) Understand professional and ethical responsibility
- h) Communicate effectively
- i) Broaden their education
- j) Recognize needs and to engage in life-long learning
- k) Understand contemporary issues

Where as the criterion of Faculty addresses issues are Sufficient Number and Competencies to Cover All Curricular Areas, Levels of Student- Faculty Interaction, Advise and Counsel students, Actively involve in service (College & University), Interact

with Practitioners and Employers, Professional development and Monitor and evaluate effectively.

And Institution and financial support criterion is addressed on issues: Sufficient to Assure Quality and Continuity of the Program, Sufficient to Attract and Retain a Well-Qualified Faculty and Sufficient to Acquire, Maintain, and Operate Facilities and Equipment.

The immediate steps to move forward for accreditation are: Form Departmental Accreditation Committee (DAC), Develop Program ABET Web Page, Determine Program Constituencies, Form Program Industrial Advisory Committee (PIAC), Involve constituencies in formulating the Program Educational Objectives (PEO's), Ensure that PEO's are consistent with the mission of the institution., Ensure that PEO's are well-stated and measurable, Ensure that PEO's can be linked with the curriculum, Involve constituencies in formulating the Program Outcomes (PO's).

The faculty of the college has to play the foremost important role in assessment and develop the SAR.

The faculty task and responsibilities at the initial stage is Drafting the syllabus following ABET format to include: course outlines, Course Learning Objectives (LO's), Contribution of Course to Meeting the Professional Component and Relationship of Course to Program Outcomes

A course planning grid must shows for each LO: Teaching methods, Assessment method, Assessment frequency, Performance criteria, Feedback methods, Relationship to the PEO's and Relationship to the ABET criteria.

Each faculty member implements his/her plan for each course in the manner he deems most appropriate, Program requires each faculty member collect the following minimum documentation for each course, Examples of student performance on homework, quizzes, examinations, projects, etc.

Evidence of feedback mechanism include but is not limited to: graded work, written comments made to students by the instructor, and written comments from students, Results of a standard end-of-semester questionnaire that addresses overall achievement of LO's and e) Each faculty member submits to DAC the following information for each course he or she taught in the preceding semester: The four items outlined above, An assessment of the course focusing on achievement of stated objectives,

Recommendations for course improvements, The anticipated effects of these improvements

Assessment is a systematic ongoing, iterative process of monitoring (recording and analyzing) student learning outcomes and processes in order to determine what we are doing well and what we must improve. The aim of program assessment is to understand how educational programs are working and to determine whether they are contributing to student growth and development. It focuses on programs rather than on individual students. It provides information on whether the curriculum as a whole provides students with the knowledge, skills and values that graduates should possess in accordance with its mission and set goals and learning objectives.

The old emphasis was on faculty teaching, curriculum and more quantitative (how much) and prescriptive based. The new emphasis is on what students can/are able to do, and is outcomes based. The focus is also on student learning and is more qualitative (how well). The assessment process requires Recognition/commitment, Setting appropriate assessment criteria, Defining program constituents, Defining program/institution mission statements, Defining educational objectives that meet program / institution constituents, Defining program outcomes, Defining measurable performance measures and Selecting appropriate assessment methods (make sure to use multiple methods).

Also the assessment process needs: Collecting necessary data, Emphasizing on outcomes (graduates preparation for professional practice), Demonstrating how criteria and program educational objectives/outcomes are being met, Seeking external review (evaluating results), implementing actions for improvement, Following-up on implementation and Defining and repeating the process.

Program educational objectives as statements describe the expected accomplishments of graduates during their first few years of career after graduation as a result of their educational preparation. The program outcomes are defined as statements that describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills and behaviors that students acquire in the program. Achievements of all program outcomes should indicate that the graduate is prepared to achieve the program educational objectives and should be verified before certification for graduation.

There are two types of assessment method, direct and indirect. Direct assessment methods include: standardized exams, locally developed exams, oral exams, portfolios (work collected over time), and performance appraisal. It also includes oral presentations, simulations, demonstrations, case studies, capstone experience (embodied in capstone courses), juried activities, evaluation of fieldwork and behavioral observations (classroom observations). In indirect assessment methods students are asked to reflect on their learning, what they have learned and experienced, rather than to demonstrate it (i.e. surveys and interviews).

Details about instructional or curricular strengths cannot be provided by direct methods alone. Indirect assessment methods include written surveys and questionnaires from employers. Alumni, parents, faculty, graduating seniors, current students, entering students, exit interviews, focus groups, external examiner and archival records.

University should develop a Program Assessment Center (PAC) with a mission to promote university-wide culture of assessment towards developing quality education that copes with new technological changes and meets industry needs. The objectives of the PAC are Promoting the culture of assessment university-wide to: Improve and maintain the highest academic standards at university, Enhance students' learning outcomes, Provide support for academic programs to meet their objectives and institutional goals, Provide feedback for quality assurance of academic programs and Prepare the academic programs for national/ international accreditation.

The PAC has framed the internal assessment process for continuous quality improvement. The Program self assessment criteria should be: Program Mission, Objectives and Outcomes, Curriculum Design and Organization, Laboratories and Computing Facilities, Student Support and Advising, Faculty, Process Control, Instructional Facilities and Institutional Support

Based upon the experience of such review, the important assessment considerations are: Assessment is the foundation of continuous quality improvement, The right inputs and processes do not necessarily guarantee the intended outputs unless proven (measured), More data does not necessarily mean better results, Pilot testing of the assessment approach is important, No single method will satisfy all needs, there is more than way to reach the goal., Utilize the available time and resources, Involve all faculty in the

assessment process, Involve all possible constituents, Assessment is meant for improvement. Therefore, show weaknesses as well as strengths and Act for improvement/share results.

Remember: If we can not define it, you can not measure it; if you can not measure it, you can not manage / improve it.

4. Conclusion: The Assessment, Evaluation and Accreditation, Process & Procedures have been discussed with related key points and concludes that the real focus of accreditation bodies is not assessment but program and processes continuous improvement, with a vision of improving to satisfy the constituencies better.

5. References

Banta, 1996; “Assessment in practice: Putting principles to work on college campuses”.
Jossey-Bass 1996

Huggins, 2002; “ Experiences in Preparing Multiple Programs for a Joint ABET Accreditation General Review”, Proceedings of 32nd ASEE/IEEE Frontiers in Education Conference, Nov. 6-9, 2002.

Marry et.al., 2000 “Defining the Outcomes, A framework for EC- 2000”, IEEE Trans. On Education, vol. 43, pp. 100-110, May 2000

Smith M, 2003; “Accreditation and Academic Quality”, (www.caa.ae)

Yigit, 2004; “Outcome-Based Program Assessment College of Engineering and Petroleum” Kuwait University, Kuwait

Under Graduate Degree the Weakest Link in Higher Education

Zafar Mueen Nasir, PhD
Chief of Research
Pakistan Institute of Development Economics
Islamabad, Pakistan
Email: zfrnasir@yahoo.com

In the era of globalization, the investment in education is ever important then before. Education, knowledge, and technology have always been important components of development, but in a globalized, high - tech world they are essential. Therefore development economists argue that more resources should be invested in education in order to raise productivity and overall output of an economy. Empirical evidence also supports this argument and indicates that returns to investment in education are comparable with returns to physical investment.

In Pakistan, the type of knowledge and education required to bring country at higher level of development are changing rapidly. A number of studies concluded that investment in the primary level of education brings higher returns than the investment in higher levels of education. But recent research shows that the quality of education than the quantity should be the focus of the policy. The rapidly changing educational requirements in the globalized world are also asking for active policy responses from the education sector.

Is Pakistani educational system able to respond quickly and appropriately to these new requirements? What policies and strategies can be pursued to link the education to bridge the gap created by globalization. It is also important to investigate the link among different levels of education especially between the undergraduate degree and higher education. The focus of the present talk is also this with some policy suggestions.

Quality Management of Educational Institutions: The Missing Link

Mukhtar Ahmed, PhD
Member (Operations & Planning)
Higher Education Commission, Islamabad

- Quality assurance
- Resources
- Commitment
- Professional conduct
- Subject knowledge
- Teaching skills
- Governance
- Leadership
- Culture
- Facilities
- Academic structure
- Curricula
- Assessment
- Quality assurance
- Public values
- Social environ
- Resources

Major Challenges

- Rapidly rising demand for quality education
- Improving quality and relevance of teaching and research
- Equity
- Relevance with local, national and international needs
- Building a supportive infrastructure for educational systems to develop
- Cross border recognition of degrees and qualifications

Missing Links

- Incompetent Leadership
- Dearth of vision
- Lack of clear roles of strategic and operational bodies and
- Appointment issues
- Allocation of financial resources
- Accountability
- Lack of professional training
- Detached policies
- Ineffective decision making
- Attitude towards change are the missing links

How Do We Improve Effectiveness of our Educational System?

- Make schools more student centered
- Improve teachers (continue training & development)
- Raise standards/institute testing for students
- Improve creative thinking
- Continue improvement
- Improve self reliance
- Better governance/management

Challenges to Successful Quality Management Implementation in Higher Education Institutions

- Five key challenges
 - Organizational culture
 - Senior leadership commitment
 - Faculty support
 - Implementation time and
 - Training

--Julie E. Horine and William A. Hailey (1995)

SO WHERE DO WE GO FROM HERE?

If someone is going down the wrong road, he doesn't need motivation to speed him up.
What he needs is education to turn him around.

--*Jim Rohn*

There are two types of education... One should teach us how to make a living, And the other how to live.

--*John Adams*

Bottom line is....

“Accessible education that is not of high quality is worthless and high quality education that is not widely accessible is meaningless.”

Outcomes

Improvement in the quality of education will improve the comparative advantage of the Pakistan economy thus assisting its transformation into a

KNOWLEDGE ECONOMY

Outcomes

Improvement in the quality of education will improve the comparative advantage of the Pakistan economy thus assisting its transformation into a **KNOWLEDGE ECONOMY**

Wrapping up

Education quantity and quality are complements, not substitutes

Successful qualitative reforms require:

- Prime attention to quality of teaching profession
- Encouraging creative thinking
- Proper governance of educational institutions
- Strong leading/supporting role by government
- A societal responsibility/commitment for improving education
- Policy continuity over time

We Owe Quality Education to ourselves, our students, our institution, our country
Are we losing the war to give quality education to our people?

New Challenges

- New education and training needs
- Increased competition and emergence of new providers (borderless education)
- Potential of new information & communication technologies
- Competitive Advantages
- Sustainability

A brave new world

- social and economic progress is achieved principally through the advancement and application of knowledge

World Development Report 1998/99

**Foundation for a new Technical university in Pakistan,
In collaboration with Middle East Technical University, Ankara,
Turkey**

**Arshad Jamil
P.E , New Jersey
and
Kazi Zulkader Siddiqui, PhD
Islamabad**

A general enabling document for cooperation between Middle East Technical University (METU) and METU-PAK Foundation (MPF) has been signed to join the efforts of METU and MPF for establishing a new technical university on the pattern of METU, in Pakistan.

Pakistan has recognized the need for the establishment of new Technical Universities and institutes of higher education to be able to support economic, technological, and cultural development and progress of Pakistan. Such institutions of higher education and research are required to provide high quality education with a unique balance between theory and application to supply for Pakistan's expanding needs of qualified technical professionals.

METU; on the other hand, as a world class research university with a unique Technology Park, a first of its` kind in the region, offers all the technical programs and curricula that Pakistan needs in its universities. The highly qualified faculty members of METU will provide the necessary know-how to guide the establishment of the new university.

Finally, METU-PAK Foundation, which consists of METU Alumni, is knowledgeable of METU and respect its capabilities.

Specific areas of cooperation between the two parties shall include:

- Faculty Development Program at METU.
- METU Faculty Support Program
- METU Academic Support Program
- METU Planning and Policy Support
- Accreditation Support
- Development of Techno Park
- Establishing the Infrastructure for a New Technical University

The establishment of a Techno-Park, in the new campus, will be a unique feature, to be applied for the first time in Pakistan.

The development of the University is proposed to have the following phases:

1. Operation of the University shall be initiated in a loaned building on a small scale (roughly 300 students) in four (4) departments.

2. In the duration of one and one-half years, the following steps will be accomplished:
 - a. Land will be developed for the proposed university.
 - b. Campus design, and individual department buildings designs shall be completed by MPF
 - c. At least one major building will be completed.
 - d. University will be moved to the new building of the campus.
3. Construction at the Campus site will proceed and as buildings get completed, Departments will be moved into the completed structures with corresponding increase in student enrollment
4. The goal of this University is to reach a student population of at least 4,000 in a period of eight years and 7,000 in twenty years period.