



## **QUALITY ASSURANCE IN HIGHER EDUCATION IN PAKISTAN – FOCUS ON THE LEARNER**

***Prof. Norman Reid,***

Director, Center for Science Education,  
Faculty of Education, St. Andrew's Building, 13-Eldon Street,  
Glasgow G3 6NH, United Kingdom.



He has experience in teaching chemistry at university level. He has been the Director of the Centre for Science Education since 1997. His research interests link to two broad and overlapping areas:

- Learning in the sciences and mathematics;
- Attitudes relating to studies in sciences and mathematics.

These specific areas include:

- Learning difficulties;
- The influence of working memory on learning;
- Learning characteristics;
- Assessment;
- Curriculum design;
- Laboratory work;
- Information processing;
- Attitudes to the sciences and mathematics;
- Attitudes towards learning and study



## **QUALITY ASSURANCE IN HIGHER EDUCATION IN PAKISTAN – FOCUS ON THE LEARNER**

*Prof. Norman Reid,*

Director, Center for Science Education,  
Faculty of Education, St. Andrew's Building, 13-Eldon Street,  
Glasgow G3 6NH, United Kingdom.

### **ABSTRACT**

The provision of Higher Education in Pakistan is growing at a quite remarkable rate. With such growth, there are inevitable pressures and stresses. Among these is the issue of quantity against quality: a system may grow rapidly at the expense of retaining quality. Most approaches to quality assurance at every level of education, tend to focus in on what is measurable in some way, often neglecting the more important but less easily evaluated outcomes. At the same time, committed university staff can feel undervalued by the whole process of evaluation which tends not to affirm their successes. In addition, the process of quality assurance can often take large amounts of time, with university staff unconvinced of any benefits which might accrue.

In thinking of quality, it is important to look at what the world of business and industry say they want from graduates. This paper seems to describe the key attributes sought. Looking at these attributes, the current approaches to quality assurance are totally inadequate.

It will be argued that there is a great need to increase the PhD throughput in Pakistan in that the successful PhD students of today will form the pool of skilled academics from whom the intellectual and research leadership of tomorrow can be drawn. This paper seems to identify some of the key issues relating to education at the PhD level, with suggestions for ways forward in Pakistan.

Throughout the paper, aspects of the situations in Scotland and Pakistan are considered, with Scotland having had a very long history of Higher Education. The aim is not to make comparisons in that the two educational systems are very different. The aim is to see the kinds of ways which lie in the future for Pakistan as it increases its impact at global levels.

### **BACKGROUND**

It is an interesting thought that, for most of history in most societies, formal education for all has not existed. The whole business of reading and writing was restricted to minorities and societies seemed to manage to conduct their affairs with varying degrees of success with reading skills accessible to few. In ancient societies, there were elaborate systems of education but these were built around gifted individuals and only a few could take advantage. The Greek empire of nearly 2500 years ago stands out as a remarkable example.

There are very old institutions of learning although they did not award degrees. Thus, the University of Nanjing, in China, was founded around 258 BC. However, it did not offer formal degrees until 1888 AD. While there were several religious institutions, these were not universities in the normal sense of offering studies in many areas. Many were built around a

person, a key teacher, and were not institutions in the usual sense. Fez, Cairo, Baghdad, Timbuktu, Istanbul are the best known and some of these were re-constituted as formal universities many centuries later. Fez was founded in 859 and is the oldest degree awarding institution in the world.

A university is traditionally seen as an institution of Higher Education which awards degrees of itself, these being accepted statements of the achievement of specified high standards. A university is built around the concept of knowledge in all areas of life, with the pursuit of learning and understanding being seen as a goal in its own right.

Thus, many earlier institutions did not fulfill these criteria but some later evolved into universities in this sense. The great universities of Western Europe started with the University of Bologna in Bologna, Italy, founded in 1088 by students who recruited instructors. By 1500, there were 40 universities in Europe, these being seen as the great flowering of Higher Education as we know it today, with Italy taking quite a strong lead.

One of the earliest universal systems of school education was established in Scotland in the 16th century. Here, children from age 5 to 12 were given opportunities for formal school based education, paid by the state, open to all irrespective of family circumstances. Those who excelled were encouraged to stay on to the age of 14 or 15 and receive extra tuition by qualified teachers, being asked to pay for this tuition by helping the teaching of younger children. At the age of about 15, the most able could attend university. At that time, Scotland had four universities, perhaps the highest proportion of any country in the world, given the very small population.

There have been many other types of Higher Education institutions in the world. Some have focussed on specific areas (like teacher training, applied sciences, nursing). There has been, throughout the world, considerable re-organisation of such institutions and many today call themselves universities. In order to focus on quality, we need to know *why* such institutions exist and what needs they are seen to meet in their social context.

## **Higher Education in Pakistan**

The Boston Report (2002, page 5) considers Higher Education in Pakistan and states that, *“Higher education has always been an important component of the social agenda, but it has acquired a new importance today. In the emerging ‘knowledge economy’, nations that fail at creating a decent learning environment will lag behind, and may end up becoming virtual colonies of those that do succeed in this regard.”* This report has much to say about Higher Education in Pakistan although it defines Higher Education in a somewhat unorthodox way.

The UNESCO Task Force Report on Higher Education in Developing Countries (2000, page 12) presents the same argument, *“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.”*

The Boston Report identifies many of the key areas of problems, at the time of compilation, in Pakistan education in general. In summary, these relate to what they call the “*educational apartheid of multiple educational systems*”, problems associated with teacher remuneration, problems related to inappropriate curricula, the relative absence of research and the mismatch of outputs from Higher Education with the needs of society (they identify some gaps in certain technical skills, communication and humanities). In passing, reports in the UK also draw attention to problem areas, one of them being the mismatch of outputs from Higher Education with the needs of society! Indeed, in Scotland itself, being qualified as a teacher (even of subjects like mathematics, physics and chemistry) is no guarantee of a job in teaching as there are very few vacancies. In England, by contrast, a teacher qualification in mathematics, physics and chemistry means a choice of many jobs, there being a considerable shortage in these areas. Here is a beautiful example of mismatch between degree qualifications and the job market.

One problem is that some of the Higher Education system in Pakistan is built on the tradition of the British system (in fact, the English system, mainly: see appendix) from the 19th century, with its emphasis on preparation for the public services. Needs have changed dramatically. Pakistan now needs much more emphasis on the science and technological areas, as well as applied sciences, entrepreneurship and business skills. There are said to be major gaps in information technology, biotechnology and nanotechnology.

However, it is a fact that “*students who graduate from the Pakistan educational system routinely do well (and often excel) in educational and professional environments abroad suggest that the system in Pakistan is still able to produce good students*” (Boston Report, 2002). Nonetheless, there is a need for change and this conference reflects a recognition of that.

While building on what is good, change must be embraced without fear. However, there is a need to identify the key purposes of Higher Education provision. It is important to consider what works well elsewhere but the tendency to import educational systems from other countries must be resisted. Frequently, these do not transfer well and Pakistan needs its own system.

Implicit in all of this is the need to measure and evaluate. However, the danger is that we measure what we can measure, neglecting many of the more important outcomes which are not open to easy measurement. I shall return to this later. However, it is essential to note the need of defining as accurately as we can what the goals of Higher Education are in general and what more specific goals are imperatives for our own institutions and our own courses.

### **The Scale of the Problem**

Education in Pakistan is growing at breakneck speed. The rate of growth in enrolments in Higher Education institutions is about 5% per annum, averaged over the past 8 years (Pakistan Statistics Yearbook).

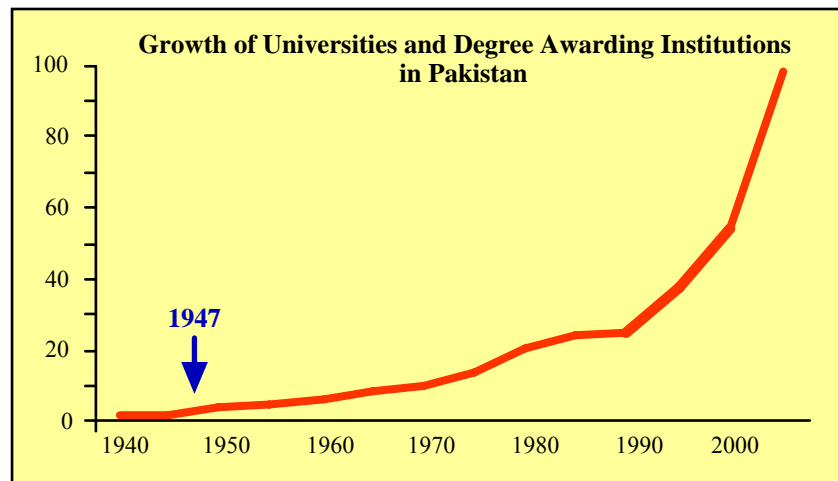


Figure 1 Growth of Universities (source: HEC)

Although degrees are defined differently in terms of length when compared to Scotland (which is fairly typical of Western Europe: see appendix), the pattern of enrolments is interestingly different.

% of all students	Pakistan	Scotland
<i>Bachelors</i>	69	42
<i>Masters</i>	27	18
<i>PhDs</i>	1.2	3

Table 1 Proportions following different degree levels (Sources: HEC; Education Statistics, Scotland)

The gender proportions give the proportions of women in Pakistan institutions of Higher Education around 41-44%, depending on the definition of Higher Education institutions (HEC, Pakistan Statistics Yearbook).

Looking at the proportion of those attending institutions of Higher Education compared to the age cohort is not easy as students are being drawn from a wide range of ages. It is perhaps more useful to look at the proportion attending institutions of Higher Education as a proportion of the total population.

Approximate Proportion in Higher Education (compared to total population)		
	Pakistan	Scotland
%	0.08	0.8

Table 2: Approximate Percentage of Total Population Attending Higher Education

This comparison is interesting but potentially misleading. Scotland has a tiny population. Indeed, for every Scot in Scotland, there are 33 Pakistanis in Pakistan; and Pakistan has ten times the land mass of Scotland. Scotland has had universal education at all levels for over 400 years. Scotland's education development is now negligible in terms of numbers. The growth in Higher

Education in Pakistan is about 5% per year. At that rate, it would take less than 50 years for Pakistan to match the Scottish pattern. However, the population in Pakistan is growing rapidly while the Scottish population is more or less static. Given these differences, it would still only take Pakistan about 75 years to match the Scottish situation (assuming the population growth rate of the last 5 years).

Considering it took Scotland over 400 years to reach its present position, this would be a remarkable achievement. However, in the light of this enormous growth, how do we maintain quality with such a huge growth in quantity? The developments in Scotland took place over many centuries and change was slow. Higher Education in Pakistan is growing extremely rapidly: how can the teachers in Higher Education cope with the pace of change?

In 2003-4, there were the following graduations in Pakistan:

Graduations in 2003-04	
Bachelors	82064
Masters	32892
PhD	294
<b>TOTAL</b>	<b>118056</b>

*Table 3: Graduations in Pakistan (Pakistan Statistics Yearbook)*

In Scotland, with its tiny population, there were about 1900 PhD graduations in the same year and the proportion of all degrees which were higher degrees is over 13%. Overall, number of degrees awarded in Pakistan is about 10% of that in Scotland, allowing for population. Of these, 1.2% are PhDs in Pakistan, while 2.9% are PhDs in Scotland. Clearly, here is an area where development in Pakistan will be very rapid in coming decades: *many more PhD students will study in Pakistan*. Again, how will quality match the increasing quantity?

In the UK, the percentages coming from some selected broad areas can be identified.

Broad Subject Areas	Percentage
Biological sciences	15.0
Physical Sciences	13.7
Medical Related	15.3
Engineering and Technology	13.7
Social Studies	8.4
Education related	3.9

*Table 4 Subject areas for PhDs (UK)  
(Source: Office of National Statistics)*

There is a need for universities in Pakistan to review the areas where the need for PhDs is greatest and adjust opportunities accordingly. Of course, the needs of Pakistan may well be somewhat different when compared to the needs of the UK.

I argue that a strong population of PhD qualified people can offer the research leadership for the future. It is likely that, on current data, Pakistan is running at 4% of the Scottish rate. However, is Scotland producing too many PhDs? This is probably true in that Scottish PhDs frequently have to leave Scotland to find suitable employment. Also, it is necessary to remember

that Scotland had four universities in the 16th century for a tiny population while, in 1948, Pakistan had 2, for a population perhaps 20 times the size of that in Scotland in 1600.

The focus of this paper will remain mainly with PhDs as this seems to be the area where *greatest proportional growth* will occur in Pakistan in the next decade or two. Again, the question arise about how quality is to be maintained when quantity rises rapidly.

### Purposes of Higher Education

In some ways, the purposes of Higher Education will reflect the wider aims of education in general. This can be conceptualised in the following way:

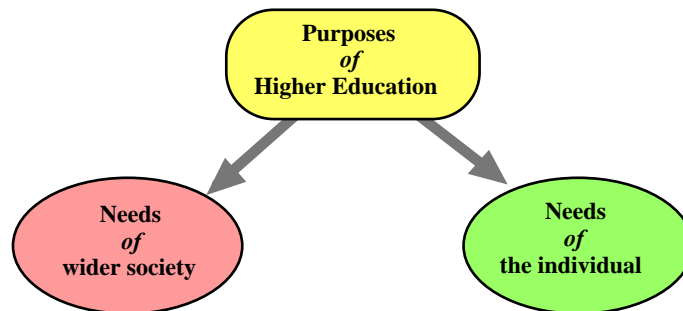


Figure 2: Purposes of Higher Education

The analysis is very straightforward: there are societal needs and individual needs. There is no use generating graduates and postgraduates for a marketplace where there are no relevant jobs. Equally, there is little use in generating graduates and postgraduates who are not educationally developed. Let us look at this a bit further:

Societal Needs	Individual Needs
Subject degrees for the job market	Knowledge base
Adequate Knowledge base	Able to access knowledge
Good Skills base	Able to think critically
Robust Intellectual skills base	Able to address problems in the field
Communication skills	Skills of enquiry
Leadership and teamwork skills	Flexibility

Table 5: Some Examples of Societal and Individual Needs

If we wish to consider the wider needs of society, one key place to start is to look at what employers are saying they wish.

### Views of Employers

In their report, “*Quality in Higher Education*”, Harvey and Green (1994) bring together results from a survey of 2000 employers across the UK. The outcomes may be surprisingly relevant in Pakistan although, inevitably, this is only part of the picture. There is increasing pressure from governments for graduates to contribute directly to economic regeneration and growth. While accepting that the purpose of Higher Education is to encourage scholarship and the training of the mind along with the development of practical and professional skills, it is suggested that Higher Education should also contribute to the meeting of the needs of business and industry.

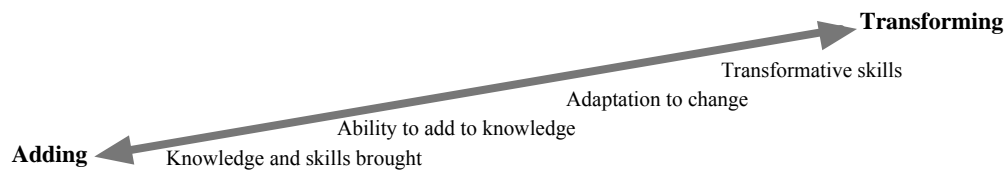
A fundamental question for all academics teaching in Higher Education is: can we *explicitly* indicate how our curriculum contributes to the broad preparation of graduates for forty years of working life with continual adaptation and ongoing training ?

Employers views about quality depend on how they define “quality”. It can reflect on perceived standards in graduates. It can reflect on how well graduates fit into their organisation. It can reflect on what graduates are seen to be able to do for their organisation. It can reflect on how the graduates are capable of changing and improving their organisation.

In looking at why employers want graduates, it is assumed by many that a degree confers *credibility*.

- The knowledge and ideas that graduates bring to an organisation;
- Their willingness to learn and their speed of learning;
- Their flexibility, adaptability and ability to deal with change;
- Their logical, analytic, critical, problem-solving and synthetic skills and their impact on innovation.

These are pictured as an *enhancement continuum*:



**Figure 3: The Enhancement Continuum**

At the left hand side of the continuum, graduates are seen in terms of the added value that they can bring to the organisation while, at the right hand side, their contribution is seen in terms of the changes that they can bring to the organisation. It is noted that there is no objective way of measuring such standards.

The criticism of employers in not being able to define what they want may stem from the observation that employers are describing standards and qualities in terms of “**transformative potential**” - *the potential in graduates to make contributions to innovation within the organisation*. Such a criterion is extremely difficult to assess as well as being elusive and dynamic in nature. Employers want graduates who not only add value but are likely to take the organisation forward in the face of continuous and rapid change.

What employers say they want:

- (a) **Knowledge:** The holding of a degree is seen not as an achievement but as an indicator of potential. Overall, most employers consider that understanding of core principles, technical ability, potential, willingness to learn and problem solving are more important than a stock of knowledge.
- (b) **Intellectual Ability:** Employers expect graduates to have developed a range of intellectual skills: they like graduates who are inquisitive, innovative, logical, analytic, critical, creative, able to think laterally, and conceptualise issues quickly.

All of these can be placed in the transformative potential area. All of this needs to be seen in the context of a period of very rapid change where graduates are seen to be the people who will be flexible, adaptable and receptive to change.

- (c) *Ability to work in a modern organisation*: Employers rate characteristics in this area highly. Coping with pressure, stress management, meeting deadlines, work prioritisation, and dependability are regarded as very important.
- (d) *Interpersonal Skills*: This tends to describe personal qualities that have interpersonal implications: self-confidence, consideration for others, tact, tolerance, leadership.
- (e) *Communication skills*: Oral, written and listening skills are always rated very highly.

In addition, core skills have been defined: seen as generic, transferable intellectual and personal skills, a list of desirable skills is suggested along with a list of desirable personal skills. The intellectual skills are:

- Willingness to learn
- Team work
- Communication skills
- Problem solving skills
- Analytic ability
- Logical argument
- Ability to summarise key issues

In a follow up study, Harvey, Moon and Geall (1997) interviewed 258 individuals (84 strategic managers, 55 line managers, 84 graduates, 35 non-graduates) all working in business and industry.

Key ideas that emerged include *change* and the *need for flexibility* although the future nature of change is not clear and the meaning of flexibility is very variable. From the perspective of graduate employees, the idea of the *transformative graduate* (1994 report) is upheld: employers want graduates who fit in quickly, bring added value but also who contribute towards evolutionary transformation of the organisation faced with incessant changes.

Graduates face a less clear career pathway in flexible organisations and promotion will be based on *evaluation of performance* rather than time served. With fewer layers of management, graduates are expected to be able to teamwork with others at different levels easily and the need for team-working has continued to grow. It is important for graduates to see their own specialism as it interfaces with numerous other areas of activity within the organisation and to be able to move from their specialism into other areas comfortably.

The interviewees were asked if a degree was worth having? Overwhelmingly, employers and graduates regarded the investment as worthwhile. While this agreement existed, it was not the content of the degree that was thought to be most important. The following were rated highly as desirable graduate attributes:

- (a) *Knowledge*: Employers are not very interested in specialist knowledge although in some areas detailed specialist knowledge and skills are assumed (like medicine, law, the sciences).

- (b) *Intellect*: They are looking for higher level skills like analysis, critical faculties and synthesis.
- (c) *Willingness to Learn*: Graduates' attitudes to continuous learning and development are considered very important.
- (d) *Self-skills*: These included skills like self-motivation and self-assurance (self-belief and self-confidence) as well as self-starting, single-mindedness, desire to succeed, ability to cope with disappointment or set-back, willingness to take responsibility, to use initiative, identify their own work agendas, willingness to work with minimum supervision.
- (e) *Communication skills*: Communication of ideas with others, influencing people to bring about action, communication with clients and customers, especially bullet-point report writing, summarising documents, concise recommendation writing, manual writing, formal oral presentations, ability to contribute in meetings effectively, participation in group discussions, exchange of ideas, ability to persuade and so on.
- (f) *Team working Skills*: Emphasised very strongly, team working was seen as allowing the development of ideas, being able to agree effective forward action, establishing effective contacts within the organisation, and meeting the needs of clients. The place of mutual trust and cooperation is stressed as each brings in their piece of the jigsaw puzzle to make the complete picture.
- (g) *Interpersonal Skills*: These are essential to enable people to fit in, being a reasonable personable individual and able to work with others comfortably. Overall, team working, communication and interpersonal skills are inextricably linked for an effective contribution within an organisation.

If the above list reflects in any significant way what the world of employment needs, it raises huge issues of quality assurance. Most of these attributes are simply not open to easy measurement. The kind of quality assurance adopted in many countries is woefully inadequate and shows the need for radical re-thinking. Indeed, assessing the development of the list above would be unbelievably complicated, probably to the point of impossibility. This raises the question about whether we are approaching the whole issue of quality assurance in the wrong way.

The UK Higher Education Quality Council published its report (Graduate Standards Programme) in 1997 looking at the development of threshold standards for undergraduate degrees. They used the word "graduateness", listing five broad categories of generic skills:

<i>Subject mastery</i>	Subject content and range, subject paradigms, subject methodology(ies), subject's conceptual basis, subjects limitations and boundaries, subject's relationship to other frameworks, context in which subject is used.
<i>Intellectual-cognitive</i>	Critical reasoning, analysis, conceptualisation, reflection and evaluation, flexibility, imagination, originality, synthesis.
<i>Practical</i>	Investigative skills or methods of enquiry, field craft skills or laboratory skills, data or information processing, content or textual analysis, performance skills, creating of products, professional skills, spatial awareness.

<i>Self/individual</i>	Independence or autonomy, emotional resilience, time management, ethical principles and values base, enterprise, self presentation, self criticism.
<i>Social/people</i>	Teamwork, client focus, communication, negotiation or micro-politics, empathy, social or environmental impact, networking, ethical practice.

It is interesting to note clear divergences in views in looking at “*graduateness*”: academics tend to emphasis ***subject based outcomes***; students focus on ***employability and personal development***; employers describe attributes that are ***attitudinal*** as well as skills that can be thought of as ***generic***. *There is a clear mismatch in perceptions.* This alone has massive ramifications for quality assurance. If there is little agreement about what are we aiming at, there is little chance we shall ever reach any agreement on how to measure it.

In the Hugh Macmillan Memorial Lecture in 1997, entitled, ‘*Work, Worth and Wealth*’, Mark Goyder, Director of the Centre for Tomorrow’s Company offers a futuristic look at the workplace and what education needs to do in preparation. His argument is that enterprises that want to prosper will need to:

- Be fast on their feet, good learners, capable of inspiring loyalty, superb at relationships with work force, suppliers, customers.
- Know exactly where their licence to operate comes from: clear goal definition, sense of purpose throughout work force, clearly defined role and context.
- Have clear purpose, strongly held values, clear definition of success and how to measure it (defined not just in financial terms but in terms of each relationship that contributes to performance).

The shift from manual to mental will continue, with fewer who work in large organisations actually working for them. The security of lifetime employment will go. It is possible that a core of highly paid clever people will be operating global businesses where they outdo each other to make the same things better, faster and cheaper. Suppliers will compete to keep up, leaving the majority to become part of losing communities with every increasing poverty and dislocation. Some of this is happening already. He argues against the distinction between the so-called “wealth creators” (business and industry) and the “wealth spenders” (teachers, social workers, doctors etc). Importantly, he argues that too much educational provision is seen as a conveyor belt approach: the task is defined for us. This has huge implications for Higher Education.

Bringing these three reports and lecture together offers the following summary of key issues:

- (1) Are subject courses preparing students for a 40 years or so of working life with *continual adaptation and ongoing training*?
- (2) The workplace needs graduates who not only add value but are likely to take the organisation forward in the face of change. In this context, do departmental courses give students opportunities to develop those attitudes and skills that can be described as *transformative*?

- (3) To what extent have departments integrated relevant aspects of *workplace awareness* (including relevant attitudes and skills) into their ongoing teaching programmes?
- (4) In what ways are the *aims of academic education* and preparation for the workplace complementary or inconsistent? To what extent do courses allow students to interface their academic studies with other disciplines and with workplace realities?
- (5) To what extent do we seek to provide opportunities to develop what are described as “self-skills” and to develop *team working and interpersonal skills* as an integral part of the departmental teaching programmes?

Bringing it all together, we must recognise that Higher Education is part of the whole process of education and that graduates will sooner or later become the employees of the future. One key role of Higher Education is the equipping of our graduates so that not only they develop intellectually but they develop in ways that enable them to make the major contributions that are needed in business and industry. This can be summarised in figure 4.

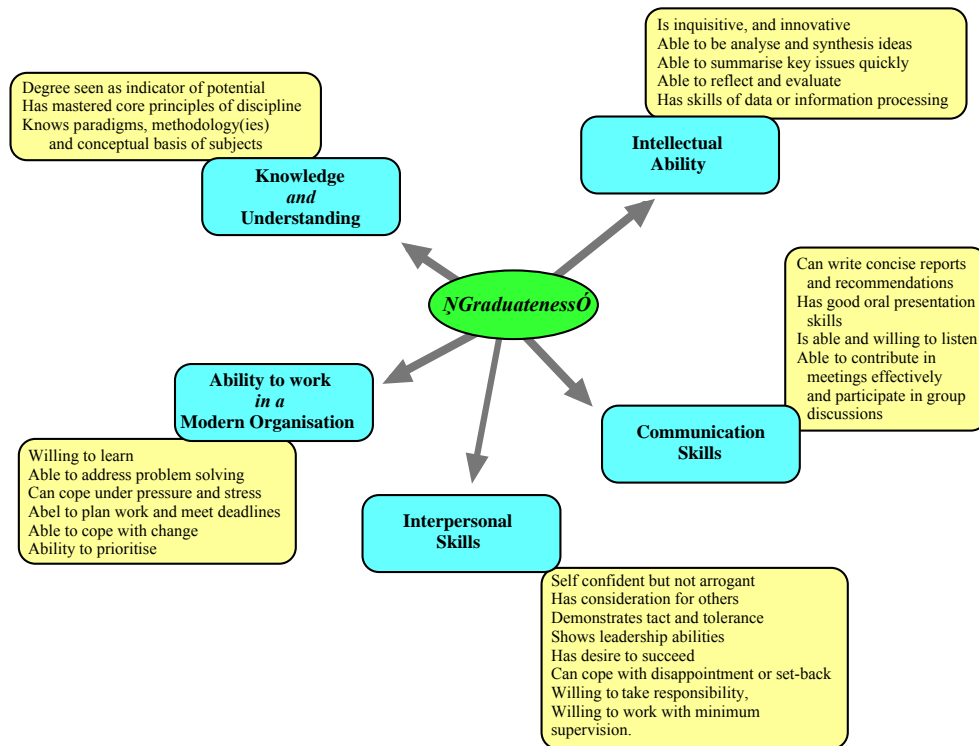


Figure 4: A Picture of 'Graduateness'

Again, it is worth reflecting on the sheer complexity of the ideas picture in figure 4. Can this be assessed? Almost certainly not. If these are some of the key goals for Higher Education, then we need to re-think the whole issue of quality assurance.

### Quality: Focus on the Student

There is a real danger in looking at quality and carrying over ideas which have their roots in the business and industrial world. Here, there are often measurable outcomes like number of units of production per day, number of faults for, say, 1000 units produced, number of people

required to produce, say, 1000 units in a given time. Our ‘product’ in education is not measurable in that way.

If we think solely of educational attainment, it is tempting to look at the number of passes at a given level in a given subject area. We can even compare one university to another. *This can be incredibly misleading.* Consider an example from medicine. In a survey of heart surgeons in hospitals, one surgeon came out very well in the success rate of his patients (measured by their survival for a period of time after major surgery). Another surgeon had a much poorer survival rate for his patients. On that basis, the second surgeon was rated as much less successful. In fact, the second surgeon only took the patients that the first surgeon would not take. He was the expert but limited himself to those patients where there were major complications. The end results were a very disillusioned brilliant surgeon whose services to medicine were effectively lost.

It can be argued that simply measuring the output from surgery was short-sighted. The quality of the intake must also be considered. Yes, that is true but how can the quality of the intake into surgery be measured with any sense of objectivity. How can quite different medical situations be compared at all? Indeed, often the extent of the medical complications may only arise when the patients was actually undergoing the surgery.

The parallels with education are straightforward. It is very difficult to measure the quality of the output with sufficient precision to allow comparisons between institutions of Higher Education to be compared. It is incredibly difficult to make any kind of objective measure of quality of the intake student group. It is no use referring to their school examination results for these are known to be *very poor predictors of university success*. This exemplifies the nonsense of comparing institutions of Higher Education with each other. It all ends up as a series of value judgements and the basis for these may be very flawed. The end results may be false elation in one institution together with resentful disillusionment in another. Students are served badly in both types of institution.

The way forward can *never* be by comparison. It must be by looking at the standards which are expected and explore the extent to which a specific institution, course or degree matches up. There is another problem. No matter how carefully assessments are carried out, once the media get hold of them, they oversimplify and can more or less destroy the reputations of institutions or departments which *they* decide have not come up to standard. This can destroy morale of the staff involved and the only people who suffer are the students. The whole exercise is counterproductive as the experiences in the UK reveal.

### **Quality: Focus on the PhD student**

Let’s focus on the PhD specifically. Firstly, I based my remarks on the fact that I have supervised some 25 PhDs over the past 10 years, along with almost as many research Masters. I have examined numerous PhDs, many from Pakistan.

At what am I aiming personally in my supervision? For me, the key outcomes by the end of the PhD is that the student is *equipped to carry out their own research unsupervised in the future, with some degree of basic competence and confidence*. However, while my students do pass, I have to confess that I am not always confident that they are able to direct their own research in the future, having completed their PhD with me. Equally, I know that a few are capable of directing the work of others - they are the highfliers and they will provide the research leadership of the future.

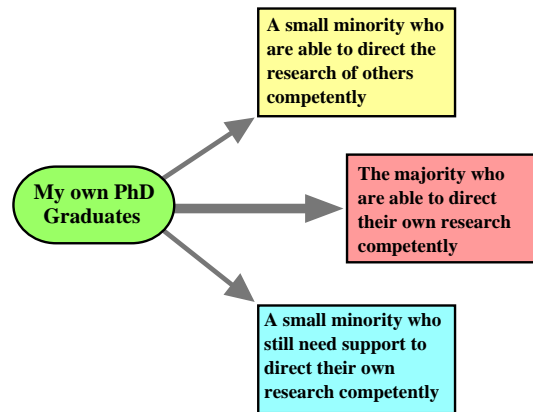


Figure 5: My Own PhD Supervision Experience

There is another important personal view which I hold. I do *not* see myself as in any way superior to my PhD students, most of whom come from outside Scotland. Many hold professional jobs in countries all over the world. Many are extremely able intellectually. I see these students as travellers along the road. I am a traveller as well, the only difference being that I have been travelling a bit longer. This colours my whole view of relationships, so critical in all PhD work. We work together at addressing some research problem. I am not some ‘superior expert’. We talk, argue and debate. They respect me as I respect them for we are all on the journey of learning together. True research is breaking into new understandings and insight. I have no monopoly here. I learn as much as they do and share their excitement when something new emerges from the data we analyse: it is new to me as well. Thinking of quality assurance, how can this kind of approach be measured? It is impossible and any attempt would probably destroy it. However, while I have seen other supervisors with the same approach and their students certainly benefit, I have also counselled some students whose PhD supervision has been woefully inadequate.

Another important feature of PhD work is to consider how it is organised. In the social science and science areas (including medical areas and engineering), there are usually research groups where teams of researchers work together. The project of one student may well lead to projects of future students while projects often relate to each other. This gives a coherent research programme where ideas and understandings develop under the leadership of a senior academic, often supported by a number of other academics. This has the huge advantage of developing team working skills (so desirable in the workplace) as well as giving research output which is coherent enough to be useful. There is another great advantage: younger academics can learn the skills of supervision in collaboration with their more experienced colleagues.

In looking back, here is a list of some specific things which I seek for my students.

Their thesis must,-

- (a) Tell a *coherent and meaningful story*, beginning with a genuine research problem and leading to some kind of outcome;
- (b) Address a *realistic problem*, set in an appropriate context;
- (c) Demonstrate a *critical overview* of all the key contributors to previous relevant work;

- (d) Employ *appropriate experimental approaches* in addressing the research problems;
- (e) Include three (normally) major experiments which form a *logical sequence of enquiry*;
- (f) Show evidence of *correct data handling, critical thought and valid drawing of conclusions*;
- (g) Show some evidence that the work *contributes to knowledge* in the sense of methodology and/or findings.

If there is an oral examination, my only concern here (assuming the theses is fine) is to check that,

- (a) The student understands fully what they have written and described;
- (b) The student actually conducted the research themselves.

In looking at the supervision, the characteristics of good PhD supervision include:

Important Pointers for PhD Supervision
The value of the concept of research teams Avoid 'one-off' projects Develop a coherent research programme Good supervision involves 'hands-on' involvement Importance of regular informal meetings Set thesis standards and stick to them Focus on the important; ignore the peripheral Collaborate with others Make research fun and a challenge

Table 7: PhD Supervision

All of this can be summed up as in figure 6.

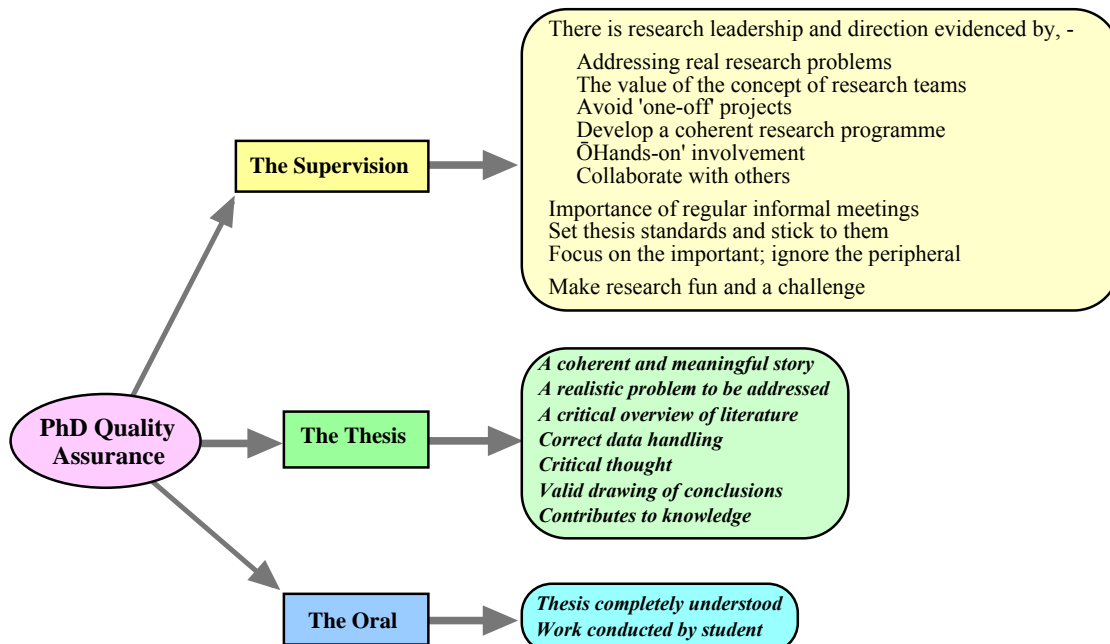


Figure 6: Quality Assurance at PhD Level

My general comments on theses from Pakistan which I have marked are that:

- (a) There is evidence of committed hard work;
- (b) There is evidence of a growing concern about research but the kinds of problems addressed are not, to my mind, adequately fundamental or important;
- (c) Literature covered is sometimes inadequate due to lack of library resources;
- (d) Some of the approaches adopted are somewhat out-of-date;
- (e) The statistical approaches adopted are frequently flawed;
- (f) There is often only one experiment described, making these thesis read like an incomplete story.

Of course, this reflects only my own area. However, while the PhDs I have marked do show some of these problems, most can be rectified without too much difficulty to reach the appropriate standard.

### **Assessing Quality**

The key thing is to look back at what the aims are and to focus on the PhD students themselves. If the key aim is to enable the successful PhD graduate to be able to supervise their own research in the future with minimal supervisions, then that is what we must consider. Evidence can be gained simply by interviewing PhD students near the end of their time. Peer review is probably the best way forward and it is not a matter of chance that PhD students in UK universities are assessed today by the quality of their thesis (using the kind of list of criteria given above) followed by an oral examination with two assessors, neither of whom has any involvement with the supervision of the student. These examiners are looking for evidence of understanding and that the work was done by the student. To ensure that the oral examination is fair, a neutral chairperson is involved. This system has evolved over many centuries and seems to offer some kind of evidence of quality, with a degree of humanity and fairness.

Other European countries have variants of this kind of system. In Sweden, for example, the thesis is much shorter but it must include two published papers from their research, both in reputable journals. That is a very demanding standard, ensuring quality by peer review.

There are various other approaches which have been adopted in various places, some helpful some much less so.

- (a) Some universities demand annual reports on student progress and an interview by another academic. This is of limited value in that the whole process is a waste of time for the vast majority of students (who regard it as an unhelpful imposition) and it devalues the supervisor who often feels that he or she is being checked for quality in a report and interview over which he or she has little control.
- (b) Some subject areas demand all kinds of research training. This was reviewed some years ago by Birbili (1999) and she found that student reaction tends to be very negative. The only way to learn how to do research is by doing research and, where necessary, learning from mistakes. We do not learn how to do good research by attending courses. This whole approach is not recommended.
- (c) Some subject areas (rarely in the sciences and related areas) ask for research proposals from student before they are accepted on a PhD programme. This reveals a complete confusion about the nature of research. If a research

programme can be described in a research proposal, then it is not real research. In real research, we may know something of the starting point; we know something of the first steps of enquiry; however, research, by its very nature, is uncertain. If the project is genuine research enquiry, then, it may move in all kinds of directions after the start and these are often totally unpredictable. It only takes a little thought to appreciate that most research proposals do not represent real research: they are pre-determined enquiries

- (d) It is possible to look at PhD programmes by checking against a list of desirable criteria. This almost never works as the whole process of research (genuine research is unpredictable and often frustrating) is far too complicated to be reduced to any set of characteristics to be ticked off.
- (e) Surveys can be conducted and these can furnish useful insights. However, they are too rigid for the sheer variety of research activities undertaken in a PhD.
- (f) Statistical data can be gathered (like pass rates, time taken to complete) but these tell us almost nothing useful.

The danger is that attempts at quality assurance can distort the entire system, actually making it less successful. We tend to measure what can be measured easily, ignoring what is more important. For example, the research assessment exercise operating throughout the UK for nearly 20 years (originally imposed by a right-wing government) has caused massive distortions to the whole research enterprise. It probably does not give a very accurate picture of what is going on. The danger is that it can focus on things like: numbers, completion rates, publications records, times for completion, research contracts won (measure in monetary value rather than research value), conferences addressed and so on.

Much of the human interrelationship side is not assessed - how can it be assessed? Yet, research is a human collaborative activity - that is its nature. The effect of this kind of assessment is to make senior academics develop policies to encourage the kinds of research activities which gain the maximum credit, leaving other highly valuable contributions to wither. Indeed, universities quickly developed policies to offer jobs to academic staff from other universities just before a research assessment exercise was to take place, simply to gain the credit for their past work. Quality assurance can distort and distort badly, especially when money is involved. Financial rewards must never be related to research in this way - the distortion inevitable is far too great. In all of these things, the problem is that the assessment tends to focus on the system and not on the student.

### **Ways Forward: PhD Quality Assurance**

In simple terms:

- (a) Develop a clear and shared vision of the desired goals;
- (b) Look for exemplars of good practice;
- (c) Avoid 'importing' answers;
- (d) Formal staff training achieves little;
- (e) The apprenticeship model is best;
- (e) Ensure quality assurance does not distort the best practice.

The whole PhD process needs to be seen in terms of the overarching goal of generating PhD graduates who are capable of directing their own future research with competence and

confidence. Every attempt to ensure quality *must* address that overarching issue. It is almost certain that traditional forms of quality assurance will never work. Therefore, the way ahead may depend on:

- (i) Sharing agreed standards among potential supervisors (as in figure 6);
- (ii) Ensuring that the Heads of Department are aware of the required standards of supervision;
- (iii) Sharing the supervision standards with PhD students;
- (iv) Make sure that PhD students work in small groups with more than one staff member;
- (v) Set standards for theses and instruct examiners accordingly;
- (vi) Where orals are held, ensure that these are humane exercises focussing on only two criteria (figure 6)

Bureaucratic structures of quality assurance for PhD standards will almost certainly be inappropriate and will be counter-productive. The *key to quality assurance is affirmation and trust*. Where people feel affirmed and trusted, they will develop considerably, without often being aware of it. The central feature is the aim to generate the people who can direct their own future research with competence and confidence. From among them, there will be some who are able to offer the leadership in research and lead other supervisors forward to ever higher standards.

## **REFERENCES**

- 1) Birbili, M. (1999) Research Training, a Review circulated among Higher Education Institutions in the UK.
- 2) Goyder, M. (1997) Work, Worth and Wealth, Hugh Macmillan Memorial Lecture, RSA Journal, May, 1997, London.
- 3) Graduates Standard Programme (1997) Higher Education Quality Council
- 4) Harvey and Green (1994) Quality in Higher Education: Employer Satisfaction, Birmingham, University of Central England.
- 5) Harvey, L., Moon, S., and Geall, V. (1997) Graduates' Work: Organisational Change and Student Attributes, Birmingham, University of Central England.
- 6) The Boston Report (2002) Towards a Reform Agenda: A Contribution to the Task Force on Improvement of Higher Education in Pakistan, available on line at:

## **APPENDIX**

### **Education in the UK**

This causes great confusion as there is no single UK education system. The UK is a *United Kingdom* and there are several education systems in the constituent parts. The two main ones are: England and Scotland, the latter being much older in terms of universal education. The confusion is caused by official documents from London tending to ignore all educational systems except that operating in England, leaving the impression that there is only one system. Similarly, TV programmes almost entirely ignore the parts of the UK outwith England.

#### ***England***

Following the 1944 Act of Parliament, there were Grammar Schools, Secondary Modern schools and fee paying private schools. In the 1960s, there was an attempt to make all schools comprehensive and, indeed, most became comprehensive except the private schools. In the 1980s, there started an endless series of changes leaving the English education system highly confusing and variable: there are comprehensives, a few grammar schools, schools run by various social or religious groups, and all kinds of specialist schools, as well as quite a proportion of private schools where fees have to be paid.

The General Certificate of Secondary Education (GCSE) is now sat after five years of secondary (starting at age 11+) to be followed by the Advanced Level ('A' Level) two years later at age 18+. Typical able pupils sit three subjects at 'A' level, making the system quite specialised. There have been numerous attempts to replace the 'A' level system over the past 40 years but these have been blocked politically. Another structure is now being introduced and this may prove to be more acceptable. In essence, it brings the English system closer to that operating in Europe and in Scotland.

#### ***Scotland***

Schools were free and open to all from the 16th century. A national examination system was set in place (the Higher Grade examination) in the late 19th century (some 50 years before

‘A’ Levels in England). Schools tended to be comprehensive except in some cities and they are now all comprehensive. Pupils enter these secondary schools at age 12, almost one year later than England. There is small number of private schools.

After 4 years of secondary, pupils sit Standard Grades (at age 15-16), to be followed by the Higher Grade one year later and the Advanced Higher Grade another year later (around age 18). Able pupils take five or six subjects at the Higher Grade and passes at Higher Grade control university entry. A higher proportion of the population goes on to Higher Education compared to England.

### ***Overall***

As a whole, the English education system is strong on arts and humanities while the Scottish system is strong on mathematics, the sciences and related subjects. The two systems are completely different in almost every way!!

### ***University***

At university level, Scotland follows the European tradition of having a four year bachelor’s degrees, with a one year Masters and there years for a PhD. Many PhD students move directly to PhD from their Bachelor’s degree. England is possibly unique in the developed world in having only three years for their bachelor’s degree. Because of the shorter time, the degree is much more specialised and not broad like the European pattern. Thus, students enter departments where they stay for their three years. In Scotland and the rest of Europe, students tend to enter Faculties and can take a range of course outside their subject specialism. Arising from European Union agreements, many English students now add on a mandatory Masters degree after their bachelor’s, making the total four years like the other countries. PhDs in Europe tend to follow similar patterns in general although there are considerable variations in assessment. The degree is based mainly on research.