



QUALITY OF Ph.D. PROGRAM – ISSUES AND PROBLEMS

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ABSTRACT

Ph.D. program has gone through a great metamorphosis since its inception in 19th century at the Freidrich Wilhelm University in Berlin, Germany and later adopted by Yale University in 1861. The requirements for Ph.D. program vary throughout the world but some basic stipulations are common. They are: independent or classroom course work to get depth and breadth of knowledge in the field of interest, original research or innovation in the existing solution of a problem and ability to scholarly write a publishable dissertation in a refereed journal. The original research requires critical and creative thinking, analysis and synthesis of information, planning with the aim to contribute in the advancement of knowledge, development of technologies and application of innovative tools to solve challenging problems. This paper deals with the issues and problems of gaining in-depth knowledge, ability to identify the area of research, ability to form explicit goal and objective from start to finish the research project, manage resources, methodology of research conduction and above all coordination between student and supervisor who is supposed to be an experienced and skilled mentor. The issue of integration of all these factors which is not only sufficient but necessary for quality assurance of Ph.D. program has been analyzed based on primary data collected through interviews of HEC approved supervisors and students.

Key words

Depth and breath of knowledge, critical thinking, original research or innovation, publishable dissertation

1) INTRODUCTION

The origin of doctorate dates back to the Ijazat Attadris Wa'l-ifttd (“license to teach and issue legal opinions”) in medieval schools of 9th century. The doctorate was later extended to European universities in the Middle Ages for all academic disciplines except the professional fields of theology, medicine and law under the heading of “philosophy”. The degree of Doctor of Philosophy (Ph.D.) used to be granted as honorary degree to selected and well established scholars. The term Ph.D. did not acquire its modern meaning as the highest academic degree in science and humanity until nineteenth century in Germany. After adoption of Ph.D. by United States in 1861 it spread to Canada in 1900 and to United Kingdom in 1917. Subsequently during the second half of twentieth century Ph.D. was adopted globally. Like the growth of a society the increase in number of Ph.D. students has given birth to **issues and problems** such as lack of thorough knowledge and skill required at inception level, absence of motivation, insufficient passion and devotion to pursue time bound study, dearth of resources, fashion or craze just to

acquire degree, inadequate guidance and career counseling. All these intrinsic factors besides extrinsic motivation, external control and focus on interests and requirements influence the quality of Ph.D. program. The deterioration in quality of scholars also resulted in academic malpractices. The issues and problems have been analyzed using the data collected from a sample of thirty universities, advisers and two hundred students in the light of **HEC Quality Criteria** for Ph. D. studies laid down in Annual Report 2004-2005 and reproduced here for reference in Fig. 1. The students' survey questionnaire was based on the points also suggested in the **HEC Self Assessment Manual** prepared by Dr. Abdul Rauf. The result of students' survey is tabulated in Table 1 and plotted in Fig.2

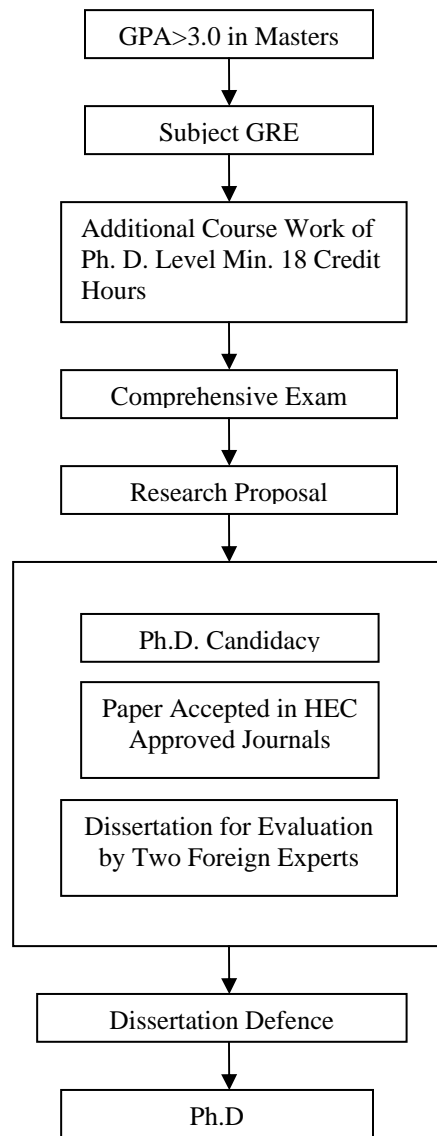


Fig. 1 HEC Criteria for Post Graduate Studies

Students Survey- Sample of 200 Students

The grading scale represents participant's knowledge and problem solving skill based on GRE subject test results whereas the other attributes were determined through question/answer session and examination of written reports.

Table 1: Response of Students Survey

Excellent: 90% Very Good: 80% Good: 70% Fair: 60% Poor: 50%

	Excellent	Very Good	Good	Fair	Poor
Subject knowledge	-	45	70	60	25
Problem formulation and solving skill	10	22	30	42	96
Collecting and analyzing data	-	-	40	35	125
Ability to put knowledge into practice	17	23	35	40	85
Ability to give innovative solution	-	7	19	56	118
Oral communication	-	19	47	45	89
Report writing	-	12	35	43	110
Independent thinking	9	20	32	41	98
Motivation	22	34	68	50	26
Reliability	15	24	36	40	85
Resource and Time management	-	25	41	53	81
Self discipline	-	30	48	50	72

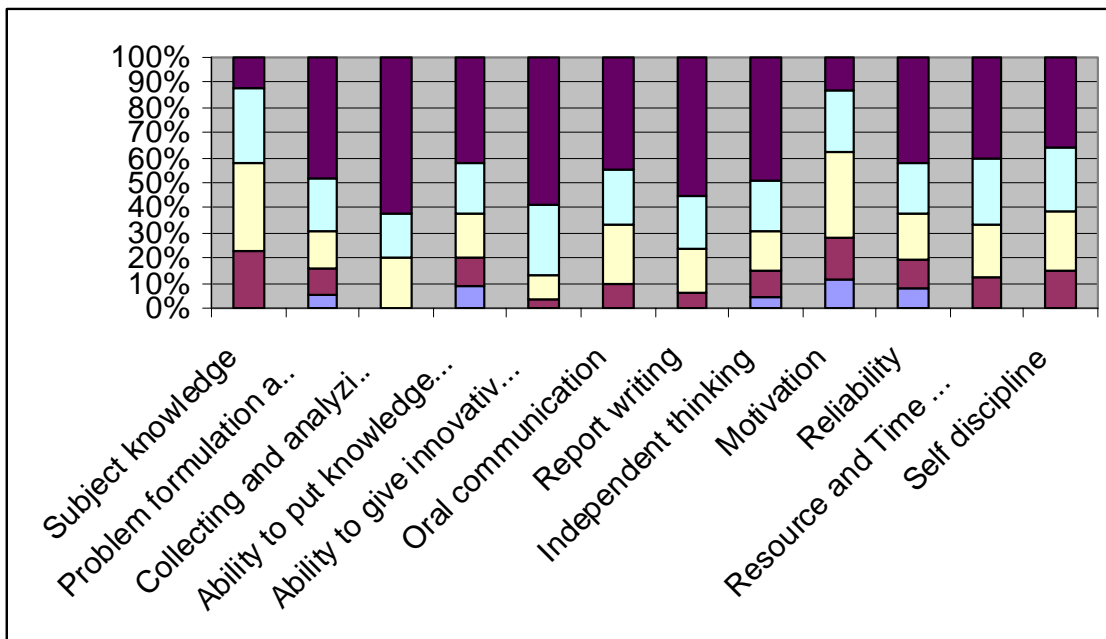


Fig. 2 Response of Students Survey

The above tabulated data is not relevant in isolation and without considering faculty attributes and institutions' predicaments. A survey of faculty response is tabulated in table 2 and plotted in Fig. 3.

Table 2: Faculty Survey – Sample of 30 Faculty Members

Ph.D. degree more than five years old	6
Ph.D. degree more than ten years old	24
Ph.D. degree in the discipline other than Masters	15
Thorough up-to-date knowledge and expertise	16
Research and publication during last five years	10
Research and publication during last ten years	12
Interaction with Ph.D. students less than three hours/week	16
Interaction with students more than three hours/week	8
Students dependency on faculty	27
Faculty load more than six credit hours	23
Faculty load of six credit hour	7
Supervisors availability	3
Supervisors positive attitude towards students	7
Time devoted to update knowledge, less than 10 hours/week	20
Time devoted to update knowledge, more than 10 hours/week	6
Time spent in the lab, less than 10 hours/week	20
Time spent in the lab, more than 10 hours/week	6
Conference, seminar and workshop attended at least one per year	6

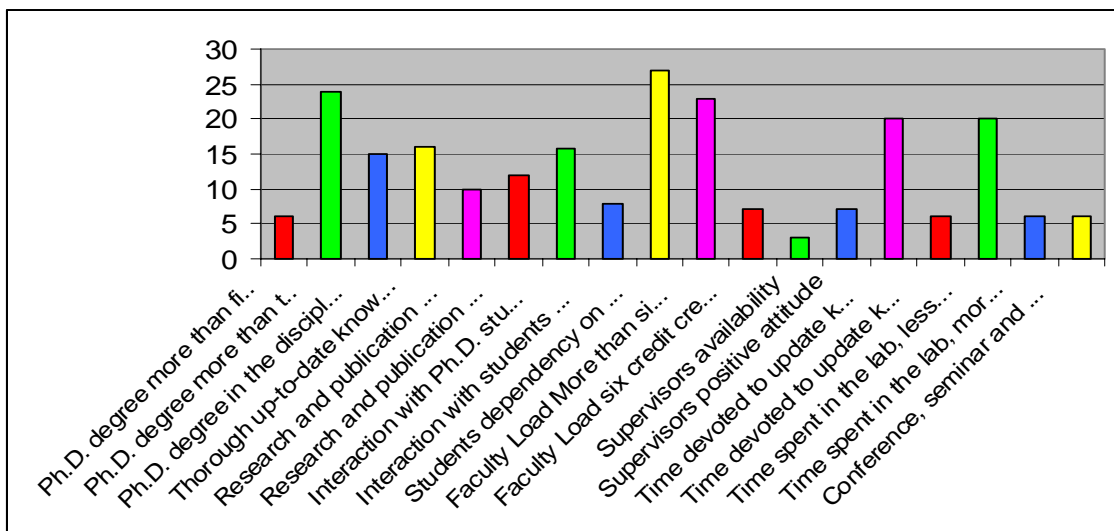


Fig. 3 Faculty Survey – Sample of 30 Faculty Members

The results of these surveys lead to the under mentioned issues and problems to be analyzed to enhance the quality of Ph.D. program.

2) Issues/Problems and Analysis

Social Issue

Social norms of a society are the most important characteristics that govern a specific community rather influence all walks of life including academia. To qualify the statement, a batch of a hundred science and mathematics students was asked the question as to why they are doing Ph.D. Invariably the answers were:

- We could not do medicine or engineering
- We have to do something in any way
- Ph.D. has become requirement for university teachers

Alternatively when another hundred medical and engineering students were asked why they did not go or would not go for Ph.D. the answers were:

- Why should we do Ph.D. when we can earn more just with bachelors degree
- We have to support the family who has spent a lot on us and cannot put more time in
- School
- Job prospects in other fields are not good and there is no social status of teachers in our society

Analysis

The survey shows that our society has developed a trend that most of the so called top students do not go for Ph.D. due to social and cultural norms wrongly set by the society who would have other wise proved to be good scholars and asset for nation. It appears that those who are pursuing Ph.D. are doing so due to compulsion and not that they have love and adoration for scholastic knowledge. This needs serious consideration and efforts have to be made not only to improve job prospects in other fields but raise the social status as well.

Problem of Students Induction

The problem of students' induction in Ph.D. program is direct corollary of social problem. It is also evident from the students' survey that the majority students' cluster around average and even the engineering students do not fall in top ten or twenty percentile in GRE subject test.

Analysis

In fact the foundation of passion for acquiring knowledge in depth and breath is laid down in early stages of schooling if the students are exhorted to learn to consider different possibilities to solve trivial mathematics, science or social problems to expand the brain. This requires the creation of interest in independent study instead of learning text books by rote which consequently results in the process of thinking and generating ideas. It is unbelievable that almost all the students leave thirty to forty percent important material of high school course work as choice. This deficiency can never be covered up at graduate level unless extraordinary efforts

are made. Whereas in the developed world the students with exceptional academic background, motivation and intrinsically interested in research go for Ph.D.

Another problem is language barriers since most of the students do not use English even as second language in their daily life and have to struggle hard to get to the concept of subject matter. Consequently the students have difficulty in problem formulation with ability to form explicit goals and objectives from start to finish the research project besides poor oral and writing communication.

Problem of Learning Culture

The above two problems have further contributed to the culture of not studying in libraries or working in computer or research labs after class hours. It is a rare scene to see students with backpack full of books in universities. It looks as if the students have come to universities with a pen and a notebook to attend a seminar.

Analysis

Noisy and unattractive learning environment, frequent electric power failure, improper luminance, lack of modern teaching tools such as overhead and multimedia projectors, poor stacking and sequencing of books and journals, time consuming manual method for issuing journals and books, lack of faculty's commitment and devotion, indifferent and impassive faculty attitude towards students altogether contribute to nonconductive learning conditions.

Institutional Problems

- **Supervisor's qualification** – Ten out of thirty faculty members were found having basic degree in physics and Ph.D. in Computer Science or IT or Engineering. Further the faculty members with Ph.D. older than ten years have no expertise in modern essential tools like MATLAB used in computing, mathematics, physics and engineering.

Analysis

If the supervisor's basic qualification or masters is in a different field than his Ph.D. then he will be weak in breadth of knowledge. For example if one has basic degree in physics and Ph.D. in engineering then for sure he must have not studied all the basic courses of engineering and hence might be hesitant to supervise his students to develop breadth of knowledge resulting in superficial supervision. Or suppose even one has the engineering degree and experience in Control Systems and supervising the students in the field of Image Processing will not do any good to the students but to demotivate them.

- **Supervisor's motivation** – Seven out of thirty supervisors were motivated and eulogized HEC policies including research funding and personal incentives.

Analysis

Motivation is directly related with institutions' policies, work conditions, incentives and above all personal virtues. Poor job prospects based on knowledge, skill,

professional integrity and commitment apart from degree requirements are the causes of diminished motivation.

- **Supervisor's experience** – Twenty out of thirty supervisors are not involved in active research by themselves in the areas that they are supervising. .

Analysis

This situation is the result of shortage of true research leadership to be followed by novice researchers and reflects on departmental and institutional ethos and policies which ultimately affects the quality of education. Therefore, a critical process of monitoring is required to be developed to peer supervisors' involvement in research and time devoted in labs.

- **Supervisor's availability** – Almost all the supervisors are usually not available to the students due to their preoccupation in work at other institutions, administrative jobs or running some business. It is unfortunate to quote here an example from our survey that a senior faculty member managing a top university who is supervising at least twelve students has no time for students. A few good students left the institution in frustration half way done.
- **Supervisor's work load** – All the interviewed supervisors complain that due to teaching load including classroom teaching, making and grading assignments, quizzes, midterm and final exams, they are hardly left with any time for other activities.

Analysis

The teaching load of the faculty involved in research and Ph.D. program is not according to international practice of six credit hours per week teaching assisted with teaching and research assistants. One reason for this is quoted to be the shortage of faculty.

- **Lack of supervision and guidance** – All the above mentioned factors contribute towards lack of supervision and assistance to the students.
- **Supervisor as role model** – Whatever may be the reasons quoted to defend the above points none of the interviewed thirty supervisors by virtue of knowledge, research, guidance, time commitment to the students and assistance in their lab and field work are thought to be role models for the students.
- **Monitoring and assessment process** – Not a single institution is having a weekly log of students' work, track record of seminars and conferences attended, monthly or quarterly progress reports to assess the logical development of solution of the formulated problem, methodology, clarity of ideas, support arguments, commitment, writing and oral communication etc.

Funding Issues

- Lack of Financial assistance

- Dearth of Funding for research library, conferences, experimental work and travel for study and field work

Analysis

Funding is usually a great problem especially when there is no funding agency other than the government whose priorities keep changing depending on the needs. In most of the developed countries research is also funded by the industries and philanthropic organizations which cater for the needs for financing the above research aspects. Lack of funding being an important factor not only hampers the research activities but also becomes the source of discouraging motivation.

Facilities Issues

Except few all the universities have inadequate under mentioned facilities causing inconvenience to the students which otherwise supposed to be part of infrastructure items.

- Library with latest books and journals
- Well equipped laboratories
- Computing facilities
- Office room
- Phone
- Internet
- Audio/visual aids

Support Facilities Problems

- Orientation program for students development
- Technical support
- Provision of mentors
- English language assistance program
- Editorial support
- Research group meetings
- Seminars to present work

Analysis

The survey given in Table 1 shows that majority of students have an average knowledge and hence need a carefully designed orientation program associated with workshops. There is hardly any technical support in the labs, workshops or field work which is essential for managing the job in time. Keeping the students academic background, and faculty's survey given in Table 2 the appointment of a mentor who is supposed to be an experienced researcher is necessary. Since most of the students do not have English as a second language need extra coaching in the language and requires the initiation of language assistance program along with editorial support for the development of presentable and publishable dissertation demonstrating the scholastic quality. Regular group meetings and seminars for presentation provide an opportunity for positive critique thereby enhancing the quality of research.

CONCLUSION

Commendable efforts have been made by HEC to improvise higher education qualitatively and quantitatively by introducing admission criteria, scholarships, providing university funds, job incentives and support for conferences and seminars but unfortunately institutions of higher learning could not create the culture and passion for knowledge, expert mentors and dynamic research environment. The fact is that the foundation of creative mind is laid down in the early stages of schooling. This needs serious consideration to improve the quality of high school education system if we have to produce at least good scholars and if not the great scholars. It used to be said that great scholars are born but now the institutions instil greatness and scholarship by:

- Devising creative and dynamic research environment through devoted and expert faculty
- Thorough assessment system for both students and faculty improvement
- Monitoring of supervisors activities
- Feedback from employers and community
- Establish departmental board of studies for suggestion in curriculum and assessment of research activities
- Constant development of labs and libraries
- Regular seminars and workshops to assist the researchers to update knowledge and gain hands on experience of latest research software and hardware tools.
- Establishment of language centers to develop writing and oral communication skills
- Regular interaction between students and supervisor
- Linkage of academia and industry
- Exploring funding sources other than government such as industries or philanthropists

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