# Cross Matching Learning Outcomes of Postgraduate Basic Medical Sciences to the Qualification Framework of Pakistan

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## ABSTRACT

**Objective:**

To match the learning outcomes defined in PhD course document to guidelines provided by the HEC in terms of both the Pakistan Qualification Framework (PQF) and the National Qualification Framework (NQF).

**Methodology:**

A qualitative study by comparative content analysis, carried out at Khyber Medical University in 2016. The learning outcomes in PQF and NQF were defined by purposive sampling based on three major domains of learning; Knowledge, Skills, and application of skills, and matched to the PhD Course guidelines.

**Results:**

Cross referencing the documents showed that on manifest analysis the coverage for knowledge and skills ranged from 28 to 36 % but with latent analysis it was bumped up to 160 to 56 %, respectively. Research showed an excellent match in the PQF with 175% but for the NQF it reaches 75% only.

**Conclusion:**

Although there is some degree of manifest and a larger degree of latent compatibility as regards the first two domains of Knowledge and Skills, the third component of applicability was entirely deficient. Keeping in focus research as a major component, explicit outcomes on generic skills should be added to address this gap.

**Key words:**

Learning outcomes, Curriculum matching, Content analysis, Manifest analysis, Latent analysis, Qualification framework

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## INTRODUCTION

Learning outcomes are being continuously developed and updated at national and international levels in health-care education, providing a system by which the product of an educational program can be defined.——[14] In Pakistan these outcomes are defined as framework provided to all post-graduate degree awarding institutions including Khyber Medical University (KMU) by the Higher Education Commission (HEC).[5,6] These guidelines are not specified for medical institutes per se but are broad enough to encompass arts, science, business and sociology. This however leads to difficulties in interpretation and application in medical sciences, requiring specific expertise. To address the content validity of any course document, curriculum cross-referencing with national guidelines becomes necessary to address any misalignment issues.[3] Thus, curricular matching done using unobtrusive research by data collected via content analysis of documents becomes a challenge due to the subjective nature of the outcomes.[7,8] Although this matching is tedious and time consuming, the benefits outweigh all the difficulties in terms of identifying gaps, differences in significance or contradictions.[8]

In this paper the learning outcomes of the PhD course document in Basic Medical Sciences[9] are cross referenced to the HEC (PQF, 2009) and (NQF, 2015) using content analysis.

## METHODOLOGY

### Study type

A qualitative study was carried out using content analysis of the learning outcomes, both, manifest and latent.

### Sampling

Data were gathered by carefully scrutinising two documents, namely, post-graduate courses for MPhil leading to PhD in Basic Medical Sciences in Khyber Medical University (2010) and HEC's Pakistan Qualification Framework (HEC-PQF). These were then compared to the latest National Qualification Framework (NQF) recently launched in 2015. The learning outcomes in HEC-PQF were defined by purposive sampling based on three major domains of learning; Knowledge, Skills and application of skills, and matched to the PhD Course guidelines. To ensure objectivity the data were gathered by faculty not involved in the curricular development, and analysed, to further increase validity.

### Analysis

Content analysis was used to analyse both the documents.10 There are various types of content analysis that can be used; conventional, directed or summative but as this is an unobtrusive research, summative analysis including both manifest and latent content analysis were used.11'12,13 The text is analysed for the occurrence or recurrence of certain words or codes focusing on frequency of occurrence. Thus, helping in aiding in quantifying data within a qualitative research.13

The first step involved is an in-depth scrutiny of the HEC-PQF as well as the NQF documents level 8 Doctoral, PhD. The unit of analysis was zeroed down to the three major groups of the learning outcomes.14 Codes were identified within this unit and used as reference codes for manifest analysis of the PhD Course document. Next, these same codes were then identified in the PhD Course objectives to map out similarities and dissimilarities. Text search was carried out in full reader search in Adobe Reader and Microsoft Word 2016. The codes were then manually counted and all data placed in Microsoft Excel 2016. The Manifest analysis showed a matching of word frequencies in both documents. A further latent analysis was done by identifying text with similar or near similar meanings using Keyword In Context (KWIC) search of learning outcomes in the PhD Course document and matched to HEC-PQF and NQF. This was done for quality assurance and to remove any ambiguity in interpretation of the documents.15

Graphs were produced in Excel to compare and contrast the documents in terms of knowledge, Skills and Research. Word clouds were generated to further enhance the visual impact of our analysis and for the purpose of triangulation.14,16

## RESULTS

Each of the three domains as delineated in the HEC-PQF document consisting of Knowledge, Skills and Application of Knowledge and Skills were analyzed separately. Word clouds for manifest analysis were generated for each of the three documents, PQF, NQF and PhD course to produce a visual impact, as can be seen in *Figures 1-3*, respectively. Although there was some degree of manifest and a larger degree of latent compatibility as regards the first two domains of Knowledge and Skills, the third component of Applicability was entirely deficient. On further scrutiny a separate entity of Research was added that showed a higher frequency in the PhD course document as compared to the HEC-PQF or the NQF.

### Knowledge

The initial manifest analysis of the HEC-PQF generated codes that when matched to the PhD course document in IBMS, KMU showed a compatibility of ~38% which fell to ~30% with the NQF. But the addition of the latent analysis showed an increase of up to ~163% in the PhD course document to the PQF-HEC. The details of both analyses can be seen in *Figure 4*.

### Skills

In the skills domain the Manifest analysis matched the PhD course document to the PQF by ~28% more so then NQF by ~36%, although with the addition of the latent analysis the compatibility increased to 56 to 53%, respectively for both documents. The detailed results have been presented in a graphical form in *Figure 5*.

### Application of Knowledge and Skills

The learning outcomes; Accountability, Professional practice, Intellectual independence and Initiative were found to have no link to the PhD course document. But both the PQF and the NQF have similar compatibility.

### Research

Although not defined as a separate domain, Research was found inherent to all three domains outlined in the HEC-PQF and NQF encompassing knowledge, Planning, Writing and Presenting. The PhD Course document exceeds the PQF document by ~150-175% but lags behind the NQF by ~75-78%, as can be appreciated in *Figure 6*.

Figure . Frequency of Learning outcomes in the Pakistan Qualification Framework (2009), Higher Education Commission, Pakistan.



Figure . Frequency of Learning outcomes in the PhD, Basic Medical Sciences Course document, Khyber Medical University



Figure . Frequency of Learning outcomes in the National Qualification Framework (2015), Higher Education Commission, Pakistan.
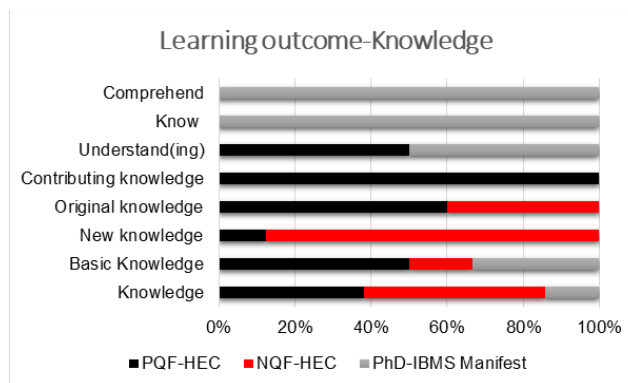


Figure . Comparative Content Analysis of Knowledge in the Pakistan qualification framework (PQF-HEC), National Qualification Framework (NQF-HEC) and PhD Course document, IBMS (PhD-IBMS)
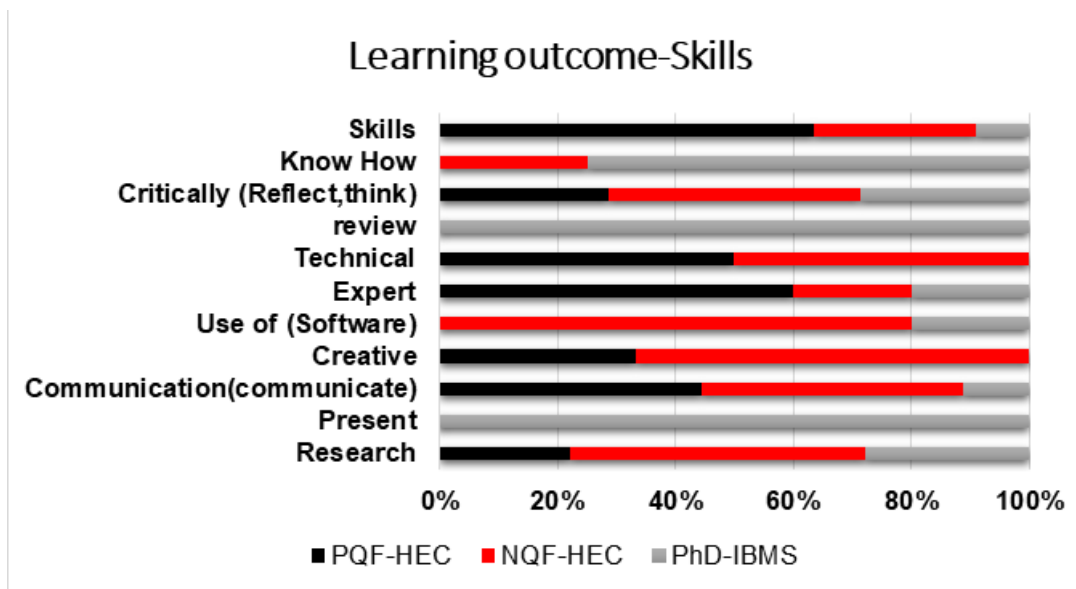
Figure   Comparative Content Analysis of Skills in the Pakistan qualification framework (PQF-HEC), National Qualification Framework (NQF-HEC) and PhD Course document, IBMS (PhD-IBMS)
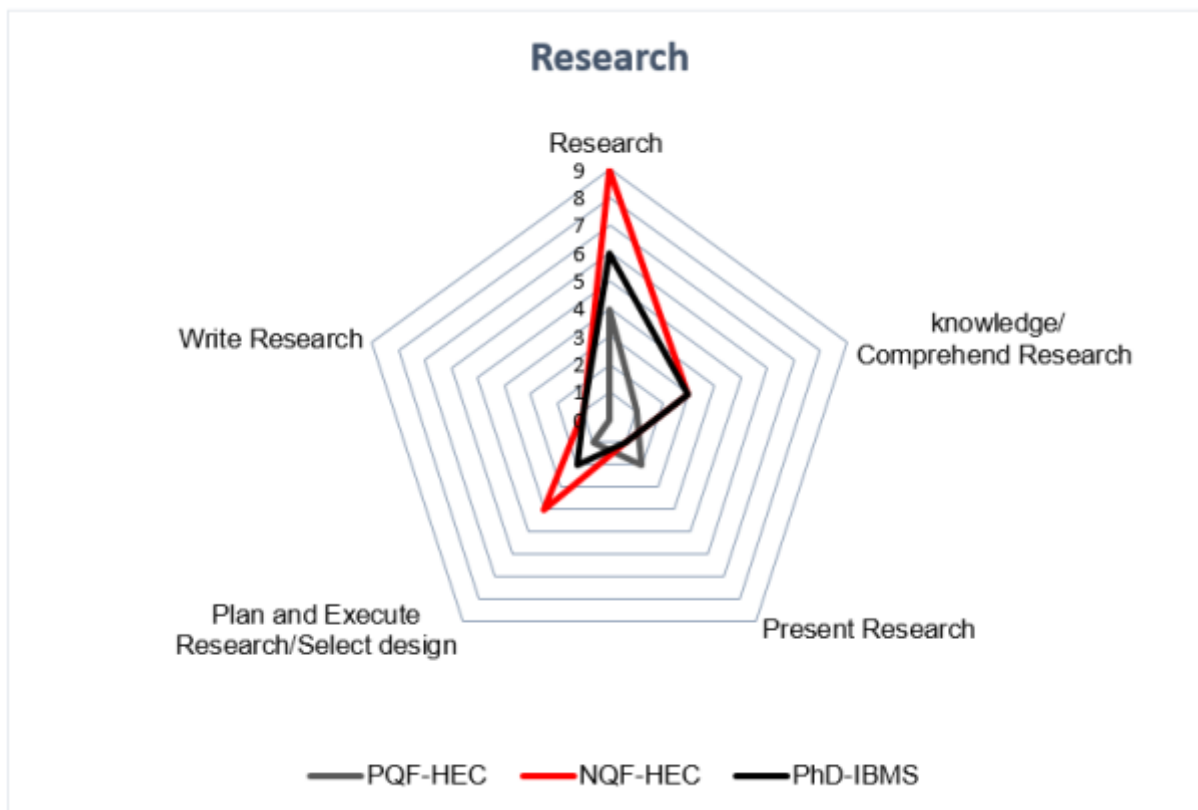


Figure  . Comparison of Four points of Research; Comprehend, Plan, Write and Present in Pakistan qualification framework (PQF-HEC), National qualification framework (NQF-HEC) and PhD Course document, IBMS (PhD-IBMS)

## DISCUSSION

The PQF classifies qualifications into eight levels and defines a further eight elements for the development of a curricular framework. Of these eight elements, the learning outcomes for Knowledge, Skills and Competence for each level are defined at number three. This framework not only implements a national standard across the country but in addition provides a comparative basis for international qualifications.[17] Learning outcomes are statements that define what a learner will know or be able to do at the end of a learning activity, more specifically the knowledge, skills, attitude and competencies gained. The PQF was developed in 2009 and serves as a guide for all degree awarding institutes to formulate their courses accordingly. KMU started its PhD programme in Basic Sciences in 2010. Considering the initial stages of both national and institutional reforms on developing curriculum, the PhD course document shows a high level of compatibility as regards Knowledge and Skills. Since then, working on its surmise "as an instrument for educational reform" saw the launch of the NQF by the HEC in 2015.

As regards the three learning outcomes, Knowledge is the predominant theme throughout the PhD course document far surpassing both the PQF and NQF. One of the reasons might be that most of the course is delivered via large classroom lectures with very little interaction and emphasis on course completion rather than a development of critical thinking or intellectual independence. While the surmise may be for it to provide a stronger basis to develop skills and application, this will eventually lead to cognitive overload.[18] In the PhD course document, the word "Comprehend" has been substituted for knowledge but most of its emphasis is on basic knowledge and understanding rather than "new", "advanced" or "Original" in both PQF and NQF. Whereas the course document and the PQF showed more compatibility, most of the PhD course work needs to be redefined according to the latest NQF of "new" knowledge rather than "basic knowledge".

Looking at the various domains in Skills, there is some discrepancy when manually analysing the two HEC documents; the PQF emphasis is on developing expertise and communicating effectively whereas the NQF has a more or less uniform approach to skills including being creative, and have technical skills related to the field. The IBMS PhD document approaches this outcome with a "knows how" encompassing various types of skills again emphasising cognition rather than skills. The allocation of credit hours for each course provide a clue as to the ~50% match in skills as there are none allocated to practical work. There was found to be a general consensus on no practical in the taught courses as the assumption was that once the students start their research they will definitely be undertaking various skills for their projects. To some extent this idea of implicit learning outcomes that "students will learn mostly during their research" would explain the total lack of match in manifest or latent analysis of Application of Knowledge and Skills.[19] Another reason for this mismatch may be because intellectual independence and initiative are considered generic skills, which as literature shows, are not always embedded into some higher education curricula.[20,21] This needs to be addressed and be more explicitly mentioned in the learning outcomes so that it is clear to the teachers as well as students as to their teaching, learning and assessment.[22]

One of the major differences in the NQF document in terms of definitions is the use of the term competencies in lieu of Outcomes-Application of Knowledge and Skills. Learning outcomes pertain to an education programme defined by educators and competencies are graduate attributes.[23] Some scholars use these terms interchangeably considering them as only differences in perspective.[24] While others suggest that they can be considered interchangeably at the point of exit but not at entry.[8,25] To remove any ambiguity as to the interpretation of these terms in this article they shall be used interchangeably. As both HEC documents have been developed for all post graduate subjects ranging from the arts, to other sciences and are not subject specific for medical subjects, this curricular framework may be considered as a guideline to develop course specific documents in the medical field.

Ernest Boyer, educator, developed a generic model of scholarship in which he defines four domains of scholarship. One of these is Discovery in which he means original, active research that advances knowledge.[26-28] Thus, keeping in view the importance of research for a PhD student in which all learning outcomes are either explicitly stated or implicit, analysis was done with Research as a separate domain. IBMS has had a much broader vision for research as compared to the PQF, but as the map in *Figure 3* shows that, while the shape of the PhD course document aligns truly with the set criteria of the NQF there is a need to improve in terms of frequency.

This analysis revealed some limitations to the study in that it was conducted on documents and does not address what is actually being delivered to the students and whether their assessments align to these learning outcomes. To further analyse this gap structured interviews with faculty as to course delivery and implicit curriculum need to be carried out. Thus making it possible for future studies in quality assurance for other levels of the NQF.29,30

## CONCLUSION

Defining clear, precise, explicit learning outcomes are one of the initial steps in developing curricula and serve as guidelines for teachers and students in terms of competencies at the end of the day. A regular audit with changing times helps keep things at par with national as well as international standards. This analysis has shown that there are some gaps to be covered. The PhD Course document although appearing deficient in many aspects does actually cover most learning outcomes but as a hidden curriculum. This gap needs to be adjusted more explicitly thus building teacher confidence on carrying out the learning outcome. Keeping in view the latest NQF there is a need for a regular audit of course documents by improving content validity. Thus, KMU can demonstrate that it meets most if not all criteria set by the HEC keeping in mind the generality of both PQF and NQF with most improvement needed in Skills and Applicability.

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