NEED ANALYSIS FOR CONTENT DEVELOPMENT TO IMPROVE QUALITY IN RESEARCH

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ABSTRACT

The aim of the study is to examine the issues and current practices of the doctoral students of 12 universities spread all over Pakistan who are conducting their research. The research issues of the study are whether or not the doctoral students know various stages of the research such as proposal, introduction, literature review, methodology, results and discussion from the very beginning of the research. It was an experimental study over a span of one month held in 2006. The data were collected from 27 experienced university teachers selected randomly. First, the subjects were examined in the beginning of the Research Methodology Workshop, and later after a month on the completion of the Workshop held at Higher Education Commission, Islamabad. The results have shown a significant difference in the current practices and quality of research before and after the workshop. The applied research which is conducted here is one way of accomplishing just that, by approaching a common sport – rock climbing – from a scientific direction and engaging wider researchers in the methods of research by using Need Analysis for Content Development.

1. INTRODUCTION

Research, as explained by Mouly (1978), is best conceived as the process of arriving at dependable solutions to problems through a planned and systematic collection, analysis, and interpretation of data…a back and forth movement in which the investigator first operates inductively from observations to hypotheses, and then deductively from these hypotheses to their implications in order to check their validity from the standpoint of compatibility with accepted knowledge. After revision, these hypotheses are submitted to further test through the collection of data specifically designed to test their validity at the empirical level. The major objectives of the study are to investigate whether or not the research:

1. is conducted in a systematic and controlled manner being its operations on the inductive deductive approach, and

2. is empirical. Subjective belief is checked against objective reality.

1.1 Research Question

Keeping in view the objectives stated above, the study investigates whether or not the doctoral students know various stages of the research from the start of the research? The research question of the study is to know how much knowledge the doctoral students have about research procedure a) before the taught course of Research Methodology? b) after the taught course of Research Methodology? Since there is no single blueprint for planning research, research design is governed by the notion of 'fitness for purpose'. The objectives of the research determine the methodology and design of the research.

1.2 A framework for the research design

The process of operationalization is critical for effective research. What is required here is translating a very general research aim or purpose into specific, concrete questions to which specific, concrete answers can be given.

The process moves from the general to the particular, from the abstract to the concrete. Thus, the framework for research design presented by Murrison (1993) is followed. The basic components of the research are given below:

a. orienting decision,
b. writing proposal
c. research design and methodology,
d. data analysis, and
e. presenting and reporting the results.

2. LITERATURE REVIEW

Literature review indicates the ways in which the previous researches under reviewing will be relevant to the research (e.g. information; theory; methodology). It also demonstrates that the researcher understands the similarities and

differences between these works and paradigms (i.e. Where do they stand in relation to each other? Where does his research stand in relation to them?) The works that the researcher refers to should reflect recent scholarship as well as those considered to be of seminal importance and if the study is cross-disciplinary or comparative the researcher need to describe how the different areas of research can be drawn together in a meaningful way. Basically literature review considers the following important factors:

- Provides a conceptual framework for the research
- Provides an integrated overview of the field of study
- Helps establish a need for the research
- May help clarify the research problem
- Helps to demonstrate researcher's familiarity with the area under consideration (theory and / or methods)

All the five areas (a-e) given above will be looked into detail for our analysis for the empirical evidence of the study.

a. Orienting decisions

Orienting decisions set the boundaries or the parameters of constraints on the research. They address to i) be inclusive in thinking for building on the ideas for a longer time to identify the strength of different research areas to be creative, ii) jot down ideas for revisiting them later on for further modification or changes, iii) select the topic of personal interest rather than to be overly influenced by others, iv) be realistic about the time framework in terms of short-term and long-term issues and questions, v) have the clear understanding of the steps necessary in conduction the research along with the derive of motivation, vi) have comprehensive background knowledge of the literature related to the research, and vii) have clear rationale behind the methodology the research has chosen.

b. Writing a proposal

This section examines whether the researchers have a complete knowledge of writing a good proposal which consists of the first there chapters of the dissertation, that is to say, a) statement of the problem/background information, b) review of the literature, and c) research methodology.

c. Research design and methodology

The methodology section shows the researcher how he is going to set about looking for answers to the research question (including, if appropriate, materials and methods to be used). It must include enough detail to demonstrate that he is competent and the project is feasible. The proposed methods must be appropriate to the type of research. Research should describe the detailed methodology for proposing a specific method, that is, how the study is to be conducted to give a clear picture to its reader to evaluate the research design and method. Mostly the method is typically reported as given below:

c. Hypothesis
d. Research design
e. Data collection procedures
f. Sampling/study area
g. Measurement instruments
h. Data analysis (statistical approach)

d. Data collection Procedures

Procedure explains what was done earlier and how. It includes a description of the research design and how to achieve the purpose of the research.

2.1 Sample

Sample explains the persons or subjects who participated in the study and how they were selected, that is, the proposed sample size of the population etc. This decision must be done early in the overall planning of research. The most important factor here is the need to think out in advance of any data collection the sorts of relationships that researcher wishes to explore within subgroups. Where simple random sampling is used, the sample size needed to reflect the population value of the particular variable depends both on the size of the

population and the amount of heterogeneity in the population (Bailey, 1978). Random sampling and purposive sampling are the two main methods of sampling given by Cohan and Holliday (1979, 1982, 1996) and Schofield (1996).

2.2 Instruments

Instruments enable researcher to decide on the most appropriate instruments for data collection such as interviews, questionnaires, tests, and observation etc. as explained by Kvale (1996), Tuckman (1972), Patton (1990) and Morrison (1993).

2.3 Statistical analysis

Decisions will need to be taken with regard to the statistical tests that will be used in data analysis as this will affect the layout of the research items (e.g. in a questionnaire), and the computer package that are available for processing quantitative and qualitative data e.g. SPSS.

3. QUALITATIVE AND QUANTATIVE DATA

The terms 'qualitative' and 'quantitative' are research approaches. **Qualitative** approaches involve the collection of extensive narrative data in order to gain insights into phenomena of interest; data analysis includes the coding of the data and production of a verbal synthesis. **Quantitative** approaches involve the collection of numerical data in order to explain, predict, and /or control phenomena of interest; data analysis is mainly statistical. Qualitative data involves primarily induction while quantitative data involves primarily deduction. If hypotheses are involved, a qualitative approach is much more likely to generate them whereas a quantitative approach is much more likely to test them.

3.1 Data Analysis

The researcher needs to consider the mode of the data analysis to be employed whether or not it has a specific bearing on the form of the instrumentation. For example, it is important to plan the layout and structure of a questionnaire survey very carefully in order to assist data entry for computer reading and analysis; an inappropriate layout may obstruct data entry and subsequent analysis by computer. The planning of the data analysis will need to consider a) what needs to be done with the data when they have been collected, b) how will they be proceeded and analyzed? c) how will the results of the analysis be verified, cross-checked and validated?

e. Presenting and reporting the results

Presenting and reporting of the research and its results need proper planning of data analysis. There is some general consensus that when writing up research the aim is to:

- Give the abstract of the research
- Explain the purpose of the research
- Give review of the literature
- Describe how the research was done
- Present the results
- Discuss and analyze the findings
- Reach conclusions

Decisions here need to be considered:

- How to write up and report the research?
- When to write up and report the research (e.g. ongoing or summative)?
- How to present the results in tabular or written- out form?
- How to present the results in non-verbal form?
- Vital information to be included when writing up research.

3.2 Data collection and analysis of the present study

A longitudinal study was carried out over the period of one month on 27 experienced university teachers from natural sciences, social sciences and humanities selected randomly from all over Pakistani universities. First the subjects were examined in the beginning of Research Methodology Workshop to find out their existing knowledge on research design, and later how much learning has taken place after the completion of the workshop. The subjects were also asked to give assessment about their resource person. For the purpose of the study, all the subjects completed the same writing task before

the Workshop and one month later, at the end of the Workshop. The scoring pattern for rating the mini research project from 1 to 5 (5 for the strongest and 1 for the weakest) was used. Adapting the scoring criterion given by Jacobs et al, (1981), ratings were assigned for five criteria:

4. RESULTS

The pre- and post-test ratings given to the research projects produced by the 27 subjects were compared along with the average scores in both tests which is shown in Fig 1 below.
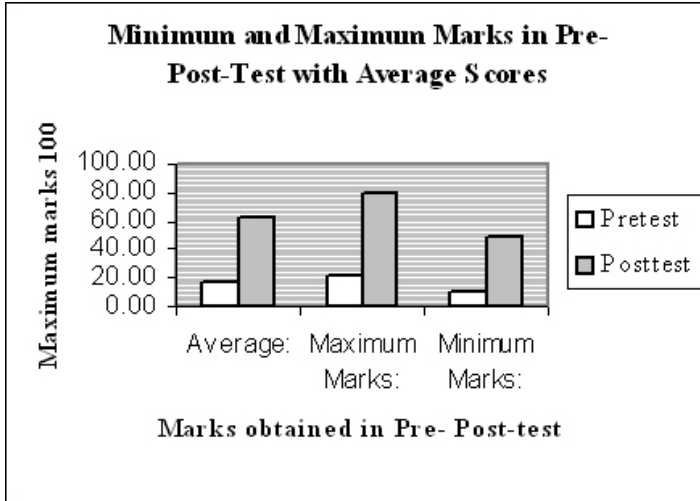

Figure 1 is spelled out in detail in Table 1 below for convenience

Minimum and Maximum % Marks in Pre - Post - Test

Table 1   **P <.01

Maximum Marks:	Pretest	Posttest
	22.00	**80.00**
Manimum Marks:	10.00	50.00
Average:	17.40	63.38
Standars Deviation:	1.64	4.07

Fig1 and Table 1 shows the significant difference between the scores of Pre- and Post-Test which answers our research question (a & b), that is, how much knowledge the doctoral students have about research procedure before and after the taught course of Research Methodology? In Pre-Test maximum and minimum per cent scores are abstract, statement of the problem/background information, review of the literature, methodology, data collection and discussion. The two raters scored each research project independently. The final score for each research project was then calculated by recording the mean of the two raters' scores.

22:10 as compared with the Post-Test which are 80:50 with the average marks 17.40 in Pre-Test and 63.38 in Post-Test. Descriptive statistics from t-test were available for a total 27 subjects. Means for the pre- and post-test ratings are presented in Table 2 below.

**Comparisons of pre Test and Post Test Mean Scores**

Table 2

No. of Participants	Excellent	Good	Average
27	29.17	58.33	12.50

t-test was conducted to compare the pre- and post-test scores. t (26) = -30.706, p=0.000. The result was significant at α = .01. This test failed to provide the evidence that the mean scores of pre-test and Mean score of post test are same.

The results on the significance of the Research Program show that the participants of the program developed their understanding of research methods, and overwhelmingly endorsed the program. The results are shown in Fig 2 below.

Percentage of Response for Program Evaluation
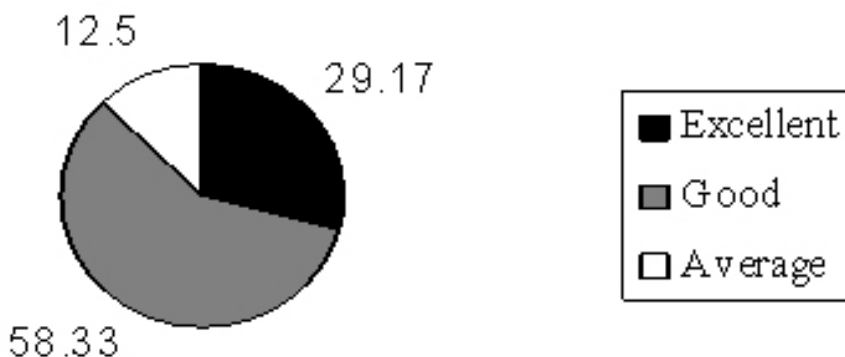
The Figure 2 is given in Table 3 below for convenience.

Percentage of Response for Program Evaluation

Table 3

Test	N	Mean	SD	SE	t -value
Pre Test	27	8.70	1.64	.32	-30.71**
Post Test	27	31.69	4.07	.78	

Table 3 and Figure 2 show that out of 27 participants, 29.17 % participants rated the program an excellent effort of Higher Education Commission whereas, a majority 58.33% of the participants declared the program as a good attempt of HEC. Overall 87.50% favoured the program, where as only 12.5% of the participants rated it as an average program. The empirical data also show that a profound demand of participants to introduce such research and development crash programs to raise the quality of research in the country. They unanimously believe that lack of research knowledge hamper

the faulty further progress in the main stream of overseas and indigenous publications.

5. DISCUSSION

The statistical data of the study show that the teaching research methodology has its advantages over the traditional approach where students start doing research on their own without knowing the scientific ways of conducting research. Considering the teaching process as a whole, we can see that it stimulates the researchers' thinking and enables them to create ideas and organize the raw materials in a logical order. Essentially writing up in an organized way is a methodological research. This is an absolutely

necessary stage at which researchers should have prior knowledge and skills to apply to the writing to find out what knowledge they already obtain and what they still need. Also, by classifying research as abstract, statement of the problem, literature review, methodology, results and discussion, the researchers can arrange their research ideas into proper categories to contribute something new.

6. CONCLUSION

The findings of the study imply that the teaching research methodology was effective in improving the quality of research. The results have shown a significant difference of knowledge between pre- and post-test. The findings of the study have approved the research questions and shown a significant difference in achievement before and after the tests. The study recommends that in order to improve quality in research, the taught course work should be implemented compulsorily before conducting the actual research. The teachers should change their attitudes towards the research. Instead of expectations, teachers should focus on teaching their researchers how to conduct a scientific research providing their researchers with opportunities to interact with each other. It is a universal fact, now hardly disagreed with by any one that any nation in the world, which ruled the world, did so just by virtue of its excellent system of research available to its people in general. And if Pakistan wants to make any significant positive impact internally in the country or externally on the world affairs, the only course to follow is to have a comprehensive and meaningful system of research to all researchers indiscriminately. This is particularly significant when the researchers lack research knowledge. By controlling and monitoring the on-going research, the researchers will inevitably produce quality in their work.

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