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Exploring the Learning Difficulties in Research Methodology Courses: A Qualitative Study of Graduate Students of Education

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ABSTRACT This study is an attempt to explore the factors that increase the learning difficulties of students enrolled in graduate programs at the Institute of Education and Research, University of Punjab in Lahore. The study is qualitative in nature. The sample of the study comprised eight students (5 female and 3 male) selected by using the purposive sampling technique. In-depth interviews were conducted using the semi-structured instrument. The responses were recorded and the data were transcribed into text. Moreover, codes, categories and themes were created by using thematic analysis. The most emerging themes of the research were weak prior knowledge, rote memorisation habit, lack of motivation, lack of applied approach, and lack of peer cooperation in the class. The study recommends that an applied research project may be included in the teaching of research methodology courses.

INTRODUCTION

Knowledge has been the major determinant of sustainable competitive edge and superior performance for individuals, organisations and nations while knowledge creation capacity is also an important source of competitive advantage in the age of globalisation (Bereiter and Scardamalia 2010). It is a well-known fact that research and development for knowledge creation is a key objective of universities and other institutions of higher education. Higher education is increasingly incorporating research projects in different degree programs to equip its students with applied and more relevant research skills. This reflects the importance of research in the economic perspective of knowledge economies on the one hand and for social cohesion and social integration on the other hand (Brennan and Teichler 2008). Moreover, research skills are equally important across all disciplines due to globalisation, complexity of society, social displacement during the course of time and specific policy formulation in this environment. Hence, the learning research is one of the fundamental tasks for undergraduate and graduate students at the university.

Research courses are challenging tasks for the students striving for graduate programs particularly in social and behavioural sciences (Murtonen and Merenluoto 2001; Lewthwaite and Nind 2016; Nind et al. 2020). More specifically, quantitative and qualitative research courses have been considered difficult by students from different disciplines. For instance, Benson and Blackman (2003), Lehtinen and Rui (1995) and McBurney (1995) reported that students enrolled in education discipline face difficulties generally in research methodology courses and particularly in quantitative research and statistics. Similarly, students from other disciplines, for example, psychology, sociology, social work, and generally in social science face difficulties in research methodology courses and applied statistics (Diab 2006; Hauff and Fogarty 1996; Thompson 1994; Zeidner 1991).

Despite the growing importance of research projects and research methodology courses in undergraduate and graduate programs, less is known about learning difficulties faced by the students registered in research methodology courses (Earley 2014). Much of the existing literature has explored the student difficulties in statistics courses, which is just a subcomponent of quantitative research. In the statistical domain students mostly face difficulty in understanding the different statistical concepts as well as statistics anxiety (Onwuegbuzie et al. 2010; Zaidan et al. 2012). In the context of research methodology learning, only emotional and motivational fac-

tors were investigated in existing literature (Murtonen and Lehtinen 2003; Walker 2010). However, content learning of research methodology in the wider domain, which includes different paradigms, approaches and methodological concepts, is a neglected area in the existing literature (Murtonen 2015). Hence, understanding and grasping these concepts is not only a difficult as well as demanding task for student and novice researchers but also an equally demanding task for professional researchers (Deem and Lucas 2006; Lehtinen 2007; Murtonen 2015).

Objectives

Despite the growing importance of higher education in Pakistan, the quality of higher education and more specifically research in social sciences is still depicting a dismal picture. The course work requirement in graduate programs and particularly research methodology courses can help to improve the quality of research output of students throughout their professional life. Hence, the key objective of this study was to explore the students' learning difficulties in understanding the research methodology course using a qualitative research approach. Moreover, this study also identifies the factors that increase the learning difficulties of students.

Literature Review

The main aim of education is to produce wisdom, thus engaging in research is very important for the production of knowledge (Elliott 1996). However, in higher education, research methods are considered to be a most important and complex domain. Although the course of research is an essential part of the university education, there is not much knowledge about teaching and learning research (Wagner et al. 2011). Research plays a significant role in one's daily life. All inventions have been possible with the help of research (Gross 2001). Students feel difficulties and emotional problems in learning research methodologies (Walker 2010). Meyer et al. (2005) conducted ground-breaking research on students' concepts of research. Study results reveal that some students face problems in conceptual understanding. These problems of understanding research at a more basic level also precede the problems on a detailed or advanced level.

Traditionally, research education in social and behavioural sciences is divided into general methodology, quantitative, qualitative methods and statistics at the university level. These individual courses do not help students to grasp the whole process of research (Leech et al. 2007). Some studies identified superficial teaching, difficulty of concepts, linking theory with practice as major difficulties in research (Murtonen and Lehtinen 2003; Murtonen and Titterton 2004; Earley 2014).

Recently, Murtonen (2015) investigated how students understand central methodological concepts of theoretical, empirical, qualitative and quantitative research. This course focused on the topics related to the research question, relation between empirical, theoretical, qualitative and quantitative research, and research paradigms in educational research. Stability of students' concepts about their topic was measured in the last lecture.

In Pakistani context, few studies have investigated the factors responsible for learning difficulties in Mathematics and English at the school level (Ahmad et al. 2013; Akhter and Akhter 2018). Mahmood (2011) explores factors that affect the quality of research of graduate students enrolled in the discipline of education. The study found that an irrelevant curriculum of research methodology courses, weak knowledge of course instructors, and inefficient and unskilled supervisors deteriorate the quality of research of graduate students enrolled in the discipline of education at the International Islamic University in Islamabad. To the best of the researchers' knowledge, there is no study that explores the factors responsible for the learning difficulties of graduate students in research methodology courses in the Pakistani context.

METHODOLOGY

This study has adopted a qualitative research design in order to explore learning difficulties and to identify factors that enhance the learning difficulties of graduate students enrolled in research methodology courses. A purposive sampling technique was used in the study. Purposive sampling enables the researcher to select the participants for rich information and in-depth study (Creswell 2013). Students of M.Phil first semester (session 2017-2019) that are a part of the morning classes

for research at IER were the participants for this research. The total numbers of participants were eight (three males and five females). Participants from both genders were selected to identify the learning difficulties faced by students in understanding research during their research course in M.Phil class. The students' academic performance (measured in terms of cumulative grade point average) was representative of the whole class, with CGPA in the medium range.

In this study semi-structured interviews were used for the collection of data. The semi-structured interview was conducted in order to attain information and identify the difficulties faced by the students in understanding research.

Procedures for Data Analysis

The data analysis in qualitative research is somewhat different from the quantitative research and mostly based on the transcripts of interviews, notes on the participants' observations, and the researchers can also examine the picture and other images and describe them in text. This study was based on semi-structured interviews, hence in the initial phase detailed transcriptions of the interview were carried out. Moreover, code, categories and themes were created by using thematic analysis.

FINDINGS

The following themes were extracted from the data by the systematic arrangement of similar and contrasting views of students regarding difficulties in research methodology courses.

Weak Statistical Background

One of the most frequently mentioned problems was the students' weak statistical background. Most responses indicated that students feel difficulties in the data analysis process, especially quantitative data analysis. Many students feel difficulties in understanding data analysis due to use of different statistical concepts in research. They find statistical analysis difficult because of their weak statistical as well as mathematical background. A student (S1) said, "*One of the most difficult areas in the research methodology course is quantitative data analyses*." He added, "*I found statistical techniques difficult to understand because of their technical nature*." Similarly, some participants reveal that the technical nature of the research methodology course does not align with the students enrolled in humanities and social sciences. For instance, student (*S3*) reported, "*I assume methodology studies are hard because methodology with its methods is tightly connected to mathematics. I myself am a less mathematical person, a humanist, for me this kind of subject is far from my real interest. For me hypothesis testing using the statistical test is difficult and particularly interpretation of results in terms of statistical significance is always confusing for me.*"

The above statement reveals that students enrolled in humanities and social science find difficulties in research methodology courses due to weak mathematical background. This fact is also reflected in the response of a student (S7) who stated, "*I feel quantitative data techniques are difficult due to different statistical tests, their technical and statistical nature. I also feel difficulties in the application and use of different software like SPSS in data analysis. I feel statistical concepts are difficult to understand because of my weak mathematical and statistical background*".

This reveals that many students feel difficulties in understanding quantitative research methods, especially statistical analysis. These results are consistent with the findings of Murtonen and Lehtinen (2003) who found that students of education and sociology mostly feel difficulties in understanding statistical analysis.

Prior Theoretical Knowledge

Some students argue that due to weak theoretical background and prior knowledge they cannot understand and grasp the different concepts in the research.

For instance, S2 reported, "*Throughout this course I realised that my previous knowledge was very weak and it constantly put pressure on me, I even cannot understand common concepts. Sometimes I feel that my reading comprehension is also weak. As teachers at IER recommend the foreign books that use standard language, which increases the difficulties for me. When I compare myself with other students I feel that I have a*

weak educational background. Most of the concepts that I learnt in Master's level studies are either weak or sometimes even wrong."

The above statement reflects that the weak theoretical, and conceptual background of the students increases the learning difficulties for them. This fact is also substantiated by the response of student (S 5) who reported, "*Due to my deficiencies in schooling, then subsequently in intermediate, bachelor's and master's level studies I remain weak in understanding theoretical concepts. There are different parts of the research course that need conceptual understanding, where I find difficulties.*"

This reveals that weak prior knowledge is the most important factor in explaining the students' learning difficulties. This is also consistent with the existing literature. Many studies find that the prior knowledge of students is a crucial factor in facilitating in-depth learning. Prior theoretical and conceptual knowledge provides a basic foundation upon which learning of subsequent concepts is based (Mayhill and Brackley 2004; Perkins 1993).

Previous Learning Style

Some respondents emphasised on previous learning styles as a potential hurdle in the understanding of the research course. Some students respond that they are used to rote memorisation of concepts in their previous studies while research is an applied subject, which needs conceptual understanding.

For example, S3 responded, "*Throughout my early education I was used to memorisation of different answers for some selective questions. But, now I feel that memorisation is not a suitable strategy in higher education and particularly in research. However, it is very difficult for me to adopt the new learning style and conceptual understanding is very difficult for me.*"

This statement reflects that rote memorisation habit developed during early education increases the learning difficulties of students.

Similarly, S7 responded, "*I was always memorising the selective answers and avoided in-depth studies. Now, the research requires an in-depth understanding of different concepts, which is quite difficult for me due to my previous learning style. Although I am trying to overcome this deficiency, it still requires a lot of effort and creates difficulties for me.*"

This reveals that the rote memorising habit developed during early education is also an important factor that increases the learning difficulties in those subjects, which require conceptual understanding.

Motivation for Learning Research

Some students are facing learning difficulties in research cours es because they lack the motivation for learning research. In the selected sample some respondents identified that due to a lack of interest in the subject they cannot emphasise on the research and faced learning difficulties.

S4 reported, "*From my early education, I have always been interested in literature, stories and art related subjects and hate science, maths, and statistics. Currently, I find myself more motivated for the psychology of education than research and it completely loses my interest and motivation for research. Especially, the statistical concepts in research such as hypothesis testing and inference are quite boring for me.*"

This statement reveals that a lack of interest in a subject increases learning difficulties of students. This is also reflected in the response of student S6 who reported, "*I am always easy with plain theoretical subjects while feeling difficulties in technical subjects such as Mathematics and Statistics. Due to the use of statistical concepts in the research I am not interested in this subject.*"

These statements corroborate the fact that the lack of interest and motivation of students in research methodology courses increases the learning difficulties of students enrolled in education.

Lack of Learning by Doing

In some students' perception, the research is an applied subject and it needs practical application in the form of a research project along with the theory. But usually, instructors do not include the research project in the course, which in turn reduces the students' understanding of research. For instance, S3 responded, "*Our instructor has not included the research project in our course. We lack practical knowledge and just memorise some important concepts. Practically, even though I cannot differentiate between independent and dependent variables, I do not know*

how to develop a research question and how to review the literature. I have no idea of the practical applications of different statistical tests."

Similarly, another student S8 argued, "*Although I am familiar with the theoretical concept in research, but practically it is very difficult for me to develop a research proposal or even a different application of statistical tests.*"

These perceptions of students show that a research project can enhance the understanding of research methods and mitigate the learning difficulties of students.

Lack of Peer Cooperation in the Class

Most of the respondents argue that lack of peer cooperation and cut throat competition among students is another factor that increases the difficulties for all students in approximately all subjects. Respondent S1 says, "*There is a deficiency of cooperative learning in our class and most students avoid discussions with their fellows.*"

Similarly, S2 put forward the same argument in these words, "*In higher education cooperative learning is very important because the discussion on different topics among students make these concepts more understandable. But, in our class there is a different culture, everyone avoids working in groups and also hesitates to participate in discussion on different concepts*."

Overall these arguments reflect that lack of peer cooperation and cut throat competition in class further increases the difficulties faced by students in learning the research. Another participant S7 shared similar views while explaining the learning difficulties of students, "*In our class, students are not familiar with cooperative learning and most teachers do not encourage cooperative learning.*"

Teachers' Attention

Most students respond that teachers cannot spare their time for students due to a large class size. Research as a subject requires the time of the teacher for each individual student but teachers cannot spare their time for each student especially those who are facing difficulties. For example, S3 reported, "*Even though I want to discuss difficulties with my teacher, he cannot spare time for me due to the large class size. Due to multiple assignments, teachers cannot spare time for me when I want to discuss any issue with them. Teachers are simultaneously involved in teaching, research and different departmental committees, therefore they cannot spare their time for student counselling.*"

These responses reveal that students facing difficulties in learning research methodology courses need the individual attention of the teacher. Hence, individual attention of teachers can enhance the performance of those students who face difficulties.

Lack of Encouragement

Some students have an opinion that the teacher does not encourage the student to actively participate in class and ask questions. For example, S4 responds, "*I always feel that our teacher does not appreciate voicing our opinion and asking questions in class. He discourages the students and is not easy with questions. Our teacher is used to delivering a one-sided lecture and does not encourage students to participate in class. His behaviour is always discouraging, as he never appreciates me. I feel like I am being ignored and not involved in learning.*"

These responses reflect that teachers' encouragement can mitigate the learning difficulties of students.

DISCUSSION

Most responses indicated that students felt difficulties in the data analysis process, hypothesis testing and inference. These results are consistent with the findings of Murtonen and Lehtinen (2003) who found that students of education and sociology mostly feel difficulties in understanding statistical analysis and this problem may have more relevance in Asian than in Western contexts because of the weak mathematical background of the students enrolled in educational programs. The domain of methodology is not clearly related to students' everyday life, and thus, research activity and concepts are experienced as difficult (see, for instance, Anderson et al. 1988; Oguan et al. 2014; Watts 1991).

When the respondents were asked, in their opinion, what are the common factors which make

research difficult for them, the following themes emerged from the data. First, most students considered their weak background as a potential hurdle in understanding research. This is also consistent with the existing literature. Prior theoretical and conceptual knowledge provides a basic foundation upon which learning of subsequent concepts is based (Mayhill and Brackley 2004; Perkins 1993). This issue has more relevance in the Pakistani context, where social sciences attract students with weak backgrounds (Zaidi 2002). Second, some students think that the rote memorisation habit that developed during early education is responsible for their weak performance and consequent difficulties. This finding is also consistent with existing literature that supports the claim that rote memorisation increases learning difficulties (Grove and Bretz 2012; Hilgard et al. 1953; Ramadhan 2015). Moreover, this problem is more relevant in the Pakistani context where rote memorisation is an important factor in the explanation of secondary school academic performance (Christie and Afzaal 2005; Mohammad and Kumari 2007). Third, another theme that emerged from the students' opinion is the lack of motivation for learning research. Some students are not interested in the research and consequently they are not motivated to learn the research. Negative attitudes reflect motivational problems, anxiety (Zeidner 1991) and underlying negative conceptions toward methodology studies (Lonka and Lindblom-Ylänne 1996). Fourth, some students identify that lack of practical approach and applied projects in the course make it difficult for them. Linking theory and practice is a problem of conceptual and procedural knowledge (Hiebert and Lefevre 1986), that is, it is hard for students to see the connection between methodology courses and practical research activities. Fifth, some students also gave importance to the lack of peer cooperation in class, which made the research more difficult for them. Existing literature documents that peer cooperation and cooperative learning is an important factor for self-esteem, and many other positive outcomes (Slavin 1991; Jacob and Furgerson 2012).

When students were asked how teachers can help them to mitigate their learning difficulties in a research course, following themes emerged from their responses. First, teachers cannot spare their time for the individual student due to large class size and multiple assignments on the part of the teacher such as teaching, research and their involvement in different departmental committees. This finding is in line with literature that argues that teachers' attention improves student behaviour and performance (Hall et al. 1968; Broden et al. 1970; Becker et al. 1967; Kirschner et al. 2006). This problem is more relevant in the Pakistani context where the Higher Education Commission introduces incentives for the research publication, which distort time allocation in favour of research. Second, the teacher does not encourage class participation, students' questions and active learning. This finding also consists of existing literature that documents evidence for the positive role of teachers' encouragement on student self-efficacy, and motivation for self-regulated learning (Tuckman and Sexton 1991; Alcott 2017; Butt and Shams 2013).

CONCLUSION

This study is an attempt to explore factors that increase the learning difficulties of students enrolled in M.Phil. education programs at the Institute of Education and Research, Punjab University in Lahore, Pakistan. Overall results reveal that the most difficult area for students is the data analyses, hypothesis testing and inference. These difficulties are majorly due to the use of different statistical concepts in research. This is particularly true for the students enrolled in education with a weak mathematical and statistical background. Moreover, results reveal that there are different factors such as weak prior background, habit of rote memorisation, lack of motivation for learning research, lack of applied approach for learning research, lack of cooperative learning both on the part of students and teachers, lack of teacher's attention to the individual student, and lack of encouragement on the part of the teacher that increases the learning difficulties of students in a research course.

RECOMMENDATIONS

On the basis of the above findings, the following are the important recommendations for the policymakers. First, as most students face difficulties in statistical analysis and inference, there may be a short course, which covers the basic

statistics such as the use of different statistical tests and inference before the commencement of a formal research course. Second, before the formal commencement of classes, teachers may take a test to assess students' existing knowledge and special attention may be given to the students with a weak prior background. Third, a university may formulate a rule to maintain a specific teacher student ratio so that a teacher can easily manage their class. Fourth, there may be an applied project in a research course at the M.Phil. level that enables students to practically learn a whole process of an applied research project.

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