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Challenges in Undergraduate Research Project Completion: A Case Study of Abdul Wali Khan University Mardan

* Dr. Muhammad Zahid, Lecturer

* Dr. Muhammad Bilal, Lecturer (Corresponding Author)

Abstract

Undergraduate research is an important aspect of higher education because it promotes students' abilities to develop critical thinking, analytical skills, and academic writing skills. Nevertheless, majority undergraduate students face significant difficulties in conducting research, which adversely affects their academic performance and research outcomes. This study examines the academic, institutional, and personal barriers encountered by undergraduate students in their research projects at the university level. A qualitative research methodology was adopted in the study, with semi-structured interviews used to gather information from undergraduate students. Thematic analysis was used to identify the main patterns and themes in the students' research experience. The findings showed that students had to deal with several problems, such as not knowing how to conduct research well, challenges in academic writing and data analysis, no access to academic sources, poor tutor support, institutional challenges, and time-management problems due to academic workload and personal obligations. These were interconnected issues and affected students' motivation and research productivity. The study concludes that training in research, the creation of institutional research infrastructure, the development of better supervisory practices, and the provision of student support services are necessary to enhance undergraduate research experiences. The results add to the existing literature on undergraduate research and give useful recommendations to facilitate the research completion at the undergraduate level.

Keywords: Academic Skills, Guidance, Research Infrastructure, Research Supervision, Universities

Introduction

Undergraduate research is an essential part of higher education, playing an important role in students' academic, cognitive, and professional growth. Undergraduate students are engaged in research activities to develop critical thinking, analytical thinking, problem-solving skills, and scholarly writing, which are paramount to academic achievement and further career growth (Healey & Jenkins, 2009; Kuh, 2008). Students are exposed to the practical side of knowledge production and dissemination through research projects, in which they may learn to develop research questions, conduct literature reviews, apply methodologies, and interpret results. Undergraduate research, though important, is also linked to many challenges that hinder students' interaction and performance. Some of the challenges identified in previous research include a lack of knowledge of the methodological basis, a lack of academic writing skills, inadequate supervision, and limited access to research materials (Brew, 2013; Lea & Street, 2006). These issues are further complicated by poor research culture, lack of institutional support, and lack of undergraduate-level training in research methodology, which is particularly acute in developing countries such as Pakistan (Iqbal & Mahmood, 2011). Mardan Abdul Wali Khan University (AWKUM) is no exception, and, like most universities in Pakistan, it has undergraduate students who must complete their degree programs by undertaking a research project. Nonetheless, there is anecdotal evidence that students have various academic, institutional, and personal problems when conducting research. Although quantitative studies have been conducted to identify research-related problems, qualitative research has not focused on the lived experiences, perceptions, and challenges of undergraduate students in the Pakistani setting. Thus, the research was conducted to address the challenges encountered by undergraduate students in their research projects at AWKUM using a qualitative methodology.

* Department of Sociology, Abdul Wali Khan University Mardan
** Department of Sociology, Abdul Wali Khan University Mardan Email: bilal@awkum.edu.pk

Literature Review

Undergraduate research has been well recognized as a high-impact educational activity that boosts student engagement, academic performance, and employability (Kuh, 2008). The involvement of students in research activities encourages inquiry learning, critical thinking, and in-depth understanding of disciplinary information (Healey & Jenkins, 2009). Universities all over the world have incorporated undergraduate research projects into their curricula as a way of equipping students for postgraduate studies and professional careers.

Lopatto (2010) suggests that undergraduate research experiences foster intellectual development, self-efficacy, and scientific thinking in students. On the same note, Hunter, Laursen, and Seymour (2007) reported that students engaged in research develop better communication, collaboration, and analytical skills. Nevertheless, the quality of undergraduate research is related to institutional support, supervisors, and students' readiness.

Lack of knowledge in research methodology and academic writing is one of the biggest problems of undergraduate students. The students frequently have difficulty formulating research questions, designing research instruments, choosing suitable methodologies, and analyzing data (Lea & Street, 2006). Poor training also makes many students struggle with writing literature reviews, referencing, and avoiding plagiarism. Research methodologies courses are not practical in developing countries, as they are mostly theoretical, and they cannot effectively prepare students for research (Iqbal & Mahmood, 2011). In a study conducted at Pakistani universities, Ahmad and Mahmood (2019) found that students lack research, critical thinking, and data analysis skills due to a lack of training and mentorship.

Research success depends on institutional support, which is essential for students' success. Poor library facilities, poor access to databases, poor funding, and research workshops are prevalent in most developing countries (Brew, 2013). The nature of supervision, such as a lack of guidance, ineffective communication, and heavy workloads among supervisors, also negatively impacts students' research progress (Wisker, 2012).

Mentors who play a major role in the research process are supervisors. Lee (2008) observes that the supervision process requires faculty instruction, emotional nurturing, and professionalization. Nevertheless, unlinked expectations, inability to provide feedback, and time limitations frequently result in student dissatisfaction and research delays.

The problems in the structure of universities in Pakistan include bureaucratic stalling, absence of research culture, and institutional disincentives to supervise undergraduate research (Shahzad et al., 2017).

Individual and psychological variables play a critical role in determining the performance of students' research. Psychological problems that are common among students in research projects include anxiety, stress, lack of motivation, and lack of confidence (Pyhältö et al., 2012). Research anxiety may result from fear of failure, time spent on research, and pressure on the student.

Research productivity also depends on time management and work-life balance. Misra and McKean (2000) argue that poor time management among students is associated with increased stress levels and poor academic performance. Also, students' socio-economic status, family matters, and language barriers contribute to their research experiences, particularly in developing countries.

Training and mentoring students in research is necessary for building research competence. Well-organized mentoring and research-based learning programs enhance students' research and academic performance (Lopatto, 2010). Institutions of higher learning that incorporate research into the undergraduate program and offer mentoring programs have increased student participation in and productivity from research.

Nonetheless, the training of researchers at Pakistani universities remains poor and irregular. According to Iqbal and Mahmood (2011), Pakistani universities lack systematic research training programs, which has negatively impacted students' research competence. On the same note, Aslam and Hussain (2020) noted that there ought to be a curriculum change to empower research methodology education in Pakistan.

Research Methodology

The research is based on the interpretivist paradigm, which presupposes socially constructed reality and the interpretation of experiences shaped by social, cultural, and institutional backgrounds (Creswell & Poth, 2018). The paradigm to be used in the study is the interpretivist paradigm, as it

aims to explore the lived experiences, perceptions, and meanings of undergraduate students with respect to research challenges rather than to test hypotheses or determine variables.

The research used a phenomenological approach to investigate the lived experiences of undergraduate students undertaking research projects. Phenomenology is an approach to studying how people experience a phenomenon and how they understand these experiences (Creswell & Poth, 2018; Moustakas, 1994).

The study was conducted at Abdul Wali Khan University Mardan (AWKUM), Khyber Pakhtunkhwa, Pakistan, a public university that offers undergraduate studies in the social, natural, and management sciences**.** The target population of the study comprises undergraduate students at Abdul Wali Khan University, Mardan, who are either in the process of completing or having already completed their final-year research project. Students from various faculties and departments were recruited to provide opinions on the issue at hand.

A purposive sample was used to select students who have completed their undergraduate research projects or are still in the process of completing them. According to Guest, Bunce, and Johnson (2006), saturation may occur in 12 to 25 interviews; however, the ultimate sample size depends on the depth and variability of the data. As such, the study considered about 20 undergraduate students in different departments and continued the interviews until thematic saturation was reached.

The data was gathered through semi-structured in-depth interviews, which are flexible for probing and clarification and provide participants with the opportunity to share their experiences (Kvale & Brinkmann, 2009). The interviews were conducted physically or via the internet (i.e., Zoom/Google Meet) based on the availability of the participants. The interviews took about 40 to 60 minutes and were tape-recorded with the participants' approval. To capture nonverbal cues and context, field notes were also taken. The interviews can be conducted in English or Urdu/Pashto, as the participants prefer. The translations were done with care to ensure the meaning was maintained.

The thematic analysis method was used as follows: Braun and Clarke's (2006) six-phase model,

To ensure rigor in qualitative research, the study used the criteria of trustworthiness proposed by Lincoln and Guba (1985): credibility was established through long-term involvement, member checking, and triangulation. Summaries of findings were provided to the participants to ensure accuracy. It was described in detail the context, participants, and findings to enable readers to judge whether the results are applicable to other contexts. A trail of audit on research decisions, the interview process, and data analysis was kept in a document. The researcher's bias was reduced through reflexive journaling and peer debriefing, enabling the findings to be based on participants' narratives.

Findings and Discussion

This section provides the results of the research study of the problems encountered by undergraduate students during their research projects at Abdul Wali Khan University Mardan (AWKUM). The results are arranged in line with the research questions and study objectives. The participants' quotes were italicized and then interpreted and discussed in light of the relevant literature.

Academic and Methodological Problems

This section presents findings on academic and methodological challenges experienced by undergraduate students in their research projects. Thematic analysis provided the recognition of four sub-themes *(1) insufficient knowledge of research methodology, (2) problems with academic writing and citation, (3) problems with data collection and analysis, and (4) deficits of research skills and critical thinking abilities.*

Poor knowledge of research methodology

One of the most frequent issues mentioned by the participants was a lack of knowledge of research methodology, including research design, sampling methods, and research tools. Participant added. "*We learnt about research methodology, though it was purely theoretical. At the beginning of my project, I was not aware of how to choose between qualitative and quantitative designs. I was not aware of sampling, population, and variables. I have copied other theses of the past. The way to write objectives, research questions, and hypotheses was not taught in practice by any teacher"*

The participants stated that the teaching methods and methodologies were shallow and that they were not exposed to the actual research processes. This observation implies an imbalance

between curriculum and research practice. This finding is consistent with earlier studies indicating that a lack of methodological competence among undergraduate students is common due to a deficiency in practical training (Iqbal & Mahmood, 2011). According to Kolb's Experiential Learning Theory (1984), students can learn research skills efficiently through practical work; hence, the study can be built up only to a point through theoretical training. Moreover, this is evidenced by reports from international settings, where undergraduate students face challenges in choosing a research design and demonstrating methodological rigor (Brew, 2013).

Problems with writing academic papers and referencing

The problem of academic writing became one of the most significant challenges of the student, especially when writing literature reviews, paraphrasing, and citing. Writing the literature review was a tough task. I was not aware of how to paraphrase articles using my own words. Participant added. "*I feared plagiarism since I did not know how to paraphrase. Easy to get lost in APA referencing, and no one had taught us correctly".* According to students, they used to rely on duplicating past theses or copying internet materials because they lacked good writing skills in academic work. This means that there has been no academic literacy development at the undergraduate level. These results complement the Academic Literacies Model, which considers academic writing as a social practice defined by what institutional expectations and disciplinary norms enact (Lea & Street, 2006). In Pakistani higher education institutions, the quality of undergraduate research is likely to be poor because students tend to be undertrained on the principles of academic writing (Aslam & Hussain, 2020). Also, Lea and Street (2006) postulated that writing problems in academia are not merely linguistic but also epistemological, in that students find it hard to comprehend knowledge-building in disciplines.

Data Collection issues

The respondents noted that they had a significant problem in gathering research data from respondents, institutions, and communities. Another participant added "*Individuals were not ready to complete the questionnaires; they claimed to be busy. There were other departments in which we were unable to gather information on students. Transportation and security were also problematic for fieldwork". Students* noted social, administrative, and logistic obstacles to data collection. These issues influenced the validity and completion of their research project. The same problems have been reported in studies carried out previously in developing countries, where students face obstacles to respondent non-cooperation and bureaucratic and institutional lack of support (Brew, 2013). These results indicate institutional barriers within higher learning institutions that curtail opportunities to conduct undergraduate research.

Issues with data analysis and research software

Several participants also complained that they had difficulty analyzing it, especially when using statistical software or qualitative methods. A participant shared "I *gathered information and was not aware of how to analyze it using SPSS. Nobody taught us to code or perform thematic analysis; I simply explained the findings. I relied on the seniors and hired individuals to analyze my data".*

These results indicate the absence of analytical ability and technical training among undergraduate students. Data analysis is one of the most vital aspects of research competence, and a lack of training compromises research quality. Iqbal and Mahmood (2011) also reported similar results, stating that Pakistani students have poor research training systems and thus lack statistical and analytical skills. In addition, Brew (2013) indicated that research competence should be taught by structured training in research tools for students.

Lack of research skills and critical Thinking

Respondents were found to possess few critical-thinking skills, problem-solving capabilities, and independence in research. A participant opined.

"The training was not based on critical thinking; we simply did what the supervisor instructed. I was unable to come up with my own research topic; I plagiarized the past students. I was not sure that I could defend my research ideas."

These results indicate that undergraduate education focuses more on rote learning than on inquiry-based learning. Research involves analytical thinking, creativity, and independent learning, which are not well developed in traditional education systems. Kuh (2008) emphasized that undergraduate research also improves critical thinking and intellectual growth, but this advantage takes institutional commitment to inquiry-based pedagogy.

Institutional and Supervisory Challenges

The second research objective to be discussed in this section is to explore institutional and supervisory issues facing undergraduate students in their research projects. Thematic analysis demonstrated that there were five subthemes: *(1) inappropriate institutional research infrastructure, (2) insufficient access to scholarly resources and technology, (3) excessive workload of supervision and lack of guidance, (4) delays in communication and feedback, and (5) administrative and bureaucratic barriers.*

Lack of Proper Institutional Research Infrastructure

One of the greatest institutional barriers noted by the participants was the lack of adequate research infrastructure, including a research support unit, laboratories, and research training centers. Participant added that "*The undergraduate students lack a research office to which they can refer. We lack a research center that assists students with their research".*

The participants also emphasized that the university lacks well-organized research support systems to address the needs of undergraduate students, as it has systems that serve post-graduate students. Infrastructure in institutions is a key factor in research development. Research institutions and university mentorship programs have been shown to increase research activity and productivity among students (Brew, 2013). The lack of these facilities at the undergraduate level can be taken to mean that the institution has not considered building undergraduate research capacity. Throughout the course, I have developed a deep understanding of how limited access to scholarly resources and technology can affect an individual and have created a thematic learning experience that explores this subject. Scarcity of access to scholarly resources and technology. This topic has been explored throughout the course, and I have developed a deep interest in how it can impact an individual, leading me to create a thematic learning experience on the topic.

Lack of access to international research databases, journals

Students complained about limited access to research databases and journals. A students complained that *"Students are unable to access Scopus or Web of Science articles. The university does not provide SPSS or NVivo software to students. The internet is weak, and articles are difficult to download".* Quality research cannot be attained without access to scholarly resources. Nonetheless, third-world universities usually have limited financial and technological resources, which restrict access to research databases and technologies (Iqbal & Mahmood, 2011). This observation is consistent with the international literature indicating that research output is largely influenced by the availability of institutional resources (Brew, 2013).

Workload of Supervising and Inadequate Guidance

The respondents were not satisfied with the supervisory support, as the supervisors were overloaded and were rarely available for supervisory meetings. A participant shared his story. "*My supervisor had many students, so he did not have time to attend to me"*

Similarly, another student's experience was also the same. The participant stated. *"On some occasions, I had to wait weeks before I saw my supervisor. There was a lot of general guidance; no detailed feedback was provided".*

Supervisory overload is a common issue in institutions of higher learning, particularly in developing countries, where the faculty-to-student ratio is very high. Supervision is also key to the success of research, and without guidance, students' research success is negatively affected (Lee, 2008; Wisker, 2012).

Delayed feedback

Students complained about poor communication with supervisors and slow response times. The participant narrated. "*The supervisor was ineffective because he used to respond to my emails and WhatsApp messages late. Feedback took place one month after I had submitted my draft. There were some cases when it was not clear what to do".* The development of students' research is imperative for timely and positive feedback (Carless et al., 2011). Lapse of communication is a factor that slows down the progress of students, causing anxiety and frustration. The results are consistent with models of supervision that emphasize dialogic and formative feedback in research supervision (Lee, 2008).

Administrative and Bureaucratic Barriers

The respondents cited bureaucracy and administrative delays as challenges they faced in conducting the research. There was a long approval process for the proposal due to departmental procedures.

There was a challenge in accessing permission to gather data on departments and schools. The documentation process was very slow.

Public universities are characterized by administrative inefficiencies that may slow down research (Shahzad et al., 2017). These impediments reduce students' motivation and lengthen the research process.

Supervisory issues

Many respondents noted that the supervisors were unavailable when needed due to excessive academic workloads. My supervisor had a tight schedule, and I could not see him frequently; that is why I had to conduct most of the research independently. In some cases, I was confused because I was not given clear instructions on how to proceed and how to analyze the data. The institutional research facilities were also not satisfying to some students. There are no updated journals and books in our university library, and therefore, I was forced to search for them all online. Data analysis was not properly conducted and was not supported by any software. Also, the respondents cited administrative hurdles such as delayed approvals and bureaucracy. Data collection was difficult to obtain permission from the department and the university to implement.

The results reveal that supervisory support is among the greatest deterrents for undergraduate researchers. As highlighted in previous research, proper supervision greatly promotes students' research skills and confidence, as well as their academic performance (Lee, 2008). The role of supervisors is important, as they direct students in conducting the research design, data collection, and analysis; hence, this lack of interaction can negatively impact the research. Problems within institutions, such as inadequate access to academic and research facilities, also contribute to students' problems. Brew (2013) also explains that a university with structured research training, access to scholarly databases, and methodological support makes the research more conducive to student research. Lack of such facilities may demoralize students and constrain the quality of their research works. Findings related to administrative barriers, such as bureaucracy in the approval process, are also in line with previous research showing that bureaucracies are likely to increase the time spent on research and demotivate students (Kiley & Mullins, 2005). These governance and research management systemic problems in higher education manifest as institutional inefficiencies. Overall, the results indicate that institutional and supervisory issues are a relevant factor affecting the research experience of undergraduate students. Enhancing the mentorship systems, upgrading research institutions, and simplifying administrative systems are critical to improving the potential for undergraduate research.

Personal Time Management/Workload Problems in Undergraduate Research

Time management is a serious issue that affects students' success in completing research projects. Undergraduate learners are usually tasked with various academic tasks, such as coursework, exams, and extracurricular activities, which can make it hard to find enough time to conduct research. Students encounter temporal and workload issues of conducting research amongst undergraduate students. Most respondents alleged that the academic workload was too heavy to allow them to concentrate on research. It was a subject- and assignment-heavy load, and I therefore had no time to dedicate to my research project. Research was put off because exams and class presentations were more crucial. Other respondents have cited poor time management skills and procrastination. I began my research too late because I was not aware of how to manage my time effectively. At other times, I wasted time and had to deliver the project in a hurry. Other external commitments students cited included part-time jobs and family obligations. *I was engaged in a part-time job, and therefore, I did not have as much time to research. My research schedule was also interrupted by family obligations.*

Conclusion and Recommendations

The paper concludes that undergraduate students face complex issues in conducting research, including academic, technological, institutional, and personal challenges. These are interrelated problems, and all the issues affect students' performance in their research and learning. Undergraduate research education has systematic problems, as demonstrated by deficiencies in research training, limited access to academic resources, inadequate supervisory oversight, and time-management challenges. In line with prior research, the results demonstrate that research training, effective supervision, and institutional support systems are vital to improving undergraduate research experiences. Thus, it is important to enhance research structures for undergraduates to build research skills and equip them for postgraduate studies and professional life. In light of the findings, it is

recommended that universities incorporate a thorough research methodology and academic writing programs into their undergraduate programs. Regular practical training sessions on data analysis programs and preparation of a research proposal should be organized. Similarly, there should be an increased provision of research facilities in higher education institutions, such as digital libraries, access to academic databases, and statistical software. Universities also need to simplify administrative processes to enable research approvals to be granted on time. The faculty members may be trained in effective research supervision and mentorship. The supervisor's workload in the departments should be minimized, and frequent meetings between students and their supervisors should be held. Similarly, time management training and research plan tools should be offered to the students. Academic support services and counseling should be enhanced to help students cope with stress and workload.

Future studies can be carried out to compare the issues of undergraduate research in public and privately funded universities. Moreover, quantitative research can be conducted to assess how much research problems can affect academic performance of the students.

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