Challenges Encountered in Scaffolding Undergraduate Research Projects: the Case of Three Universities in Zimbabwe

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Abstract
The study set to explore problems associated with the undergraduate research supervision process. The study utilized the qualitative case study design. Three universities namely; Great Zimbabwe University, Midlands State University and Zimbabwe Open University-Midlands region were included in the study. Data was collected from 15 university lecturers who supervise undergraduate research projects and 45 students undertaking undergraduate research projects. Participants were purposefully selected on the basis that they would provide rich data on the supervision of research projects. Focus group discussions and questionnaires were the data tools used to solicit data from the participants. The study revealed that the supervisors' inadequate research skills and expertise, students' research in-competencies, non-supportive relationships of supervisors with students, and negative feedback from supervisors hamper students' research progress. The study recommends strengthening research supervision skills through training of research supervisors. Basic research skills need to be introduced to students before embarking on the research.

Key words: research, supervision, scaffolding, undergraduate, supervisor, supervised.

Introduction
Research is a high impact educational practice that is enhanced by conducting empirical studies, applying new technologies and linking tangible findings to concepts and questions at the core of the discipline. The project referred to as first degree research is a defining element of an undergraduate degree (I’ Anson and Smith, 2004). It is a pre-requisite for completion of a degree in many university faculties. Undergraduate research refers to projects that prompt students to investigate, analyse and articulate findings in ways that help them understand the methods used in the field to generate new knowledge and creative thinking. According to Bently and Kyvik (2013) this period of internship entails studious, serious and systematic investigation into any aspect of education with the aim of discovering, revising and interpreting facts and theories. Healey (2005a) in discussing characteristics of a project assert that the project tackles the central question or issue in depth which the student takes ownership of. The project draws from the disciplinary and inter-disciplinary knowledge,
skills, and literature that students have gained during their degree. Sources that inform projects include textbooks, journals, interviews, surveys, and secondary data. It is based on a systematic and rigorous methodology demonstrating the understanding and skills students have developed during the degree programme and showing an awareness of appropriate ethical issues in undertaking research.

The aim of the undergraduate project encompasses both intellectual and skills development. Healey, Lannin, Stibb and Derounian (2013) aver that projects have been viewed as an effective means of research training and encouraging a discovery approach to learning. Students are active learners whereby they are producers of their own knowledge rather than consumers of other people’s knowledge. Confucius (c450BC) cited in (Healey et al, 2013:19) is often quoted: “Tell me, and I will forget. Show me, and I may remember. Involve me, and I will understand.” In support of the above Healey (2005a: 183) suggests that undergraduate students are likely to gain most benefit from research in terms of depth of learning and understanding when they are actively involved in inquiry based learning. Undergraduate research brings students into the world of scholar by introducing them to complex questions and problems that prevail in a given subject and increase contact time between lecturers and students. It improves students’ sense of confidence in their own scholarship (Baptista, Hue, Costa and Jenkins, 2010). Other benefits of the project to the students also include enhancing students’ understanding and appreciation of scholarly methods of knowing. Analytical and communication skills are also improved (Levy and Petrulis, 2012; Patridge and Sanders, 2011).

Supervision as a central element of project ensures students are on the right path adhering to professional and ethical guidelines. It contributes immensely to the successful and timely completion of research study (Thondlana, Mawere and Wade, 2011). Baptista et al, (2011) point out that undergraduate research provides a means of conducting assessment of student, understanding and mastery of skills. There are multiple challenges associated with the process of research supervision at undergraduate level which this study sought to investigate.

Statement of the Problem
Undergraduate research is a challenging environment for both supervisors and students. To have a well-researched project at the end of the given period both the supervisors and students will have undergone some challenges. Projects submitted are at times of poor standard. Some students also fail to complete their research projects during the specified period. A number of scholars have noted challenges in the undergraduate supervision of projects. Kimani, 2014; Wadesango and Machingambi, 2011, and Thondlana, Mawere and Weda, 2014 among others noted some challenges too and also carried out studies in this area.

Purpose of study
The main purpose of this study was to investigate the challenges faced by the supervisors and the supervised during the undergraduate research project.

Research Questions
i) What are the challenges faced by supervisors and the supervised during undergraduate supervision process?
ii) How can these challenges be overcome?
Theoretical Framework
This study is informed by Bruner’s scaffolding theory. The theory was influenced by the work of Russian psychologist Lev Vygotsky who argued that people learn best in a social environment, where meaning is constructed through interaction with others. Vygotsky’s zone of proximal development theory where people learn in the presence of a knowledgeable other person became the template of Bruner’s model (www.teachthought.com/learning/learning-theories-jerome-bruner-scaffolding-learning/).

Bruner believed that when children start to learn new concepts, they need help from teachers and other adults in the form of active support. Scaffolding can be applied across all sectors, for all ages and for all topics of learning. Boikhutso, Dinama and Kebabope(2013) define scaffolding as an instructional strategy that involves supporting novice learners to cope with the complexities associated with research supervision and the acquisition of research prerequisite skills.

Research supervision is a specialized formal process of training students that is recognized as the highest form of teaching and learning in universities, globally (Morrison, Oladunjoye and Onyefulu, 2007). The process requires supervisors’ assistance. Supervisors need to provide guidance, advice and feedback in all steps of research from topic selection, relevant literature, methodology, data analysis, and report writing (Blunt and Conolly, 2006). It is a concept that is relevant as it forms the basis of finding out whether or not supervisory process in universities facilitates the acquisition of problem-solving skills. Hodson and Hodson 1998 (cited in Boikhutso et al, 2013) contend that letting students wade through unscaffolded tasks in the name of learner-centeredness is not advisable because students do not have the experience to translate theory into practice. In this study the researchers use the term supervisor to refer to the more knowledgeable person. A supervisor is the more knowledgeable other who should provide scaffolding to the student (the supervised). It is a system that helps students achieve success on tasks that would be too difficult for them to achieve by themselves. Successfully orchestrating this feat allows the supervisor as well as the supervised to share reciprocal learning (Burch, 2007). However, a lot of challenges are faced during this process.

Methodology
The paper adopted a qualitative research methodology utilizing the case study research design. Qualitative case study methodology enables researchers to study phenomena within their contexts using a variety of data sources (Baxter and Jack, 2008: 544). The central tenet being to explore an event or phenomena in depth and in its natural context. The case study approach was particularly useful to employ because there was the need to obtain an in-depth understanding of the problems encountered in the scaffolding of undergraduate research projects in the universities. Great Zimbabwe University, Midlands State University and Zimbabwe Open University were the three universities that comprised the case of this study.

Polit and Hungler (1997: 37) cited (in Mbokane, 2009) refer to the population as an aggregate or totality of all objects, subjects or members that confirm to a set of specifications. In this study, the population was comprised of university lecturers who supervise undergraduate research projects and students undertaking research projects. The researchers set to find people who could and were willing to provide information by virtue of knowledge and experience through sampling. Magwa and Magwa (2015:62) assert that sampling is a technique used to gather information about a population without having to measure the entire
population. Collecting samples from fewer cases means information is more detailed and it affords researchers a lot more control over subjects. Purposive sampling was used to select lecturers who supervise research projects and students carrying out research projects. From each of the 3 universities 5 lecturers and 15 students were selected purposively bringing to a total of 15 lecturers and 45 students. The total sample size was made up of 60 participants.

Informed consent was sort where participants were informed of the purpose and benefits of the study. Participants were assured that their responses would be treated with confidentiality and that they were free to withdraw. Data was collected through interviews, questionnaires and focus group discussions. The data was analysed through the use of thematic approach to provide some patterns which formed basis for interpretation (Cresswell, 2009). Similar codes were aggregated together.

Findings and Discussion
All participants had the view that problems encountered during the research process emanated from both supervisors and students. It emerged that supervisors encounter many problems in scaffolding undergraduate students carry out research projects. Students on the one hand, also face challenges in carrying out their research projects. As echoed by Grant (2003) research supervision at undergraduate level is an exercise plagued with a multiplicity of challenges mainly evidenced in research outputs. All the 60 research participants stated that they encounter challenges during the supervision of undergraduate research projects. Some of these challenges are discussed in this section.

Supervisor’s research in-competencies
Out of the 15 supervisors 9 (60 %) viewed supervisor’s research in-competencies as a challenge in the supervision process. This challenge was also echoed during the focus group discussions with students. The study established that lack of adequate research experience and exposure to research skills on the part of the supervisors pose numerous problems in coming up with quality research projects and completion of the projects on time. Some supervisors were said to lack confidence because they do not have adequate research skills to supervise research projects. One supervisor seemed to sum the sentiments of others when she started:

Most supervisors have undertaken the research methods module, however, they have not received formal training on supervision. Most research supervisors have not acquired skills to supervise and this has a negative impact during the research supervision. For quality supervision such supervisors need to for instance, attend workshops on project supervision.

The students undertaking the undergraduate projects also blamed some supervisors for making the carrying out of the research a challenging process for them. It was pointed out that some supervisors are always changing their opinions during feedback. It was sad to hear that some supervisors instead of modifying a topic chosen for the study by student they reject student’s topic and force the student to embark on a topic he or she has no interest in. One reason for such an action as narrated by students was that the supervisor will not be knowledgeable in the area chosen by the student. From the focus group one male student expressed his anger saying:

One very disappointing issue in project supervision is when the supervisor gives you comments in your first write up then after implementing the changes and re submitting the supervisor will again give other new suggestions. This changing of opinions is very
frustrating. Being given two supervisors is also terrible for these supervisors can have very contradicting views on one issue and this ends up confusing the student.

In line with the above view, Brown (2007) contends that to produce quality research a supervisor has to be competent in research, giving guidance and direction during research. The in-experiences of supervisors lead to inadequate supervision leading to students’ failure, thereby damaging the reputation of the supervisors and the university (Kimani, 2014). Remenyi and Money (2004) compliment this view by pointing out that universities should ensure that a training course on research supervision is a pre-requisite for research supervision. Some researchers have a sense of self-doubt in guiding students.

Level of commitment by students
The level of commitment by some students carrying out research projects was cited as a critical factor leading to poor research outputs and incompletion of the projects. This view was raised mainly by the supervisors. Out of the 15 supervisors 12 (80%) strongly stressed lack of commitment by students as a key challenge during project supervision. Only a few supervised 5 (11%) reasoned that some students are not serious with their work. It was pointed out that supervisors are frustrated by the lack of progress of some students. Some undergraduate students as revealed by the study do not implement suggestions given by supervisors. Cases of plagiarism are not uncommon among students as established by the study. Some students were said to duplicate previous projects. The following remarks from one undergraduate supervisor bear testimony to the above:

Some students never consult their supervisors. A student can go for a long time without consulting the supervisor only to come with a completed project which in many cases will have been duplicated. As an example, during an oral presentation when a student fails to answer basic questions pertaining to his/her research this is clear evidence that the student will have copied someone’s work. If not duplicated, it will have many errors.

In support of the above another supervisor had this to say:

Students do not consult during the given time. They always need a follow up. They only get serious towards the end that is, the submission date. They do the last minute rush and will consult when they are expected to present. Another problem with some students is that they need follow up. If they are not followed up they will never consult. In addition, one frustrating issue is that some of them never or partially implement suggestions given.

In a study by Thondlana, Mawere and Weda (2011) with students who failed to complete their research projects on schedule as well as with the research supervisors it also emerged that students’ consultations were inadequate. Students only consulted during monthly pay days. Students’ poor time management led some students to rush and complete research in the last minute. Literature review has ascertained that students have problems of duplicating projects (Boikhutso et al, 2013). This is as a result of students lacking commitment and interest to produce their own work.

Supervisor – supervisee relationship
This study established that a constraining factor in the undergraduate research supervision is that supervisors do not relate well with the students. Participants echoed that in order to ensure student success in their research work, interaction between supervisor and supervisee is crucial. Out of the 45 students, 28 (62%) were of the view that supervisors relate with students in authoritarian ways, whereas 13 (28%) said that supervisors relate well with
students making the research process an enjoyable activity. Even some supervisors 40% also noted that poor relationship between supervisors and students is a challenge in the project supervision process. Some supervisors as revealed by the study are hardly available for consultations and keep postponing meetings and this was said to create a bad relationship with the students.

The findings underline the importance of a good supervisor-supervisee relation as key factor in the success of the undergraduate research. The issue of a good supervisor relationship was also noted by Boikhutso et al (2013) when they said that a non-supportive supervisory relationship is more likely to lead to poor research output and incompletion of the project. Open and honesty communication is one way to achieve the good relationship between the two parties.

**Negative and inadequate feedback from supervisor**

An overwhelming majority of the participants raised the issue that feedback was highly problematic in undergraduate research supervision. Effective feedback is crucial in students’ completion of their research projects. Some supervisors were said to provide negative and inadequate feedback which demotivates the students.

One student lamented:

*Just imagine having tried your best in for example, writing a chapter and you receive comments such as “This is just poor. Your work is below expectations”. You will feel completely demotivated.*

The table below highlights some of the types of feedback students receive from lecturers.

<table>
<thead>
<tr>
<th>Nature of feedback</th>
<th>Responses</th>
</tr>
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<tbody>
<tr>
<td>Relevant feedback</td>
<td>41%</td>
</tr>
<tr>
<td>Little feedback</td>
<td>18%</td>
</tr>
<tr>
<td>Feedback that conflicts previous feedback</td>
<td>15%</td>
</tr>
<tr>
<td>Delayed feedback</td>
<td>26%</td>
</tr>
</tbody>
</table>

The majority of the participants 59% as reflected in the table pointed out that students receive negative feedback such as little feedback, feedback that conflicts and delayed feedback which hinder the successful completion of the research projects. Only 41% were of the view that feedback from supervisors was appropriate and relevant. (Wadesango and Machingambi, 2011; Boikhutso et al (2013) share the view that some supervisors provide negative feedback which demotivates students.

**Conclusion**

Supervising students undertaking research is a significant part of the work of university lecturers. Employability in the 21st century is increasingly linked to skills and attributes that are acquired through research focused activity (UNESCO, 2005). The aim of the undergraduate project is for students to demonstrate the development of a deeper understanding and appreciation of the research process, independent study skills as well as expertise in their chosen field of study. Challenges such as failing to provide feedback on students’ submissions timeously, supervisor having inadequate skills, and students failing to
consult at every stage of the research process are some of the problems encountered by supervisors and the supervisees.

**Recommendations**

From the findings of study, the following recommendations are made:

- Supervisors have to do a lot of research in order to meaningfully guide the novice researchers.
- The relationship between supervisor and the supervised is a key factor in the undergraduate research. It should involve professionalism, honesty and respect of students’ opinions.
- Continuous refresher training and induction are necessary to keep supervisors abreast with research knowledge.
- Research supervisors need to have the necessary skills and experience to support and direct students’ research work.
- Students need to be given a sound base prior to embarking on the projects.

**References**


**Websites**


(accessed on, 10/08/15).