

Empowering first year (post-matric) students in basic research skills: a strategy for education for social justice

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Post-matric students from under-resourced (historically disadvantaged) black high schools generally encounter difficulties in their academic work at university. The study reported here was intended to empower first year (post-matric) students from these schools with basic research skills in a bid to counteract the effects of their high school under-preparedness. The context of an English and Academic skills module was used to offer a hands-on collaborative research skills experience based on John Dewey's concept of "learning-by-doing". The students were an intact class of Human and Social Sciences first year students involved in a research endeavour based on student-generated topics. The research project was carried out in small groups during the second semester of the year. Qualitative data were collected by means of an open-ended questionnaire and a written report at the end of the year. Students reported that the collaborative research experience had a positive effect on their basic research, reading, writing, and critical thinking skills, and it empowered them to work in groups on a project. They had not been exposed to this experience at high school.

Keywords: collaborative research experience; empowerment; learning-by-doing; post-matric students; social justice

Introduction

Learning about research and simultaneously putting theory into practice is not normally offered to first year university students. Some studies such as Hutchinson & Atwood (2002), Bourner, Hughes & Bourner (2001) involved first and second year students in the research experience. The present study also involved first year students. But unlike these studies, the present study involved post-matric students from rural public high schools. Often, these schools do not provide the kind of educational background that offers skills and competences normally expected of a first year university student. Such students often find academic work at the first year level very challenging. This study therefore sought to minimize the effect of these students' under-preparedness on their first year academic career by exposing them to learning experiences which they did not, and could never do, at high school.

The term "post-matric" is used interchangeably or in conjunction with "first year students" in this article to highlight the proximity of these students to high school level as opposed to second or third year level. In most instances, these students come from rural high schools which are under-resourced and, in the majority of cases, do not have libraries. They are often not exposed to reading, writing, information literacy skills and basic research skills to the level at which they should be to function optimally at first year level. Yet, as Pretorius (2000:15) rightly states, "academic success at tertiary level is particularly reliant on accessing information from texts in an efficient and meaningful manner".

In addition, some of the schools from which most post-matric students come do not always use teaching methods that include effectively working in groups to complete small-scale research projects. These, and other factors already mentioned above, have been established from research on first year students from historically under-resourced public high schools (Zulu, 2005; 2007; 2008). In her study of inference generation in the reading of expository texts by university students, Pretorius (2000:12), noted how the

“problem of sub-optimal reading skill is particularly acute in the South African context... for many children reading develops at a suboptimal level and they have problems accessing, understanding and integrating information from written texts ... and this handicap accompanies them through an uncertain scholastic career in primary and secondary school, and even up to tertiary level”.

The “disadvantages” alluded to above are recognized in this study, the aim of which is to combat these disadvantages in a bid to minimize their negative effects on the academic career of post-matric students at first year. This study is therefore premised on a positive belief that every student has what it takes to succeed given an empowering learning environment. An empowering learning environment, according to Norton (in Mahlomaholo, 2010:12), is marked by active learning, extension of learners’ experiences, encouragement of intrinsic motivation, building of confidence, cultivation among the learners of a sense of ownership and control and encouragement of collaboration among learners. Hence the collaborative research project which offers students the opportunity to work together to solve authentic research problems of their choice and in so doing develop their academic reading and writing as well as critical thinking and social skills.

Empowering post-matric students with research skills at first year has the potential to help them develop critical academic skills which they need for them to stand a chance to compete on an equal footing with their counterparts from better resourced schools, and more importantly to have equal opportunity to participate successfully in the university educational experience. This is what education or teaching for social justice aims to do. It aims to raise teachers’ and students’ awareness to social inequalities in school and society so that these can be recognized, named and combated (Wikipedia, the free encyclopedia). This study recognizes the educational status of post-matric students from disadvantaged educational backgrounds as marginalized and the students as a vulnerable group. Hence the need to give them an opportunity for a unique experience of engaging in an academic exercise normally reserved for upper-level (third and fourth year) students at university.

Context of study

The context for the “learning-by-doing” experience was a research project of limited scope, which the students carried out in groups. This project was on a variety of student-generated topics based on social and educational issues which a first year student could handle reasonably from conceptualization to execution. The main purpose was to empower students by giving them a sense of ownership of the project with the lecturer (henceforth — researcher) acting as guide and facilitator in the whole process. It was envisaged that students’ engagement in an authentic research project would develop their reading, writing and research skills more speedily in the context of a practical project. The notion of empowerment is echoed in Lautenbach’s (2011) study where postgraduate students were involved “in an authentic research project” and found it empowering. Lautenbach (2011:52) emphasizes, however, that “this empowerment is only possible if researchers ... are provided with basic skills and techniques to carry out the

study.”

The role of the researcher was to act as facilitator, mentor, guide and “expert” advisor. Undergraduate research programmes reported in the literature adopt the “apprenticeship” model of supervision (Hunter, Laursen & Seymour, 2006: 40), where “student researchers work collaboratively with faculty in conducting authentic, original research” generally on a project already conceptualized. In contrast, the present study engaged students in the conceptualization and execution of individual group projects so as to simultaneously empower them with the basics of research theory and the practical experience of executing an empirical study.

A hands-on approach was adopted in the present study which was based on John Dewey’s (1916) educational philosophy of “learning-by-doing. The focus on “learning-by-doing” or “learning through doing” is foregrounded in this study as a powerful pedagogical approach for helping students gain the self-confidence they need to take control of their learning and understanding of research theory through practice. This is what empowerment implies in this context, and according to Page and Czuba (1999),

“empowerment is a multi-dimensional social process that helps people gain control over their own lives. It is a process that fosters power (that is, the capacity to implement) in people, for use in their own lives, their communities, and in their society, by acting on issues that they define as important.”

Empowerment gives confidence to people to do things they could not do before (Denmark, 1993:351). In this study, students are empowered in various ways through conscious and deliberate action of involvement in the process of conceptualizing and executing a study of their own. This involvement has the effect of raising the students’ “conscious awareness” of their limitations and strengths as learners fresh out of high school.

Dewey argues that “knowledge is based on experience” and “the student learns through direct experience in classroom activities” (Rohmann, 1999:102-103). Learning-by-doing in the context of this study therefore refers to learning the research process through practical engagement in, and experience of, executing an authentic research study, as opposed to what Dewey (1916:140) terms “acquiring knowledge as theoretical spectators” or being “engaged not in having fruitful experiences but in absorbing knowledge directly”. Similarly, Freire’s (1970) argument in *Pedagogy of the Oppressed*, that “*conscientizacao* is developed through *praxis*, the integration of action and reflection and that ...working together, students share their common experiences and build a group identity as well as self-awareness (Rohmann, 1999: 148) is invoked in this study.

The present study, informed by the theoretical framework explicated above, sought to empower post-matric students with skills they did not fully acquire at high school so that they could participate optimally in their academic experience. Their involvement in a collaborative research learning-by-doing experience was intended to enhance their reading, writing, critical thinking and team skills, which are often poorly developed at high school. The voices of the students came through as they reflected on their experiences right after they had completed their research project (the first two questions) and a few weeks later, at the end of their first year (the reflective essay):

What things did you enjoy about your research learning experience?

What things did you learn in your research learning experience?

Think back on the small-scale research project you carried out this semester. Write a two page account in which you describe your experiences with the project up to the stage where you concluded it.

(Your discussion should include your feelings during the whole process, the challenges you encountered, and what you would do differently if you had another opportunity to start the project afresh).

Ethical considerations

The students were informed at the beginning of the semester that the regular module they were expecting would be modified to include a basic research skills component. They were informed that instead of doing the normal advanced reading and writing skills, these would be taught in the context of a small-scale research project.

Method

The study was carried out within the interpretive paradigm which recognizes that reality is not 'out there to be uncovered as 'facts'(Morrison, 2002:18) but is constructed by individuals "in interaction with their social worlds" (Merriam, 2009:22). Elements of the constructivist-interpretive and advocacy/participatory worldviews are combined in this study. In the constructivist/interpretive worldview as Creswell (2007:20-21) explains, individuals seek an understanding of the world in which they live and work. They develop subjective meanings of their experiences, meanings directed toward certain objects or things. Researchers in this paradigm address the "processes" of interaction among individuals. The advocacy/participatory worldview, on the other hand, involves participants as active collaborators in the researcher's inquiry. It has an action agenda for reform and is focused on emancipating people from structures that limit self-development and self-determination. In this study, the researcher relied on the views of an intact class of 170 post-matric first year students. These participants shared their understanding of the research experience (and related activities), and attempted to make sense of the meanings they attached to these experiences. In the course of their attempt to make sense of their experiences — their feelings, attitudes, opinions and values came to light. These were constructed in the context of various social interactions with their peers, the learning environment, the researcher, the university, the participants/subjects in their own projects and their understanding of themselves as learners and as novice researchers. The students actively participated in the researcher's inquiry and were involved in shaping the final report of the study. Their 'voices' were heard throughout the research process as they responded to open-ended questions about their experiences and offered their views about the entire project just after it ended.

Students worked together in collaborative groups — an empowering strategy which shifts the responsibility for learning from the teacher to the student and involves active participation of students in the learning process. The strategy also provides a context for social interaction whereby learning takes place in interaction with others. Working in groups collaboratively was empowering for students who were anxious about the prospect of doing research which they perceived as difficult. It eased their anxiety to know that they would not have to struggle alone. To further empower students, support was given in the form of an information literacy skills course, in which they were taught how to find information on the internet using relevant search tools and also how to access relevant books and journals in the library. The learning guide which was prepared specifically for this module was an invaluable 'scaffold' for the students as it served as a reference for information they had not grasped in class. Positive appraisal was used constantly to reassure students that they had what it took to succeed.

To walk the students through the research process, a number of activities were undertaken

in the initial stages of the study, using the more structured and more focused cooperative learning strategy and assigning small manageable tasks for the students to do each week. This method accommodated the developmental level of the students and their current level of language competence, and empowered them with the confidence to move on to more complex tasks knowing they had successfully completed the previous ones. As they became more and more independent, the structured approach was gradually replaced with the collaborative strategy.

The actual process began with the search for a suitable social or educational issue. This exercise was done individually first, where each student had one day to think about an interesting issue and then share that with the whole group. Each group had to arrive at one issue through a process of debate and consensus and then formulate a topic. The topics were subjected to scrutiny by the whole class, after which suitable ones were retained and others discarded. Thereafter, the same procedure was followed to develop the topic into a researchable problem by means of an empirical research question.

Prior to that, a whole-class session was conducted on how to convert an issue into a researchable problem, following Punch's (2006:19-29) framework for developing research proposals. Examples were given and students tried their hand at formulating a research question based on a given issue. They had ample opportunity to ask questions before they went on to produce their own researchable problem by means of an empirical research question in groups. Research questions developed by groups were subjected to critical evaluation by the whole class. Groups that had grasped the idea helped those who had not, by pointing out what needed to be improved or changed in order to produce an acceptable research question. Therefore the whole process of topic generation was an empowering experience since students assumed responsibility for the exercise first in groups, then as a whole class with the researcher assisting when needed. Ultimately each group had a research topic which they liked and had negotiated fully. That way ownership of the project was ensured. As they engaged in this first stage, they were carefully guided in the use of correct terminology to describe what they were doing. These terms were also defined and contextualized in examples in their learning guide.

The rest of the stages also followed more or less the same procedure of group negotiation, class discussion, feedback, writing, and rewriting. This process of was designed to strengthen the self-efficacy of struggling groups, and to develop the students' technical and language skills. Through this process and the researcher's constant persuasion, affirmation and validation, and sharing of work successfully completed by other groups, students were encouraged to work hard to produce satisfactory work. They gradually learned how to acknowledge sources, to attend to grammatical problems, to organize their work logically, to express their ideas clearly and to write more coherently and more cohesively with each successive piece of writing.

Groups allocated responsibilities to their members for various tasks one of which was identifying relevant sources such as books and journal articles to assist in the process of developing a problem statement, conducting a literature review, selecting and describing the research design, methodology, and data analysis. All of this culminated in a research proposal. Ten groups were randomly selected to present their proposals before a peer audience and the lecturer. Before the groups were selected, a lecture was given on how to present orally and criteria for judging the presentations were fully discussed. Verbal and written comments given by the lecturer were to be used for the improvement of the proposal before final submission. Questions for data collection were developed, pretested and refined. Letters of permission to

conduct research were issued. Students were allowed two weeks to collect data and two weeks to work on the research report. Some of the research topics included: *Factors that lead to the incidence of family disorganization; Overcrowding in lecture halls; Factors that impact on the completion rates of learners at the university; Experiences of first year students of university life; Perceptions of female students regarding government child support grant.*

Data collection and analysis

Data were collected in two phases. Firstly, through an open-ended questionnaire (on the last day of class) seeking students' experiences of the hands-on research project, what they had learnt about themselves, about others, and about research and secondly, two weeks later, through (written) self-reports measuring students' feelings, challenges, and what they would do differently given another opportunity. Analysis of the data began as soon as the first set of data were collected and continued until all data had been collected. Analysis followed the usual qualitative data analysis methods as explicated in Miles and Huberman (1994) and Merriam (2009).

The process included data segmentation, coding, categorization, identification of themes and patterns and comparison of data across categories and data sets, all the time focusing on statements relating to perceptions, experiences, feelings, challenges, what students would do differently given another chance.

Findings

The findings reported here present a synthesis data collected in the two data collection sessions. The data reflect students' experiences with the research process at two different time periods: right after the experience was concluded and two weeks after the experience was concluded. The findings presented in this section are students' own words, and they generally reflect six important areas of students' experiences with their involvement in the undergraduate research experience; how the experience of working on the project empowered them as persons and as students; how it empowered them cognitively, socially and affectively; how it empowered them as novice researchers; how it empowered them to understand group dynamics; and how it empowered them to understand what research entails, and empowerment in language and literacy skills. Illustrative comments are quoted verbatim.

The collaborative research experience taught students something they had not done before. It brought about a 'conscious awareness' of the attributes and values necessary for life-long learning. For instance, the values of tenacity, perseverance and determination are crystallized in the following comment:

Conducting research was the hardest thing I have ever done. I was clueless and I could not focus as I was confused ... even thought of dropping the module ... What really motivated me to keep on trying was that she [the lecturer] was very patient with us and the comment or feedback in our script was not that bad. I realized that in life nothing is hard for you to achieve or to be successful. You have to put your mind to it.

Following are the main themes which emerged from the findings and these reflect how the experience of working on the project was for the students.

Theme one: personal empowerment

Working collaboratively promoted students' personal growth and their development as learners. They learnt about their strengths and weaknesses, and the importance of respecting

cultural diversity. They also experienced the value of ‘ubuntu’ (humaneness). ‘Ubuntu’ is “a way of life throughout Africa: it is caring for each other’s well-being in a spirit of mutual support” (Keane, 2007:53). Through the experience of collaborative research, students learnt important values of ‘ubuntu’, equity, and respect for cultural diversity. Some illustrative comments follow:

Strengths and weaknesses:

*... I love challenges and to stretch myself very thin to see whether I will snap or remain ...Realized there are still some difficulties as I am used to the high school style of learning but I will improve on that ...
... Need to think critically and write faster*

Values of ubuntu:

*... must also understand that people are from different ethnic and culture, he or she must respect the people’s culture.
...Working with a group is one of the most difficult tasks because you are not alone. Whatever you do you need to consider your group members.
...Taught me to be tolerant of people who are different to me*

Theme two: empowerment in the cognitive, social, and affective domains

Students’ critical thinking, reasoning, problem solving, as well as their reading, communication and listening skills were improved. They also learnt valuable interpersonal and team skills.

*I can say research is very difficult, challenging but important. It increases one’s critical thinking
Formulating a problem statement made me to learn more about sentence construction.
The literature review made me realize the importance of reading as many books as I can.
Reading different opinions by different authors on the same topic, I’ve learned a lot about plagiarism ... the most important part is that it improved my knowledge in citing and acknowledging sources.
We were giving each other moral support. The support helped the group to be able to work together as a group not as individuals. Working in a group helped me to learn how to work with other people...Learned how to respect others and listen to others.*

Affective domain

Students were also empowered by coming to an early realization of the variety of academic emotions experienced in learning and in carrying out research (Reinhard, Goetz, Titz & Perry, 2002; Hubbard, Backett-Milburn & Kemmer, 2001). Not only did they realize that (academic) emotions influence learning and achievement but also that various emotions are experienced during the process of learning — especially learning in groups — (Cartney & Rouse, 2006) and in the actual process of carrying out research (McLaughlin, 2003; Holland, 2006; Jarzabkowski, 2001). The following examples illustrate this point:

*Not easy dealing with sensitive issues because it affected me as well. Some interviewees were crying as they related their problems. Others did not want to open up because they felt it would be useless since we were not going to provide any solution to their problems.
Not easy to ask a person sensitive issues — I had to be gentle and sensitive and try not to offend anyone.*

When I finally submitted my work, it was such a relief!

Theme three: empowerment in research skills

The research experience raised students' awareness of the importance of cultural considerations when conducting research. Their level of confidence increased in their ability to perform important aspects of research :

The researcher must also understand that people are from different ethnic and culture, he or she must respect the people's culture.

The literature review is very important because when doing a research you don't just use something from your head but the information you research about also need(sic) to be supported by authors to see if that information may be true or relevant

The most important part is that it improved my knowledge in citing and acknowledging sources.

I have learnt that I need to have reading skills to conduct a preliminary review of the relevant literature, citing a source and being clear about the kind of information I need to use.

Theme four: empowerment in understanding group dynamics

Working collaboratively on the group project empowered students to understand how groups function, and to appreciate the various dynamics of groups. This is what students had to say:

Competition — everyone wanting their ideas to be accepted regardless of value

Some don't want to accept other people's opinion even if they are good

Group participation and cooperation — main challenge

Working as a group has benefits because your work becomes lighter and easy to handle

Learned that conflict can make a group stronger

...working in groups is a form of socialization, learning some of good things you did not know from others

Theme five: empowerment in understanding what research entails and future prospects of engaging in research

Although the research experience at the first year level introduced students only to basic research skills, they came away with valuable information about what research in general entails, and they also gained valuable insights into what collaborative research entails. Such insights would not only be helpful in their future involvement in research endeavours but would also be instrumental in shaping the way these students view research:

Conducting a research study is quite interesting activity, which needs one's full attention to his work, determination, and co-operation if he is working in a group. It requires one to be able to communicate well with others as this is a key tool in interacting with others.

Conducting a research study enables one to be able to widen his or her horizon, and sometimes to get you out of your comfort zone. But it is also challenging as you need to know where to start when conducting a research study. You need to be prepared mentally for this activity to unfold smoothly. You need to establish a good start...

Theme six: empowerment in language and literacy skills

Involvement in the research learning module had positive effects on students' language, reading, writing, and information literacy skills. These are critical skills for a post-matric

student entering first year at university. In responding to the questions of what they had learnt and enjoyed in their research learning experience, students pointed out the following:

... *concord* ...

... *new vocabulary* ...

... *how to search for information* ...

... *reading comprehension* ...

... *formal academic language* ...

... *how to read fast* ...

... *course forced me to visit the library* ...

... *how to write a report ... a proposal ... a problem statement ... literature review*

Finally, students' reflections on what they would do differently, given another opportunity yielded valuable insights into what the experience had taught them. Their comments revealed how they had been empowered by this experience and also provided insight into how this experience would enrich their future engagement in research. Most importantly the learning-by-doing approach was validated:

First I will consult my lecturer on every issue I don't understand in order to know what to do and I will go to the library and look at journals of past research projects for guidance and I will read as much as possible on my research topic in order for the literature review and problem statement to be simple.

Learned research jargon ... taught me how to formulate a problem statement ... I'm going to be a good researcher. It was challenging to do research for the first time, but doing it in a practical manner was helpful.

Discussion of findings

On the whole, the findings reveal that the experience of learning research by actually doing it was highly beneficial for students. Their ability to complete this difficult process and to be able to reflect on it critically, is an indication of sufficient intellectual maturity to justify that the effect of their high school under-preparedness had been minimized to a large extent. This learning-by-doing approach empowered students in various skills such as: information literacy, reading, writing and language skills, critical thinking and reasoning, cooperation and collaboration, technical skills such as citing and referencing skills; formulating research questions; data collection; writing a problem statement; literature review; correct referencing method; writing a report; listening and communication skills; conflict resolution and problem solving skills; group interaction skills; time management; and leadership skills. They experienced increased self-esteem, perceived self-efficacy, and confidence in their ability to understand specific aspects of the research process such as thinking of a researchable topic; formulating research questions; writing a problem statement, preparing a proposal and writing a report.

The whole experience was consciousness-raising as students were alerted to the fact that emotions are an integral part of research work. The experience helped students gain a certain degree of intellectual and personal maturity as they became more conscious of their level of ability and interpersonal skills. They were exposed to the reality (praxis) of working in teams and to critical leadership skills such as conflict mediation, time management, guidance, encouraging participation, planning and negotiation. Most importantly, they gained valuable basic research skills and a foretaste of the pressures associated with conducting a research study. Students experienced a heightened awareness of the importance of regular consultation, class attendance, commitment, tolerance for diversity, and empathy. The undergraduate research

experience not only fostered students' intellectual, social and personal development, but also provided a foundation for the development of advanced academic skills in future. Their mental abilities were stretched to the limit, and although they could not be said to perform the research process independently at first year, the skills they learnt were internalized for later use.

Conclusion and recommendations

This paper has discussed various ways in which a class of post-matric first year students were empowered by their involvement in research learning and doing.

The whole experience equipped them with valuable cognitive, affective and social skills which they would not otherwise have acquired (at first year) in their regular English and Academic skills module or through the traditional pedagogical approach of teaching basic research methods courses.

Through the experience of collaborative research, students learnt important values of 'ubuntu', equity, and respect for cultural diversity. Students were 'initiated' into the academic community; their academic and social integration was fast-tracked, and their intellectual maturity was given a head-start. Therefore, involving first year students in research can be a tool for social justice; a means for empowering students and a strategy for emancipating them from the consequences of a disadvantaged high school education.

Finally, it would be interesting for future research of this nature to trace the progress of students who were exposed to research at the first year level to determine how it compares to that of their counterparts from previously advantaged schooling backgrounds.

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