



Science Student Teachers' Challenges and Coping Strategies in an Open and Distance Learning Environment in Zimbabwe

Vimbai Sharon Matswetu^{1,*}, Walter Munakandafa¹, Violet Munodawafa¹, Edward Mandoga¹

¹ Bindura University of Science Education [*Corresponding author: matswetuv@gmail.com]

Abstract. A Zimbabwean university recently introduced a Virtual and Open Distance Learning (VODL) programme to train science teachers to deal with the critical shortage of science teachers in one province. Thirty percent of the students withdrew from the programme within the first year. The study sought to determine the students' coping strategies for challenges experienced by the seventy percent who remained in the programme. Questionnaires and focus group discussions were used to collect information from a random sample of 98 students. Quantitative data were analysed using descriptive statistics while responses from the focus group discussions and open-ended questions were manually coded, interpreted and merged into themes. Results indicated that students faced financial problems, inadequate resources and overwhelming material intended to be covered in a relatively short period of time. Though the majority of the students have a commitment to attain a professional teaching qualification, a significant number have not developed effective coping strategies. To reduce the attrition rate of the programme, the institution needs to develop a robust learner support system, invest in training lecturers in ODL methodologies and intensify involvement of the Ministry of Education, Sport, Arts and Culture in the programme.

Keywords: ODL; Teacher training; Science education.

1 Introduction

Zimbabwean secondary schools have been hit by a shortage of trained science teachers due to brain drain to neighbouring countries coupled with low enrolments in teacher training colleges in the past decade. According to Mpofu et al., (2012) "significant number of untrained science teachers are currently deployed in schools as relief teachers... (they) need access to professional

training opportunities urgently” (p. 214). However the current conventional science teacher training programmes cannot meet the nation’s demand for science teachers (Bindura University of Science Education (BUSE), 2012). On the other hand, the conventional teacher training programmes are far beyond the reach of many relief teachers in the rural areas who need the professional teaching qualification. In many developing countries, Open Distance Learning (ODL) is regarded as an effective way of increasing access to education (Chimpololo, 2010; Chiome, Chakanyuka & Chabaya, 2011).

In line with this view, Bindura University of Science Education introduced the Virtual and Open Distance Learning (VODL) programme to train relief science teachers and also upgrade the skills of serving teachers (Mhishi, Bhukuvhani & Sana, 2012). These science student teachers attend lectures during the four-week school holiday at learning centres established by the university at boarding schools mainly in remote rural districts of the country’s ten provinces. The centres are close to the student teachers’ doorstep and meant to be affordable. These centres offer both accommodation and catering facilities to the student teachers and university personnel. In addition, they serve as resource centres which ideally should have computers, internet access and libraries, but as noted by Mhishi, Bhukuvhani & Sana (2012), some of the centres have insufficient resources.

In Zimbabwe, untrained relief teachers are all employed by the government and deployed at the district level by District education officers (DEO). They are currently given one school term’s contracts to work, and depending on DEO’s discretion, such contracts may not be renewed. When renewed, the relief teachers could be posted to different schools from the ones they were previously deployed.

Distance education has been practised in many sub-Saharan countries, including Zimbabwe, in response to teacher shortages and it has been shown that the students could achieve results that are comparable to those of conventional students (Perraton, 2010). However retention of students in distance education programmes is a challenge. Chiome et al (2011) reported that “an education programme of the Zimbabwe Open University (ZOU) at one of the regional centres lost 60% of its enrolment from 2006 to 2009” (p. 86). Similarly, statistics of the VODL programme from its inception in August 2010 up to August 2011 show that 30% of the students have withdrawn from the programme. Student attrition is costly for the university in terms of human and material resources set aside for the distance learning programme. At the same time, “the reputation and credibility of an institution could be battered by high attrition rate” (Chiome et al., 2011, p. 87).

This study sought to determine the science education student teachers’ challenges and their coping strategies. An understanding, from the students’

perspective, might help the university and other similar ODL programmes globally to implement mechanisms that reduce attrition rates.

1.1 Rationale for Open Distance Teacher Education

Research has shown that distance teacher education can play a crucial role both in initial training and continuous professional development (Perraton, 2010; Kangai & Bukaliya, 2011). In situations of scarce economic resources, “ODL has been accepted as a viable, cost effective means of expanding provision without costly outlay in infrastructure” (Pityana, 2009). As mentioned previously, in the rural remote areas of Zimbabwe, most of the teachers were untrained or in need of further professional education. Open and distance learning (ODL) is flexible and can be combined with a part-time or full-time job which makes it a feasible option for most untrained relief teachers (UNESCO, 2001; Mhishi, Bhukuvhani & Sana, 2012). The distance learning programme for the institution under study included a four-week long residential session in every school holiday at centres in the rural areas. These sessions created opportunities for student versus lecturer face-to-face interaction which may not be present in most distance education programmes (Mpofu, et al, 2012).

1.2 Challenges in Open Distance Teacher Education

Distance teacher education faces a number of challenges which include delays in module distribution, shortage of reference materials, stakeholders’ perceptions, and shortage of skilled practitioners in the ODL discipline (Chimpololo, 2010; Nyaruwata, 2011; Mhishi et al., 2012; Mpofu et al., 2012). The problems of material resources are usually a result of lack of financial resources by both learners and institutions. Most of the lecturers involved in distance learning are from conventional universities without specific training in ODL. As such, there are challenges in the development of appropriate materials and provision of adequate student support as most of the lecturers learn about ODL through seminars and workshops (Pityana, 2009; Chimpololo, 2010; Nyaruwata, 2011).

Electricity black-outs and problems of Internet connectivity negatively affect students’ opportunities for study and access to Open Educational Resources (Chimpololo, 2011; Nyaruwata, 2011). This is likely to lead to students failing their courses or passing with weak grades if they cannot access supplementary reading material. Ultimately, this may reduce some students’ motivation which could cause them to drop-out of the training programme altogether.

1.3 Reasons for Attrition from Open and Distance Programmes

Some of the challenges experienced in distance learning may lead to students withdrawing from the programme. The cost of distance education is unaffordable for the average student due to poverty and the fact that some learners are unemployed (Pityana, 2009; Ojo cited by Chimpololo, 2010; Nyaruwata, 2011). It was noted that most students enrolled in the VODL programme “because of the opportunity to get a regular income as teachers rather than for professional reasons which leads to poor attitudes, including lack of commitment, resourcefulness, self discipline and self management among others which may cause students to drop out when the going gets tough” (Mpofu et al., 2012, p. 222). There are also institutional factors like delayed feedback, inadequate library resources, unclear or poor communication strategies and failure to respect adult learners which have been found to increase student’s chances of withdrawing from the distance learning programme (Chiome et al., 2011).

1.4 Possible Solutions to Challenges of ODL

Various solutions have been proposed for dealing with the challenges of ODL including: establishing satellite centres in strategic parts of the country where print and electronic study materials could be accessed by students; academic counselling; use of alternative sources of lighting; and training of both students and lecturers in the use of technology (Chimpololo, 2010; Hill as cited by Chiome et al., 2011 & Spodick, 1996). Some of these suggestions are already in place in the VODL programme. There are mobile libraries at the centres during the residential sessions. However, some possible solutions depend on individual financial resources, for instance the use of alternative sources of energy and not many students are in a position to afford generators or solar panels. Mpofu et al. (2012) conclude that VODL students reflected that they needed a lot of economic, social, and resource support if they were to withstand the programme pressure. This study therefore sought to understand students’ challenges and coping strategies so that meaningful and worthwhile support could be extended to the students.

1.5 Research questions

1. What challenges do science student teachers face in the open distance learning programme?
2. How do science student teachers cope with the challenges of learning in the VODL programme?

3. What are the students' perceptions of the personal input required for them to succeed in the VODL programme?

2 Method

The research was a case study of one centre of the four VODL centres in the province. Both qualitative and quantitative research techniques were employed. Mixed methods research provides a diversity of views since both researchers and the participants would be involved in uncovering relationships between variables through quantitative research while also revealing meanings among research participants through qualitative research (Bryman, 2006).

The study centre had a population of 300 students from which a sample of 98 students was chosen through random sampling techniques. The sample comprised 32.7% of the total population which was more than the 25% proposed as a representative sample by Best and Khan (2005). Both males and females participated in the study. Copies of a *Questionnaire for VODL students* with open and closed questions were distributed to all participants. From this sample, 48 participants were randomly assigned to six groups of eight students each, for the focus group discussions. Fifty completed copies of the questionnaire were received, representing a return rate of 51%. The return rate was low, notwithstanding the efforts made to recover a larger number of the completed questionnaire. Focus group discussions were employed so that the descriptive statistics from the questionnaire could be supported by detailed descriptions, for better understanding of students' responses. The focus group discussions were done after the administration of the questionnaire.

SPSS (Version 16) was used to analyse closed questions while responses to open ended questions and key themes from focus group discussions were described and analysed qualitatively. Similarly, manually coded data were merged into themes by the researchers. The themes were scrutinized and interpreted to find meanings in relation to the three research questions.

3 Results and Discussion

3.1 Challenges faced by VODL Science Student Teachers

The most prevalent problems stated by questionnaire respondents were financial concerns and inadequate resources such as library books and computers for accessing the Internet as indicated in Table 1.

Table 1: Challenges experienced by VODL student teachers

Challenges	Percentage
Financial Problems e.g. tuition and centre fees	66
Resources e.g. library books	54
Too much work e.g. many courses within a short period of time	14
Centre-related issues e.g. regular hiking of centre fees and poor living conditions	14
Delays in information dissemination e.g. untimely relaying of notices by the university	10
Relief teachers' contract renewal e.g. transfers, constant movements and termination	8
Electricity power cuts	2
No Challenges/problems	2

Lack of financial resources has an effect on attendance at residential sessions since some students could not afford to pay for accommodation and meals at the study centres which made them forfeit the opportunity to visit the temporary library at the centre. After each residential session, library books were returned to the university library at the main campus. Some students could not afford travelling expenses to the university library which was further away from their homes when compared to the study centres. Below are samples of participants' responses regarding lack of financial resources: "Inadequate funds to pay both the university funds and centre fees" and "Fees and transport costs as a married man are so strenuous".

All six focus group discussions indicated other resource constraints which they encounter. One participant in the focus group discussion pointed out that they have limited access to reference textbooks and as a result they do not produce quality work.

Most of the students were adults with other family financial responsibilities which they had to shoulder in addition to their tuition fees. Inadequate resources were a serious constraint to students who therefore found it difficult to concentrate on their studies. According to Tressman as cited by Emmanuel (2011), adult learners need to cope with the stress and the demands of their personal and academic responsibilities in order to succeed educationally.

An equal number (14%) of students raised the issue of centre-related problems and too much work being covered during the residential sessions as indicated in the questionnaire responses cited below: "Poor service provision in terms of accommodation, electricity, sanitation and even food shortage and poor diet at the station we are living"; and "being packed with a lot of information in a very short period or towards the examination which causes pressure".

If the living conditions at the centres do not meet the optimum standards expected by the students, they may find it difficult to give attention to their

studies. Failing to cope with the volume of information in the courses might lead to attrition, as this could be an indication of unpreparedness and lack of familiarity with strategies for successful learning in an open distance programme (Emmanuel, 2011).

3.2 Coping Strategies adopted by VODL Science Student Teachers

Students have employed various coping strategies as indicated in Figure 1.

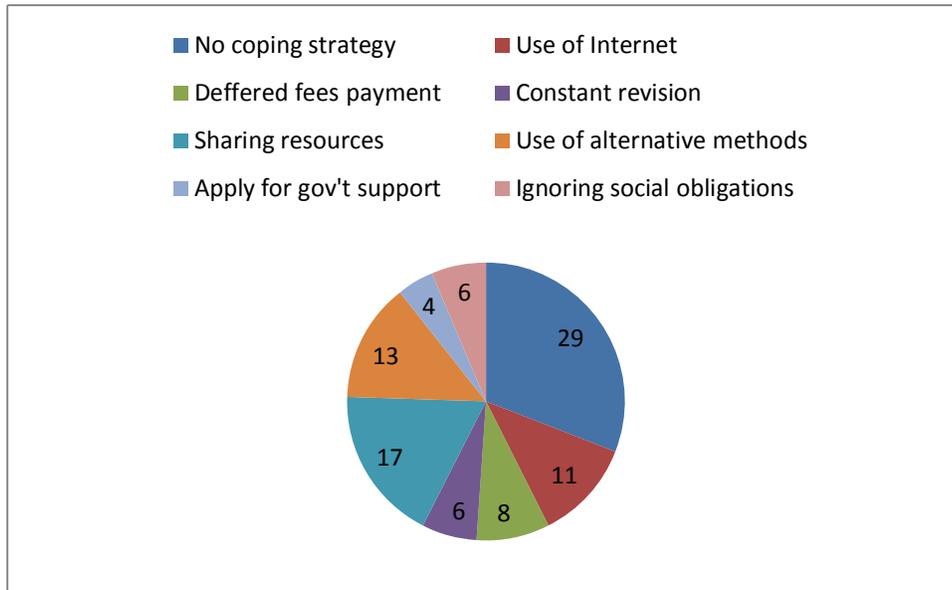


Figure 1: Coping Strategies adopted by VODL science student teachers (%)

A significant number of students (29%) have not adopted a coping strategy as shown by a sample of quotations below: “It’s very tough to cope with”; “Unable to cope with them”.

Lack of adoption of a coping strategy could lead to attrition as students fail to cope with the challenges experienced. The proportion of those without a coping strategy was almost similar to the 30% who left the course. Nevertheless, it is imperative to note that some of the challenges experienced by students were beyond their control, such as late notices from the university, harassment by District Education Officers, or constant movements when seeking temporary teaching appointments. Such students have no alternatives but to endure the perceived ‘harassment’ and constant change of schools as untrained relief teachers until they procure the professional qualification to

qualify them for a permanent appointment in the Ministry of Education, Sport, Arts and Culture (MoESAC).

While some students seemed not to have a plan to deal with the issue of financial problems, it is necessary to note that the university has already taken into account of the prospective students' economic disadvantages. The few students (4%) who applied for government financial assistance were not considered because part-time studies were not eligible for government assistance. Fifty- six percent of the participants in the study had advanced level qualifications but failed to join conventional programmes in universities because of prohibitive costs. With that view, the university had a flexible fees payment plan in which a semester's fees were paid in seven monthly instalments. Given this context, it would appear that those students who genuinely wished to complete their studies strived to find various ways of raising income to finance their studies as done by other students.

Other participants have come up with feasible alternatives to solve various problems they encountered, as noted in the excerpts below:

“We are residing outside the campus”.

“I try to get some other form of lighting so as to complete the tasks on time”.

“Supporting subsistence farming to produce enough for family consumption. I have managed to harvest 2 tonnes of maize this year”.

“We are struggling to raise money so I have to buy and sell goods”.

“I only sacrifice through thick and thin. Most of the time I have to borrow the money for residence and transport just to achieve my objective and meet my goal”.

“Sourcing textbooks from different people but they are outdated, in terms of the prevailing information required. This might also lead us to failure”.

“Intensifying group-work and making sure I participate”.

“Struggling and depending on other students of different institutions”.

“By ignoring other, but important, social responsibilities to spare money for tuition, transport and research material”.

The quotations above indicated that some students were pro-active, resourceful, innovative and dedicated such that they tried whatever was possible to successfully complete the programme. These students realise the importance of their efforts towards attaining their goals. Such learners were likely to persist with their studies when compared to those who were “not prepared to handle these issues and who lacked the motivation to work through these problems. Many of the students who cannot deal with these stressors will most likely dropout of the programme” (Emmanuel, 2011, p .3).

However, finding alternative accommodation outside the centre disadvantaged the students as they forgo the opportunity to use the library during the night and to carry out discussions with colleagues who stayed at the

centre. Similar coping strategies which the students adopted, may actually drawback them. For instance, with reference to inadequate reading materials, some students stated:

“Sometimes use general knowledge. Use false references”

Adopting this as a coping strategy could not be useful at all, since this often resulted in poor marks for class assignments, consistent poor performance and possibly withdrawal. It appears students need guidance from lecturers when they experience problems so that they can come up with viable problem solving plans. According to Chiome et al., (2011) “students need tutors and academic planners to help them complete courses on time and to act as a support system when stress becomes a problem” (p.193).

3.3 Students’ Perceptions of the Effort Required to Succeed

Of the different responses given by the participants in the study, the majority (76%) still expected to succeed in their studies by prioritising their university work as shown in Figure 2.

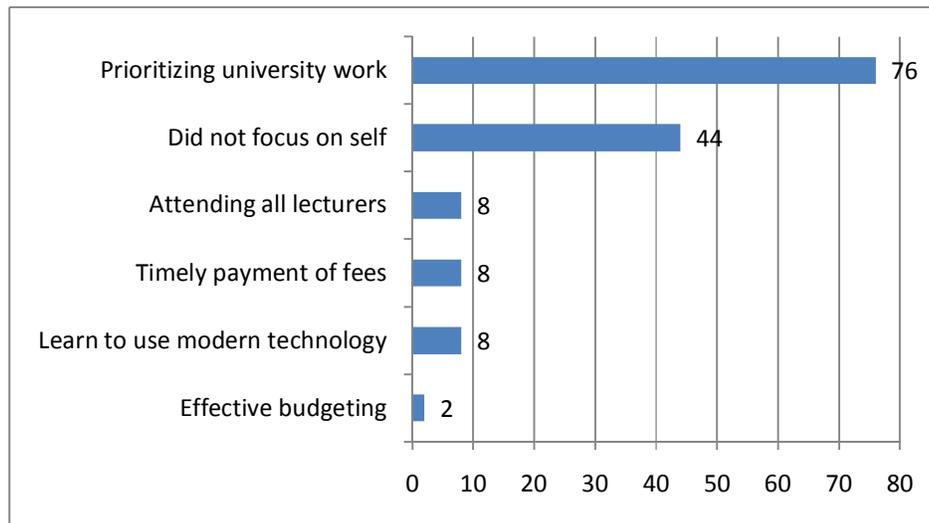


Figure 2: Students’ Perceptions of the Effort Required to Succeed

These students appeared to be very much aware that a combination of perseverance, discipline, commitment and endurance would help them complete their studies successfully. This is evident from the excerpts quoted below:

.“We need to be committed, disciplined and self-motivated”.

“To be dedicated, determined devoted and have that hunger for achievement in a quest to complete the journey”.

“I should consider my university/school work as a priority”.

The individual commitment shown by some of the students is an important factor in determining whether student would drop out of the programme or not. Emmanuel (2011) emphasises that “open distance learning success requires being a self-directed learner and the ability to study independently with a focus on specific learning goals” (p. 3).

A significant number (44%) did not suggest any form of personal effort but sought interventions from other people or institutions. This could mean that they had a feeling that success or failure depends on other people or factors that were not within their control. For instance some students stated that “there is need for lecturers to prepare resourceful modules as supplement to the notes they are giving us”. The same sentiments were echoed in one of the focus group discussions where participants said “...the lecturers just give us notes briefly and ask us to research from the library”. It is necessary for students to be equipped with the relevant learning skills to succeed as open distance students. Al-Oraini and Kaur (2007) state that “ basic computer and Internet skills, managing learning, note-taking and making, presenting information, coping with assessments, information gathering process and searching, retrieval and evaluating are a must for all distance education students” (p. 7). When students are equipped with these skills they might confidently take responsibility for their learning.

Other students stated that they wanted financial assistance from the government or the university. The majority of participants in the study (86%) were relief teachers who were engaged in initial teacher training while the rest were qualified teachers, on full-time employment, who wanted to upgrade their qualifications. The relief teachers stated that they wanted longer work contracts from the MoESAC, rather than the current contracts that are valid for a term, which may not be renewed as recent graduates from colleges come to fill their positions. Although it may not be feasible to expect longer work contracts without the relevant professional qualifications, at least this group of teachers had a good intention; to be able to pay their fees.

The participants also noted that attending all lectures was one of the major factors necessary for them to succeed in their studies as noted in some of the responses below:

“To pass I need to attend all lectures”.

“Attend all lectures in time”.

“Attend all lectures without fail and make use of the library”.

The students prioritised attending all lectures on time. However, it is also necessary for them to acquire detailed knowledge from the library since only key points and summaries were usually provided in lectures.

Some students commented that observing institutional regulations was important for them to succeed in their studies as evident from their responses:

“No arrears in fees”.

“Respecting the order of the institution”

Timely payment of tuition fees eliminated disruptions in lecture attendance. Failure to comply with university regulations regarding payment of fees and other disciplinary issues may lead to expulsion from the programme, which means they would not succeed in their studies. Nonetheless, it is very important for students to realise that it is not only one component that is important for them to consider but all the views that they brought out in their focus groups.

The virtual component of the programme requires the student to master Information and Communication Technology (ICT) skills, yet only few students (4%) seemed to realise the importance of this aspect. However this issue is not peripheral and should therefore not be downplayed. In fact, by not saying anything about technology, it could mean that they lacked exposure and requisite skills due to the rural environment where computers and the Internet were not readily available to most of the students living and working there (Kamal and Sultana, nd.) stressed that “use of ICT is very crucial in ODL systems for better delivery of the courses, better coordination among student-student, student-tutor etc, extracting more knowledge, perfect and fast flow of information’(p. 10). Therefore, learners need to have explicit instruction in ICTs since it has been noted that most adult distance learners appear to need computer assistance and training as they usually feel that they lack technological skills (Dzakiria, 2005).

4 Conclusions and Recommendations

The findings indicated that ODL students faced a myriad of challenges including financial problems, inadequate resources such as library books and computers, as well as the need to balance their multiple roles with their studies. Nevertheless quite a significant number (71%) have developed effective coping strategies such as sharing learning resources, borrowing money from relatives and ignoring other social obligations. It should be noted that despite the challenges faced by the students, there lies a deep commitment among the majority of them to attain a professional qualification in science teaching.

There is a tendency among some students however to expect the university and lecturers to provide everything they needed for the successful completion of their programmes. Whilst the university was doing a lot in trying to make the programme flexible in terms of tuition fees payment and contact time for lectures, students needed to realise that the nature of university work itself requires students to make give a corresponding level of personal effort and sacrifice.

Based on the findings from the study, the researchers came up with the following recommendations:

- The institution should expedite relaying of information to centres on time.
- The university should strive to establish a memorandum of understanding with the MoESAC so that those untrained relief teachers that have enrolled for the programme can be given longer contracts to assure them of job security until they get a professional qualification.
- The institution should expedite action on the installation of virtual component of the Virtual and Open Distance Learning programme since it is important in minimising library resource problems for the science student teachers.
- Efforts should be made to promote a culture of resourcefulness and self-reliance among ODL students by assisting them with financial aid and resource materials.
- There is a need for orientation by universities' students' affairs departments to new students enrolling for open distance learning programme so that misconceptions about open distance learning are cleared. This should include what the university can do for them and what the university expects them to do which would reflect the characteristics of ODL.

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