Addressing Teaching Practice Quality Assurance Issues in Open and Distance Learning Science Teacher Training: A Case Study in Zimbabwe

Mr Crispen Bhukuvhani*, Lecturer Department of Education, Bindura University of Science Education, Zimbabwe
Mr Walter Munakandafa, Department of Education, Bindura University of Science Education, Zimbabwe
Aspinas Tigere, Teaching Assistant, Department of Education, Bindura University of Science Education, Zimbabwe
Ms Violet Munodawafa, Department of Education, Bindura University of Science Education, Zimbabwe
Mr Alfred Zengeya, Dean Faculty of Science Education, Bindura University of Science Education, Zimbabwe
Dr. Mathew Mupa, Lecturer, Department of Chemistry, Bindura University of Science Education, Zimbabwe

Abstract
This paper reviews the objectives of teaching practice for science education programmes in relation to the philosophy of open and distance learning programme. The various quality assurance issues that arise in the implementation of teaching practice on an existing model are presented. Two major concerns are the effectiveness of the teaching practice sessions and sustaining the fundamentals of the open and distance learning programme. A developmental methodological approach was employed for the case study. The research is also informed by extensive review of related literature to quality assurance in the practice of education. An interpretative approach has been used to analyse themes for the study. A new five-stage teaching practice model has been proposed for the university under study for its Virtual and Open Distance Learning programme, which enables students to have effective teaching practice experiences without violating the open and distance learning fundamentals.

Keywords: Science Education, Open and Distance Education, Quality Assurance, Teaching Practice
1. Introduction

The world needs better teachers and more teachers. The Dakar conference revealed that there were still more than 100 million children out of school; they need teachers as the world moves towards the 2015 target of education for all. And we need to raise the skills of the existing 60 million teachers, too many of whom are untrained and unqualified. Beyond that, the skills and knowledge all teachers need are no longer fixed and familiar targets but moving ones. Teachers therefore need more opportunities than ever before to go on learning throughout their careers. One of the ways of strengthening the teaching profession is to use distance education or open and distance learning (UNESCO, 2002).

Many countries still do not have enough teachers. In some, the expansion needed in the teaching force is far beyond the capacity of traditional colleges. The supply of teachers is also adversely affected in countries where retention rates are low for newly trained teachers or where significant numbers of teachers are being lost through HIV-AIDS or in rural areas which have difficulties in recruiting and retaining teachers.

Teacher quality is an issue in most countries. Many teachers are untrained or under-qualified or teaching subjects in which they are not qualified or trained. In addition, teachers face a widening range of demands and roles. National governments, international organisations and specific circumstances continually set new goals: gender parity by 2005 and universal basic education by 2015; inclusive education; education for democracy, peace and social cohesion; multi-grade teaching; increased accountability for achieving learning targets; the development of learners who are self-managing and independent, skilled in critical thinking and problem solving, equipped with life-skills; the preparation of learners who are competent for knowledge-based economies, capable in the use of information technology; and the expansion of teachers’ roles to include social work in communities where child-headed households and orphans are common as a result of HIV-AIDS.

Continuing professional development enables teachers to extend existing knowledge and skills and develop new ones. Some of this takes the form of long structured courses leading to formal qualifications (diplomas or bachelor’s or master’s degrees). Other forms are shorter, concentrate on skills in managing children’s learning or curriculum change and do not lead to additional qualifications. In some countries, qualified and unqualified teachers alike participate in continuing professional development. It may be provided as in-service activities (on-the-job learning) or out-of-school courses of varying length (off-the-job or in vacations) (UNESCO, 2002, 2001).

Distance education has been used to teach, support and develop teachers for many years: UNESCO was a pioneer through its UNRWA/UNESCO Institute of Education which was training teachers for refugees forty years ago. While the success of programmes has varied, experience demonstrates that distance education can be used to enable teachers to learn and to gain qualifications (UNESCO, 2002, 2001). In Pakistan, one study found no difference between the efficacy of the Bachelor of Education distance learning and regular graduates (Munshi and Bhatti, 2010).

Distance education has been defined as an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner. Open learning, in turn, is an organised educational activity, based on the use of teaching materials, in which constraints on study are minimised in terms either of access, or of time and place, pace, method of study, or any combination of these. The term ‘open and distance learning’ is used as an umbrella term to cover educational approaches of this kind that reach teachers in their schools, provide learning resources for them, or enable them to qualify without attending college in person, or open up new opportunities for keeping up to date no matter where or when they want to study. The flexibility inherent in open and distance learning, and the fact that it can be combined with a full or near full-time job, makes it particularly appropriate for the often widely distributed force of teachers and school managers.

Teaching practice (TP) experiences are an extremely important and essential component of teacher training programmes as they afford pre-service teachers an induction into the profession (Keogh, Dole and Hudson, 2006 cited in Bhukuvhani, Zezekwa and Sunzuma, 2011). Pre-service teachers are able to observe experienced teacher-practitioners who model useful, efficient and effective pedagogic practices in their classrooms and gain useful experience in planning and managing student learning activities in a hands-on way.

2. Context of Study

Initial teacher education and training is the programme of studies which leads to qualified teacher status according to the official standards of Zimbabwe. It is the basic or first level of qualification for a teacher. It may be taken as a pre-service programme (before a trainee teacher begins work as a teacher) or an in-service one (while an untrained or trained teacher is working as a teacher).
As a result of much decreased numbers in student enrolment in its conventional and block release teacher education programmes, Bindura University of Science Education (BUSE) introduced the Virtual and Open and Distance Learning (VODL) programme. The programme has since enrolled large numbers of students, seven hundred and twenty two probably because, as revealed by UNESCO, (2002) it is attractive for students who cannot get to college for practical, economic, social and geographical reasons and who cannot leave their jobs to attend full time courses. Most of the VODL programme students are untrained relief teachers who are working in the remote districts of the country where BUSE has set up learning centres where intensive face-to-face lectures are conducted during the school holidays when they are not expected to be at work. Three teacher education programmes are on offer: Diploma in Science Education, Bachelor of Science Education-General and Bachelor of Science Education Honours degrees.

For the Diploma in Science Education students are required they be on teaching practice for at least one full semester (two school terms). Bachelor of Science Education-General students go for one school term on teaching practice. This is so for these two programmes because they are pre-service programmes, they are the students’ initial teacher training programmes.

For the Bachelor of Science Education Honours degree, the students would have five weeks of teaching practice, since they are already in the field of teaching and have been upgrading their qualifications to be able to teach senior secondary level students (A-Level/AS Level) in their subject specialisation areas. This is also recognising the teaching practice they did during their initial teacher training in which they graduated with Certificates/Diplomas in Education.

### 2.1 Current Teaching Practice Model

The Bindura University of Science Education’s Department of Education is also offering the above mentioned science teacher education programmes to conventional and block release students. The subjects of specialisation (Agriculture, Biological Sciences, Chemistry, Computer Science, Geography, Mathematics and Physics), duration of study and duration for teaching practice for conventional and VODL students are the same. What is different is that, the conventional and block release students are deployed to schools with already qualified and experienced science and mathematics teachers who act as mentors which is not the same scenario with VODL students.

Congruent with other/universally accepted models of TP, Leshem and Bar-Hama (2008), once deployed to the host school, the conventional or block release student’s main requirement is to observe their mentor teach and to gradually start teaching on their own. Informal formative assessment is mainly done by the student’s mentor who carries out frequent lesson observations of the student teaching. The primary purpose of the observation, as revealed by Leshem and Bar-Hama (2008) in their TP model, is to improve the student’s performance in class by providing feedback on his/her strengths and weaknesses. Formal assessment is carried out at least three times by university lecturers. Besides being qualified and experienced science and mathematics teachers, the mentors used by the university in this model have not been familiarised with the university’s assessment instrument and expectations (Bhukuvhani, Zzekwa and Sunzuma 2011).

The challenge is for the VODL programme, where there are few or no qualified science and mathematics teachers. For example, in the rural districts of Mashonaland Central province, Zimbabwe, it has been reported that 80% of the science teachers either unqualified or requiring up-grade of their qualifications.

Many countries also report that teachers express a strong preference for urban postings. For example in Ghana over 80% of teachers preferred to teach in urban schools (Akyeampong and Lewin, 2002). There are a number of rational reasons why teachers may prefer urban postings. One of the concerns about working in rural areas is that the quality of life may not be as good. Teachers have expressed concerns about the quality of accommodation (Akyeampong and Stephens, 2002), the classroom facilities, the school resources and the access to leisure activities (Towe et al, 2002). Health concerns are also a major issue.

Other than the brain drain of qualified science and mathematics teachers (Chetsanga, 2002 cited in Mhishi, Bhukuvhani and Sana, 2012) other concerns include poor infrastructure, very high climatic temperatures, perennial flooding, problem animals, the high risk of contracting malaria and also the infestation of the tsetse-fly are real worries worth considering (Mhishi and Bhukuvhani, 2011).

In the view of the prevailing conditions in the rural schools, the present teaching model that is being used for conventional and block release student teachers could not be recommended for the VODL programme. To this end, we propose a new model for teaching practice for VODL. We believe that successful implementation can be achieved by following the sequence suggested below.
3. Proposed New Teaching Practice Model VODL Programme

To this end, we propose a new teaching practice model for science education programmes offered through ODL, made possible by innovation of using existing knowledge base within the communities in which the ODL students are placed. The model consists of 5 stages; it optimises the available limited qualified science and mathematics teachers in the rural areas where VODL students are in supervising and assessing them during their practicum. It offers the possibility of many attractive features including interactive experience that can widen the scope of constructivist learning. Students will be able to study at their own pace and use the resources provided in this model in a flexible way. We believe that successful implementation can be achieved by following the sequence suggested below.

Stage 1: Training of Science and Mathematics Mentors

Qualified science and mathematics teachers from the districts where the university has learning centres are trained to be mentors on issues related to pedagogical practices in science education. The training is conducted during the school holiday when there is little interference to their day to day teaching commitments. Mentors are trained on: the concept and rationale of teaching practice in science education, trends in science education methodological approaches, ethics and professionalism in education, measurement and evaluation, rationale of planning in science teaching and learning, documentation in supervision of students on teaching practice and quality control measures in education. In line with Kelly and Grenfell’s (nd) explicit framework for teaching practice, mentors are also fully briefed and trained to understand the expectations of both the student and the university.

The idea here is to bridge the gap between the role of the mentor and the expectations of the university. It is also of value in that it exposes the mentors to new pedagogic ideas, taking into consideration that many of them were trained years ago when teacher training programs were otherwise content based (Moon, 1994). The training is thus envisaged to enable the teachers to provide effective mentoring which, as argued by Maynard and Furlong (1993), is a difficult and demanding task that places increased responsibilities on them as mentors.

Experienced teachers acting as mentors play an important role in the college-school partnership component of teacher education (Mudavanhu & Zezekwa, 2009). Therefore workshops for the would-be mentors on their role before the university deploys its students to the schools is important. Learning at college and practice in schools need to interrelate when it comes to teaching practice (Bhukuvhani, Zezekwa and Sunzuma, 2011).

Stage 2: Tutorial Assistants for Practicum Pre-Requisite Courses

The trained mentors, certificated by the university, are recruited as Tutorial Assistants (TA) in the teaching of pre-requisite courses for the practicum courses. The Tutorial Assistants are paid part-time rates (approved by the university) as an incentive, which as recommended by Moon (1994) in a similar programme with mentors, helps to sustain commitment. During the tutorial sessions each subject area would be taught through small group methodology on matters regarding planning, practical work, educational technology, teaching methods and classroom administration. Microteaching and peer-teaching techniques through pre-recorded and live lessons are implemented during this stage. As in Moon’s scheme, methodology university lecturers play a facilitator’s role, moving from group to group identifying problem areas and addressing them. This is expected to fully prepare the student teachers for the teaching practice and its expectations and therefore reduces the theory-practice.

The TAs participation in this model also has cost benefits as it ameliorates the inadequate number of university lecturers faced with the large number of students at each centre and the diverse subject range offered.

Stage 3: Trained Mentors Supervise Practicum

Mentors are allocated a maximum of five students to supervise. Each mentor is expected to visit each student at least once monthly for a period of 12 months. Qualified science and mathematics are teachers in short supply in most rural areas. This has lead to insufficient mentors since most rural schools are hardly accessible and most teachers working as science teachers are unqualified relief teachers. These mentors would be ‘peripatetic mentors’ since they would be stationed at one school but visiting student teachers on teaching practice in the schools within his/her cluster or district. Mentoring is by subject specialisation, to help continuous content development in the subject area during teaching practice.

While challenges faced by a mentor with only one trainee have widely been reported, an added complication for the mentor in this model is that s/he has to establish a working partnership with all five students and “cope with their differing personalities, backgrounds and ways of working, and then has to assess them as individuals” (McKeon, nd:231).
Stage 4: Internal Assessment
University lecturers from the Department of Education visit student teachers for both supervision and assessment purposes for at least thrice per student during the teaching practice period.

For supervision, as suggested by Kilminster, Cottrell, Grant and Jolly (2007), the students are provided with guidance and feedback on matters of personal, professional and educational development. This encompasses pre- and post-lesson discussions and the teaching of specific skills and competencies, helping the student to develop self-sufficiency in the ongoing acquisition of skills and knowledge.

Assessing students’ TP is a complex activity, which entails multiple sources of assessment including field/reflective journals (TP file), portfolios, observation lessons, tests, self-assessment, peer assessment, mentor assessment, and pedagogical lecturer assessment (Leshem and Bar-Hama, 2008). The assessment method, among those reported by Tilsone (1998) and Jackson, Burrus, Basset & Roberts (2010), mainly used in this stage involves lesson observation as well as inspection of the student’s TP file which includes schemes (unit plans), lesson plans and reflections/evaluations. The scores awarded are guided by the same supervision and assessment forms used by the department for the conventional and block release students.

The final grade for the TP is however based chiefly on the grades that the students receive for their observation lessons as it is a critical component of their TP (Leshem and Bar-Hama, 2008).

Stage 5: External Assessment
For quality control, external assessors are appointed for assessing the students. External assessors are qualified lecturers in education from other universities and colleges of education. At least 10% of the students are sampled for assessment by the external assessors. The external examiner’s mark is considered final and for the rest of the student teachers’ mean score would be calculated for final teaching practice mark.

4. Conclusion
It has been revealed that the current teaching practice model for conventional teacher education programmes may not be adopted for the VODL programme. The proposed model, if followed stage-by-stage may ensure quality at every level of teaching practice and student teachers’ professional development in an attempt to prepare a teacher with equal competences and skills with those on full-time study. It includes mentor supervision, subject mastery, internal and external assessment procedures to ensure quality science teachers are produced as ultimate outcomes.

References

