CHAPTER

4

Open and Distance Learning for Initial Teacher Education

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Abstract

Open and distance learning (ODL) has played an important role in initial teacher education and training since the United Nations Relief and Works Agency (UNRWA)/UNESCO Institute of Education was set up in the 1960s. Early programmes addressed crisis situations by, for example, providing qualified teachers for Palestinian refugee children. The first decade of the 21st century has seen ODL emerge as an established and embedded part of national initial teacher education and training provision in both developing and developed countries. ODL has been adopted worldwide as the potential solution to a range of teacher education issues, from cost and supply to access, diversity and quality. In particular, it has been promoted as a key strategy to achieve the World Forum's Education for All and the United Nation's Millennium Development Goals. As stated by the World Forum on Education in 2000, ODL offers a means of:

> "ensuring that by 2015 all children, particularly girls, children in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality."

In this chapter, the authors discuss a number of questions: Why is ODL used in initial teacher education? Does the use of ODL serve the same purposes in developing and developed countries? What is the impact of information and communication technologies on ODL? What are the key quality challenges for ODL in initial teacher education? Finally, the authors consider whether ODL's potential to achieve the Education for All commitment has been realised.

What Is Initial Teacher Education?

Initial teacher education (ITE) refers to that part of a teacher's education, preparation and training that leads to fully qualified, licensed or credentialed teacher status within a national or state/provincial system. It is the stage prior to *in-service teacher education,* which seeks to enhance teacher quality and performance beyond the professional entry level. Inevitably, there is overlap between these two stages in teacher education, particularly in relation to the unqualified serving teacher.

A conventional *pre-service* approach to becoming a qualified teacher, operating in developing and developed countries, might be described in the following way: a period of discrete higher education study based in a teaching college or university. The programme aims to develop the general education, subject and pedagogical knowledge and understanding required for teaching a particular age range or subject. This occurs alongside periods of supervised practicum or placement in one or more designated schools. Assessment, based on national or state/provincial professional standards or competences, of subject-specific and pedagogic knowledge, skills and understanding is also required to confirm the qualified teacher status *prior* to the individual entering the profession. The period of pre-service education may vary depending on the prior educational achievement of the individual at entry (for example, a three-year undergraduate degree programme or a one-year graduate entry programme) and is usually full-time in nature. The length and number of placements are highly variable and, depending on the national or state/provincial system's cultural view of its importance, may be marginalised or may take up the majority of time on the ITE programme.

The in-service approach is used where unqualified serving teachers require ITE to achieve qualified status. For these teachers – predominantly primary teachers in developing countries – the upgrading to qualified teacher status is a lengthy process. It involves the individual upgrading his or her personal educational qualifications, alongside teacher professional development, while continuing to work as a teacher. The process is part-time and primarily "on-the-job."

Between these two models lie many variations in programme design to meet local and national educational and economic priorities and cultural perspectives on what constitutes appropriate ITE (UNESCO 2001). What is important to recognise is that each of the four elements of ITE – general education, subject knowledge, pedagogy and practical teaching – can be successfully delivered using open and distance learning (ODL) (UNESCO 2002).

Why Is ODL Used in ITE?

ODL approaches to ITE have been identified as having major advantages over conventional programmes that require residency in terms of cost, scale and access. Moon and Robinson (2003) conclude that there are three areas of advantage: first, *resource efficiency* (buildings, teaching staff and funds), by reducing the overall cost of producing a qualified teacher; second, *supply,* in drawing in new constituencies of teachers and producing more trained teachers in a shorter amount of time; and third, *curriculum and training,* through offering greater opportunities to strengthen the relationship between theory and classroom practice (e.g., using real-life teaching on video; having teachers discuss their experiences on radio; and assessing classroom-focused activities, such as requiring trainees to integrate their

learning from ODL materials with specific activities undertaken on placement (Moon and Shelton Mayes 1995; UNESCO 2002).

ODL is able to make a substantial contribution to the cost (Perraton and Potashnik 1997), the numbers of trained teachers and the access or reach in relation to geographically isolated and marginalised communities (UNESCO 2002). These advantages have been promoted at the international level for their potential for developing teacher expansion within national systems in line with the Education for All commitment. This is not surprising given the success of a number of high-volume ITE programmes that have made considerable, sustained numerical contributions to teacher supply at an affordable cost and have been successfully integrated into established national teacher education systems. For example, more than 717,300 unqualified primary teachers and 552,000 unqualified secondary teachers qualified through the China Television Teachers College ODL programme between 1987 and 1999 (UNESCO 2002). Similarly, Allama Iqbal Open University enrolled close to 165,000 teachers for its 1995/6 pre-service primary teacher training programme, which has been particularly successful in reaching women and those from rural communities (YesPakistan 2002).

The rationale for using ODL methods in response to the crisis of qualified teacher shortages is evident when the numbers of teachers required exceeds the number of qualified teachers available. Failing to address the lack of qualifications, training and certification of these teachers is like condoning a lower quality of education for children. Pulling these unqualified teachers out to undertake ITE is too expensive in terms of the cost of replacing them, in addition to the cost of putting them through conventional ITE. Furthermore, there is insufficient capacity in conventional ITE to deliver ITE on a large scale. Therefore, resolving the teacher shortage crisis that way is a prohibitively long process. The solution is to use on-the-job training through ODL methods. This rationale was used to establish the United Nations Relief and Works Agency (UNRWA)/UNESCO Institute of Education to train extensive numbers of teachers working with refugee children from 1964 to the present (UNRWA/UNESCO 2005). And it continues to be a powerful argument for using ODL to achieve the Millennium Development Goals (United Nations 2000).

It is often the case that ITE programmes delivered through ODL – particularly those that receive international funding – are designed to have an impact on *access* and *equality*. For example, the ODL teacher education programmes in Eritrea were aimed at creating opportunities for females who, because of cultural or religious reasons, were unable to move away from their home and families, and for those people in remote rural communities whose economic and domestic difficulties prevent them from leaving their localities (Rena 2007).

Arguments for the importance of other factors in designing ODL approaches to ITE, such as *quality*, *flexibility* for individual teachers and the integration of *school-focused activities,* have also been made (Moon and Shelton Mayes 1995; UNESCO 2002; Moon et al. 2007). However, these features incur substantial additional costs because they generally require a move to a hybrid model of face-to-face and ODL, particularly where the completion of a range of supported one-to-one practicum experiences is required to secure high quality individual teaching performance. The Fort Hare University Primary B.Ed. project in South Africa (Moon et al. 2007) is typical of those innovative ODL teacher upgrading in-service projects that

have focused on improving teacher quality through a *school-focused* approach. This model requires that theory and practice be brought together in the design of specific classroom-based activities to improve teacher practice and thereby children's learning and achievement as well. There is also a strong emphasis on individual support by trained school-based staff.

ODL approaches are particularly appropriate for some elements of ITE (UNESCO 2002). An example is the development of general education or subject and professional knowledge, where ITE can deliver low-cost, high-volume delivery. However, other elements (such as individual placement supervision required for the development of teaching practice) require close contact between students and tutors and cannot be delivered where low cost is driving a mass market approach to ITE.

Does ODL in ITE Serve the Same Purposes in Developing and Developed Countries?

Teacher shortage, access and diversity have been key factors in driving ODL approaches in ITE in both developing and developed countries. In the United States, for example, the number of new teachers required is projected to rise by 18% from 2005 to 2017 (NCES 2008), leading to greater numbers of unqualified teachers, particularly in key shortage areas such as mathematics and science. But the underlying factors that create teacher shortages are different. In developed countries, teacher shortages are linked to the relative unattractiveness of the profession in relation to salary competitiveness and professional parity and esteem (Shelton Mayes and Young 1999). Tied to this is a high turnover and poor retention rates because of job dissatisfaction (Ingersoll and Perda 2007).

The success in providing high-volume instruction is most commonly cited in support of using ODL approaches to ITE, but Mashile (2008) argues for a more sophisticated approach to teacher supply. In South Africa, for example, successful low-volume ITE ODL programmes have been used for specialist fields such as teachers of the hearing impaired and teachers of technology. In a context where low student numbers are threatening the teaching of specialist subjects such as art and music, then an ODL ITE model is thought to be a solution (Mashile 2008). This line of reasoning also underpins the development of the United Kingdom's Open University ITE programme which was funded by government in relation to the supply of teachers in shortage subjects in secondary schools in 1992 (Moon and Shelton Mayes 1995).

Geographical isolation, leading to access challenges, is also a shared problem for developed countries with small isolated rural communities. In Scotland, the training of Gaelic-medium teachers for Gaelic communities has been supported through an ODL ITE programme that uses videoconferencing (Gillies 2008).

ODL programmes in developed countries have also been used to improve equality and diversity by providing training opportunities for those groups who are underrepresented in the profession at entry level on the basis, for example, of gender, age, disability or ethnicity. There is growing evidence that ODL ITE programmes both in developing and in developed countries are able to make a contribution to teacher diversity (UNESCO 2001).

However, one emerging difference between developing and developed countries is in the area of *personalisation*. The need for substantial flexibility in order to address the individual needs of teacher trainees and produce a personalised route through an ITE programme is well developed on the United Kingdom's Open University programme (Hutchinson 2006). The programme aims to fast-track trainee teachers to completion by "accreditation of prior experience and learning" (APL). The rationale is that an ITE programme should not be the same for all, but based on an individual needs analysis undertaken at the start of the programme. An Individual Training Plan sets out the amount and type of training to be completed for assessment at the end of the individual's personalised course. There is also a strong quality argument for personalisation within a fixed-length ITE programme, in that differentiation of materials and support matched to need will lead to higher levels of individual teaching performance.

Accreditation of prior learning used in this way has real potential for reducing the cost and time for completion in ITE programmes (Moon et al. 2007). It has also been identified as an important issue in South Africa where a model for "recognition of prior learning" (RPL) in relation to the National Professional Diploma has been developed (Moll and Welch 2004; Welch 2008). However, Moll and Welch also contend that while RPL models may help to develop the student, they can remain flawed if they do not engage the institution in the need to transform its academic programmes and curricula. In other words, the RPL model gives programmes the potential to generate teacher quality, but not if the model is used only as a mechanism to provide mass access to these programmes.

The other area of major difference in developing and developed countries is in the use of information and communication technology (ICT), e-learning and technology-enhanced learning.

What Is the Impact of Information and Communication Technologies?

The UNESCO (2002) report identifies four different functions of information and communication technologies (ICT) in ODL teacher education:

- as an aid to distribution of materials;

- as a means of affording two-way electronic communication;

- through networked computers which allow access to the Internet and multi-way communication; and

- as a means of diversifying into resource-based, self-accessed teacher education.

Nevertheless, the use of ICT also presents a number of problems that have to be addressed if ICT is to be successfully applied to training teachers. These problems, which are often significant for developing countries, include attaining appropriate technical infrastructure and funding to support ICT, gaining recognition from policy-makers and curriculum developers that ICT should be embedded in both ITE and ongoing professional development, and addressing the skills and needs of teacher educators themselves. Wright et al. (2009) argue that there must be a sound rationale for employing any form of ICT. They raise a range of issues that need to be addressed, such as the lack of infrastructure and Internet bandwidth

and the challenge of countering the cultural impact of using courseware from Western countries, managing limited educational resources and implementing mobile learning

Hoppe et al. (2003) argue that m-learning (e-learning supported by mobile devices and wireless transmission) represents a paradigm shift in the use of ICT. The authors suggest that hand-held mobile devices are emerging as a promising technological tool for learning in place of the fixed computer. Challenges in adopting and using m-learning remain, however, and what is possible in developed countries is very different compared with developing countries. Some developing countries have areas that lack access to electricity, and this to date has prevented the use of mobile technology. However, a solar-powered phone went into production in April 2009 (Anderson 2009), which raises the potential of teacher training and professional development through mobile technology worldwide.

Research by Leach et al. (2005) in Egypt and South Africa, Seppala and Alamaki (2003) in Finland, and Pouezevara and Khan (2007) in Bangladesh illustrates the benefits and difficulties of using mobile technologies in developed and developing countries. Though all reported some successes, particularly in relation to the sharing of visual images of teaching, key disadvantages also emerged. These included lack of proficiency in the use of the English language for software use (a particular problem for the Egyptian teachers who worked in Arabic), and limited technical and infrastructure support.

ICT has had a significant impact on models of learning, particularly in relation to personalisation. For example, the Open University Postgraduate Certificate in Education (PGCE) e-coaching and support model for individual primary trainees integrated the development of mathematics subject knowledge with pedagogy in order to demonstrate national teacher professional standards (Burgess and Shelton Mayes 2008). In developed countries, ODL methodology is now established within more traditional modes of ITE through widespread use of e-learning. The advantages are linked to personalisation, fast-tracking of trainees through to completion and enhanced three-way communication (among school-based mentors, ITE tutors and trainee teachers). All of this can lead to opportunities for greater integration of theory and practice, stronger coherence between placement and university-based elements, and enhanced monitoring of individual progress – in short, improved quality of learning.

The use of ODL integrated within conventional ITE programmes is also a modelling issue, linked to increasing professional requirements for teachers to use technology-enhanced learning in national curricula. This produces greater blurring between ODL and conventional teacher education, particularly in relation to the practicum. It also reinforces the conclusions of the UNESCO report (2002) that "programmes that combine conventional and distance methods are likely to be better than those that rely on a single approach" (UNESCO 2002, p. 19).

While the rationale for using ODL in ITE is comparable in developing and developed countries, the establishment of embedded ICTs in these programmes is emerging as a key difference. For example, Mashile (2008) argues that the lack of programmes using advanced technologies in South Africa is further entrenching the digital divide and "robs South Africans of participating in the knowledge

society" (p. 356). Differences are seen between the low level models that rely on transmission of knowledge through packaged material and high level models that use a range of strategies, such as distributed problem-based learning (Barrows 2002) and communities of learning and community-centred projects (Van Niekerk 2004).

Thus, this so-called digital divide must be acknowledged by ODL programme designers if they are to create viable pedagogies that take into account ICTs but are not driven by them.

What Are the Key Challenges for ODL in ITE?

The primary task of ODL in ITE is to train well-qualified and highly skilled teachers.

The UNESCO report (2002) asks the important question: Does ODL work for teachers? It considers the evidence in relation to student numbers, examination results or learning gains, and performance in the classroom. Enrolment was judged to be successful but completion rates were variable, with the highest completion rates linked to programmes where there was a clear reward for the individual at the end of the programme in terms of status or pay. In terms of examination outcomes, ODL programmes were judged to be "reasonable" with pass rates ranging from 50 to 90% across a range of case studies. Projects in Indonesia and Sri Lanka (Nielson and Tatto 1993, reported in UNESCO 2002) have shown a correlation between teacher learner gains and examination results, suggesting that ODL can deliver secure teacher learner gains. The evidence on trainee teacher performance was judged to be "reassuring" based on large-scale projects in Tanzania and Zimbabwe (Chale 1993; Chivore 1993; Mählck and Temu 1989, reported in UNESCO 2002). More recently, the United Kingdom's Open University PGCE programme achieved the highest grades for Training and Quality Assurance and Management in the national inspection process, which includes teacher performance outcomes as one of the inspection measures (Ofsted 2008).

Tutor Effectiveness

Much of the evidence presented so far in this chapter indicates that achieving high quality outcomes is likely to be difficult in those models of training where the importance of low cost drives a mass market rather than an individualised approach to ITE. The issue of high quality for all ITE programmes, whether ODL or conventional, is ultimately about the effectiveness of the teacher in the classroom. Success requires close contact between trainees and tutors (or school mentors) in order to provide focused observation and coaching to improve teaching. This shifts the ODL model toward face-to-face school-based support models or to enhanced ICT models of support with consequences for cost.

A critical point identified by Wright et al. (2009) is for a country to determine what its rationale is for developing ITE and what its future vision is: both need to match the funds available and the sustainability of the programme. The authors argue that in all contexts it is the effectiveness of the tutors that matters and not whether they meet trainees face-to-face or through videoconferencing or develop online materials. Tutors are the key ingredient for any successful educational system.

Technology Effectiveness

Technology is only one component within ODL, but it is also an aspect of curriculum learning that both trainees and trainers need to address. The challenge presented where programmes and training already exist is one of integration of ICT into training in order to improve teachers' qualifications and performance. An example of this is provided by the case of Jiangsu Radio and Television University (JRTVU) in China (Zhang and Hung 2007) where the importance of ensuring that the professional development needs of the trainer/tutor are met emerged as a key issue. This same issue was noted by Pouezevara and Khan (2007) in Bangladesh and Gillies (2008) in Scotland. All of these studies indicated that students do not use ICT unless it is integrated into assessed activities and that trainers may find the new technologies not only difficult but sometimes at odds with their own personal styles of teaching, compromising the trainers' previous effectiveness.

Effective trainee support in classroom-based activities is a particular concern where trainees have little experience of ODL learning and effective communication from tutors is essential whether it is in written form or through electronic communication. Integration in terms of training for all partners is important for successful outcomes.

Embedded within all teacher training programmes, but particularly within ODL programmes, is the approach taken to help trainee teachers develop their pedagogic knowledge and then put this into practice in school-based settings. What remains a major challenge, however, is the way in which ODL ITE programmes can use the potential of teaching and learning in school-based situations alongside the assimilation of ideas presented in programme materials to develop trainees' professional thinking, skills and practice. Indeed, the development of school-focused activities for ODL programmes that integrate university and school-based activity are seen as central to improving teacher quality (Moon and Shelton Mayes 1995; Moon et al. 2007). The importance of training also applies to school-based mentors. School-based activities are both a potential strength and a weakness in ODL ITE, as assessing how far teachers are applying what they have learned in the practical context is one of the most difficult problems for trainers to assess at a distance. It is therefore essential that any ODL programme has at its heart a model for training the trainers and school-based mentors as well as the teacher trainees.

Learning Opportunity Effectiveness

Understanding how learning opportunities are presented to trainees, particularly in ODL programmes, is also a challenge. The development of a trainee's learning and practice is highly influenced by the school-based context. Welch (2008) suggests that a particular challenge for ODL is designing courses that will nurture dialogue and integrate learner support. Hutchinson (2009) believes that opportunities for expansive and systematic learning are restricted when activities are discussed only in the school context between school-based mentors and trainees. He argues for a "learning partnership" that involves tutors and school-based mentors trained to focus on discussing learning.

Is ODL the Solution to the Education for All Commitment?

The scale of the demand for teacher expansion to deliver universal primary education by 2015 (United Nations 2000; World Forum on Education 2000) is unprecedented, particularly in the developing countries of South Asia and Sub-Saharan Africa. This demand has been exacerbated by the HIV/AIDS crisis in Sub-Saharan Africa and its impact on existing teacher numbers. The demand for teachers has led to many high-volume projects using ODL. For example, the teacher education programmes of the Open University of Sudan are targeted at upgrading the qualifications of more than 100,000 primary school teachers (Moon et al. 2007). Nevertheless, there is confidence that the Millennium Development Goal is likely to be met, with all but two of the 10 regions identified having achieved at least 90% enrolment by 2006 (United Nations 2008). The UN's *Millennium Development Goals Report 2008* shows that the number of children of primary school age who were out of school fell from 103 million in 1999 to 73 million in 2006, despite an overall increase in the number of children in this age group.

This success masks continuing inequalities for the most vulnerable groups. Sub-Saharan Africa, for example, has reached 71% enrolment from a millennium baseline of 58%, but surveys identify that it is the poor, the rural and girls who remain marginalised. It is estimated that more than 56 million primary age children are still out of school in Sub-Saharan Africa and South Asia (United Nations 2008). The other marginalised group of children identified in the *Millennium Goals Development Report 2008* is those affected by conflict and political unrest worldwide, who are commonly denied access to education. Data for 114 refugee camps in 27 countries show that at least one in five refugee children are not involved in formal education. Equality remains a key issue, particularly where gender and nomadic peoples are concerned. Kwapong (2007) identifies an imbalance in the gender ratio of teachers in Ghana and under-enrolment in female institutions. The issue of access to and participation in secondary schooling has also yet to be addressed. For example, only one-third of eligible children attend secondary school in Oceania and only one-quarter in Sub-Saharan Africa (United Nations 2008).

The major rise in the number of ODL programmes in the 21st century can therefore be viewed as a response to the success of ODL approaches in relation to teacher supply. However, it is important to remember that the Education for All commitment is to *quality* and a *completed* educational experience. Research has consistently shown that fully prepared and certified teachers are more successful and better rated than untrained teachers (Darling-Hammond 2000). Achieving universal primary education inevitably involves using unqualified teachers. Therefore, the transformation to a universal quality education will require a major expansion of *in-service* ITE to address the teacher quality dimension.

The evidence is strong that ODL approaches are making a major contribution to the Education for All commitment in terms of teacher numbers to ensure an entitlement to education. What remains to be seen is whether the next stage to a high quality universal education will be achieved.

The cases drawn upon in this chapter indicate that ODL ITE requires a mixed mode of training if it is to be successful in terms of raising teacher quality. Although

ICTs have real potential to enhance quality when embedded into the programme, this brings added costs and challenges. The school-based focus on practice within settings remains a key strength of using ODL for ITE. However, its full power as a tool for teaching and learning is not yet fully realised. Underpinning all these elements is the importance of effective training for tutors and school-based mentors as well as trainees. Nevertheless, the evidence leads to optimism about the positive contribution that ODL can make to initial teacher education.

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