

RESEARCH AND DEVELOPMENT OF A COSTING TOOLKIT FOR DISTANCE, FLEXIBLE AND ICT-BASED EDUCATION FOR TEACHER DEVELOPMENT IN AFRICA.

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Abstract

Costing distance-education programmes is a key aspect of capacity building in many parts of the world. This paper reports on a research and development project to produce a new costing tool for Distance, Flexible and ICT-based Education (DFICTE) for teacher development in Sub-Saharan Africa along with its associated support documentation. Working with case study institutions in Ghana, Nigeria, Senegal, South Africa and Tanzania, programme cost data were collected and systematised to create examples for a computer-based costing tool that enables those interested in introducing DFICTE to model their proposal at either the macro level (such as staff in ministries or NGO field officers) or more detailed micro level (such as would be required for a particular institution). Using a research framework of semi-structured interviews and detailed document analyses, the case studies followed a common format of questions and key points to construct a database of DFICTE costs for five teacher education programmes which users of the costing tool can draw on for illustrative example figures. The developed case studies are also presented with supplementary planning information in both English and French. The research revealed the following key issues: many programmes consist of a large number of very small courses; each small course is assessed by a range of methods sometimes leading to a costly and heavy overall assessment burden on the participating teachers; tracking of a participating teacher's progress is often difficult as teachers take study breaks making the collection of fees and the projection of income and expenditure problematic.

Keywords: Costing, Teacher Education, Case Studies, Software Tool

1. Introduction

Sub-Saharan Africa is one of the regions where the knowledge gap between North and South takes on its most dramatic character. (UNESCO, 2002)

Sub-Saharan Africa is one of the most educationally challenged parts of the world. The number of primary school-age children in the region grew from over 82 million in 1990 to 106 million by 2000. It is projected to rise to 139 million by 2015 (UNESCO, 2000). Teacher education is vital to the economic well being and political stability yet Lewin (2002) in a study of teacher education policy and practice in low income countries has demonstrated the growing imbalance between the output of trained teachers and the demands as primary provision is expanded.

In this context the benefits of open and distance teacher education are clear. For example:

1.1 Learning in Context

Conventional face-to-face in-service teacher education programmes require a teacher to travel to a centre for a particular event, at a time that may not suit them and is unable to take account of their motivation for learning on that particular occasion. The learning takes place outside the school context and so the teacher is expected to do much of the transformation and application of the centre-based learning experience to match their own particular school circumstance. Through supported ODL, however, the classroom itself becomes the site of learning. A survey in the USA (US Department of Education, 1999) found that many teachers believed that job-embedded, collaborative professional development activities are better for a teacher's professional development than the more traditional forms of development strategies. This is mirrored in an evaluation of teacher professional development in England which reported that 'the narrow perception that professional development always involves off-site activity, such as attendance at a course hosted by the LEA, is gradually being replaced by a wider and more comprehensive view of continuing professional development.' (Ofsted 2002, p11)

1.2 Self-Motivation

Centres of face-to-face education and training are often a considerable distance as well as offering very different environments for teaching and learning from rural school settings. ODL enables a teacher to fit in their study around their working and family life while staying within and drawing from their home community.

1.3 Self-Pacing

A student following an ODL course can pace their own study according to their particular needs and, if a range of resources are used, according to the way they prefer to study.

The cost and other advantages of collaborative programmes across countries are plain and the increasing availability of information and communications technologies through the new 'open content' movement make

such initiatives possible, moving from Open and Distance Learning (ODL) to Distance, Flexible and ICT-based Education (DFICTE). The UK Open University, for example, is to make almost a fifth of its courses available free on-line by 2009 and the TESSA (Teacher Education in Sub-Saharan Africa) project is collaborating with teacher education institutions in a number of countries to develop free materials that can be integrated into teacher education courses. See <http://www.tessaprogramme.org/>

However, 'Sadly – despite many claims to the contrary – sound and rigorous financial planning is often omitted in new projects and institutions seeking to harness the potential of distance-education methods' (Butcher and Roberts, 2004, p. 224)

This paper describes a research and development project to produce a software tool to aid capacity building and address the weak attention to the costs of DFICTE identified by Butcher and Roberts. The project looked at five cases of ODL teacher education projects in Ghana, Nigeria, Senegal, South Africa and Tanzania. Each case highlights useful indicative data in different contexts and which has been pre-loaded into the software costing tool to facilitate the cost evaluation of similar projects. Taken together the costing case studies illustrate:

- examples taken from each of Southern, East and West Africa including both Anglophone and Francophone education systems;
- issues affecting both single and dual mode institutions;
- issues in which national implications can be drawn from their involvement in ODL.

To provide as much rich data as possible, all institutions demonstrated:

- current engagement on a range of established Open and Distance Learning contexts and approaches;
- a focus on initial/upgrading teacher training programmes that include formal assessment systems;
- local support systems in their teacher training programmes;
- an awareness of possible ICT developments in teacher education.

To structure this paper, a description of the research methodology which fed into the development of a software costing tool is described, followed by a table of some indicative results, then an explanation of the structure of the software tool, and finally some common costing issues which were revealed across the cases are discussed in a conclusion.

2. Research Methodology

Site visits were made to the following institutions to obtain cost data for their ODL teacher education programmes:

- Ghana - University of Education , Winneba.
- Nigeria - National Teachers Institute, Kaduna.
- Senegal - Ecole Normale Superieure, UCAD, Dakar,

- Tanzania - Open University of Tanzania, Dar es Salaam
- South Africa - University of Fort Hare.

The following key questions were explored with the academic and administrative teams in each case:

- A How many students is it proposed to train and over what timescale, and how do they progress through programme?
- B What are the costs associated with each sub-component of the programme?
- B1 What are the elements of the central programme team and how much do each element (including recruitment/registration element) cost?
- B2 What are the resource elements that have been developed, and how much does each element cost (to include updating plans and distribution costs)?
- B3 What are the support elements and how much do each cost?
- B4 What are the assessment elements and how much do each cost?
- B5 What are the quality assurance and evaluation elements and how much do each cost?
- B1 and 2 needed to be separated in terms of development and operational phases.
- C What is the overall cost per cohort? What proportion of the overall budget is represented by B1–5?
- D Is the overall cost per student 'within budget'? If not, which elements B1-5 will require adjustment?
- E How are overheads calculated?
- F How is it anticipated the programme will be funded?

To answer these questions, as far as was possible, the team worked in a collaborative way with the staff from each institution by analysing interviews, documents and synthesising information from a range of formal and informal sources. In many cases, this was the first time such information had been gathered together.

3. Results

The combined result of the analysis of the costing data is shown in Table 1. These data are collected directly from the collaborating institutions or inferred from other information which they supplied in late autumn 2004.

4. **Structure of the Software Costing Tool**

The software costing tool is intended for two possible audiences, those who are working at a macro policy level and are interested in a broad-brush calculation of the possible costs of a potential DFICTE teacher education programme (such as staff in ministries or NGO field officers) and those who might be working in an institution who require a much more detailed cost analysis. The data input to the costing tool is constructed around the collection of information answering the following questions asked of the user and help is supplied by a costing tool tutorial to help users in their decision making:

(1) Would you like to do an **outline** or **detailed** costing?

The tool takes the user down two possible routes: an outline for a policy maker or a detailed route for someone planning to introduce a new programme in an institution.

(2) What is the shape of the **programme** and what **elements** make it up?

Data required here would be the number of potential student-teachers taking the programme and linked to what they do on the programme so the tool required inputs of:

- What **learning resources** elements will be developed and distributed and at what cost?
- What **trainee support** elements are planned and at what cost?
- What **assessment and QA** elements are planned and at what cost?
- What **programme resources** management and administration elements are planned in development and presentation and at what cost?
- What **income** elements are planned and how much will each generate?

(3) Where will you find the **data** you need?

A user is able to go to data from the five case studies and select the nearest to their situation, or they may enter data that they know or is available easily locally.

(4) What are the **cost profiles** of distance teacher education programmes?

Costs will either be:

- related to the number of trainees on a programme (*variable costs*) e.g. trainee support and assessment elements. The cost per trainee will remain constant regardless of the number of trainees – for each trainee recruited, additional support and assessment activity will take place; or

Table 1 –Table showing comparative cost data results from five case study institutions

These case study costing data are based on information provided in October and November 2004. Each case study gives an overall view of the cost structures for the programme and then extrapolates from a snapshot in time. It is not a detailed representation of the programme.

Case Study	Programme Level Length	Trainee Numbers	Programme Development Est. Costs (\$)	Presentation Costs per Trainee (\$) Learning Resources	Presentation Costs per Trainee (%) Learning Resources
		Enrolled to date Enrolled annually Graduates to date		Trainee Support Assessment & QA Programme Resources	Trainee Support Assessment & QA Programme Resources
1: University of Fort Hare (in Eastern Cape Province of South Africa)	Primary B. Ed Distance Education Primary level & in-service 4 years	1,950	900,000	250	5%
		400		500	10%
		1,500		250	5%
		<i>Above is total over 5 annual cohorts of programme life</i>		4,200	80%
2: Open University of Tanzania	B.Sc. with Education Secondary level & in-service 6 to 8 years	800	450,000	150	5%
		100		300	10%
		26		750	25%
		<i>1,600 trainees projected over 16 annual cohorts of programme life</i>		1,800	60%

3: University of Education, Winneba (in Ghana)	Diploma in Basic Education Primary level & in-service 3 years	5,400	350,000	25	10%
		1,800		50	15%
		1,600 (est.)			40%
		<i>65,000 trainees projected over 10 annual cohorts of programme life</i>			35%
4: Ecole Normale Supérieure (in Senegal)	Upgrading Teacher Training Secondary level & in-service 1 to 2 years	2,500	400,000	25	5%
		800		150	35%
		2,100			5%
		<i>Above is total over 3 annual cohorts of programme life</i>			55%
5: National Teachers' Institute (in Nigeria)	Nigerian Certificate in Education Primary level & in-service 4 to 5 years	175,000	1,400,000	75	15%
		24,000 (in 2004)		150	30%
		62,000			20%
		<i>381,000 trainees projected over 19 annual cohorts of programme life</i>			35%

- independent of the number of trainees (*fixed costs*) e.g. development of learning resources. These costs are likely to be high even if few (or no) trainees enrol – however, as more trainees are recruited, the cost per trainee will fall as more trainees use the learning resources already in place.

Due to the significance of fixed costs in distance education, distance teacher education programmes are characterised by economies of scale, so that the cost per trainee falls as the number of trainees increases. This means that small distance education programmes are generally less cost-effective than their conventional counterparts, whereas large-scale distance education programmes can deliver significant financial and other benefits compared to their conventional counterparts.

5. Conclusion

The different case study institutions work in a variety of contexts but they face some common issues and dilemmas. ODL institutions exist alongside conventional provision and are keen to be seen just as academically respectable as other institutions or as their face-to-face versions if a dual mode operates. A number of the costing study institutions make choices within this political environment which has implications for the cost of the quality assurance (QA) of the programme, the structure, assessment regime and length of the teacher education programmes and the consequent completion rate.

The costs associated with the programmes have been analysed in terms of the percentage of income spent on elements such as

- Core Team
- Learning resources
- Student support
- Assessment
- QA and Evaluation

and the relative weighting of the different elements highlight some interesting issues.

In discussing costs with staff in the different institutions one returns time and again to the balance between effectiveness and efficiency. The need to reduce costs and to train as many teachers as possible given the acute problem is plain; ODL teacher education must be cost efficient. But to provide a quality training, it must be cost effective and so decisions have to be made as to the balance that should exist and the trade-offs that need to be made between, for example, quality learning resources and frequency and location of student support. Here some specific conclusions are from the costing case studies. Often the issues are inter-related.

5.1 Programme Content

Some programmes consist of a large number of small courses. It is not unusual for a three-year programme to consist of up to thirty courses which has an impact on work-load and course completion. A rule-of-thumb which equates

two years of ODL study to one year of face-to-face also sometimes makes the training period very long. Five to six years is common and sometimes the period from initial training to the award of a Bed is 11 years. Due to personal, financial and professional reasons, trainee teachers often have to take a study break which further lengthens the time to train.

5.2 Amount of Assessment

Small courses have to be assessed and this has an effect on assessment costs. In a number of institutions, assessment accounts for about 40% of costs. Other institutions are able to assess the student teachers at half of that proportion. In many cases the desire to assess so much is linked to checking on ODL students being 'equivalent' to those trained through more conventional provision. A further cost factor associated with assessment is the level of personnel who marks scripts. Sometimes this is done only by core University academics, rather than contract staff which is expensive and often introduces very lengthy delays in providing results and feedback to students.

5.3 Training in using new technologies

The costs associated with up-skilling in the use of new technologies manifest themselves in a number of ways. There are the straightforward costs associated with the introduction of new (usually desk-top) computers. However, a more hidden cost is the expensive use of academic staff to re-key and amend DFICTE learning resources as other staff are not sufficiently trained in either word processing or data manipulation. The latter problem leads to less than accurate recording.

5.4 Tracking of students

To give an accurate cost-benefit analysis of DFICTE methods for training teachers it is necessary to be clear who is enrolled on a programme, who is taking a study break, who has withdrawn and who has graduated. Tracking of teachers in training at these different statuses is very difficult. At the UK Open University, an initial teacher education course is available which can be studied in a single year or up to three years. Keeping track of students' progress, tutor marked assignments and associated school placements is difficult and requires a sophisticated data-base. In many of the case study institutions, the length of study is much longer and the associated tracking even harder. In addressing this issue concerns of multiple small courses, long programme times, over-assessment and training in the appropriate use of new technologies combine. Given the complexities of the programmes and the large numbers of intending teachers, efficient and cost-effective use of ICTs is the only solution

5.5 Constrained Government Budgets

Butcher and Roberts (2004 p. 225) notes 'innovation in distance education relies heavily on unsustainable sources of funding, particularly donor funding'. In these costing studies, the difficulty in securing adequate income through student-teacher fees and government grants is a recurring theme. In many cases, the government funding has been frozen for a number of years and teachers find it difficult to fund themselves from their salary. ODL, however,

provides some opportunity for the teachers to supplement their income privately.

The range of cases presented in these costing studies give those contemplating the introduction of ODL programmes for teacher education many illustrative models and indicative costs. Experience in a number of countries, however, has indicated that what matters is the quality of teachers and schools and the impact those have on pupil learning.

[...] the bricks and mortar institutions of teacher education created to meet the needs of the twentieth century will be insufficient to meet the needs of the present century. Existing such institutions will have a role. But it will change. The emphasis must move to school based rather than college based training solutions Moon (2004)

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