Teacher training through computer-mediated tools in the developing world: a distance training approach

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In the new Millennium, when most developing countries seem to be in the urgent need to train greater numbers of teachers in shorter periods of time, most currently used models and means seem to have fallen short of the ambitious national and international goals these countries have signed up to. Bearing in mind this cold wind blowing on the teacher training programmes of such countries, the article suggests adjust up teacher training to the needs and means of the 'Information Society' in which we live currently. In order to achieve this goal, the article further recommends Distance Teacher Training through Computer-Mediated Tools. Such a proposal will be exemplified through the model of the Senegalese FAD/FASTEF/UCAD PROJECT, French acronym for Projet Sénégalais de Formation à Distance de la Faculté des Sciences et Technologies de l'Education et de la Formation (FASTEF) (Cheikh Anta Diop University) This project initiated by the Ministry of Education of Senegal, sponsored by the World Bank and implemented by FASTEF/UCAD, seems to be a breakthrough in terms of teacher training 'en masse' (in great numbers). The article will give some insights about its conception, objectives, programmes delivery, outcomes and future perspectives.

Key word: Teacher, training, distance, computer, tools, FASTEF, UCAD, project, Senegal.

RESUME

Dans ce nouveau Millénaire ou la plupart des pays en développement semblent être dans l'urgence de former rapidement et effectivement un plus grand nombre d'enseignants afin de relever le défi éducationnel du siècle, la plupart des modèles et moyens considérés satisfaisants jusqu'ici, semblent être en déphasage par rapport aux ambitieux engagements nationaux et internationaux auxquels ces pays ont souscrit. Compte tenu du coup de vent froid qui souffle sur les programmes de formation de ces pays, l'article se propose d'ajuster la formation des enseignants aux besoins et moyens de la 'Société de l'Information' dans laquelle nous vivons aujourd'hui. Pour atteindre cet objectif, l'article propose plus précisément la Formation à distance des Enseignants par le billet des outils informatiques. Cette proposition sera illustrée à travers le modèle du Projet Sénégalais FAD/FASTEF/UCAD, dont l'acronyme français signifie: Projet de Formation A Distance de la Faculté des Sciences et Technologies de l'Education et de la Formation de l'Université Cheikh Anta Diop de Dakar. Ce projet initié par le Ministère de l'Education du Sénégal, financé par la Banque Mondiale et mis en œuvre par la FASTEF/UCAD, semble être une percée en matière de formation en masse d'enseignants. Dans les pages qui suivent, l'article donnera quelques éclairages sur sa conception, ses objectifs, son mode de gestion, ses programmes, ses résultats aux examens ainsi que ses perspectives d'avenir.

MOTS-CLES: enseignants, formation, distance, outils, informatiques, FASTEF, UCAD, projet, Sénégal.

INTRODUCTION

In the developing world Teacher Training (TT) has reached a turning point as a result of four factors: a fast changing globalised world, (b) lack of materials and funds, (c) constant renewal of teaching methods and
approaches, (d) effective intervention of the Information and Communication Technologies (ICT) in people's life. Bearing this context in mind, Teacher Training can no longer be limited to the vicinity of the lecture rooms of the training colleges where its only power sharing component, teaching practice is more seen as "an uncomfortable add-on than a core component", Richards (2008: 166).

In order to get teacher training out of this bog, many models have been suggested: the reflective model (Wallace, 1991), the critical thinking model (Hawkinnis and Norton (in press), the self-regulated model (Slaouti (2007), the computer-mediated model (O’Keeffee and Farr, 2003), just to name a few. Given the reflective and critical nature of these models, they all seem compatible with computer-mediated language learning burgeoning around the world. To cope with this new teaching situation, the article suggests teacher training to be boosted in the developing world by integrating computer-mediated tools (CMT) and distance training (DT).

Consequently, the article will be structured around four parts. Part one will briefly assess (1) the new context bearing in mind the great interest Computer Assisted Language learning has generated in Africa. Part two will pertain to materials and methods with focus on novel teacher training tools. Part three will focus on the methodology which will describe the project and state its results. Before concluding, the article will work out a succinct discussion of the overall results and consider their implications and perspectives.

Teacher education in the developing world: what new context?

In the 21st century, education in general and teacher training in particular, can no longer be limited to what is called the 'Eternal Triangle' (ie, teacher, learner, instructional materials).

Today at a time when millions of pages of information are stocked in the World Wide Web (WWW.) as web resources, there is no longer so much a problem of information accessibility as an issue but information processing through the most effective approaches and technologies. In any case, for the first time in history, Information and Communication Technologies (ICT) have given the people of developing countries real opportunities to take their education into their own hands. In fact, young Africans are so enthusiastic about Computer-Mediated Learning, that, there is no doubt in the years to come both the digital and the education gaps will be bridged. Now that everybody knows that communication ignores space and time, education in general and teacher education in particular, must be taken from the closed academic spheres to the popular and remote areas of the developing countries, so that 'Education For All' ceases to be a mere slogan and means something to the poor and the needy people.

In this regard, African countries like Senegal are doing their best to raise funds and facilitate access to ICT and the Internet. For example many Senegalese schools and education institutions have free access to ICT and Internet connections. More over, whereas one hour Internet access is estimated to 2 pounds (1800 FCFA approximately) in a UK Internet Cafe, this is only 250-300F CFA, (ie, one quarter of a pound) in the Internet Cafes of the developing countries. In the long run, it is this important financial point that will make the difference and help to close up the digital gap.

In anticipation of the reshaping of international education and teacher education in particular, this article is a modest contribution aiming to warn and raise awareness for African educators and learners not to miss the electronic-learning train which is a unique chance to catch up with lost time. The following lines will attempt to shed light on the theories behind e-learning and computer-mediated teacher education.

MATERIALS AND METHODS

In order to give a theoretical background to this project this part will shed light on the new materials, methods and means currently used in modern teacher training programmes. It will include two sections which will be developed in the following pages.

Models of teacher education across the literature

In his comprehensive summary of teacher education models, Wallace (1991) identified three main ones: 'the Craft Model', 'the Applied Science Model' and 'the Reflective Model'. In sum, 'the Craft Model' draws a parallel between the teacher trainee and the apprentice in seeking professional skills. As for advocates of the 'the Applied Science Model' it is believed that all training problems can be solved through content knowledge expertise. Last but not least, 'the Reflective Model aims to turn the teacher trainee into a reflective practitioner capable to change for the better through continuous reflection and self-questioning.

If the first two categories (Craft and Applied Science models) seem to be at a slow down, and even at a halt in the industrialised countries, 'the Reflective Model' is in constant refinement and use throughout the world, due to its adaptability and cost effectiveness. In actual fact, from the theories propounded by Schon (1987, 1988) to his followers' brilliant interpretations of his ideas (Wallace, 1991), 'the Reflective Model' has been impacted by two major factors identified below by Richards (2008). One such factor stems from within the profession and is the...
emergence of ‘critical pedagogy’. The other factor originates from external pressures on the profession, which Richards (2008: 159) calls ‘globalization and the need for English as a language of International communication’. The third factor, overlooked by Richards (2008) and which this article takes as one of the most decisive changes, is the explosion of Information and Communication Technologies (ICT) and the consequent transformation of people's communication and life-styles.

Information and Communication Technologies (ICT) in modern teacher training

Today, whether they like it or not, teacher trainers and their trainees must find ways and means to integrate an ICT dimension into their programmes. Fortunately, ICT seems to be in perfect contingency with prevailing approaches such as ‘critical pedagogy’, ‘reflective practice’, ‘electronic and ‘self-regulated learning’.

These new methods now widely applied in language learning and teacher training have been integrated into the ICT to give birth to new learning and education modes known as Computer-Assisted Language Learning (CALL), Computer-Mediated Language Learning (CMLL), Computer-Mediated Communication (CMC), Computer-Mediated Use of Language Corpora (CMULC), Computer-Mediated Self-Directed Learning (CMSDL), etc. This profusion of new electronic learning/training modes calls language learners and teacher trainers to reconsider their strategies and techniques, the more so as, "literacy is no longer just about reading and writing. Society now demands multi-literacies, which includes a high proficiency in digital and online competencies” O’Keeffe & Farr (2008:389). Therefore, if teacher trainers want to maintain the good reputation and professionalism society has characterised them with, "...they have a fundamental obligation to educate teachers in a way that empowers them to work in the modern world" (O’Keeffe & Farr: 2008: 389).

Computer-mediated teacher education: state of the art

Computer-Assisted Language Learning (CALL)

In the literature, computer-mediated tools are in multifaceted growth. Even though today it seems to reach an unprecedented level, the idea of integrating the computer into language teaching dates back to the 60s under the name CALL (Computer-Assisted Language Learning (Tick, 2006). Like its component element Communicative Language Teaching (CLT), CALL is not an approach, which has stemmed out of the blue. It was borne out of a long and painful process enhanced by "the proliferation of the Internet, the urge of e-learning in the society... referred to as the learning society" (Tick: 2006: 1). In their attempt to document that long process, Warschauer and Kerns (2000) in Tick (2006: 5) have identified four stages in the growth of CALL programs.

Stage 1: Structural CALL (1960s-1980s)

In this period, computers were simply used as mere drilling machines, which matched quite well the audio-lingual methods of the time.

Stage 2: Communicative CALL (1980s-1990s)

Here the focus was on 'cognitive learning' and 'mental processing' of information, which entailed well-programmed instruction. This is also the beginning of individualized and autonomous learning that resulted into 'Self-Directed Learning' (Dickinson, 1987).

Stage 3: Integrative CALL (1990-21st Century)

At this stage language learning is given a broader meaning, integrating social, cultural, socio-linguistic, socio-cognitive aspects of language. In this learning context, learners are exposed to authentic learning environment and materials, which the computer and multimedia software like CD ROMS, DVDS are good at providing. However, one must always bear in mind Widdowson’s words in Salsbury & Crummer (2008) ‘the authenticity of a text depends on the reader's relation to it’.

Stage 4: Intelligent CALL introduced by Warschauer and Healay (1998). The intelligent CALL wants the language learner to be totally "... independent, autonomous and life-long learner, who is able to plan his active, conscious, and purposeful self-regulation of learning" (Tick 2006:7).

Computer-Mediated Communication (CMC) in teacher education

As the name implies, CMC triggers communication through computers and the World Wide Web (W.W.W.). The advantage of this ICT tool is that communication can be synchronous (authentic and live language fragments), for example chatting, or asynchronous (language fragments brought into the training scene via ICT multimedia means). No doubt such new language learning tools enhance the development of the macro-skills, speaking, listening, reading and writing. Unfortunately the macro-skills are difficult to develop nowadays if one does not master a fifth skill known as ‘the electronic literacy skill’. Since "... almost 80 % of all training is likely to be web-based training" in years to come (Leites and Buteira, 2000:1), teacher educators must prepare language teachers to bridge the pedagogic digital gap to be safely on board the electronic language learning train.
Call activities in teacher education: from design to implementation

Activity design is a problem area in both CALL and Computer-Mediated Teacher Training (CMTT) programs. In any case, whatever the activities or tasks built into an e-learning programme, they must be flexible enough for the learner/trainee to adapt and surface the tacit background knowledge stored in either the short-term or the long-term memory. In this respect, Collins & Moonen (2001) have provided language teacher educators with a useful framework to address the issue of designing CALL and CMTE activities and tasks in a resource-challenged context. In their view, if the designer wants to come up with effective activities/tasks, he must bear in mind the following criteria to be briefly reviewed.

A/ CALL activity design framework

Timing

In fact the first issue to be addressed is timing. The activity designer must be clear about the duration of the activity/task, starting and ending time, pace of study, etc.

Content(s)

Here questions like the following ones may be asked: what topics, ideas, information, linguistic elements will the activity involve? Will the activity be designed upon Johns & Davies’ (1983) distinction between TAVI (Text As Vehicle of Information) and TALO (Text As Linguistic Object). How will target features be incorporated? How will they be sequenced? What instructions, learning orientations will be given to the learner?

Instructional approach and resources

This raises the question of approach and method (Richards and Rodgers, 1986) as well as the type of instructional materials required by activity implementation. Since it is a question of e-learning and computer-mediated education, it is good to suggest the trainer/trainee the types of ICT resources that will be needed, ie, hardware, software, accessibility, exploitability, pre-set timing, feedback procedures, etc.

Delivery and Logistics

Here it is important to suggest possible learning modes. Will the activity/task be carried out individually, in pairs or dyads, in groups, etc? It might also be good to say whether the activity or task will be carried out synchronously (through chat mode for example), asynchronously (through a blog for example, which consists of a private person opening an electronic page or blog on which s/he will post issues of interest to which other people are also free to give their views of information they hold about the matter). What approach will learners/trainees be encouraged to adopt? Reflective, dialogic, interactive, critical thinking, critical pedagogy.

B/ CALL activity types

According to Hawkins and Norton (in press), for teacher education programs to be effective, they must incorporate at least three types of activities. These will be reviewed very briefly.

Critical awareness activities

Such activities aim to raise and develop trainees’ capacity to reflect on their practices, analyse them critically, foresee implications and go beyond.

Critical self-reflection activities

These aim to foster trainees' self-reflection skills, for them to be able to critically evaluate themselves, assess their own practices and other practitioners' with a view to learning from the strong and the weak aspects of observed performances.

Critical pedagogical relation activities

With these types of activities the vertical classroom can be seen as a small community living in a micro world. Each member of such a community must learn to develop good human relationships and feelings to facilitate interaction and exchange. Such types of activities will be life-styled to facilitate transfer of skills and strategies into authentic environment and society. This is why Richards (2008: 165) warns participants to be aware that "... the course room is a setting for patterns of social participation that can either enhance or inhibit learning".

Web-based language testing: design and implementation procedures

If we agree that teaching and testing are two sides of the same coin, computer-mediated language educators must make provision for their tests to match the e-learning mode. Even though one must agree that some traditional test validation criteria such as validity, reliability, etc,
remain in play, CALL and CMTE tests may not be validated if the test designer and/or implementer do not take into account the following issues pinpointed by Roever (2001:1) and, which the article has analysed through a resource-challenged context (Crandall, 2005)

**Computer familiarity**

The test designer/implementer must consider the extent to which the language testee is familiar with the testing logistics (hardware, software). Otherwise there may be considerable waste of time and energy.

**Typing speed**

It is also useful to have an idea about the number of words the testee can type in a minute for example. Too slow typing speed can bring about frustration and undeserved failure.

**Delivery failure and rapidity**

The testee may well finish the test in time and be in position of not being able to submit his test paper or software in time because of technical/technological delivery difficulties or failures. In this particular case what alternative delivery channels are offered to him? Sometimes, if the World Wide Web (W.W.W.) is under a lot of pressure due to contingent demand, delivery can be hugely slowed down or even come to a standstill. Therefore if there is delay or failure in the delivery or the quality of the test, who should take the blame? - the testee, the test administrator or the hardware suppliers. In any case these issues must be reflected on so that everybody can get his fair share and know his stance.

**Loading time and timer**

In some situations, downloading and printing can also be a big problem. if the test includes such kinds of computer processes, what will the testee do to meet delivery deadline. Will the test administrator stop the timer? How will he know that someone is bogged on the line on the other side of the world? Even if he knows, what will he do? Has the testee been informed about such alternative solutions beforehand?

**Limitations of using web-based tests**

In practice web-based testing is limiting by nature. As a matter of fact no one can be totally sure that the testee is not cheating or it is actually the registered student who is taking the test if there is no form of proctoring. In these contexts, how reliable will the grades, the marks be? Are there ways of detecting online cheating? Is not the solution in giving questions, activities that require mental processing and critical thinking, which may be more or less developed with some people rather than with others? Perhaps this issue needs to be researched.

**Browser incompatibility**

In some situations, the testee can well complete the work, send his responses to the test administrator, who because his application is not compatible with the testee's machine, fails to access the test paper in due course. Here again who must be accountable for such failure. Should the testee be penalised? - For what fault? The issues raised above clearly give hints about the complexities of computer-based tests, which must be approached with a lot of care, preparation and critical thinking so that most of the problems can be solved in anticipation. This is why the article suggests some sort of piloting to be aware of problem areas and stumbling blocks.

**Self-regulations in computer-mediated teacher education**

Traditionally, Self-Regulation is used to match distance learning. In this case it is defined as "... individuals' capacity to actively and consciously control their own learning process in terms of cognition (knowledge), motivation and behaviour" (Dettori et al 2006: 397).

Since "web-based applications allow training to be continuously updated, universalised and tailored" (Leites & Butureira, 2000: 1), it is redundant to say that it matches perfectly well self-regulation learning modes. This is why it is strongly advised to incorporate self-regulation into Computer-Mediated Teacher Education programmes, in which teacher professional development largely depends on teacher capacity to regulate his learning.

In this respect, Self-Directed learning (SDL) is very useful for enhancing critical adjustment to the rapid evolution of the current social, cultural, and technological contexts characterising this globalised world. According to Dettori et al (2006: 400) however, learning is effective only if the individual learner can overcome three major e-learning challenges: 'transactional distance', 'managing shifts in learner roles' and 'learning the technological nuances of online learning'. As a matter of fact all well-designed e-learning programs must have addressed these three issues as analysed in the previous sections of this paper.
METHODOLOGY

Project description

This project known in its French acronym as FAD/FASTEF/UCAD (Formation A Distance de la Faculté des Sciences et Technologies de l'Education et de la Formation) Université Cheikh Anta Diop) has been launched in 2010. It will be described exhaustively for the sake of exemplifying teacher training in a developing country through computer-mediated tools in a distance learning form. Consequently, the section will include two main parts: (1) project description and project results, (a) project context and rationale, (2) administration and programmes management, (3) Programmes design and implementation, (4) teaching practice and research paper supervision, (5) examinations and Certifications. Here the English department has been taken as an example to show how the project applied to each one of the ten departments of FASTEF, the Faculty of Education of Cheikh Anta Diop University in Dakar Senegal.

Project context and rationale

Under the pressure of meeting both national Educational objectives and international commitments like ‘Education for All’ (EFA) and ‘The Millennium Development Goals’ (MDG) by the year 2015, Senegal, a developing country where English is used as a foreign language, toiled and moiled to build new schools and recruit teachers in sufficient numbers.

Unfortunately these new recruits did not receive any form of training prior to their new job. The immediate consequence of this reality was that most of these teachers found it difficult to meet the pedagogical objectives for which they have been hired. Conscious of this major shortcoming, the Ministry of Education in partnership with FASTEF and The World Bank launched a vast computer-mediated distance teacher training programme aiming to give initial training to about one thousand untrained teachers known as ‘contractuels’ or ‘vacataires’. ‘Contractuels’ are teachers who have got their first contract with the Ministry and ‘vacataires’ are teachers fulfilling their teaching duties without any specific contract yet with the Ministry. The target population of the project can be divided into three groups depending on their level of study at the entry point of the project. At the top of the ladder are postgraduate recruits who have earned a full Master degree in their area of study. They make the F1B section. The second group are those who have been recruited on the basis of a full Bachelor degree (F1A section). The third group are undergraduate students who have either the Baccalaureat or the first or the second certificate of a given Faculty, and who, because of the economic hardship thought it wiser to get their first job instead of completing their studies. They enrol in the F1C section.

Since these teachers could not be trained as regular on-site trainees, it was agreed to give them pre-service training through a computer-mediated distance learning approach. Thus they could continue their teaching duties in areas where they have been posted and get good training at the same time. For this to be possible however, a project had to be designed by the FASTEF experts and validated both by the Ministry of Education, which is the employer of these teachers and The World Bank, which agreed to sponsor the project.

Administration, programmes design and implementation

As soon as an agreement was reached between the three stakeholders: The Ministry of Education, The World Bank and FASTEF the faculty of Education of the University Cheikh Anta Diop (UCAD), a project director was chosen by the Dean of the Faculty in the person of an experienced university professor of the same faculty. After exhaustively briefing all the faculty members of the different departments about the project, another clarification meeting was convened at FASTEF between the project managers of the Ministry and all the Faculty members led by the FASTEF project manager. In the course of these exchanges the Ministry Project managers explained clearly the project objectives, its financial and material means, its target populations and their locations in the different areas of the country, which reassured everybody about the feasibility of the project. From that day a project manager was chosen in each department. A condition for such a choice was that this person be really good at computing and project management.

After this phase each department had to meet and establish strategies for designing a fully fledged programme along the lines of the programme in force for the training of the on-site group, the fundamental difference being that here the training had also to be computer-mediated and by distance. The Table 1 recapitulates the main modules designed for the three groups: F1B2, F1AB1/C2, F1C1.

A glance at Table 1 shows that the F1B2 whose training takes two years undergo the F1B1 modules in their first academic year so do the F1C2 who take the language development modules as F1C1 trainees. The F1A group (Bachelor level) are the only group whose training takes one academic year. Therefore the training of the F1B2 and the F1C2 is more elaborate.

On the other hand, it was agreed that each module be designed with a view to implementing it through computer-mediated tools and distance learning strategies. Once the modules had been designed and checked by the Head of Department and a specific committee set up for this purpose, demonstration
sessions were given by the FASTEF project manager to show trainers how they could support distance trainees make the most for their on-line modules. It was also made clear that each module had to be posted by the department project manager on the platform for a given time for trainees to exploit and explore through further readings Internet research and quiz exercises to be checked by through the chat tool or the homework format.

In order to back up this online training however, it was agreed to convene all the distance trainees to the Faculty for two days twice in the academic year both for physical contacts and clarification opportunities, a move well appreciated by the trainees themselves. Both these meetings were scheduled at times when teachers were on vacation, i.e., during Christmas and Easter holidays. However the training programmes also involved teaching practice which took the form of a field work activity as well as the writing up of a research paper. Both issues will be briefly considered in the following section.

Teaching practice and inspection

Under the frame field work activities each trainee was provided with a coach in the form of an experienced teacher for a period of 8 or 10 weeks. During this period the practising teacher had to teach one or two classes under the coaching of that experienced teacher afore mentioned. The latter would assist the trainee in planning his lessons, getting or developing the right materials, teaching the lessons according to plans, being observed while teaching and being given regular feedback on both teacher and learner performances. On that occasion the trainee was also initiated in small administration duties and was also encouraged to take an active part in school activities.

During this school attachment period another person known as the trainee’s supervisor would come and observe the trainee teaching and would look carefully at the teacher’s instructional materials and lesson plans to evaluate the trainee’s progress in preparation for the inspection day. This supervision work is normally carried out by one staff member of the host department of FASTEF. For online trainees whose attachment schools are in Dakar and its whereabouts, supervision was still carried out by a department member. But given the fact that most of the distance trainees were far away from Dakar where FASTEF the faculty of education is located, it was agreed to entrust this task to supervisors called ’inspecteurs de spécialité’, already trained in FASTEF well before the project launch and who have been disseminated over the whole territory. But due to the great number of FAD trainees to be coached and inspected, other experienced teachers were chosen to fill out vacancies.

After the teaching practice phase, the trainee was inspected. This means that on a given date and time the trainee was to be formally observed and graded by a committee of 3 professionals. At the head of this inspection board is a member of the department (FASTEF), then comes a practising teacher whose rank is above the one of the inspected teacher (highly qualified teacher or one of the ’inspecteurs de spécialité’, and finally another experienced teacher of the same rank the inspected trainee would like to be nominated to. This inspection mark weighs heavily in the trainee’s aggregate marks.

Research paper and supervision

Building on the Module: Introduction to Research at the beginning of the training programme, each trainee, whether on-site or on-line has to choose a research topic oriented to classroom activities, for example: implementing group work in large classes.

Once the initial research proposal was read for revision or simply confirmed by the department research coordinator, the trainee was put under the supervision of one member of the department. The latter would orient and guide the trainee’s readings so that he could be on

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<th>F1B2/MODULES</th>
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<td>Materials development</td>
<td>Introduction to Research</td>
<td>Reading comprehension</td>
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<td>Reflective teaching</td>
<td>Communicative Lang teaching and testing</td>
<td>Listening comprehension</td>
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<td>Information and Communication Technology (ICT) in CLT</td>
<td>Classroom management</td>
<td>Practising the speaking skill</td>
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<td>Leadership in Education</td>
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<td>Culture in ELT</td>
<td>Computing and the language classroom</td>
<td>Developing the French skills</td>
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*Table 1. Fad groups: main instructional modules.*
the right track. Once the trainee was familiar with his topic and had a good grasp of its scope, he would be requested to work out a statement of purpose and a detailed outline of the paper (chapters, sections, sub-sections, etc.). This outline was then read and confirmed or revised which would give way to the writing up of the paper chapter by chapter. Throughout this phase the trainee and the trainer would constantly work on-line for the reading, the proofreading, comments or changes to be brought on-line or off-line by the trainee. These on-line off-line exchanges have been considered as great moments in the distance training programmes.

At completion of the work each on-line trainee was to submit 3 copies of the finalised paper, one of which had to be an electronic copy for the marker to access even when he was absent from the school of education. This research paper counts up as an important part of the pass mark as it recapitulates both theory and practice and a student who fails it is eliminated from the exam process as a whole.

Examinations and certifications

For the sake of test reliability and feasibility, all trainees (on-site and off-site) have to come to FASTEF on dates known to everybody, well before due course, for both trainees and trainers to be ready for the purpose. These examinations called the certification exams encompass different activities testing the trainee’s capacity to bridge theory and practice in a resource-challenged context and in large classes generally speaking.

Those who pass the exams are certified and awarded state-recognised degrees depending on their level at the project entry point. Earners of Masters degrees are awarded CAES degrees (Certificat d’ Aptitude à l’Enseignement Secondaire), which entitles them to teach advanced classes of secondary schools (Seconde, Première, Terminale). Those who enter the project with a Bachelor degree, are awarded CAEM degrees (Certificat d’Aptitude à l’Enseignement Moyen). With such a degree they will be allowed to teach in lower secondary classes like beginner classes (6e, 5e) or intermediate classes (4e, 3e). The last group who enter with a Baccalaureat or an undergraduate certificate, earn CAE-CEM degrees (Certificat d’Aptitude à l’Enseignement dans les Collèges d’Enseignement Moyen) allowing them to teach in beginner classes (6e and/or 5e of lower secondary schools). The latter teachers are generally certified to teach two subjects, for example: English and French. For this reason, they do not want to drop the training of this target group even though they could well be replaced by those with higher degrees like graduate and postgraduate students who come now in greater numbers.

Project results

To gauge the effectiveness of the FAD project, its populations and their performances at the different certification exams have been put against the FASTEF on-site populations and their performances at the same certification exams. The results of the FAD and the ON-SITE groups have been presented in tables and diagrams and cross-analyzed with the view to having a clearer idea of the project teacher training strategies together with yielded spin-offs.

The reader must realise that Tables 2 and 3 are displayed here to compare the FASTEF on-site groups with their counterparts of the project with a view to gauging the effectiveness of the distance instructional programmes and their impact on the distance groups.

Tables 2 and 3 shows that the project involved a total population of 756 trainees on-site and distance combined. It is also interesting to note that among the 5 sections constituting this total population (F1B2, F1B1, F1A, F1C2, F1C1) the distance population is higher in each section with the simple exception of the F1C2 FAD group, recording 87 against 145 trainees for the on-site F1C2 section. However, it may also be useful to point out that the total population of the distance group is larger (402 against 354 trainees) for the on-site group. The number of drop-outs is a little bit higher in the distance training group at 1.24% against 0.56% as is the number of fails 6.30% for the distance against 3.98% for the onsite group. These results may partially be explained by the fact that the on-site group benefited from better training conditions, live lectures, direct interaction with lecturers and classmates, free library access, direct supervision from the faculty, better working conditions, absence of teaching duties and workload, etc. Below are presented the results of the two groups at certification and passage examinations.

In Figures 1 and 2 the reader will understand that column 1 stands for the F1B2 sections, 2 for F1B1, 3 for F1A, 4 for F1C2 and 5 for F1C1 sections. The blue/gray colour represents the on-site sections and the red/dark one is for the distance or FAD sections.

Figure 1 compares the tested population. For group 1 (F1B2 on-site and F1B2 FAD), 100% of each group sat for the certification examinations and 100% passed them. For the F1B1 sections N° 2, all the trainees of the on-site section (100%) took the tests and passed them, while 100% of the FAD section sat for the tests and 90% only got pass marks showing a neat difference of 10%. These findings can be explained by the fact that F1B1 trainees are not taking certification exams yet but progress tests
Table 2. FASTEF On-site-groups: populations and certification results.

<table>
<thead>
<tr>
<th>On-site sections</th>
<th>Enrolled population</th>
<th>Drop-outs</th>
<th>Testees</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>F1B2</td>
<td>27</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>F1B1</td>
<td>16</td>
<td>100%</td>
<td>1</td>
<td>6,25</td>
<td>15</td>
</tr>
<tr>
<td>F1A</td>
<td>64</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>F1C2</td>
<td>145</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>145</td>
</tr>
<tr>
<td>F1C1</td>
<td>102</td>
<td>100%</td>
<td>1</td>
<td>0,98</td>
<td>101</td>
</tr>
<tr>
<td>Total</td>
<td>354</td>
<td>100%</td>
<td>2</td>
<td>0,56</td>
<td>352</td>
</tr>
</tbody>
</table>

Table 3. Project FAD groups: populations and certifications.

<table>
<thead>
<tr>
<th>FAD Sections</th>
<th>Enrolled population</th>
<th>Drop-outs</th>
<th>Testees</th>
<th>Pass</th>
<th>Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Number</td>
<td>%</td>
<td>Number</td>
</tr>
<tr>
<td>F1B2</td>
<td>37</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>F1B1</td>
<td>30</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>F1A</td>
<td>133</td>
<td>100%</td>
<td>5</td>
<td>3,76</td>
<td>128</td>
</tr>
<tr>
<td>F1C2</td>
<td>87</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>87</td>
</tr>
<tr>
<td>F1C1</td>
<td>115</td>
<td>100%</td>
<td>0</td>
<td>0</td>
<td>115</td>
</tr>
<tr>
<td>Total</td>
<td>402</td>
<td>100%</td>
<td>5</td>
<td>1,24</td>
<td>397</td>
</tr>
</tbody>
</table>

Figure 1. The project comparative tested populations.

giving access to the F1B2 class.

For section F1A corresponding to N°3 on the figures, 100% of the on-site group took the certification exams and 93.75% succeeded, when 94.53% of the FAD group out of 96.24% of the total population who took the tests. This shows a total failure of 5.47% which is an important percentage.

As regard the F1C2 groups N° 4, 100% of the number of enrolled trainees in each group (on-site and distance) took the certification exams and 96.55% of the on-site group passed against 82.76% of the distance trainees, who passed their exams. These results show that the
total number of failures is significantly higher with the distance group with 17.24% against 3.45% for the on-site F1C2 group. These findings are consistent with the hasher working conditions of the distance group earlier advocated in this paper together with occasional Internet connection failures in some areas of the country as well as less command of English, the language of instruction.

The last group N° 5 on the figures (the F1C1 sections) recorded 115 enrolled populations. 100% of this number sat for the passage examinations and all of them 100% passed. At the same time 99.02% of the enrolled 102 trainees sat for the passage exams out of which 95.05% got pass marks against 4.95 % who failed. It is interesting to note that with the F1C1 sections, the FAD group recorded no failure, when the on-site group had a rate failure of 4.95%. This may find ground in the fact that the FAD F1C1 group has more practice of English as a result of teaching duties and Internet surfing.

**Discussion**

In sum there is a difference of 48 trainees in the advantage of the FAD enrolled population (402 trainees) against 354 enrolled in the on-site groups all sections combined. The number of drop-outs is also higher with the distance group (1.24%) than with the onsite group (0.56%). Comparatively it is worthy noting that the F1B2 groups (section N°1) seem to be the best groups as both the on-site and the FAD groups registered no drop-out and all the enrolled populations sat for the certification exams and passed without any problem, which is an exception.

As for the F1C2 groups, they seem to be the weakest groups as they recorded a total failure of 20.69 % (17.24% failures for the FAD group plus 3.45% for the on-site group). For the F1A groups the FAD group seems slightly better 96.24% against 93.75% pass for the on-site group. This may be due to the fact that the FAD group is better at teaching practice, which accounts for a high mark. Finally with the F1C1 groups, the FAD group seems much better with 100% pass against 95.05 % pass for the on-site group. Perhaps they have benefited from daily practice of English the target language through their teaching duties in addition to frequent computer use about which Leites and Buteira (2000: 2) argue: “Computer use by students has the potential to enhance collaborative communication and lead to productive use”.

The results show that despite the obstacles inherent in distance training, the project was largely positive and can be improved and generalised to help Senegal, the target country, reach the goal of giving adequate training to every and all teachers in its educational system. No doubt this computer-mediated teacher training project sponsored by the World Bank will inspire many other developing countries.

**Implications**

As a matter of fact, a lot of people still believe that computing and Internet surfing in general set students
back in their reading and writing abilities because of the great time one can spend on the computer (Jackson Von Eye et al, 2006). The results shown above have proven the contrary. This is supported by Krashen (2008:184), who argues that "...surfing is beneficial to language development... and there is no need to fear that it will take the place of reading... ironically this will result in more acquisition of the language and literary development". This view is further supported by the findings of a study conducted by Jackson Von Eye et al (2005) on 140 children from low income families, who previously did not have access to the Internet. The study reported that "... Internet use resulted in improved reading as reflected by grades and standardized tests". These results should reassure students, teachers, teacher educators, parents and school administrators that in the 21st century education will not be successful if computer-mediated tools (ebooks, ejournals, mobile phones, ipads, etc) are not fully integrated into the educational systems. Wanting to do the contrary, would mean to row against strong winds. Whatever your efforts you will come back to the starting point. For all these reasons African educators must realise that they are living in an 'information society' and consequently they must find ways and means of taking the computer dimension into their educational systems. Otherwise they will carry on lagging behind other nations. An important reason for publishing the results of the FAD/FASTEF/UCAD project is to reassure African educators that on-line and distance learning can be embraced without jeopardising literacy standards.

Perspectives

After this computer-mediated training, there is no doubt that certified teachers will be in a better pedagogical position to fulfil their teaching duties, which will ensure greater quality in the Senegalese school results. In so doing the Ministry of Education will be closer to both the national objectives as well as the international commitments to which it subscribed. According to some observers however, these international goals will be very difficult to achieve because of ‘lack of accountability’ on the part of developing countries and because some industrialised countries are just paying ‘lip service’ to their financial commitments. This worry is here expressed by an expert as reported by Mcfarquhar (2010: 4): “If we miss the goals, who is going to punish us? Nobody will come from Mars and say, you didn’t reach the goals, so we will invade”. Between these two extremes a compromise needs to be reached, which would get all stakeholders closer to the Millennium educational goals. Therefore people involved in this important computer-mediated distance training project (The Ministry of education, the Faculté des Sciences et Technologies de l’Education et de la Formation and the World Bank) must then hold firmly to take this project to full completion for Senegal to get closer to the ambitious objective of ‘Education for All’ by the year 2015.

Conclusion

Having identified the need for training teachers in greater number due to national and international goals and commitments, the paper has reviewed the materials and the methods prevailing in traditional and modern teacher training programmes around the education world. On balancing the strong and the weak aspects, the paper has opted for computer-mediated teacher training combined with a distance training strategy, which seems to be more cost effective due to its rapidity, efficiency, space-free and 'en masse' training opportunities. In order to illustrate the use of the strategies mentioned above, the paper has pondered over the example of the FAD/FASTEF on-line computer-mediated distance teacher training project. In essence, focus has been laid on five fundamental areas that seem to have turned the project into a successful one: its conception and management procedures, its programmes design and implementation, its population enrolment and certification procedures and finally the project implications and perspectives. All these issues have been considered with respect to the Senegalese educational goals and international commitments, the facilitation of which invites all stakeholders to reach a flexible compromise.

REFERENCES

Johns T, Davies F (1983). Text As A Vehicle for Information: the classroom use of written texts in teaching reading in a foreign language, in Reading in Foreign Language, 1/1.