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TEACHER EDUCATION IN THE CONTEXT OF INTERNATIONAL COOPERATION: THE CASE OF EAST TIMOR

Abstract

East Timor has reached independence in 2002, after two periods of colonialism and after severe violence, especially following 1999. As a result, the country was almost destroyed, and lost its qualified workforce in all sectors, including education. To ensure national independence it is necessary to reconstruct and build the basic infrastructures for all sectors, and mainly, prepare a technical and professional elite expected to ensure the autonomy of the society and the sovereignty of the state. In this context, education plays a key role. Thus, the Timorese Government has supported several approaches to empower national education, mainly through teacher education. Due to the lack of qualified teacher trainers, East Timor has resorted to the support of teachers from Portuguese-speaking countries, such as Portugal. In this paper we describe and discuss how a module of a bachelor's course carried out in East Timor was designed and implemented by Portuguese teachers. Furthermore, we reflect upon the singularities of such an experience, highlighting the challenges and the obstacles found by the trainers and the trainees.

Contextualisation: the path to independence and its consequences on education

East Timor is currently the world's newest nation. It became, for the first time, an independent country on May 20, 2002. This followed 450 years of Portuguese colonial administration, 24 years of illegal occupation by Indonesia, and 32 months of temporary international administration by the United Nations Transitional Administration of East Timor. Transformation of the educational legacy of the Portuguese and Indonesian occupation periods is a vital factor of building an independent and economically, culturally and politically sustainable future for East Timor.

East Timor is one of the world's least developed countries. In terms of the United Nations Development Programme (UNDP) Human Development Index (0.495 for East Timor in 2011) it was ranked 147 out of 187 countries worldwide in 2011 (UNDP, 2011). In 2011, GNI (Gross National Income) per capita was estimated to be US\$ 3005 (UNDP, 2011) and in 2007, approximately 37% of the total population lived with less than US\$ 1.25 per day. In 2011, infant mortality was 56 deaths per 1000 live births (UNDP, 2011), and data from 2008 indicated that 370 women died for every 10,000 live births.

Data from the Preliminary Report on the 2010 Census indicates that East Timor's population is about 1.2 million. Approximately 41 percent of the country's population is living in poverty. However, it is important to emphasise that in the last 5 years, East Timor has made considerable progress in improving its people's livelihoods, alleviating poverty and improving social conditions (UNDP, 2011). Much of these improvements are based on the way in which the revenue from the

Petroleum Fund is being used to promote human progress through the development of the non-oil economy.

As stated by Timorese during the course of the 2001 participatory assessments for the National Development Plan, the link between educational attainment and poverty reduction was recognized. The Timor-Leste Survey of Living Standards showed that, in 2007, educational attainment remained low. A substantial percentage of the population (57 percent) remained uneducated to the primary level. Only 14 percent of the population had education to the secondary level. Furthermore, the 2002 East Timor UNDP report states that tertiary education sector is diminutive, with only 2.8% of adults enrolled.

This low level of development was intensified by a period of violent retribution perpetrated by the Indonesian military and militia groups after a UN sponsored referendum on August 30, 1999. The country was in ruins and lost almost its entire qualified workforce in all sectors, especially in education, caused by the wave of violence before and after the referendum (Robinson, 2009). Moreover, this period of violence is thought to have destroyed about 80% to 90% of school buildings and other infrastructures (UNDP, 2002).

This situation has obviously become an enormous challenge for the newborn country, lacking experience and resources. The Timorese Government has invested on fundamental aspects of the education sector, such as i) reconstruction and construction of educational infrastructures, ii) reinforcement of the institutional capacity, iii) improvement of the educational system (both in curriculum development and in the recruitment and training of skilled teachers) (Jerónimo, 2011).

Nowadays, East Timor's education system is still the legacy of colonial rule, but by two colonial powers that had very divergent concerns (Shah, 2012). For most of their period of rule the Portuguese showed a slight interest in mass education. The Indonesian approach to education was quite different. The Indonesian government was determined to achieve universal primary education. According to the 2002 UNDP report, around 1985 almost every village had a primary school. However, such an increase in the number of schools was not followed by the quality of teaching. Furthermore, Indonesia used teaching as a strategy of 'Indonesianisation' of population. The government forbade the use of Portuguese (the language used in East Timor during the Portuguese period, as well as Tetum and other dialects) in schools and implemented Indonesian language as the official language of East Timor. Since the independence, the official languages of the country are Portuguese and Tetum. Presently this also constitutes a serious issue, since teachers are expected to teach in Portuguese, and most of them do not manage this language.

After the independence there was a lack of teachers, and a large number was recruited on a voluntary basis. Most of these teachers were not qualified (a large number hold only primary education) (UNDP, 2002). In 2007, 75 percent of East Timor's 12,000 teachers were not qualified to teach, under the standards defined in the country's National Education Act and by the Ministry of Education. Consequently, in 2008 the Government provided intensive training for 3,000 teachers. In 2009, this programme was extended to cover 9,000 teachers. In addition, 617 teachers have completed undergraduate programmes and 36 teachers were attending postgraduate programmes. These intensive training programmes are now

mandatory for all teachers and are an ongoing initiative (East Timor Government, 2010).

The lack of qualified trainers led the rulers to strengthen ties of cooperation with international organizations and with several countries, including Portugal and Brazil (both Portuguese speaking countries). The bond of cooperation between East Timor and these two countries essentially focused on further developing the quality of education through the reintroduction of the Portuguese language courses, the regular intensive courses, the PROFEP-Timor courses and the Bachelor's course (BC) (Jerónimo, 2011). These programs have been conducted over the past years aiming to contribute to the enhancement of the quality of education in East Timor.

In this paper we aim to:

- i) describe the organization of the scientific modules of a BC and also the teaching-learning-assessment strategies that were implemented;
- ii) describe the main obstacles/challenges that influenced/determined the conceptualization and implementation of the pedagogical strategies;
- iii) highlight some insights that can be useful for further similar initiatives.

Teacher education endowment: the 8th edition of the teacher-training bachelor's degree

In order to obtain competent and trained teachers, the Timorese Government has heavily invested on teacher training, mainly in in-service teacher training. To achieve this goal, the Timorese Ministry of Education has relied on the support of international experienced higher education institutions. The University of Aveiro (Portugal) has been collaborating on the restructure of the secondary education curriculum, developing students' books and the corresponding teachers' books and cooperating on several teacher-training courses and programmes fully taught in Portuguese.

One of such programmes was the 8th edition of the teacher training bachelor's degree, which included several modules. The last one consisted in 300 hours of training of 301 biology, chemistry, mathematics and physics teachers, implemented during November and December 2011 on the National Institute for Teacher Training (INFORDEPE), located in Dili, East Timor.

Regarding the facilities provided for the training programme, the INFORDEPE is housed in a plot of several buildings in the heart of the city of Dili and includes several classrooms; one roughly maintained science laboratory divided by shelves in three areas to accommodate some of the physics, chemistry and biology classes; one library with a severe shortage of books, not to mention the lack of up-to-date and accurate resources; one photocopy centre; one computers room; one auditorium; one canteen and one dormitory for those trainees who are displaced from their home districts. Despite the apparent reasonable facilities, all the rooms provided for the training programme were constrained by non-existent running water, more significant in the science lab, and limited access to electricity, characterized by constant and unexpected run-outs, mainly noticed in the computers room and the science lab.

Despite that all the 301 science trainees had previous teaching experiences, only a few of them were formerly graduated from higher education institutions and, of those, the language of their studies, Tetum or Indonesian, had been different from

the language they should privilege while teachers, Portuguese. The huge diversity of the in-service teachers' educational backgrounds was a common feature to all the four science subjects.

Additionally, the teachers' ages varied from mid-twenties to late-sixties and most of them were temporarily displaced from their home districts to take the course. This meant that they would be fully dedicated to the course during its length. An important aspect to reveal, which is essential to understand these teachers' professional context standpoint is that, despite that they were supposed to teach their students in Portuguese, they did not have access either to books or any other Portuguese written literature. Another critical aspect to take into consideration is that most teachers had not been teaching what they intended to graduate on after taking this course. They were given the chance to choose the science subject they intended to graduate on. Despite that some tried to deepen their knowledge on the area they used to work and took the course on their own subject, others (most of them) tactically opted to study the subject which was having a shortage of teachers on their home districts. Thus, it was not unusual to find situations as unlikely as a primary school teacher graduating on maths or a geography teacher graduating on physics.

To accomplish this programme a team of 10 qualified teacher trainers from University of Aveiro (3 biology, 1 chemistry, 4 mathematics and 2 physics) were assembled.

Timorese trainees were divided into subject areas and latter subdivided into smaller groups, depending upon the number of assembled trainers. Such an arrangement resulted in 10 classes of varied length, 4 math's classes of nearly thirty teachers per class, 3 biology classes of approximately forty teachers per class, 2 physics classes each composed of 15 trainees and 1 chemistry class with ten teachers.

Organization and implementation of the scientific modules

Covered contents

The contents covered during the course included topics that are taught at pre-secondary level from 7th to 9th grade. Some of these topics were:

Mathematics: types of numbers (e.g., natural, whole, integers), first and second degree equations, statistics, elementary geometry (planes and solids) and trigonometry;

Biology: anatomy and physiology of the Human body (e.g., urinary system; reproductive system); dynamic of ecosystems; levels and organization of biodiversity;

Physics: measures, measurement and measuring instruments; circular motions, Newton's laws; slants and pulleys, types of energy and energy systems; electricity and electric systems;

Chemistry: corpuscular theory of matter; atomic model, types of aqueous solutions, properties of the matter, chemistry and sustainable development, elements of the periodic table.

Time schedule

Concerning the classes' schedule, it was agreed between the trainers and INFORDEPE that the daily training schedule would follow a work routine of 8

hours, split up into 5 hours of morning classes sessions and 3 hours of supervised autonomous work in the afternoon to consolidate and extend the work carried out in class. Time spent on the writing of a monograph about a particular topic related to the scientific domain chosen by the trainee, was also integrated in the autonomous work time. Once a week, the afternoon work of each class was substituted by biology, chemistry or physics practical lab activity or a guided mathematics practice session.

Teaching-Learning Strategies

Special attention was given to the design and implementation of the classroom strategies, which was the trainers' responsibility. The following aspects were considered:

a) the two folded teaching goal of the bachelor's course in improving teachers' scientific knowledge, as well as exploring innovative teaching-learning-assessment strategies, in order to develop pedagogical content knowledge;

b) the diversity of constraints that had to be dealt with during the bachelor's module and which were previously mentioned (such as the heterogeneity of the trainees, lack of pedagogical resources, high miscommunication risk due to language difficulties), but also due to the risk of 'educational culture shock' between trainees and trainers. In Timorese primary, pre-secondary and secondary schools, transmissive teaching strategies, such as reading, repeating and copying promoting memorization, seems to be the rule (Earnest, 2003). Actually, despite the great disparity of the teachers' training and educational background, all of them revealed a remarkable capacity for memorization;

c) the consciousness of the vast constraints the Timorese teachers have to deal within their daily professional life. These difficulties will not miraculously vanish after accomplishing the bachelor's module. Implemented pedagogical strategies should not be over sophisticated and decontextualized from the economical and social context of East Timor.

It was decided to start each 'thematic block' with the introduction, exploration and definition of the main concepts. Strategies such as oriented reading and interpretation of simple texts, registering the main terms and concepts on the board were widely used. Gradually more cognitive demanding tasks were introduced by the resolution of specific exercises. In specific occasions, trainees were asked to elaborate concept maps, or formulate 'wonderment questions' (Chin & Brown, 2002). Problems were solved individually or in groups. PowerPoint presentations were deliberately used in a few specific moments, since access to ICT resources is very difficult in the majority of East Timor schools.

At the end of each specific thematic block, the pedagogical aims of the Bachelor's course were worked. The teachers reflected and worked collaboratively on topics such as: i) definition of learning outcomes and goals for specific scientific contents; ii) long and midterm class plans considering scientific contents and learning outcomes; iii) daily plans, in order to conceptualize and organize diverse teaching-learning-assessment strategies; iv) definition of global and specific correction criteria to be taken into account in the elaboration of a test. Point distribution throughout the test was also exercised.

In what concerns laboratory classes, the activities developed were more practical and demonstrative than experimental, mainly due to the lack of well-

maintained laboratory material, but also because of the high number of trainees per class. However, despite these difficulties, simple activities were designed in order to give the teachers the opportunity to experience and manipulate lab material, in some cases for the first time (Earnest, 2003). Furthermore, as most Timorese schools do not have science labs, nor any lab equipment or reactants, an effort was made to (whenever possible) give the teacher-trainees alternative materials of their daily use to be applied when making experiments with their own students. Some activities were:

Biology: microscope observations (e.g., blood cells, plant cells); study of influence of light and water on the germination of different seeds;

Physics: determination of the coefficient of friction between two surfaces (by using slants and pulleys); construction of solar oven cookers;

Chemistry: separation processes of the components of heterogeneous or homogenous mixtures; simple solubility experiments; appraisal of the density of solid and liquid materials; acid-base reactions; oxidation-reduction reactions.

Since many of the teacher-trainees had never written a laboratory activities report, classes were also used to explore the structure of a scientific report.

Assessment

On what concerns trainee teachers' evaluation, formative assessment methods were privileged in order to maximize learning opportunities. Qualitative description and compilation of the most common mistakes were used to boost teacher reflection.

Final thoughts

All the trainers emphasize the engagement of the Timorese teachers and their will to maximize this unique learning opportunity. Being conscious of the crucial role they will have in the future education of the country, the trainees revealed a huge motivation. Timorese teachers also demonstrated awareness of their own limitations and difficulties, therefore showing solidarity among each other. Due to the teaching methods usually used in East Timor that overvalue memorization and passive acquisition of knowledge, the trainers identified some underdeveloped competencies, which should be strengthened: graphs and tables' interpretation, establishing relationships between concepts, applying knowledge in new contexts, and abstract reasoning. Science education in East Timor relies mainly in a theoretical perspective, lacking the experimental approach. Therefore, it was not unexpected to see that most teachers had never experienced a science lab opportunity.

Even if the social, professional and economical contexts were not perfect, the teachers excelled the trainers' highest expectations. There remains a real hunger for education within East Timor.

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