INTRODUCING STUDENT CENTRED APPROACHES IN PRE-SERVICE SCIENCE TEACHER EDUCATION IN CAMBODIA

1. Objectives

This synopsis discusses the introduction of student-centred instructional methods in public teacher training institutes in Cambodia. Over a 5-year period science lecturers have been supported in adopting student-centred methods through regular training, follow-up sessions and suitable teaching resources. The paper describes findings and lessons learned in capacity development and student-centred science education and relates these to the wider context of science education in low-technology environments.

2. Background

The Khmer Rouge regime caused a massive setback to the education system in Cambodia. An estimated 75 per cent of teachers, 96 per cent of university students and 67 per cent of primary and secondary school students were killed (Benveniste et al., 2008). Since the signing of the Paris Peace Treaty in 1993 the country has made strong progress in rebuilding its education system. Primary enrolment and completion rates have been climbing to 96% and 87% respectively (UNESCO, 2011), bringing the country on track to achieve universal primary education by 2015. However, these improvements mask lingering problems such as high numbers of over-aged students, high repetition rates, stagnating quality of education and low relevance of the curriculum for the rural majority of the population (UNESCO, 2011).

3. Significance

Teaching quality has been identified as the single most contributing factor to improving learning outcomes (Hattie, 2009). A World Bank study identified bolstering pre- and in-service teacher training as 'imperative' to raise teacher subject and pedagogical content knowledge (Benveniste et al., 2008). The quality of education affects student dropout rates and interest in pursuing science studies.

Rote learning is still prevalent in many Cambodian science lessons. Teachers read from textbooks and encourage memorisation rather than understanding. Assessment is based on recalling facts, rather than understanding, reasoning or applying knowledge. Students are seldom provided with opportunities to observe phenomena around them and analyse them scientifically. Curiosity in science is suppressed rather than stimulated.

The Cambodian Ministry of Education has endorsed student-centred learning in its policies (MoEYS, 2010) The curriculum for teacher training, revised in 2011, includes explicit attention and instruction time on the topic. However, merely adopting new policies or curricula is unlikely to change teaching practice. Progress requires alignment of formal rules, informal constraints and enforcement characteristics (North, 1994). This paper describes how an implementation strategy, based on academic research and local experience, can achieve promising results toward sustainable changes in behaviour and underlying motivation.

4. Theory

The concept of Technological Pedagogical Content Knowledge (TPACK) was introduced by Shulman (1986) and later adapted by Mishra and Koehler (2006) to include digital technologies and to formulate a counterweight against technological determinism (Oliver, 2011). The model attempts to capture some of the essential qualities of knowledge required by teachers for technology integration in their teaching, while addressing the complex, multifaceted and situated nature of teacher knowledge. A central element in the TPACK concept is that applying a student-centred approach or technology in itself is not sufficient to improve teaching and learning quality. This requires a negotiated balance between content knowledge, pedagogy and technology.

The term student-centred approach is arguably overused and may mean different things to different people (O'Neill and McMahon, 2005). It can be summarised as a learning model that places the student in the centre of the learning process (Lea et al., 2003). Student-centred approaches are characterised by active students, deep learning and understanding, shared responsibility and accountability and a focus on instilling an increased sense of autonomy in learners (Lea et al., 2003). A central point is the interdependence between teacher and learner both taking a reflexive approach to the teaching and learning process.

5. Design and Procedure

The paper is based on the results of a capacity development programme from the Flemish Association of Development Assistance and Technical Cooperation (VVOB), implemented between 2008 and 2013. During a 3-year pilot phase, the geographical scope was limited to one institution for teacher training. A core group of teacher trainers was guided in trying and selecting out resources and approaches, adapting them to local contexts and developing instructor's manuals. During the mainstreaming phase, activities were scaled up to all Cambodian institutions for teacher training through workshops and distribution of teaching resources. Throughout the process the Ministry of Education was involved, as it carries the final responsibility for the quality of teacher training.

6. Findings

The programme has paid much attention to the strengthening of teaching capacity of lecturers. Over a two-year period and on average 20 days of training, teacher trainers have been trained in 30 student-centred approaches, that were selected and contextualised by Cambodian teacher trainers. Surveys, prone to confirmation bias, were triangulated with student interviews, lesson observations and focus groups. They indicate that a large majority of science and pedagogy teacher trainers are familiar with student-centred approaches and apply them regularly. Lesson observations show that the quality of lessons has steadily improved at all institutions for teacher training. Many teacher trainers also support their students to use student-centred approaches such as experiments, concept cartoons and active questioning, sharing resources and awarding extra credits.

Trainings have been complemented by training activities, based on Japanese lesson study (Fernandez, 2010). Teacher trainers regularly meet to discuss in detail lesson plans or lesson try-outs, covering both content, pedagogy and technology issues, stimulating

social learning. A recently installed portal site for teacher trainers and teachers in the Khmer language, increased availability of resources such as experiment videos, animations and simulations in the Khmer language and improving English skills of newly graduated teachers have been expanding the learning ecosystem.

However, important challenges remain. Many teachers experience problems with reasoning skills. Experiments tend to be used merely to confirm theories in the textbook and not to challenge students and have them develop scientific skills and attitudes (VVOB, 2012). Lack of higher-order insights in subject knowledge results in low confidence to adopt student-centred teaching.   There is a strong belief in the importance of content and in the authority of the teacher as knowledge expert and forms of distributed education which pass more control to the learner are inherently suspect (Rennie and Mason, 2007).

The programme has focused on the direct target group of science teacher trainers and teachers. Aspects of the wider educational system, however, may create negative incentives for teacher trainers to adopt a student-centred teaching style. Teachers' and teacher trainers' salaries are low, increasing the need for second jobs and reducing availability at the college and preparation time. Salary reform has been on top of the Education Strategic Plan and is considered a critical stumbling block for improving educational quality (Benveniste et al., 2008). The average Cambodian classroom accommodates over 40 students. The combination of a full curriculum and few effective teaching days leaves little time for inquiry and creativity.

Other challenges have been significantly reduced between 2008 and 2012. Internet access, availability of educational and ICT materials in Khmer and English language skills of teacher trainers have improved strongly (VVOB, 2012).   There is still a gap between availability and accessibility of materials though, underlining the need to improve the management of resources at the colleges.

Strong accountability structures have repeatedly been put forward as critical components of a successful education system (e.g. OECD, 2011). Those for teachers and teacher trainers in Cambodia are arguably very weak. Formal responsibility for supervising teacher trainers and teachers lies respectively with the central Teacher Training Department and the Provincial Offices of Education. Both institutions, however, are understaffed for the geographical area and amount of people they need to control. Directors have a more direct link, but lack direct incentives to control their staff. Konur (2006) underlined the importance of strengthening of the position of various 'players' in the 'education game'. He referred to support services, parent groups and students as partners who could play a role in 'shortening' accountability structures.

These groups have a clear interest to improve the quality of education and are present at the college and school level. Donor support could complement its focus on capacity development of teacher trainers and teachers with organisational and individual capacity development of organisations and people that can improve accountability. Better data collection, possibly with support from citizen networks (Trucano, 2013), may increase pressure on schools, administrations and policy makers.

This synopsis has highlighted some points of success and challenges in a science teacher trainer development programme in Cambodia. It argues that it has succeed in improving the capacity of teacher trainers and selected teachers to adopt student-centred

instructional methods. However, negative incentives in the education system limit the impact of the programme.

7. References

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