Title Registration for a Systematic Review: Teaching Methods for Improving the Quality of Teachers and Trainers of Technical and Vocational Education: A Systematic Review

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TITLE OF THE REVIEW

Teaching Methods for Improving the Quality of Teachers and Trainers of Technical and Vocational Education: A Systematic Review

BACKGROUND

Globalisation, sustainable development, and economic competitiveness have led to an increased demand for high quality skilled workers who can quickly adapt to different settings. Technical and Vocational Education and Training (TVET), which refers to “those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge related to occupations in various sectors of economic and social life” (UNESCO, 2002, p. 7), strives to bridge the gap between the lack of skilled workers and global demand. Also known as vocational education and training (VET) or career and technical education (CTE), TVET encompasses technical education, vocational education, vocational training, on-the-job training, and apprenticeship training, and may be delivered either in a school- or work-based environment (NICHE, 2010). Although no universally accepted definition of TVET exists, it can broadly be seen as acquisition of skills and knowledge for better participation in work (Tripney et al., 2013). Demand for skilled workers is increasingly in demand due to socioeconomic and technological changes. It is estimated that 25 to 30% of the labour force is underemployed (ILO, 2010). TVET presents great potential to resolve this problem since its major aim is to fully prepare the learner to the labour market demand. This gives TVET teacher training programs the responsibility of producing more competent professionals, since the quality of the teacher is a critical element in developing learner competence and effectiveness.

TVET university-level curricula typically involve a major subject, sometimes called vocational discipline, which does not belong to the traditional university mainstream and is not a standard subject like mathematics, physics or chemistry (Lipsmeier, 2013). Emphasis is therefore placed on a combination of basic sciences and relevant technical knowledge which are specific to each profession. This requires a close relationship between industry and TVET. Furthermore, different professions demand different professional training programs. Thus designing a homogeneous TVET curriculum which can easily be delivered by lecturers and readily assimilated by students is extremely difficult (Lipsmeier, 2013). The differentiation by function, that is, teachers’ specialisation in specific subjects or trades within technical and vocational school, is the most common approach to address this issue worldwide (Lipsmeier, 2013).

TVET teacher training programs include pre-service and/or in-service training. Pre-service training programs refer to programs offered to future TVET teachers to enhance their knowledge, skills and competence. With their length varying from few months to at least 4
years, they are in most countries the backbone of TVET policy because they lay the foundation for the building of great professional abilities through theoretical and practical teaching (ILO, 2010). They generally involve in-school training (where the student teachers will receive theoretical and practical teaching in classrooms, workshops or labs within the premises of a TVET institution, (TESDA, 2010)) and practical teaching in a technical and vocational education establishment. On the other hand, in-service training, sometimes referred to as continual professional development (CPD), concerns training generally sponsored by the employer during working hours (TESDA, 2010). Through seminars, workshops, colloquium, this training is a practical solution for enhancing teachers and trainers’ professional skills and flexibility to respond to changes. Although in-service training is common in developed countries, it is still scarce in less developed countries. Whatever the case there is enormous need for in-service training worldwide (ILO, 2010). Many educational systems provide the same pre-service training to TVET teachers as received by their peers in wider field of training (UNESCO-UNEVOC, 2012). This most of the time contributes to a misalignment of the learning content with work realities and expectations. In-service training is therefore necessary to bring these instructors closer to the industry, helping them in building real world experience. This dual dimension of TVET teaching program is a reality in high income countries but remains a major challenge in developing countries. In low income countries, vocational training is generally set back to apprenticeship. Globally, TVET instructors sometimes do not come from an academic background; rather, they are content experts who have spent multiple years learning and refining their skills in a specific occupation. They obviously have substantial knowledge of their craft, but have never developed pedagogy or strategies of instruction (Elkins, Kenizon, & Krzeminski, 2011). There are not enough specialised TVET teachers at both secondary and tertiary levels of education. Also, most of the teachers do not have direct contact with industries and the job market. This hinders their ability to provide teaching relevant to the labour market since it is difficult for them to update their knowledge with a rapidly transforming labour market.

Defined as the number of students enrolled or willing to be enrolled to it, demand for TVET is increasingly high. More than half of European Union secondary school children are enrolled in TVET programs (ILO, 2010). Even though this figure is far smaller in low income countries there is a significant increase in demand for TVET at the detriment of general education (ILO, 2010). Hence, there exists a huge worldwide need for more skilful TVET teachers and trainers (Elkins et al., 2011; NICHE 2010). Technical and vocational teachers training is a sensitive area of action in any serious educational policy (Schröder, 2013). This may explain why TVET teacher training is the subject of discussions at many conferences around the world (Lipsmeier, 2013), and thereby, many unresolved issues in need of evidence-based intervention.

The on-going globalisation and resulting changes in the education of skilled workers require a unique framework in TVET teacher training as well as a system of further education for teachers (GIZ, 2011). This requires a consideration of the strengths and weaknesses of global
education systems which include high, middle, and low income countries. Due to limited resources for government development agencies and businesses to invest in teaching methods, it is important to assess the efficacy of teaching methods in order to guide investment and policy makers.

**OBJECTIVES**

Are school-based teaching methods more effective than work-based teaching methods in improving TVET teachers and trainers quality, with reference to teachers and trainers in accredited training centres?

Is school-based teaching more effective than distance learning in improving the quality of TVET teachers and trainers in accredited training centres?

What is the relationship between in-service training and TVET teachers and trainers’ quality of teaching? Does this relationship differ for secondary education and tertiary education?

**EXISTING REVIEWS**

To our knowledge there is no existing review on this subject.

**INTERVENTION**

Intervention: All teaching methods (including formal or informal teaching) used in training TVET teachers and trainers will be included. This can include classroom-based teaching methods, work-based teaching methods, or a combination of the two methods. Eligible studies for this study will therefore be:

- studies comparing school-based teaching methods against no intervention
- studies comparing work-based teaching methods against no intervention
- studies comparing distance learning against no intervention
- studies comparing in-service training methods against no intervention
- studies comparing school based teaching methods against work-based training methods
- studies comparing school-based teaching methods against distance learning
- studies comparing work-based teaching methods against distance learning

School-based teaching methods comprise all those teaching methods utilized within the school environment, mostly in classrooms and workshops. They include: direct instruction, drill and practice, lecture, question and answers, discussion, mental modelling, discovery-based learning, and inquiry.
Work-based training refers to those training methods used to teach on the job. They include: demonstration/instruction, coaching/mentoring, job rotation, projects (candidate joins a project team giving him exposure to other parts of the craft), “sitting next to nelly” (working alongside a colleague and learning by observing).

School/work based teaching methods refer to those methods that alternate between school- and work-based teaching.

Distance learning will include all those teaching methods used where the teacher and the learner doesn’t share the same geographical area. By distance learning we mean ICT-based distance learning methods as well as paper-based distance learning. ICT stands for information communication technology which is a diverse set of technological tools used to create, disseminate, manage and store information. It includes computers, internet, radio, television as well as telephony.

Interventions implemented in any country will be eligible for inclusion. There is no exclusion of studies due to their cultural representation or country of origin. Interventions of any duration or level of intensity will be included provided the intended outcome of the intervention is competitive performance test, relevance, access or participation. Acceptance of interventions of varying durations will maximize the potential variation of strategies that may be included. No language barrier will be applied.

Studies that include a combination of these methods will be considered multifaceted and will not be included.

**POPULATION**

The population will consist of TVET teachers and trainers in accredited training centres. TVET teachers may be from the formal sector of classroom teaching, academic technical education or school-based vocational education and training. TVET trainers will include student teachers in or from non-school technical education institution. These are mainly enterprise-based and community-based TVET providers.

**OUTCOMES**

Our primary outcomes will be:

- Teachers’ performance on aptitude tests. These are the results on any exam given under the supervision of an authority (school authority, government, accredited international body).
- Teachers’ Work place productivity

Secondary outcomes will be: students’ critical thinking, creativity, independent learning, cost, lifelong learning, skill, employability, adaptability, qualifications, attitudes to work,
career aspirations, work-related confidence, work-related self-esteem, motivation (e.g., to find work, to secure promotion at work), job search skills, job satisfaction, employability. Outcomes will require subgroup analysis: gender, age, socioeconomic region, and disability.

### STUDY DESIGNS

Randomised control trials, quasi-randomised trials, and quasi-experimental designs will be included. Studies will be coded for methodological factors such as method of selection or assignment, attrition, blinding, method of statistical analysis (e.g., ITT), among others. A form will be developed for coding information about the participants, interventions, designs, and effect size characteristics. All studies will be coded by two reviewers. Any differences in coding will be reported in terms of inter-rater agreement and subsequently reviewed, discussed and resolved or continuing differences will be resolved by a third party.

### REFERENCES


Schröder, T. (2013). Vocational Teacher Education and Research as a Task and Challenge for the East and Southeast Asian Region. *Regional Conference on Vocational Teacher Education – Vocational Teacher Education and Research as a Regional Task and Challenge for the East and Southeast Asian Region.* China, GIZ.


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**ROLES AND RESPONSIBILITIES**

- **Content:**

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- **Systematic review methods:**

PMR and OPM will select titles from eligible studies. Any disagreement will be arbitrated by AAA or NIC

OPM, PMR will extract data from eligible studies. Any disagreement will be arbitrated by AAA or NIC

- **Statistical analysis:**

OPM, PMR, AAA, NIC will analyse extracted data for relevant outcomes. We will use REVMAN for protocol and review development and final presentation of manuscript.

- **Information retrieval:**

OPM, PMR, AAA will review and select titles for inclusion, extract data from finally included studies.

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**POTENTIAL CONFLICTS OF INTEREST**

We declare that there is no conflict of interest

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**FUNDING**

At we have not received any financial support. We are applying for the mini grant program with Campbell Collaboration

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**PRELIMINARY TIMEFRAME**

Note, if the protocol is not submitted within 12 months of title registration and/or the review is not submitted within 24 months of protocol approval, the review area may be opened up for other authors.

- Date you plan to submit a draft protocol: June 2014
- Date you plan to submit a draft review: August 2015
DECLARATION

Authors’ responsibilities

By completing this form, you accept responsibility for preparing, maintaining, and updating the review in accordance with Campbell Collaboration policy. The Coordinating Group will provide as much support as possible to assist with the preparation of the review.

A draft protocol must be submitted to the Coordinating Group within one year of title acceptance. If drafts are not submitted before the agreed deadlines, or if we are unable to contact you for an extended period, the Coordinating Group has the right to de-register the title or transfer the title to alternative authors. The Coordinating Group also has the right to de-register or transfer the title if it does not meet the standards of the Coordinating Group and/or the Campbell Collaboration.

You accept responsibility for maintaining the review in light of new evidence, comments and criticisms, and other developments, and updating the review every five years, when substantial new evidence becomes available, or, if requested, transferring responsibility for maintaining the review to others as agreed with the Coordinating Group.

Publication in the Campbell Library

The support of the Coordinating Group in preparing your review is conditional upon your agreement to publish the protocol, finished review, and subsequent updates in the Campbell Library. The Campbell Collaboration places no restrictions on publication of the findings of a Campbell systematic review in a more abbreviated form as a journal article either before or after the publication of the monograph version in Campbell Systematic Reviews. Some journals, however, have restrictions that preclude publication of findings that have been, or will be, reported elsewhere and authors considering publication in such a journal should be aware of possible conflict with publication of the monograph version in Campbell Systematic Reviews. Publication in a journal after publication or in press status in Campbell Systematic Reviews should acknowledge the Campbell version and include a citation to it. Note that systematic reviews published in Campbell Systematic Reviews and co-registered with the Cochrane Collaboration may have additional requirements or restrictions for co-publication. Review authors accept responsibility for meeting any co-publication requirements.

I understand the commitment required to undertake a Campbell review, and agree to publish in the Campbell Library. Signed on behalf of the authors:

Form completed by: PambeMiongRigobert H. Date: