

Competence measurement in South Africa: Teachers reactions to feedback on COMET results

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Summary: The South African COMET project has recently completed a second COMET Test series for the welding, mechatronics and electrical occupations over 810 participants. Tests tasks relevant for the South African TVET system were developed and validated at the beginning of 2014 and the large scale test was implemented towards the end of the same year. This paper explores teachers' reactions to the feedback of COMET test results of their students.

Keywords: COMET, vocational competence development, competence diagnostic system, vocational teacher commitment; work process learning; didactics (teaching and learning).

Introduction

The decision to participate in a large scale competence diagnostics exercise was initially informed by the rapid revival of apprenticeships in South Africa (2008-9). Whilst the apprenticeship system was being revived against tried and tested governance processes, there was a new qualitative imperative which sought international benchmarking of levels of vocational competence acquired during the apprenticeship. The COMET competence model was selected as measurement model based on sound psychometric criteria (Martens, Rost, 2009). The COMET project matured through its first pilot phase (2011), and the results of this first study raised – among others - three major findings. Firstly that the only teaching site that achieved a measured holistic shaping competence amongst a small percentage of apprentices was using a reflected work process learning and teaching methodology. Secondly, that a large proportion of public-college-based vocational learners' test scores were an indicator for a predictive probability that the majority of learners will not be able to achieve the required competence level of a skilled worker according to international standards. The third finding indicated a stagnation of competence development during course of training (Rauner et al, 2012).

The imperative for a competence diagnostic system was thus realized and a program was approved to embed the practice and understanding within the South African TVET system with the mandate to inform improvements in teaching and learning systems.

The second large scale COMET test was therefore completed in November 2014. In the post test phase of this project, vocational teachers started to express their interest in the COMET project results and the project's potential as a theoretically sound and empirically tested competence model that may facilitate deeper insights into the strengths and weaknesses of their teaching/training. This interest was

supported by a visit to each COMET test teaching site where the results of the tests were discussed with teachers in more detail to gain deeper insights from teachers' experiences. Each visit realized some new observations to be incorporated in the final results.

Other research priorities from this test series are elaborated in separate contributions and will include:

- An investigation into the vocational learning approach based on the COMET model for developing competences in a South African context;
- The potential of the COMET competence diagnostics model for the assessment and development of occupational competence and commitment, in Technical Vocational Education and Training;
- The potential for COMET to improve the trade test pass rate.

Methods and research design

COMET tests were administered in September 2014 on a set date in at five public college sites, three company based training academies and two private technical training schools. Of the 810 COMET test participants, fourteen teachers were included. Test motivational questionnaires and occupational commitment questionnaires were also administered immediately after the test on the same day. Rater training commenced in October 2014, and rating of all tests was completed in November 2014. Feedback to teachers of individual test results commenced at each test site in February 2015.

The feedback sessions were conducted using a focus group discussion approach. Each focus group was made up of teachers from a particular test site to enable deeper consideration of complex teaching and learning issues. This open format with groups of teachers was also designed to encourage dialogue around the individual test results. The intention of this type of feedback session is to record unique observations that could be incorporated into the overall findings of the 2014 large scale study still in the analysis phase. Each site visit was conducted with a loose agenda including the following topics:

- (i) Review of the primary 2011 COMET test findings. Such findings included information shown in Figure 1 and 2 below:

Finding 1: There is a Stagnation of competence development during the course of training

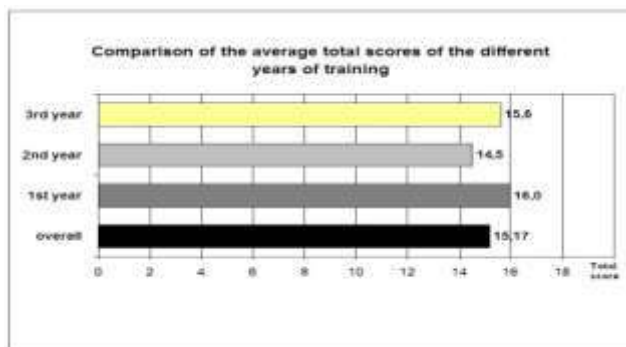


Figure 1 (Rauner, Hauschildt, Heinemann, Peining, 2012)

Finding 2: Test takers were highly motivated and the majority found the task interesting and useful.

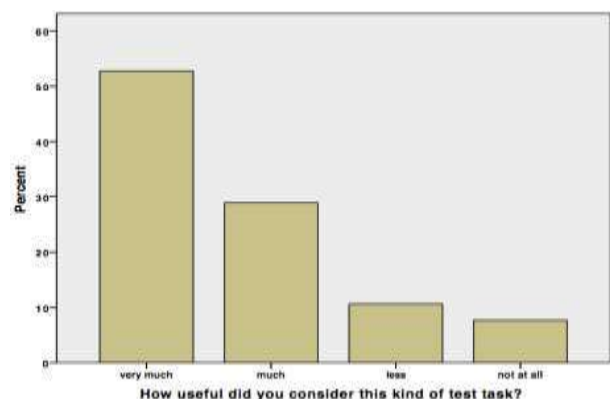


Figure 1 (Rauner, Hauschildt, Heinemann, Peining, 2012)

- (ii) Advice on how teachers should manage the report back of results to their students. Instructions requested teachers not to distribute test results with a score less than 10 points; those test takers who did not receive a result were to be given the same cover letter thanking them for their participation with encouragement to share information with their peers and participate in the learning tasks offered by teachers in the future. Each participant receiving a report also received a summary of the average score for all test takers of the same occupation.
- (iii) Confirmation of top ten ranking student scores for each occupation tested;
- (iv) Summaries of student comments from the motivational questionnaire, unique to each test site.
- (v) The relationship between teacher competence and their learners (Ranuer, 2014), indicating that teachers often transfer their problem solving horizon to the learners.

Need for Quality Assurance:

Learners and teachers: A strong relation when it comes to COMPETENCE



Average profile of **teachers** in the Mechatronic Profession
Main test **COMET South Africa 2014**



Average profile of **learners** in the Mechatronic Profession
Main test **COMET South Africa 2014**



Figure 6. (Source: Rauner, Dec 2014 TTPRIS Conference South Africa)

Each feedback workshop was recorded for purposes of analysis and comparison.

Results

The feedback workshops stimulated useful discussions between teachers. Teachers were generally motivated to interrogate the content of the feedback and find ways to teach more cooperatively amongst each other and in partnership with industry. The

most notable observations in these discussions were common amongst more than 70 percentage of teachers. They are described below in order of interest:

1. Teacher cooperation and learner behaviour: Teachers concurred that they were not able to predict the top COMET test performers amongst their learners. They were more often surprised to learn who top COMET test scorers were. This commonly lead to a joint reflection on learner behaviour during both theoretical and practical teaching sessions. Most teachers concluded that students with top COMET scores generally asked more questions about the topic being taught, they also took longer to complete practical assignments and in many cases the student had a more mature identity with the skilled work of the occupation being taught.

Some suggestions made by teachers:

Technology theory teachers need to find ways of cooperating with their practical workshop instruction counterparts, by way of linking theory to practical tasks taught – some examples would be to jointly implement COMET learning tasks, first as a group assignment and then individually, as a means to developing conceptual problem solving skills linked to real problems encountered in the world of work;

Practical assignments and theory classes should be complemented with a visit to a local company that would be able to expand on how the concept/product/assignment fits into a broader work process, how industrial customers set standards for quality and cost, importance of safety considerations and what criteria the company uses when selecting new skilled workers – i.e., making factory tours valuable to the learning process requires much preparation on the part of the teacher and the learner.

2. “Teaching to the test”: Teachers commented that in many cases, the students who scored top marks against the taught curriculum were not top COMET scorers. Further discussion on this topic lead to teachers reflecting on their teaching method based on preparing for the test against a set curriculum, rather than teaching that would enable deeper problem solving abilities in the broader workplace context of the occupation. “Teaching to the test” was seen as a gain in the student pass rate at the cost of the students’ learning & development that would support a more successful college-to-work transition.

Some suggestions made by teachers:

Consider the flexibility of a three year vocational qualification as opposed to three one year qualifications; do not recognise colleges’ performance for short term “work-placements”, but rather for proven and sustained employment by means of an apprenticeship/learnership contract either during or post the full NC(V) qualification as an indicator of successful college-to-work transition; Consider a 6-12 month bridging programme for engineering related NC(V) courses.

3. Not enough time for practical mastery: Teachers conceded that they often emphasised the theory of the occupation over practical mastery and that this should be addressed in the curriculum design, with more emphasis on workshop practise, work-integrated learning and problem solving.

Some suggestions made:

In the case of the NC(V) programme, support the curriculum with e-learning and e-self- assessments that free up formal class time in favour practical mastery of the occupation; increase scope and depth of practical assignments; use industrial experts from local companies to assist in the original scope and assessment of practical

assignments; keep college workshops open on a twelve to fourteen hour roster (with controlled access) to support student access to practical hours for individual mastery.

4. Value of occupational problem solving skills recognised: Teachers were motivated to further develop COMET teaching methods in the classroom supported by simulated practical task alignment to real work processes. Teachers were motivated to cooperate in a community of COMET practise. On the contrary, teachers agreed that it would be very difficult to implement COMET teaching practise where there is no evidence of teacher collaboration.

Some suggestions made:

Implement a COMET Teachers Certificate; Consider a Continuous Professional Development (CPD) points system for vocational teachers that's quick and easy to implement; teachers earning CPD points should not lose commensurate teaching hours in the regulated weekly requirement; CPD points should be incorporated into the DHET prescribed college funding model, as should post-qualification indenture into sustained employment of students.

It must be conceded that these observations have a number of limitations. Firstly, whilst focus groups have some advantages in the qualitative analysis of data, the observations still need to be considered in the context of deeper analysis of the data from the large scale COMET test held in 2014. Secondly, the vocational teachers represented in this exercise are a small sample of the total population of vocational educators. Thirdly, all the variants of teacher instructional practise are not included in the focus group discussions and may therefore require additional research enquiry. Finally, these observations nevertheless attempt to inform the work of educational scholars committed to strengthening qualitative improvements in the South African TVET system.

Literature

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