

The Impact of the Teaching Process on the Quality of Teaching

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Abstract. The traditional forms for addressing the quality of teaching, such as students' evaluation, feedback, peer evaluation and inspectors are seen as subjective. This has opened a path for research for some assessment models which relies on standards. For instance: the AQR model to assess the teacher teaching practices [8]; the TE-QAS model to assess the teacher education [6]; the CEM model to assess teachers quality based on students outcomes [7]; the competence based model to assess the teacher quality through assessment tests [9]; the National Education Association using a standard-based learning and assessment system to show how student learning standards can be connected with teacher education and assessment [10]; the Competence based model for teachers how to teach [5]; the “Angebots-Nutzungs-” Model for assessing quality based on teacher-student interaction (results, feelings, environment) [4]; And, there are maturity models that address the quality of teaching by assessing and improving either the curricula or course design [2]. On the other hand, Chen et al. [1] state that a better quality of teaching is achieved when managing and assessing the teaching process as a whole, rather than focusing on one teaching factor.

This thesis aims at improving the quality of teaching in informatics classes. Consequently, the main objective is to assess and manage the quality of teaching with informatics teachers at university and schools in Austria. The model of Chen et al. is, however, limited to a subset of possible Process Areas and it focuses on tertiary teachers only. In their paper, Chen et al. address the implementation of a model for primary and secondary schools, but to the best of my knowledge, such a model has not been implemented and/or published yet. Within this problem domain, this work raises the following research question and sub-questions (with a Carinthian focus):

- *RQ: How to assess and to improve the quality of teaching in informatics at universities and schools in Austria?*
- *SQ1: How to define the terms “teaching process” and “quality of teaching”?*
- *SQ2: What possibilities are there to assess the teaching process and the quality of teaching?*
- *SQ3: To what extent is the quality of teaching influenced by the teaching process in informatics in schools and at the university in Carinthia?*
- *SQ4: To what extent can a Maturity Model be used to improve the quality of teaching informatics at schools and universities in Carinthia?*

Obviously, none of the aforementioned models deal with the thesis's research question. They do not assess the teaching process as a whole. To overcome this problem, Reçi and Bollin introduced a Teaching Maturity (TeaM) model [11], borrowed from SEI's CMMI [3], which goes beyond the work of Chen et al., covering university teachers as well as secondary and elementary teachers.

A combined methodology approach is used to substantiate the scientific value of the thesis. The definition of the teaching process and quality of teaching (SQ1) as well as the possibilities to assess them (SQ2), will be answered by a *literature survey* method. An application-oriented procedure (the TeaM model) with the methods *source analysis* and *empirical approach* will be used to answer if the teaching process influences the quality of teaching (SQ3). Furthermore, to answer the effect of a Maturity Model on improving the quality of teaching (SQ4) the work uses a mixture of different methods including *an empirical approach*. By summarizing the above results, it is assumed to be able to answer the main research question.

The TeaM model is already defined and has been presented at three conferences (ISSEP, CSERC, CSEET) where it has received positive feedback. Through a survey approach, we tested the model in dimensions of usability and applicability with some informatics lecturers, and the results are published in a full paper at the OCCE conference. These results helped to improve the model a lot, and the model is now being used to assess the teaching quality at schools and universities. So far, the TeaM model raises the curiosity and the interest of informatics teachers as it changes their point of view by seeing teaching as a process. Finally, the TeaM model is supported by one CMMI assessor, who looks forward to using it in the personal education section, too.

Keywords. CMMI, teaching quality, maturity model, schools and university education

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