

Appendix A

Research Seminar

As part of the FINAL BRACElet workshop

“The delicate art of connecting theory and practice: A variation theory study in programming education”

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ABSTRACT

As an educator in computer science I have often meet students who can 'hack' code, but hardly know any programming theory, but also students who can discuss theory but have problems to write code. Students' problems with connecting theoretical and practical knowledge is previously reported in higher education. Research from areas like physics education, technology education, and economics education have pointed to this problem, but little research on the problem has been performed so far. How can we understand and describe how theoretical and practical knowledge relate? The present research investigates this very problem.

In the presentation I will discuss a research study on programming students learning, focusing on the relation between theory and practice in the learning process. Computing education research has so far focused on either students' learning of theory, or how they learn the practice. Empirical evidence points however to the importance of researching the relationship between theoretical and practical learning. Based on two empirical studies on novice as well as graduating students I argue that there exists a mutual and complex dependency between learning practice and theory. It is hard to learn one without the other, and either of them can become an obstacle that hinders further learning.

The present work demonstrates a way to research how students' learning of practice and theory are related. Results from a phenomenographic analysis of novice programming students' understanding of the concept object are combined with an analysis of typical novice programming activities, based on variation theory. The analysis leads to a model of the relationship between theoretical and practical knowledge, in terms of educationally critical aspects. The model can be used to discuss how the identified critical aspects can bridge the gap between theory and practice and thus enhance students' learning.

Date: 9th September 2010 at 10am

Place: WT202 Level 2 AUT Tower

All Welcome !