

Higher Order Thinking Skills in Computer Based testing in Physics

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Abstract. After years of experience with Context Based paper based Exams and Computer based Exams we design plans to integrate this to a Assessment Platform appropriate to test Higher Order Thinking Skills, for now and the future

1 Introduction

In the Netherlands we have try to incorporate Multimedia and ICT in the Physics education. We are convinced an important condition for that is to incorporate Multimedia and ICT in the assessment. We have experience with CBT on the lower levels and are making plans to expand CBT to higher levels of education. Five aspects are important.

1. Since the 80s In the Netherlands there is a context based Physics curriculum in which specific contexts are prescribed. So schoolbooks, and as a result of that, most of the Physics lessons are context based. Because of the principle: "test what you teach", the assessment is context based too.

2. There is a lot of attention for computer education in the Dutch schools and in Physics especially. Teachers and students can use software like COACH to do measurements on video fragments and build models.

3. In the Netherlands we have Central Exams in Physics. These Central Exams are context based. One of the features is the use of a n Information book for Physics Chemistry and Biology. For Physics the book contains formulas and data (tables and scheme's). The pupils use this book in the classroom and in the assessment. One of the goals of this is to test Higher Order Thinking Skills (HOTS). The pupils has to find the necessary information in the book, without a hint in the test.

4. On the level of vocational education, we have experience with CBT for several years. There we use easy simulations and tools to assess pupil's skills. But the information book is not yet incorporated in de CBT.

5. In the level of prevocational and pre-university education, we have experience with the Compex project, to assess in the central exams the skills with video measurements and dynamic modeling.

2 Our Plans

Today we face the challenge to incorporate and integrate these five aspects in plans for CBT on higher level for the future with possibilities to assess Higher Order Thinking Skills.

Our plans are to design an Open Source Assessment Platform, where we incorporate:

DIT A Digital Information Tool. This tool in generic and the same in each Exam.

DAT's Digital Assessment Tool's. These tools are specific for one or a set of questions. But they can also be more generic, for example a video measurement Tool and a Modeling Tool.

In the talk we want to illustrate you the five aspects, and share with you our (idea's about the) design for a CBT in the future. We are very interested in Your Opinion.