1 Introduction

"To what extent have the proposed models succeeded in their goals of aiding or developing meta-cognition in students?"

1.1 What is Metacognition?

The topic of meta-cognition is as broad as it's vast applications, but it can be thought of as "Knowledge about knowledge" or "Thinking about thinking". Metacognitive skills include our ability to regulate our knowledge, identifying where gaps may be and employing suitable strategies to fill them. Certain meta-cognitive skills learnt in one domain can be easily transferred to another domain. For example, learning to ride a bicycle does not automatically enable me to ride a skateboard, however, knowledge on oneself and learning processes developed from learning to ride a bike may be useful in learning to ride a skateboard. For example, being aware that it may be suboptimal to continue learning after a period of time, or that it is more effective to learn how to ride when asking for help and to be given a push.

Successful teaching of metacognition would show an enhancement in domain learning and ideally show a closer fit the proposed models.

1.2 Challenges involved in designing for Metacognition

Designing for metacognition is a very challenging task. It is encouraging us to think about thinking and owing each version does this in a unique way, designing for this level of uniqueness poses a challenging task

In [2] it was explained that by adding to the cognitive load, the meta-cognitive goals became secondary to that of domain learning, hence, bringing meta-cognition to the forefront and attention of the user whilst in a domain-specific environment can remove its effectiveness and it is better kept as a subtle, rather than explicit addition. Else, students are required to be properly motivated to give meta-cognitive strategies the attention required.

In addition to internal challenges in designing and building for meta-cognition, there are additional external obstacles: the student themselves. The goal is to encourage students to think about their own thinking and learning, but as each person brings fourth a set of unique personality traits, experience and set of knowledge, it is very difficult to be able to define what the correct model of learning would be, and then teach this model to students. For example, does the user have difficulty with reading or writing,

preferring auditory or visual information? Is the user impatient? Does an ITS fit with all differing learning styles? Is the user at an already high level whereby a system allowing more choice and freedom would better suit?

1.3

References

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[4] Modelling Learners Cognitive and Metacognitive Strategies in an Open-Ended Learning Environment. James R. Segedy, John S. Kinnebrew, Gautam Biswas

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