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Citation for published version (APA):

Jossberger, H., Brand-Gruwel, S., Boshuizen, E., & Van de Wiel, M. (2010). *Monitoring: A Strategy to Detect Imminent Mistakes*.

Document status and date:

Published: 09/11/2010

Document Version:

Peer reviewed version

Document license:

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- The final published version features the final layout of the paper including the volume, issue and page numbers.

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Monitoring: A Strategy to Detect Imminent Mistakes

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Abstract

The aim of this empirical study was to unravel generic self-regulated learning behaviours and to seek to investigate micro processes of planning, monitoring, and evaluating in workplace simulations. Eighteen students from upper secondary vocational education participated. Students were observed during a practical lesson and interviewed afterward to gain detailed insights into their behaviours, thoughts, and (inter)actions. Information was collected on the way they executed a task, how they dealt with problems and mistakes and why they interacted with peers or the teacher. Students self-regulated during task execution. Monitoring appeared to be an activity that was regularly executed by keeping a close eye on the product students were working on. Teachers were consulted when students had doubts and needed confirmation or when they wanted more information. They consulted their peers when they wanted to get a faster answer and thought that this peer had enough knowledge to help them out.

Keywords: Self-regulated learning, vocational education

It seems a pedagogical necessity to develop employees that are qualified and adapted to the needs of the workplace (Achtenhagen & Oldenbürger, 1996). Vocational education should offer the possibility for students to develop both the competencies required for their future profession as well as the skills necessary for future learning (Achtenhagen & Oldenbürger, 1996; Biemans, Nieuwenhuis, Poell, et al., 2004). Research identified self-regulated learning (SRL) as a key skill to keep on learning and to achieve high quality performance (e.g., Zimmerman, 2006). Self-regulated learners orientate, plan, monitor, adjust, assess, and evaluate their processes during task performance. Insight into one's own learning process is essential to choose an appropriate learning path and to focus on performance aspects that need improvement (Kicken, Brand-Gruwel, & Van Merriënboer, 2008; Ericsson, 2006). During task performance, monitoring is an essential activity as learners should be constantly aware of what they are doing by looking back at the plan and looking forward at the steps that still need to be performed to achieve the goal in mind. Monitoring can help to detect mistakes and deviations from the plan. When learners realize that things do not work out as planned, they need to adjust their approach. Students, who are aware of their mistakes, can learn from them and prevent them next time. By monitoring their progress, students can also figure out when they need to seek help. Knowing when, where and how to find help or necessary information is a self-regulated learning skill (Zimmerman, 2006).

So far, little is known about the way students learn and what learning strategies they use in vocational education. The aim of this study is to unravel generic SRL behaviours and seek to investigate micro processes of planning, monitoring, and evaluating. The central research question is: "What characterises good functioning students in vocational education and what kind of self-regulated learning strategies do they use to detect (imminent) mistakes?"

Method

Participants. Eighteen students (9 females, 9 males) of the sectors Agriculture, Engineering & Technology, and Care & Welfare, participated. Students were in their first year of upper secondary vocational education and their mean age was 16,5 years (*SD* .86). Students were selected by their teachers and they could be characterised as good functioning students.

Procedure. During a practical lesson, students were observed individually and audio-recordings of their interactions were made. All actions and interactions were noted in an observation scheme. In an in-depth semi-structured interview the lesson was discussed on the basis of the observational notes and students were asked to explicate their behaviour and thoughts. Information on the way they executed a task, how they dealt with problems and why they interacted with peers or the teacher was collected.

Analysis. Data was analysed with a phenomenological approach to detect micro processes of self-regulated learning.

Results and Discussion

The observational data and the information gained from the interviews show that the students who participated in this study self-regulated their learning to some extent. In general, students started straight away working on their practical task. Monitoring appeared to be an activity that was regularly executed by keeping a close eye on the products students were working on. As students concentrated and focussed their attention on the learning tasks, they were able to detect mistakes during the process. By going through the executed steps again, they were able to correct their own mistakes. The fact that students monitored carefully helped them to determine at what point during task performance they needed to seek help; they knew where and how to find the necessary information. Only if students had doubts and

needed confirmation or when they wanted more information, they consulted the teacher. A peer was consulted when they wanted to get a fast answer and thought that this peer had enough knowledge to help them out.

This study shows that good learners monitor their learning process and are able to detect mistakes; these insights can help to teach less skilful learners to monitor systematically.

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