

By all means: Unraveling undergraduate research supervision strategies using stimulated recall. (0110)

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Introduction

Over the last decade there has been an increased emphasis on student engagement in research within universities (Boyer Commission 1998; Healey & Jenkins, 2009; van der Rijst et al., 2013). One way of gaining insight into the integration of research into student learning is to examine student research projects which can be found in the UK (e.g. Todd, Bannister & Clegg, 2004), Australia (e.g. Brew, 2010) and the Netherlands (e.g. de Kleijn et al., 2015).

For many undergraduate students, a significant element of final-year study is a capstone project under supervision. Research supervision requires supervisors to use a blend of pedagogical and personal relationship skills in order to deal with individual differences between students (e.g. Grant, 2003). Supervisors emphasize a focus on students' competence level, determination and characteristics in adapting to individual student needs (de Kleijn, 2015). Also personal and professional identities and desires play a role in supervisor-student interaction (Grant, 2003; Manathunga, 2011). In the present study, we aim to gain insight into research supervision by analysis of supervisors' strategy use. Specifically supervisors' underlying reasons within their particular research contexts. Deeper understanding of *what* supervisors do and *why* will result in suggestions for instructional development initiatives (Pearson & Brew, 2002).

Strategies in research supervision

Supervisors aim for timely completion of sufficient to high quality theses. However, what individual students need to reach that goal differs. So, adaptivity in the supervision process is important for supervisors ([de Kleijn, 2015](#)). Also, supervisors feel that responsibility for the thesis in undergraduate research belongs to the student ([Todd, Bannister, & Clegg, 2004](#)). This raises questions about how supervisors provide adaptive support towards the goal of thesis completion. Adaptive support aims to promote students' abilities to guide student activities across changing contexts (i.e. phases of research).

From studies into teacher-student interaction (scaffolding) is known that adaptivity or contingency to students' needs requires supervisors' diagnostic and intervention strategies on the level of student affect as well as cognitive and metacognitive level ([e.g. van de Pol, Volman, & Beishuizen,](#)

[2011](#)). In strategies a distinction is made between *what* is scaffolded (intentions) and *how* scaffolding takes place (means). Examples of *what* is diagnosed and intervened suggests that supervisors focus on students' competence level (e.g. research skills), determination (e.g. motivation) and student characteristics (e.g. orientation on future career) ([de Kleijn, 2015](#)). Less is known about underlying reasons for supervisors to diagnose and intervene in a particular way (means) in student-supervisor interaction. Research questions in this study are:

1. What diagnostic and intervention strategies do supervisors use in undergraduate research supervision meetings? What are underlying reasons for chosen strategies?
2. How are strategies related to the supervisors' reasons?

Method

Participants & procedure

Individual stimulated recall interviews were conducted with 11 supervisors within the hard-applied sciences (Biglan, 1973). All were involved in undergraduate research projects (duration ten to 24 weeks). Prior to the interview a student-supervisor meeting was videotaped.

The interview guide consisted of four parts we asked supervisors about; (1) history of the student research project to attain an image of the course of the project and to elicit potential diagnostic information; (2) the supervisors' goals for this supervision meeting; (3) background information such as supervision experience was collected; and (4) invited supervisors to select the moments within the dialogue in which he or she felt guidance was needed and to explain what he or she thought about that at the moment. The aim of this interview technique is to enable supervisors to reflect on strategies in action during student-supervisor interaction.

Data analysis

Analysis procedures are similar to a grounded approach. First, the interviews were transcribed and coded in several phases. Starting with four interviews, two researchers worked independently to identify interview fragments which referred to supervisors intentions and means. After that descriptive codes were assigned to the selected fragments and clustered into meaningful categories. At this point additional analysis is needed to complete the final coding scheme and to explore relationships between intentions and means.

Preliminary results

First round of analysis reveals six main categories of supervisor intentions aiming at (1) writing the thesis; (2) division of research and teaching responsibilities; (3) deepening student understanding of research; (4) determining student competence and ownership; (5) student motivation and (6) time span and planning. The data suggests seven ways through which supervisors in our study have met these intentions; (1) modeling; (2) direct instruction; (3) promote student responsibility (4) asking questions; (5) providing tips and tricks; (6) structuring tasks for the student and (7) feeding back.

Below some illustrative interview fragments will be presented in order to provide an explanation of the main categories. The first fragment shows how the supervisor uses promoting student responsibility as a mean to diagnose students' skill of writing the introduction of a thesis.

"Actually I [the supervisor] didn't guide the student, I just told her to start writing the introduction. This way I gain insight in how they prepare and what they write." (Supervisor 1)

Other supervisors ask questions in order to diagnose student needs .

"Now he's running his analysis [...]. In this phase I try to let him ask all his questions, even small and practical ones. I always try to ask him a lot not trying to make assumptions." (Supervisor 3)

Some supervisors have intentions which are to some extent 'teacher-focused'. This example illustrates a relationship between supervisor intention to overcome his own challenging research-teaching responsibilities by promoting student responsibility and independence.

"She [student] is developing an advanced method to visualize this, in which we work together. Because of my teaching duties she is more working on her own lately. Fortunately, she can really work independently." (Supervisor 5)

The presented fragments indicate that supervisors show intentions and means that vary on the scale for student-focused to teacher-focused approaches to supervision (see Prosser & Trigwell, 1997). During

presentation we will illustrate relationships between intentions and means expressed in approaches (intentions and strategies) in supervisor-student interaction.

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