

# ICED 2020 proceedings:

## Nudging self-regulation as a means of study assistance and educational development

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### Abstract

The growing need to support students in defining and pursuing individual educational goals is reflected in the data-based student assistance system SIDDATA. For its development and evaluation, 36 semi-structured interviews with students at three German universities focusing on the subject of self-regulated learning were carried out. The paper presents the results of the interviews and their impact on SIDDATA. In particular, the interview results show the different dimensions and requirements of self-regulated learning, by which means the study assistant can nudge and encourage students' ability towards self-regulated learning and the contribution such a tool can make to future educational development at universities.

### 1 Introduction

The research project "Study individualization through digital, data-based assistants" (SIDDATA), funded by the Federal Ministry of Education and Research (Germany), has the overall goal of supporting students in defining and pursuing individual educational goals. This objective is of particular relevance because the shift to the Bachelor/Master system in Germany due to the Bologna reforms has often led to criticism of school-style university learning approaches with reduced degrees of freedom and individual choice.

This aspect of the individualization of learning is mainly discussed under the concept of self-regulated learning (SRL). Zimmermann defines SRL as follows:

*Self-regulated learning theories of academic achievement are distinctive from other accounts of learning and instruction by their emphasis (a) on how students select, organize, or create advantageous learning environments for themselves and (b) on how they plan and control the form and amount of their own instruction. (Zimmerman 1990, p. 13 f)*

In this definition of SRL the cognitive psychological background of the theory is clearly evident. SRL implies a regulatory understanding where students bring their inner and outer states into

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congruence with each other in order to achieve their own learning goals individually and effectively. An extension of this understanding, however, is achieved if students exercise and understand “agency”. This concept of agency – which is then integrated into the SRL concept as an extension – also describes a central competence of students in the future world.

*Future-ready students need to exercise agency, in their own education and throughout life. Agency implies a sense of responsibility to participate in the world and, in so doing, to influence people, events and circumstances for the better. Agency requires the ability to frame a guiding purpose and identify actions to achieve a goal. (OECD, p. 4)*

The question arises as to how SRL can be supported in a data-based manner and thus contribute to the individualization of studies. In order to ascertain requirements for the development of the SIDDATA application, in-depth interviews were conducted with students which provided interesting insights into the students’ view of self-regulated learning. In the following, the results of these interviews are presented and the implications for the development of the SIDDATA assistant are discussed.

## 2 Methodology

The interdisciplinary project “SIDDATA” involves the Universities of Osnabrück, Hanover and Bremen. Within the 36 semi-structured interviews, students from all three universities were interviewed. The interviews were conducted in German in a semi-structured manner. The quotations were translated into English<sup>5</sup>. The aim was to investigate the motivation to study, the students’ situation and expectations of a digital student assistant. The interview material was transcribed and prepared for analysis with MAXQDA.

## 3 Results and discussion

### 3.1 Four dimensions of self-regulation in studies

The analysis initially focused on the conceptual dimensions of SRL and presents inductively created categories (see Table 1). In addition, the challenges students face in this context, and also the extent to which the assistant can currently support students with regard to self-regulation were analyzed.

Interest and Motivation	Self-management & Organization of Learning
Organization of Study	Freedom & Compulsion

Table 1: Inductively developed categories of self-regulation.

In the category *Interest and Motivation*, the interest in studying was the main focus. The students report that they feel more responsible and are more engaged in their own learning process if they are allowed to choose the topics of their studies themselves. This results in a reinforced motivation to study. The following quote from a student interview sums up the respective category:

<sup>5</sup> Note: We used the German term “*eigenaktives Studieren*” within the interviews, which means literally “self-active studying”.

*Well, so motivation is definitely a big point. Or just that you're interested in what you're studying. That you then simply sit down actively to learn, to choose your internship. To organize yourself (...). So it's important that you have that interest (...).*

The aspect of actively deciding to learn is also subject of the next category. In most of the interviews, terms such as self-discipline, time management and general activities related to learning were mentioned in connection with self-activity and its challenges. Consequently, the category *Self-management & Organization of Learning* was created and is well illustrated by the following quotation:

*That at a certain time you get a grip on yourself and do your tasks. So that you look at it from your own judgment: Okay. I would have to do that. Then I'll simply do it. That means that you set yourself a schedule or make a list in your head: I have to do this and that.*

The quote illustrates aspects of one's own responsibilities with regard to studies as well, and is ultimately part of the category *Organization of Study*, which is represented by the following quotation:

*Well, I would perhaps also simply relate that to the fact that you look at things in a self-responsible way again, how am I studying right now? How many modules have I taken now anyway? And do I go to the lectures or do I NOT go to the lectures. For me, that is such an activity in my studies. And that you can decide for yourself.*

The above mentioned aspect of being able to decide for oneself is a good transition to the last category *Freedom & Compulsion* in which the idea of freedom is expressed:

*(...) at school (...) you are taught how to do this: The teacher says what has to be done and then it's done. And this happens within a self-active study approach, when it aims even more at personal responsibility, of course much less. And if people have never learned what it means to pursue one's own interests, to engage themselves, then it will be difficult in any case. Yes.*

The idea of compulsion is expressed in this quotation to the effect that the freedom to choose freely is the basis for one's own motivation. It is closely associated with the compulsion to adhere to the guidelines in order to succeed in university structures.

### **3.2 Implication for SIDDATA**

With a view to SIDDATA's overall objectives of supporting students in defining and pursuing individual educational goals and individualizing learning, the following four central lines of development result from these four categories.

- Dimension "Interest": A recommender module which selects literature, classes and events according to the specified professional interests is developed and designed. At the same time, this module should also contain a developmental aspect that supports the development of professional interests, especially at the beginning of the course or in the transition of the study phases.
- Dimension "Self-learning organization": There will be a recommender module that helps the student to organize his or her learning process, e.g. in terms of time and task planning. This can be based on cognitive science indicators such as attention measurements to support the student in self-reflecting on his or her own learning process.

- Dimension “Study Design”: This module refers to the overall study design by showing support for the planning of the course of study and, for example, giving advice on how to bring one’s own professional interests into line with the curriculum.
- Dimension “Freedom”: The development of a corresponding module is probably the greatest challenge for SIDDATA. The respective goal is to show the students degrees of freedom, to give them room to shape their studies and to enable them to provide “agency” (see above).

#### **4 Conclusion**

The findings of this study have shown on the one hand that students understand SRL as a whole range of aspects which are also represented in the scientific discussion on SRL. This includes aspects of both metacognition and agency. On the other hand, the study also shows that the approach to developing an assistance system for SRL should be broadly based. The different aspects of SRL revealed by the interviews show that it may be considered promising to use nudging approaches to let students find their own paths in studies. Higher education institutions must therefore adapt to the different forms of SRL. Clearly, a need for a broader perspective on various aspects of being or becoming a student arises, including the organization of study, the development of professional and individual interests and an “agency” competence.

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