

Oscillating between Conservation and Investment: A Grounded Theory of Students' Strategies for Optimizing Personal Resources

Katja Hakel, Norwegian University of Science and Technology, NTNU

Abstract

Students' use of time and effort during their studies has been discussed exhaustively in mass media and educational research. In most cases, researchers try to give advice to teachers on how to get their students to become more active and engaged. The grounded theory presented in this article, however, challenges this approach by focusing on the students' point of view. When interviewing students for this study, I soon realized that students only have a limited amount of time and effort at their disposal. Optimizing these personal resources emerged as their main concern. For the students, investing resources into one study activity always means having to reduce the amount of time and effort they can spend on other activities. They resolve their main concern by oscillating between conservation and investment strategies. Their decision regarding which type of strategy to use depends strongly on the students' evaluation of their current situation.

Keywords: oscillating, optimizing, personal resources, investment strategy, conservation strategy.

Introduction

The theory presented in this article shows how students oscillate between conservation and investment strategies in order to optimize their personal resources. It differs from previous research in that it focuses strongly on the students' perspective. A review of this research showed that many educational studies have a teacher-focused approach. In these studies, the researchers often provide recommendations to teachers on how to change their students' learning approaches (Abouserie, 1995; English, Lockett, & Mladenovic, 2004; Grauerholz, 2001; Smith & Colby, 2007). Teachers must "lead students to deep learning" (Smith & Colby, 2007, p. 206). They must also "improve functioning regardless of the situation through a development of learning skills, and through an encouragement of cognitive and affective development" (Abouserie, 1995, p. 19). Only some researchers acknowledge that the students' approaches to learning are

based on how they evaluate their study situation and the demands of each specific task (English et al., 2004; Ramsden, 1992).

This latter perspective is in accordance with the findings of my own study. Using the grounded theory methodology, I interviewed 13 students from language programs at a Norwegian university. I found that students experience different situations differently and that they adjust their learning strategies to each specific situation. The grounded theory presented in this article is based on the patterns that emerged from the students' data. The theory describes how students resolve their main concern of optimizing their personal resources through oscillating between different types of strategies.

Method

"Remaining open to what is really going on will soon transform the researcher to going where the data takes him" (Glaser, 2012). This statement could not be any better for expressing exactly what I experienced when I started out on this grounded theory research. Originally, I had been interested in investigating students' attitude towards the use of technology in university education. The use of grounded theory as a research method seemed to be the most suitable for me then. At that time, my knowledge of how to do research and about educational technology was close to zero. Having almost no previous knowledge meant that I had few preconceptions concerning the substantive area under study.

First of all, I obtained ethical approval from the Norwegian Social Science Data Services (NSD). An interview guide that contained only the grand tour question: "Can you tell me about the use of information and communication technology in your daily study life?" was approved after I provided a detailed explanation of the grounded theory method. When the true main concern emerged from the data, I reported the changes in the research topic to the NSD. I also obtained approval of an interview guide for the semi-structured interviews I used in theoretical sampling.

I started my research with interviewing two students. All the interview participants in the current study were first to third year students from the Department of Languages and Literature at a Norwegian university, though from different study programs. I recorded and transcribed both interviews during the same day. I also recorded and transcribed the following interviews with five more students. Since I had never conducted an interview before, at that time I did not have the self-confidence in my ability to take good field notes. I was worried that I might not be able to identify crucial points in the students' narrations during the conversation. Secondly, I noticed that the students were much more relaxed when they felt I was really looking at them and not scribbling frantically on paper. However, as I learned more about the GT method I no longer transcribed the interviews I conducted during theoretical sampling.

During these first seven interviews, I only posed one grand tour question to the students: "Can you tell me about the use of information and communication technology in your daily study life?" By asking follow-up questions that emerged during the interviews, I encouraged the students to open up and elaborate on their answers. The recurrence of statements such as "sometimes you just get so full, there's no point in even trying" or "working in groups is so much better since you actually only have to do one thing instead of it all" made me realize soon that technology only plays a minor role

in students' daily life at university. What seems to matter to them much more is how they manage their time and effort. Most of the students' stories were about how to accomplish their daily study tasks within their limited amount of personal resources.

I started to analyze the interviews afterwards by reading through them line-by-line. While reading, I constantly kept the central question of the GT method in mind: "What is this data a study of, and what category does this incident indicate?" (Glaser, 1978, pp. 57-58). Glaser (1978) defines the line-by-line approach as the second rule that governs open coding. Throughout the entire process I also wrote memos, which helped me to conceptualize the incidents that I found in the data.

After the initial seven interviews, the main concern had emerged clearly from the data and the direction in which to take the study during theoretical sampling became clear to me. Many of the concepts I found during open coding were related to either conservation or investment of time and effort. I decided to explore this further through theoretical sampling. I conducted six more semi-structured interviews with other students from the same department. During selective coding after each interview, I focused on identifying further concepts and properties related to the conservation and investment of resources. Memo writing throughout the entire process helped me to direct my theoretical sampling. By writing memos, I was also able to conceptualize the data.

After these six interviews, I could no longer find any surprising incidents. All the new data fitted the concepts that had emerged previously, which meant that theoretical saturation had been reached. The ensuing memo sorting process helped me to understand how these concepts were woven together. I also continued to write memos on memos. The theoretical codes that emerged during this process showed that investment and conservation are explicit strategies for the use of personal resources. These strategies were interconnected through the theoretical code of oscillating. In addition to that, I also found that the concepts related to the students' study situation were necessary conditions for the use of these strategies.

The Theory of Optimizing Personal Resources

Studying at university places great demands on the students, who "often need to juggle various work and family commitments while completing their studies" (Ng, 2008, p. 439). However, it is not only commitments outside their studies that put a pressure on the students. Even within their daily study life, they have to handle different courses at the same time, where each course has its own readings, lectures, assignments, deadlines and finally, exams.

Students only have a limited amount of time and effort—personal resources—available for carrying out all the activities that are part of their daily studying. Optimizing personal resources emerged from the data as the students' main concern. Depending on the specific situation they find themselves in, the students resolve this concern by oscillating between different strategies to ensure their study progress while trying to manage their time and effort in the best possible way.

The preferred type of strategies for the students is conservation strategies. These strategies aim at using as little resources as possible or using them in the most

economical way. However, as the data from the study revealed, the students will go from using conservation strategies to investment strategies when certain conditions are fulfilled. They will invest their time and effort when they feel the need to secure an important outcome. Investment strategies are thus based on a conscious decision by the students to spend their personal resources more actively.

However, even while using investment strategies, the students constantly evaluate whether the conditions that originally caused the investment are still present in new situations. If they are not, the students quickly return to conservation strategies until the need for investment arises again. This oscillation between conservation and investment strategies emerged as the core category and the students' overall resolution of their main concern, optimizing personal resources.

Different situations call for different strategies

So in which way do students actually oscillate between the different strategies, and what triggers their decisions? To answer that question, let me illustrate the interplay of conditions and strategies in the following section. However, it is important to understand that the different strategies are not tied to specific conditions. The strategies used by a student in one situation do not need to be the same as in another situation. Different students might also make different decisions. The following examples are only meant to illustrate how the students try to resolve their main concern by oscillating between the conservation and investment of their resources.

Every single day, students have to decide on how to distribute their time and effort among all the different tasks and activities. This decision is based on how they evaluate their current situation. This situation is made up of five conditions that emerged from the data. One such condition is interest and motivation. Sometimes students decide to invest a high amount of personal resources on one particular course just because they feel more interested in this specific subject. They might actively try to find additional resources in order to learn more about it, e.g. by using Google to research a topic or watching infographics on Youtube. Becoming knowledgeable emerged from the interviews as one of the six investment strategies.

Often the interest in a certain course or topic is closely related to a personal interest. This can easily blur the line between university studies and private life. One student I interviewed reported that she

love[s] reading poems. I find it so much fun that I might even go home and google it, read others' interpretations and spend a lot of time on it even though I do not have to. But then that is not only because of studies, it becomes a personal interest.

Since she only has a limited amount of resources for studying, here the student decided to invest time and effort that would actually belong in her spare time.

However, sometimes a course can turn out to be less interesting than expected, maybe due to a boring teacher or a lot of tedious course work. Sometimes the student might not be interested in a course right from the beginning. When that happens, students often prioritize more interesting tasks until the conditions change and they have to invest their resources all the same. One student told me that she prioritized working as a teacher since it was "a brand new school and I really enjoyed the work". Because her motivation to work was so much higher than her motivation to study, she decided to reduce the amount of resources spent on her study activities by using

conservation strategies. Later on in the semester though, with the exam approaching fast, she had to change to investment strategies in order to catch up again with her studies. She knew that she needed to pass the exam in order to be able to continue with her studies. At this point, a high dependence on the result prevailed over a low degree of interest and motivation.

Dependence on result emerged as the second condition. Students spend their resources according to how crucial they feel an activity is for being able to continue with their studies. If the activity is judged to be of little importance and the students feel a low dependence on achieving a good result, they will try to save their resources by using conservation strategies.

Two conservation strategies come into play here. Minimizing is a strategy where students try to use less time and effort than they would normally if they were studying as expected from them. One example of using fewer resources than appropriate was a student who tried to save time and effort by not attending lectures on campus. By using technology to access the resources published by the teacher and by asking his friends for summaries, this student was spared from having to spend his time and effort on going all the way to campus.

Delimiting is another conservation strategy. Delimiting means to set a fixed limit for the amount of resources to be used. However, in contrast to the minimizing strategy, here this amount would correspond at least to the amount that is appropriate. Students dedicate themselves to a specific activity during a delimited period of time and have a clear distinction between their work hours and spare time. They do not wish to spend any more time or effort than strictly necessary. One of the students I interviewed told me that she would ask a teacher a question only if the teacher was standing nearby and available. If she had to wait for the teacher more than a couple of minutes, she would rather try to get quicker help by asking friends or by using Google on it.

These conservation strategies do not imply that students are lazy and try to avoid working. Sometimes the demands of the different courses conflict with the amount of resources available to the student. For example, the students might have to read a lot of literature for one course, while another course has an important deadline coming up. In this situation, the students might try to adapt by minimizing the amount of time and effort they spend on reading the literature, maybe by just reading the abstracts. Through minimizing their resources here they can invest more resources in passing the assignment that they depend on more.

Often the perceived dependence on a result will increase dramatically when the exam period approaches. During exam periods, most students feel that they have little time left and still so much to learn. Every single activity that could help them prepare for the exam seems to be of crucial importance. The students feel that they do not have enough resources left to do everything they need to do.

Efficientizing is a conservation strategy that many students employ when feeling under pressure. In the current context, it means that they try to improve their results by making the use of their time and effort more efficient. This does not mean that they invest more resources than strictly necessary in an activity; they are just using their

resources in different ways that lead to a better use of their limited time. Efficientizing happens for example when students choose one activity that seems to lead to better results over another. Students who feel that lectures are a waste of their time might substitute them with working on their own. They might also try to use the time dedicated to study activities in a more efficient way. This happens mostly right before deadlines. Students who feel pressed for time try to resolve that situation not by extending the time dedicated to study activities, such as longer work hours. They efficientize the use of their time by working in a more concentrated manner by consciously shutting out any possible distraction. Some students even download applications onto their PCs that prevent them from accessing social media or entertainment websites.

One strategy that emerged from the data is not perceived by the students as a good strategy, but is still—and surprisingly—used a lot. Filling voids is about trying to utilize all those little time gaps throughout the day, like reading literature on the bus or watching video lectures while brushing teeth. The students all reported that this strategy exhausts their minds more than it really benefits them. The reason for this is that these voids usually lie within their spare time. The students feel that they are constantly “switched on”. As one student burst out in an interview: “sometimes you just get so full, there’s no point in even trying”. Nevertheless, filling voids emerged as one of the possible means to *efficientize* the use of resources.

Dealing with uncertainty is another important condition for the use of investment strategies. This uncertainty relates to the students themselves and their desire to know exactly “how they are doing”. If a student does not know what exactly the teacher expects of him or if he might even be doing poorly altogether, he or she will invest more resources until he or she starts to feel safe again and can go back to conservation strategies. Both contextual and personal elements have a strong influence on the student then. Late feedback by the teacher, unknown teaching methods, lack of information or simply bad study techniques can all increase a student’s uncertainty.

Again, becoming knowledgeable emerged as one of the main strategies in dealing with uncertainty. By highlighting, taking notes or drawing illustrations, students are not only trying to get a good grip on the content they need to master. They are also customizing it to their specific learning needs. They assemble all the information from different sources such as the teacher, course materials, group collaboration, and digital or analogue sources and modify them in a way that most enhances their learning. This helps them to feel more self-confident that they will be able to meet the demands of an exam or assignment.

Seeking help comes into play when a student feels the need for further explanations or support. When I coded the interviews, a help hierarchy emerged from the data. Students change from whom they ask for help depending on the degree of effort and time it will require to get that help. At the same time, they try to avoid the risk of appearing stupid. However, the dependence on the result seems to have a much greater influence on whom a student would ask: if the help needed is crucial in order to pass a course, most often they will approach a teacher. Writing an email to a teacher and asking for an appointment, however, means having to invest more time and effort. Therefore, when it only concerns a short explanation in order to solve a particular question, the students prefer quick chats with friends.

Students who were struggling with uncertainty often expressed that their fellow students represented a social safety net to them that would catch them when they were falling. They felt that building rapport by establishing a fellowship with other students was a highly valuable investment of their resources not only professionally. To them, it also had a huge impact on a social dimension. For example, one student told me that "when I started my studies I was in a really bad personal situation, I had just become a widow. I found very kind support in our study group".

So far I have illustrated how students oscillate between different strategies based on how they experience course demands on a more general level. The final two conditions that emerged from the data and that influence how students use their resources are related to tasks and activities on a more specific level. Again, I would like to clarify that none of the strategies illustrated here are limited to specific conditions, but are used in different situations and in different degrees as the students see fit.

The fourth condition that emerged from the data is purpose of investment. This is based on the question whether there is a meaningful purpose with investing time and effort in an activity. Students want to know just why learning a new program or reading a difficult text is worth their time and effort. Quite often the simple motive behind it is that a student wants to be sure that the time and effort invested now will also be useful later on. One student I interviewed explained to me "you are constantly focusing on that you need to get a good yield out of what you are doing since you will have to write an essay on this later on".

In these situations, becoming knowledgeable emerged again as the investment strategy that students used most. This time, becoming knowledgeable refers to spending a high amount of time and effort in preparing for a later activity. Preparing for something naturally provides the students with an express purpose. For example, in order to prepare for writing an essay, a student might start early to collect any information that is available about a certain topic. Another kind of preparing would be investing time in updating computer software in order to avoid issues in the future. The expected purpose of these activities would be to save time and effort later on when the task itself needs to be done. However, if the students feel that investing does not really make any sense, they will strongly hold on to conservation strategies. At that point, any mandatory activity can be experienced as tedious and easily contribute to a loss of interest and motivation to work with the course. One student commented on a statistics program he had to learn to master in an introductory first year course. He did not need this program until the third year:

Of course, this could have come at a later point because you were not conducting any research until much later. So when you have to learn it so early, it will be difficult to see the point in investing a lot of resources into it.

The same holds for the last condition that emerged from the data, which is the anticipated outcome. If students feel uncertain that investing their time and effort really will lead to the result they aim to achieve, especially after having tried and failed repeatedly, they will refuse to invest any more resources. This can happen even when they understand the purpose of the activity or feel dependent on a good result. Students

want to be rewarded for having worked hard and long with an activity. One student told me that "At the same time, I feel that once I am putting the effort into studying, it would be nice to take the exams and get a paper on having passed them". This condition was particularly emergent when the students talked about collaborative work with other students: "I have seen the point, but I might feel a bit skeptical about if it will work. I can see that it can be really useful, but I am just a little bit skeptical". Unless the collaboration has been demanded by the teacher, the students have two choices. Both choices can be seen either as preserving or as investing resources, depending on which point of view the student has.

The first choice a student can make is to individualize. Individualizing is a strategy where the student decides to work on his or her own. This can be due to different reasons, such as a preference to work alone, personal circumstances that hinder participation or a skepticism towards fellow students. Students who individualize try to accomplish a task entirely on their own even though it might cost them more time and effort. This can be seen as an investment strategy, however, in the long run it could also be perceived as conservation. A student who talked about individualizing explained "I was thinking that I would actually get more out of it if I worked on my own". He anticipated a higher outcome from working on his own.

The other possible strategy that emerged from the interview data is pooling. Students who combine their resources with others do so because they believe that sharing knowledge, skills and thoughts with each other will lead to a better learning outcome. The students liked "that we challenge each other to contribute with different things". Almost all students referred to "many heads with many thoughts". They often see collaborating as a way to complement their own understanding of a subject matter. Often students are willing to leave their preferred work methods if the effort and time they will have to spend on accomplishing a task in a different way is justified:

If the teacher suggested a different software that made it easier to collaborate with the rest of the group, I could imagine to switch from my preferred software to the recommended one just because it makes it easier to collaborate.

However, pooling does not solely mean collaborating, but any kind of activity where students contribute with and share resources in order to utilize every student's time and effort. As a conservation strategy, pooling is used to try and save one's own resources while taking advantage of the time and effort put in by the fellow students.

Discussion

The theory of optimizing personal resources explains how students switch back and forth between different strategies in order to accomplish their study goals within a limited amount of time and effort. In educational research, the use of time and effort has mostly been researched from an educator's point of view, often with recommendations on how to get students to become more engaged in their studies. Many of these research studies are limited to what happens within one single course (Grauerholz, 2001; Hall, Ramsay, & Raven, 2004; Krohn & O'Connor, 2005). I have found few articles (English et al., 2004; Kolari, Savander-Ranne, & Viskari, 2006, 2008) with a holistic view where all of the students' courses and activities are seen in a wider context.

To my surprise, when coding the literature I discovered that the concepts related to the strategic use of personal resources are important concepts also in research areas apart from higher education. Both the achievement-goal-theory known from behavioral sciences as well as the Selection, Optimization and Compensation (SOC)-model much used in gerontology are related to these concepts. Coding literature from these two research areas thus helped me to understand the broader scope of my own grounded theory.

Achievement-goal-theory is a theory of cognitive, affective and behavioral patterns of human beings. Human beings act according to three different types of goals: mastery goals, performance-approach goals and performance-avoidance goals (Phan, 2009). Mastery goals are developmental goals related to improvement and personal growth. Performance-approach goals focus on achievement and accomplishment, while performance-avoidance goals are about avoiding failure and saving time and effort. Achievement-goal-theory has often been applied in educational research "as the dominant framework for studying achievement motivation" (Shih, 2005, p. 39). The theory emerged from the literature review as relevant because the students' choice of resource strategies clearly is related to the different kinds of study goals they aim to achieve. By tying it to the process identified in the grounded theory, achievement-goal-theory is now given a better contextual foundation.

The SOC-model was developed in the 1990s by Paul and Margret Baltes as a metatheory for human development. It describes how human beings select areas on which to focus their resources, how they try to optimize their gains from using these resources and how they compensate for possible resource losses (Freund, 2008, p. 96). In gerontology, this model is used to analyze how elderly people "undertake a number of strategies to adapt to or manage their limited and/or lost resources" (Rozario, Kidahashi, & DeRienzi, 2011, p. 225). Even though higher education and gerontology are research areas concerned with completely different stages in a human life cycle, there are strong similarities in that both students and the elderly try to manage a limited amount of resources through the use of different strategies.

The grounded theory presented in this article can integrate both the SOC-model and achievement-goal theory into one comprehensive theory. However, my study shows that the order of the stages the students go through is different from the one presented in the SOC-model. In my theory, optimization comes before selection and compensation, which would make it an OSC-model instead. If the grounded theory proves to fit data from other fields of human development research, maybe the order of the stages in the SOC-model should be revised.

Within the SOC-model context, optimization refers to strategies that "enhance one's resources to maximize one's functioning within a selected domain" (Rozario et al., 2011, p. 226). This is analogous to the main concern of the participants in my study who

try to optimize the use of their personal resources in order to accomplish different study activities. That is also reflected in educational studies where achievement-goal-theory is applied: Ng (2008, p. 443) states that "achieving strategies enable students to optimise their organisation of time and effort" (p. 443).

Baltes (1997, p. 371) claims that optimization requires "the application of a set of behavior-enhancing factors such as cultural knowledge, physical status, goal

commitment, practice, and effort. The component elements that are relevant for the task of optimization vary by domain and developmental status" (p. 371). For students, this would mean that how much they are able to optimize their personal resources is determined strongly by interplay of different elements. They need cultural knowledge related to their institution, its teaching philosophy and study expectations in general. They also need to be aware of which types of goals they wish to achieve and what kind of resources this will require. The degree in which the students succeed with optimizing their resources also depends strongly on how much experience they have with different study activities and the course they are focusing on.

This leads us to the second concept of the SOC-model. Selection means that, due to the limited amount of resources that is available, one has to decide on which areas to focus the use of resources. This concept applies not only to students or elderly, but to all human beings who experience "the condition of a limited capacity, including constraints in time and resources" (Baltes, 1997, p. 371). With regard to the findings in my grounded theory, we already know that students choose from a range of conservation and investment strategies, depending on which strategy will lead to the desired outcome and how much experience they have with using the different strategies.

Ng (2008, p. 452), who applied achievement-goal-theory to higher educational research, confirms in his study that students differ in their approach to learning depending on which type of goals they wish to achieve. However, he categorizes the students into different profiles according to the type of goals that they aim to achieve most. In my opinion, his application of the achievement-goal theory is stereotyped and lacks a more faceted perspective. Each single study task can represent a different achievement goal and thus trigger different strategies. Mastery goals and performance-approach goals automatically entail the use of investment strategies in order to secure or improve a certain result. On the other hand, a lack of motivation or dependence could lead to performance-avoidance goals and conservation strategies. That, however, does not characterize the student himself.

Since the amount of personal resources is limited, students who decide to invest into one task have to compensate for the loss of these resources by giving other tasks a lower priority. In the SOC-model, compensation "refers to behavioral and psychological strategies that are aimed at compensating for losses" (Rozario et al., 2011, p. 226). Compensation necessarily implies the use of conservation strategies. However, compensation and selection choices are not fixed decisions, but can be adjusted if the conditions around a study situation change. If students realize that they will struggle to pass a course by adopting performance-avoidance goals, they will have to revise their goals and check if selecting investment strategies for this course would be more appropriate. At the same time, they need to have their other courses in mind as well and evaluate their resource use within the overall context. This constant evaluation of goals

and conditions is the catalyst for the students' oscillation between conservation and investment strategies.

As one can see, the grounded theory of optimizing personal resources through oscillating between strategies is not an isolated theory within a limited area. On the contrary, coding the literature for the concepts from this theory shows that the theory

has broad applications also within other substantive areas and can even be integrated with other metatheories such as the SOC-model or achievement-goal-theory.

Limitations of the Study

The research presented here has two major limitations. The first limitation is related to the fact that the area under study is familiar to me since I had been a student of languages and literature myself. Nevertheless, I strove to suspend any kind of preconception and to let theoretical sensitivity guide my work. Because I listened to what the data really told me, I changed the research topic from the use of technology to the use of personal resources.

The other limitation could be the limited number of participants (13), with all but one being female and all from the same department (though from different study programs). Following the principles of grounded theory, I argue that theoretical saturation is not obtained through the number of participants or the gender distribution. It is reached through the continuous constant comparison of emergent codes and concepts and through theoretical sampling. In addition, the criteria of modifiability ensures that the findings in the current study can still be modified to findings in other substantial areas.

The hypotheses that resulted from my research should fulfill all of the four requirements as stated in Glaser (1998): they *fit* the students' data; they have *grab* and *work* as the students understood them instinctively when I presented them with the concepts during later interviews. They are *relevant* to them as they had been conceptualized directly out of the data and they can be found again in nearly all of the students' daily activities. Finally, the hypotheses are *modifiable* to any new data that may be collected and analyzed in further studies on this topic.

Implications for Educational Practice

So which implications does the grounded theory presented in this article have for educational practice? The main findings of this study can be summed up in three statements:

First: *Students are constantly evaluating each specific learning situation. They oscillate between conservation and investment strategies based on these evaluations.* This has explicit implications for course planning. Course planning should be done holistically, with all of the students' simultaneous courses and study activities in mind. As

we have seen in the discussion section, the use of resources is closely related to achievement goals. By designing courses in collaboration, teachers can ensure that course activities and assignments are distributed so that the students are able to focus on all courses without feeling under resource constraints. This can facilitate the students' adoption of mastery and performance-achievement goals. Holistic course planning enables students to spend their resources on all of their courses and to achieve better

overall learning outcomes. It might also keep them from adopting conservation strategies and performance-avoidance goals.

Second: *Behaviour-enhancing factors such as cultural knowledge, goal commitment or practice can be utilized in order to facilitate the use of investment strategies when they are caused by the "right" conditions.* Teachers can use the findings from this grounded theory to provoke the use of investment strategies. Changing the conditions of a specific situation can influence how a student decides to use his or her resources. However, this means walking a thin line and should always be complemented with raising the students' self-regulatory awareness. Motivating students and making them feel intrinsically that the outcome of an activity will justify their time and effort are examples of a positive change of conditions. This can be further encouraged through supporting self-reflection. Forcing investment by simply adding extra tasks or increasing the dependence on the final result, however, should be avoided in the course design.

Third: *Students evaluate their situations differently and will thus make different decision about when and how to invest their resources.* Based on this hypothesis, "procrastinators" ought to be treated from a new perspective. Often, these students are characterized stereotypically as individuals who need to improve on their bad study habits. The findings from this study suggest that "procrastinators" do not necessarily have poorer study techniques than their fellow students, but that they base their investment on different grounds. These students are usually much more aware of the limited amount of resources available to them. They might have gained positive experience with saving their resources as long as possible. From the data it appears that "procrastinators" are better able to deal with uncertainty. However, when the need for investment strategies becomes too pressing, these students seem equally able to use their resources in a profitable way and to achieve their desired outcomes.

Contribution to the Body of Knowledge

Even though I agree that it is crucial to "engage all members of the learning community in intentional, substantive, and inclusive dialogue about student learning" (Smith & Colby, 2007, p. 207), often this does not seem to include the students themselves. The literature review conducted as a part of this study showed that many researchers have analyzed students' approaches to learning. Several research studies recognize that students use different strategies to improve their learning outcomes (Hall et al., 2004; Jungert & Rosander, 2009; Nonis & Hudson, 2010). However, these strategies are not conceptualized and related to the use of personal resources as in the grounded theory presented here. The same accounts for oscillation. Even though the concept itself emerged from several articles within higher education, it has not been perceived by the researchers as the students' resolution to their main concern. In general, I would conclude that most of the concepts that emerged from the data in this study are treated

from an educator's perspective in previous research. The students' strategies for saving time and effort are often presented as obstacles to be overcome rather than conscious decisions by the students. They are not recognized as part of the students' attempt at getting the most out of their resources. The theory of oscillating between conservation and investment strategies contributes to the current body of knowledge by listening to

the students themselves, thus encouraging a new perspective on previous research findings.

Further Research

Several recommendations for further research emerged during the discussion of the current study. First of all, I would like to recommend a review of existing research on the deep and surface approach to learning model in the light of the current findings. This model is one of the most recognized models within higher education. However, as Howie and Bagnall (2012) state, "deep approaches to learning have been transformed through conceptual slippage to 'deep learning' and then 'deep processors' and even a 'deep learning style', in the writing in this area" (pp. 396-397). Reviewing previous research with the current findings in mind could help to put this "conceptual slippage" right again.

During the study, several concepts emerged from the data that are worth further examination. These concepts were not core concepts, but nevertheless were important enough that they emerged repeatedly from the data. For example, further research could examine the students' use of help and support strategies. When and why do students ask for help, and what influences whom they go to for support? A different research question could be whether spreading out personal resources evenly over the whole semester really leads to better results? Many educational researchers seem to assume this, as I conclude from the advice given in the implication-for-practice sections. However, as I have mentioned before no arguments can be found in the current study that students who procrastinate are less successful in terms of grade achievement.

And finally, I would like to suggest that further research could be done to expand the substantive theory from this study with a comparative analysis of other theories related to personal resources or optimization. According to (Glaser, 1978, p. 144), one could use this approach to generate a formal theory on processes dealing with this topic. Other published grounded theories within this conceptual area that might be interesting to compare could be *Routing: Getting around with emphysema* by Fagerhaugh (1973) or *Systematic advocating* by Green and Binsardi (2014).

Conclusion

The theory of optimizing personal resources showed how students oscillate between conservation and investment strategies in order to make the best use of their limited amount of time and effort. Five conditions were identified that contribute to how a student experiences a study situation. Depending on each student's individual evaluation of the current situation, different strategies are applied either to preserve or to spend personal resources more actively. The literature review showed that this strategic behaviour also is well known in other substantive areas such as gerontology and behavioral sciences. The theory provides a deeper understanding of the students' perspective and can thus contribute to a more holistic approach to developing and designing courses.

References

- Abouserie, R. (1995). Self-esteem and achievement motivation as determinants of students' approaches to studying. *Studies in Higher Education, 20*(1), 19-26. doi:10.1080/03075079512331381770
- Baltes, P. B. (1997). On the incomplete architecture of human ontogeny: Selection, optimization, and compensation as foundation of developmental theory. *American Psychologist, 52*(4), 366-380. doi:10.1037/0003-066X.52.4.366
- English, L., Luckett, P., & Mladenovic, R. (2004). Encouraging a deep approach to learning through curriculum design. *Accounting Education, 13*(4), 461-488. doi:10.1080/0963928042000306828
- Fagerhaugh, S. Y. (1973). Routing: Getting around with emphysema. *The American Journal of Nursing, 73*(1), 94-99. Retrieved from http://journals.lww.com/ajnonline/Abstract/1973/01000/Getting_Around_with_Empysema_.15.aspx
- Freund, A. M. (2008). Successful aging as management of resources: The role of selection, optimization, and compensation. *Research in Human Development, 5*(2), 94-106. doi:10.1080/15427600802034827
- Glaser, B. G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory*. Mill Valley, CA: Sociology Press.
- Glaser, B. G. (2012). No preconception: The dictum. *Grounded Theory Review, 11*(2). Retrieved from groundedtheoryreview.com
- Grauerholz, L. (2001). Teaching holistically to achieve deep learning. *College Teaching, 49*(2), 44-50. doi:10.1080/87567550109595845
- Green, J., & Binsardi, B. (2014). Systematic avocating. *Grounded Theory Review, 13*(2). Retrieved from groundedtheoryreview.com
- Hall, M., Ramsay, A., & Raven, J. (2004). Changing the learning environment to promote deep learning approaches in first-year accounting students. *Accounting Education, 13*(4), 489-505. doi:10.1080/0963928042000306837
- Howie, P., & Bagnall, R. (2012). A critique of the deep and surface approaches to learning model. *Teaching in Higher Education, 18*(4), 389-400. doi:10.1080/13562517.2012.733689
- Jungert, T., & Rosander, M. (2009). Relationships between students' strategies for influencing their study environment and their strategic approach to studying. *Studies in Higher Education, 34*(2), 139-152. doi:10.1080/03075070802596970
- Kolari, S., Savander-Ranne, C., & Viskari, E. L. (2006). Do our engineering students spend enough time studying? *European Journal of Engineering Education, 31*(5), 499-508. doi:10.1080/03043790600797061
- Kolari, S., Savander-Ranne, C., & Viskari, E. L. (2008). Learning needs time and effort: A time-use study of engineering students. *European Journal of Engineering Education, 33*(5-6), 483-498. doi:10.1080/03043790802564046

- Krohn, G. A., & O'Connor, C. M. (2005). Student effort and performance over the semester. *The Journal of Economic Education*, 36(1), 3-28. doi:10.3200/JECE.36.1.3-28
- Ng, C. h. C. (2008). Multiple- goal learners and their differential patterns of learning. *Educational Psychology*, 28(4), 439-456. doi:10.1080/01443410701739470
- Nonis, S. A., & Hudson, G. I. (2010). Performance of college students: Impact of study time and study habits. *Journal of Education for Business*, 85(4), 229-238. doi:10.1080/08832320903449550
- Ramsden, P. (1992). *Learning to teach in higher education*. London, UK: Routledge.
- Rozario, P. A., Kidahashi, M., & DeRienzi, D. R. (2011). Selection, optimization, and compensation: Strategies to maintain, maximize, and generate resources in later life in the face of chronic illnesses. *Journal of Gerontological Social Work*, 54(2), 224-239. doi:10.1080/01634372.2010.539589
- Shih, S. S. (2005). Taiwanese sixth graders' achievement goals and their motivation, strategy use, and grades: An examination of the multiple goal perspective. *The Elementary School Journal*, 106(1), 39-58. doi:10.1086/496906
- Smith, T. W., & Colby, S. A. (2007). Teaching for deep learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 80(5), 205-210. doi:10.3200/TCHS.80.5.205-210