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Aspects and Prospects of Measuring Studying and Learning in Higher Education

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The development of two dominant research traditions is described: students' approaches to learning (SAL) and information processing (IP). The development of the third tradition, self-regulated learning (SRL) is added. SAL is based on European research, whereas IP and SRL are more typical background ideas for North-American research. The most central conceptual frameworks behind these traditions are analyzed. These frameworks form the foundations for the most common inventories used in higher education to measure university students' learning and studying. A larger multilayered perspective is then outlined with three levels of context: general, course-specific, and situational. The other contributions to this Special issue are discussed in relation to this larger picture.

KEY WORDS: inventories; studying; learning; orientation; research traditions; higher education.

The demand for life-long learning in a rapidly changing environment calls for developing new practices in higher education. To foster optimal learning in our university students, there is a need to understand the learning processes that make high-quality learning outcomes possible. Since the 1970s, extensive psychological research has been carried out in this area.

We already know that students' approaches to learning and studying make a difference in students' strategies and achievement (e.g. Entwistle and Ramsden, 1983; Lindblom-Ylänne and Lonka, 1999; Marton *et al.*, 1984;

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Marton and Säljö, 1976; Meyer *et al.*, 1990; Ryan, 1984; Säljö, 1979; Trigwell and Prosser, 1996; Vermunt and van Rijswijk, 1988). Can we deepen our understanding of students and studying through new theoretical perspectives? During recent years, it seems that diverse research traditions have come closer to each other. Current themes, emphasizing active, constructivist, situational, and collaborative aspects of learning, are now accepted by researchers representing different traditions (Bruner, 1996). The models of learning presented in this issue share some basic assumptions about the constructivist nature of learning and the important mediating roles of student activity, motivation, and self-regulation, whereas situational and collaborative aspects are not yet as well integrated within the current models of university student learning. The present review summarizes three complementary perspectives: 1) students' approaches to learning (SAL), their mental models and epistemological frameworks, 2) the information processing (IP) tradition or self-regulated learning (SRL) perspective; that is, cognitive research on learning, study strategies, and self-regulation, and 3) placing student learning in a more general motivational and cultural framework. Finally, different levels of analysis are looked at: general, domain-specific, and situational.

THE SAL TRADITION: STUDENTS' APPROACHES TO LEARNING

The convention of looking at students' approaches to learning (SAL) started in the 1970s, when Ference Marton and his colleagues noticed that students appeared to differ in how they approached learning tasks, such as studying lengthy texts. They then started to look at qualitative aspects of university students' learning (Marton *et al.*, 1984; Marton and Säljö, 1976). Marton (1986) called this methodology *phenomenographic*, emphasizing students' experience, conceptualization, understanding, and perception of the task in a specific context.

Marton and Säljö (1976) introduced two qualitatively different approaches: deep and surface level learning. The former refers to paying attention to the meaning and significance of the materials to be learned, whereas the latter concentrates more on rote memorizing. It is typical to take these so called first-order student perspectives as a basis for second-order theoretical analyses in order to maintain the students' own experience of learning as the starting point of research (Marton, 1986). This two-step design has been applied, for example, by starting with comprehensive interviews of students and teachers and then to creating inventories (Trigwell and Prosser, this issue; Vermunt, 1996). This phenomenographic methodology somewhat resembles qualitative grounded theory referenced here,

and some researchers even see a danger of becoming atheoretical and folk-psychological (Pintrich, this issue).

Entwistle and Ramsden (1983) and Biggs (1979) were among the first to design inventories[2] to look at university students' approaches to learning. They collected data on large samples of students, and used multivariate analyses to analyze the results. The Approaches to Studying Inventory (ASI) was developed by Entwistle and Ramsden (1983). Around the same time Biggs (1979, 1985) developed his own instrument called the Study Process Questionnaire (SPQ). A large number of scales in different inventories have since been developed, such as the Revised Approaches to Studying Inventory (RASI; Tait and Entwistle, 1996) and the Approaches and Study Skills Inventory for Students (ASSIST; Tait *et al.*, 1998), the Approaches to Teaching Inventory (ATI; Trigwell *et al.*, 1999), the Inventory of Learning Strategies (ILS; Vermunt and van Rijswijk, 1988), the Inventory of General Study Orientations (IGSO; Mäkinen *et al.*, 2002), and the Reflections on Learning Inventory (RoLI; Meyer *et al.*, 1990).

In all this work, Marton and Säljö's (1976) original distinction between *surface* and *deep approaches* remains in some form as a central core construct. In general, the inventories differentiate some form of surface approach as an intention that is extrinsic to the real purpose of the task, aiming at investing minimal time and effort to meet the requirements, in contrast to the deep approach that is seen as an intention to maximize understanding. Entwistle and McCune (this issue) describe the historical origins and development of a series of well-known study strategy inventories and seek to identify their conceptual bases.

Several researchers identified a third approach, called the *achieving (or strategic)* approach, aiming at visibly achieving, in particular through high grades (for a review see Biggs, 1993; Entwistle and Ramsden, 1983). The deep and surface approaches are different from the achieving one, because the first two describe ways in which students engage in the actual content of the task, whereas achieving refers to the ways students organize their studying (Biggs, 1985).

The basic distinction between deep and surface approaches may emerge as a logical necessity, because in an actual task context, the students are destined to apply one or the other. However, the deep approach may be considered the only "natural" approach, while the surface and achieving approaches are more likely to be created by institutional demands (Biggs, 1993), such as assessment practices (Ramsden, 1988). Although students with an achieving approach will seek high grades by any means, presenting either a surface or a deep approach, there is empirical evidence suggesting

[2]The term "inventory" is a widely used term adopted by researchers who represent this tradition. It is used as a synonym for "questionnaires."

that it is more useful to combine achieving with the deep approach rather than with the surface one, when it comes to success in various domains (Entwistle and Ramsden, 1983; Lindblom-Ylänne and Lonka, 1999).

Students' approaches to learning are related to their more general ideas and mental models of learning and knowledge. These ideas provide a framework for how students monitor and explain their own and other students' learning (Lonka, 1997; Vermunt and Vermetten, this issue). In addition, the context and the situational interpretations, including motivational and affective appraisals, mediate more general approaches in actual studying (Boekaerts, 1996; Lindblom-Ylänne and Lonka, 2001; Salonen *et al.*, 1998). Therefore, it is important to reflect on what kinds of ideas of learning, studying, and knowledge underlie our theories and inventories.

Approaches, Orientations, or Styles?

When *approaches*, measured by different scales, are examined using multivariate statistical methods such as factor analyses, the factors consequently formed are often referred to as *orientations* (Ramsden, 1988) or sometimes *styles* (Vermunt and van Rijswijk, 1988). If a student has a tendency to use the deep approach across various situations, this is an indication of a meaning orientation, whereas a preference in favor of the surface approach may be labeled as a reproducing orientation. Therefore, approaches may be seen as less stable than orientations or styles.

The empirical SAL tradition of inventories has sometimes been seen as "quantitative" or "atheoretical," although it makes use of concepts adopted from qualitative studies as well as from research in cognitive psychology. Interviews and qualitative analyses have also been used by these researchers (e.g., Marton *et al.*, 1984). Thus, the distinction between qualitative and quantitative research disappears in SAL tradition, where two-step methodology is typical. As previously stated, researchers often start with interviews and proceed into constructing inventories and structured research instruments. Regardless of methods, the intention is the same: understanding student learning.

In order to reconcile different types of research, Biggs (1993) suggested that the distinction should rather be made between the *students' approaches to learning (SAL) position*, derived from qualitative analyses and students' reports of their own study processes, and the *information processing (IP) position*, based on analyses of actual cognitive processing. In the former category, he would include the Gothenburg group, ASI and SPQ, and in the latter, study strategy research (e.g. Weinstein and Mayer, 1986). In this issue, Paul Pintrich's ideas reflected the IP position, originally based on

cognitive theory, although the line is no longer easy to draw. He was, after all, not measuring actual cognitive processing, but rather, using inventories in much the same way as the researchers who represent the SAL position.

The term "learning style" is somewhat problematic.[3] It was used by Pask (1976), whose subjects were students who were required to reach a deep level of understanding. He looked at the strategies they used in trying to carry out this instruction. He differentiated between holist and serialist strategies of learning, and also described different pathologies of learning. Pask (1976) used the term "learning style" to mean a person's general tendency to apply a particular strategy—thus, a definition close to orientation.

THE IP TRADITION: COGNITIVE RESEARCH ON LEARNING, STUDY STRATEGIES, AND SELF-REGULATION

The so-called information processing (IP) tradition looks at study strategies and their relations to learning processes and outcomes. Metacognition is both theoretically and practically a very important aspect in terms of student learning. In this issue, it will be discussed in the context of self-regulation in learning (see Pintrich, this issue; Vermunt and Vermetten, this issue). Pintrich (this issue) contrasted the North American information processing (IP) perspective with the European student approaches to learning (SAL) tradition (see Biggs, 1993), but found that a more accurate characterization of the former perspective would be achieved by using the term "self-regulated learning" (SRL) perspective (Pintrich, 2000). On the other hand, Vermunt and Vermetten (in this issue) are obviously building a bridge between the above-mentioned SAL and SRL traditions.

Pintrich (in this issue) provided a conceptual framework for assessing student motivation and self-regulated learning in the college classroom, based on a self-regulatory (SRL) perspective on student motivation and learning. He presented a large number of cognitive and learning strategies that individuals use to help them understand and learn course material by

[3]Other uses and measures for the term "learning style" remain outside the scope of this theme issue. For example, Richardson (2000; also in this issue) points out that the Learning Style Inventory (LSI) by Kolb *et al*. (1971), which is popular in adult education, is not empirically related to measures used in the SAL tradition. Richardson (2000) also points out that the reliability of LSI has proved to be very poor. It is quite obvious that when we talk about "learning styles," we mean something different from Kolb, and that Kolb's (1984) theory of experiential learning is quite different from the SAL tradition. His models were developed for working life and organizational development, and it is therefore not surprising that there has not been very much integration between Kolb's model and the inventories presented in this issue.

self-regulated learning. In their work on the MSLQ, Pintrich *et al.* (1991) used five scales as indicators of cognitive regulation by students that provide measures of the monitoring and control activities for cognition: the scales of *rehearsal*, *elaboration*, and *organization* reflect the use of basic cognitive and learning strategies to understand the material in the course; the *metacognition* scale represents activities that help the students to plan their learning, monitor their learning, and regulate or change it; and the *critical thinking* scale assesses the extent to which students try to apply prior knowledge to new situations and to solve problems, to analyze and evaluate information in a thoughtful manner.

Cognitive research on learning and studying is closely related to the SAL tradition, because approaches to learning may have consequences for actual study behavior (van Rossum and Schenk, 1984). The interplay between students' conceptions and their strategic behavior is of central interest in the present research (e.g., Bromme and Tillema, 1995; Butler and Winne, 1995; Lonka, 1997). In the development of expertise, knowledge and beliefs are assumed to gradually become proceduralized and become integrated with expert knowledge (Bereiter and Scardamalia, 1993). At least we can say that the surface approach to learning is often accompanied by rehearsal strategies (Entwistle and Ramsden, 1983), whereas the deep approach to learning is more likely to be related to elaboration and to the search for meaning.

Sometimes, rehearsal strategies may not be strategies at all, because they may be created by institutional demands (Biggs, 1985). Is it possible, for instance, that students whose conceptions are constructivist in nature use different study strategies from those who see learning as a simple intake of knowledge? Vermunt and Vermetten (this issue) show that students' mental models of learning are indeed related to their approaches to studying. In medical and psychology students, study strategies aiming at comprehension, such as elaborative or organizational strategies, were related to relativist and constructivist ideas of knowledge (Lonka and Lindblom-Ylänne, 1996). The relation between epistemologies and strategies may prove important in understanding complex learning in higher education. Recently, our understanding of personal epistemologies has progressed a great deal (Hofer and Pintrich, 1997).

A systemic approach (Biggs, 1993) should be adopted, where student learning is seen to take place in a context that affects both the nature of learning and its outcomes. Such an approach is represented by Butler and Winne's (1995) synthetic model, where learners are seen to draw on knowledge and beliefs in self-regulated learning to construct an interpretation of a task's properties and requirements. On the basis of their interpretation,

learners then set goals, which are approached by applying tactics and strategies that generate both mental and behavioral products. Learners constantly monitor these processes in order to generate internal feedback. If external feedback is provided, it may confirm, add to, or conflict with the learner's interpretation of the task. In all, self-regulated learning takes place in relation to task demands, domain-knowledge, strategic knowledge, and abilities, in an interplay of self-regulated monitoring versus external feedback. Butler and Winne (1995) point out that learners' perceptions of tasks and cues have an effect on their engagement with and performance of tasks, and learners interpret feedback according to their systems of beliefs concerning subject knowledge, learning processes, and the products of learning.

Pintrich (this issue) presented a multilayered integrated model of phases and areas of self-regulated learning. He also took up the central concept of self-efficacy, whereas Vermunt and Vermetten (this issue) concentrate on the relations among processing strategies, regulation strategies, mental models of learning, and learning orientations. As we can see, the connections among different theoretical concepts are far from clear, and synthesis is needed in order to understand how students' multiple learning goals, mental models, approaches to learning, study strategies, and situational appraisals are related.

PLACING STUDENT LEARNING INTO A MORE GENERAL PERSPECTIVE

Approaches Today?

The deep-surface distinction has survived the past 20 years. Richardson (in this issue) points out that the current university has changed in many ways during the past decades, and that the student population in higher education is now vastly more heterogeneous in social, cultural, and ethnic terms. Is the distinction still valid?

In the recent literature, the idea of the deep approach as a functional disposition for learning has been questioned. For instance, Mäkinen *et al.* (in press) found that students who were work-life-oriented proceeded faster in their studies than those students who were primarily interested in studying. Sometimes, students who study in order to search for meaning for life may become so fond of studying that they are not motivated to graduate (Lonka *et al.*, 2000). Perhaps deep approach should be seen as a necessary, but not a sufficient, condition for productive studying.

The strategic approach may be even more crucial than the deep approach in terms of study persistence. Strategic or systematic orientation to learning may be the extra ingredient in studying that helps deep-oriented students to proceed toward graduation, especially in the humanities. In medicine, a combination of the deep approach and achievement orientation was typical of successful students (Lindblom-Ylänne and Lonka, 1999).

Today, the collaborative aspects of student learning are obvious (Entwistle and McCune, this issue). However, most of the inventories describe studying essentially as a solitary activity affecting the individual, with Vermunt's inventory (Vermunt and Vermetten, this issue) as an exception (see Entwistle and McCune, this issue). Situational and collaborative aspects of learning are not yet well integrated with the current models of university studying that underlie inventory design.

Vermunt and van Rijswijk (1988) defined cooperative studying as one important mental model of learning. However, Lonka and Lindblom-Ylänne (1996) showed that cooperation is not necessarily related to the deep approach to learning, but rather, can be interpreted as leaning on other students. Further, in a traditional medical curriculum, independent, meaning-oriented students who were not interested in cooperation were the most successful (Lindblom-Ylänne and Lonka, 1999). However, problem-based learning and collaborative computer-supported learning environments are becoming increasingly popular in medical education (Boud and Feletti, 1997; Greenhalgh, 2001). It may be that these new learning environments require new approaches to learning. In current computer-supported learning environments or in problem-based project studies, collaboration may prove important. Pintrich (this issue) pointed out that nowadays students are often asked to design their own projects and are evaluated on the task. These types of classes obviously offer the students a great deal more autonomy and responsibility, and encourage them to work together in collaborative or cooperative groups.

Lonka *et al.* (2001) developed a new inventory and applied it to 854 Finnish students in different domain areas. Their preliminary results indicated that a collaborative-constructivist view was an important learning orientation in university students, and that it developed even during traditional university studies. The deep approach may be reevaluated in the new learning environments. The classic deep approach to learning may prove to be too restricted in the sense that it has an individualistic focus. It is possible that in the future we are going to have finer distinctions among different *kinds* of deep approaches, which are more or less individualistic in focus (cf. Entwistle and Entwistle, 2003). Different learning environments may vary in terms of what is the most successful approach.

The Dynamic Interplay Between the Student and the Learning Environment

The interaction between the learner and the learning environment has been a target of recent research. Trigwell *et al.* (1999) published a quantitative study showing that teacher-focused approaches to teaching were associated with students' reproducing orientations. Their subsequent research revealed that in subjects where teachers adopted more student-focused approaches to teaching, their students adopted a deeper approach to learning (Trigwell and Prosser, this issue). Individual students and student subgroups may sometimes develop unique ways of learning. For instance, novice students may be ambivalent between surface and deep approaches, which is not necessary harmful but may reflect that an approach has not yet been established (Lindblom-Ylänne and Lonka, 1999). Self-regulation in learning is most often related to the deep approach, whereas external regulation is more likely to be accompanied by the surface approach (see also Beishuizen *et al.* 1994; Lonka and Lindblom-Ylänne, 1996; Vermunt and van Rijswijk, 1988). Other combinations, especially self-regulation with the surface approach, may result in poorer study success (Beishuizen *et al.*, 1994).

It is possible to interpret such findings as reliability problems or lack of coherence in measurement. Some students may express combinations of approaches called "orchestrations." Individual students may have various mixtures; if these are mutually incompatible they are called "disintegrated" (Entwistle *et al.*, 1991) or "dissonant" orchestrations (Lindblom-Ylänne and Lonka, 1999, 2000), where orchestration is defined as the contextualized study approach adopted by individual students or groups of students (Meyer, 1991, p. 297). Meyer *et al.* (1990) emphasize that orchestrations are affected by the qualitative level of perception of the individual toward certain key elements of the learning environment.

Vermunt and Vermetten (this issue) reflect on the implications for instruction his instrument may provide. They differentiate teaching strategies in terms of their influence on the thinking activities of the students. In their model, teaching strategies may be placed on a dimension ranging from strongly teacher-regulated to shared regulation to loosely teacher-regulated. For example, if teacher regulation is loose, the need for student regulation of learning is high. The interplay between student regulation and external regulation of learning may provoke either congruence or friction between learning and teaching strategies (see Vermunt and Verloop, 1999). Congruence occurs when students' learning strategies and teachers' teaching strategies are compatible; friction occurs when this is not the case. Frictions may be either constructive or destructive; the former may stimulate

students to employ strategies they have not used before, whereas the latter may result in a decrease in students' use of learning and thinking activities.

Lindblom-Ylänne and Lonka (1999, 2000, 2001) looked at medical students' individual ways of interacting with their learning environment in a traditional medical school. They used cluster analysis to classify students' individual ways of orchestrating their studying. They found that students who expressed a dissonant orchestration to learning in their inventory responses also, in interviews, expressed difficulties in their studies and had problems in regulating their own learning. A destructive friction was identified in their perception of their learning environment, and consequently, the study strategies of these students had not developed at all during their 5 years of studying. This was because they modified their orientation on the basis of examination practice, which called for rote memorization. Those students who retained a meaning orientation refused to adjust their behavior and continued searching for meaning. Paradoxically, the latter did much better in medical school. It was concluded that adaptation to the perceived demands of the learning environment does not advance students' intellectual development.

The experiences during the process of studying may produce pressures for adaptation. In addition to adapting to the official demands set by curricula and the university's bureaucratic organization, one has to adapt to "the whole of informal and implicit demands of study and study achievements," i.e. to the so-called hidden curriculum of a university or that of a faculty, department and academic subject or discipline (Bergenhenegouwen, 1987). Pressures to adapt oneself in a certain direction may cause a conflict or imbalance between exchange values (the diploma guaranteeing a high position on the social ladder) and practical values (gaining applicable professional knowledge). Original study goals and the goals implied by formal and informal institutional demands may collide.

Depending on which of the alternative values one prefers, and how one balances conflicting goals, different study attitudes are developed. A student's domain-specific orientations and strategies of achievement or learning are affected not only by the pressures from academic staff and their ways of teaching and assessing performances, but also by the collective student culture typical of different study environments. A classical example is that of Clark and Trow (1966) who distinguished four types of student subcultures typical of American college students in the fifties and sixties: Collegiate, Vocational, Academic, and Nonconformist.

The student culture can be seen as a part of the academic discipline or so-called academic tribe, i.e. a social community into which students become socialized (Becher, 1989). Ylijoki (2000) found that in four educational programs in one Finnish university, a unique moral order prevailed

in each, which together with other factors determined which kinds of aims with respect to one's studies were considered "virtues" or "vices." For instance, administration students preferred fast graduation and a practical attitude whereas in social sciences, dedication and becoming highly civilized were considered ideals. Altogether, the orientations and approaches to studying at the domain-specific level are affected, on one hand, by the general study orientations of individuals as well as societal, cultural, and institutional frame factors and, on the other hand, by situation-specific factors and generalized experiences based on them.

Multilayered Views: The Need to Define Basic Levels of Context of Study Processes

Students' study orientations can be seen as mediators between students' background and their studying activities (Mäkinen *et al.*, 1999). Analyzing the role of motivational and cultural factors in studying and learning processes calls for a basic distinction between three levels of context:

1. The whole of studies for graduation; the way the student is oriented when entering and later handling studying (general orientation)
2. A particular course a student is participating in or planning to participate in (domain- or course-specific orientation)
3. A specific situation in which the student is approaching the subject matter or learning task at hand (situational orientation).

Although the classification above may appear self-evident, the lack of this kind of explication seems to have caused many kinds of conceptual and methodological confusions and problems of interpreting empirical results. Recent striving for multilayer models of context (Gurtner *et al.*, 2001) and for defining hierarchical levels in different learning situations (Boekaerts, 1996) has demonstrated the need for multilevel perspectives in research especially concerning motivation and context-sensitive behavior (cf. Volet, 2001a). Because of the lack of specification of the levels of context, a variety of terms has been applied referring, however, to the same phenomenon from a certain level (overlapping concepts) or, on the contrary, utilizing one and the same term to refer to phenomena representing differing levels (cf. Entwistle and McCune, in this issue). For instance, the term orientation describing a certain pattern of motivation can be applied within each of the levels.

More explicit and elaborated differentiation among orientations and objectives, strategies and criteria of success may be needed, first, because although the different levels influencing one's orientation are partly overlapping and interact with each other, their nature and composition are

unique. Second, in order to gain an elaborated picture of the dynamic interaction of different levels we need a system theoretical approach. Third, specification of relevant factors within each of the levels may open up new perspectives for empirical studies on the direct or indirect influences of study or learning processes, which would be largely ignored in studies concentrating mainly on only one level. For instance, if we concentrate on the learning processes in higher education only on one contextual level, we may miss the significant role of cultural or sociological factors as possible moderators. Fourth, more thorough analyses of different levels may help us to solve the methodological problems that have been pointed out in measuring the styles, strategies, approaches, and self-regulation that are described in this special issue.

For instance, Boekaerts (1996) pays attention, from the point of view of construct validity, to the way self-reported strategies of learning are measured by many inventories. She criticizes the way domain-specific personality characteristics and process variables are measured by questionnaires. In these questionnaires, situation descriptions are often used to elicit student responses. According to her, researchers are blind to the way students interpret a situation description: "such prompts are geared to assess consistencies in student behavior rather than context sensitivity" (Boekaerts op. cit., p. 399). She emphasizes that it is important to identify the situation dimensions and to measure, for instance, by on-line measurements of motivation as she has done, the situation-specific appraisals in order to be able to carry out relevant research on adaptive learning in situ. In this way, we can also reach at least some aspects of the emotional factors largely omitted in studies on study approaches utilizing generally applied inventories (cf. Entwistle and McCune, in this issue). Lompscher (1998) also points out that questionnaires may measure strategies at the reflective, but not accurately at the action level.

Present constructivist learning theories state that learning is contextual. However, the analyses of contexts too often remain at a general, unspecified level. The above differentiation among three levels is a first, but basic step toward a more detailed analysis of contexts. Within each of the levels we should make further identification of the most essential contextual factors. For instance, Entwistle and Ramsden (1983, p. 62, 1988) mentioned curricula, teaching methods, and assessment procedures as important contextual factors, all of which have a varying impact in different learning environments.

Both domain or course-specific level orientations (e.g. Entwistle, 1991) and situational level orientations (Salonen *et al.* 1998) have been proved to be important. Several recent empirical studies have also indicated that the level of general orientations can offer a useful perspective for the research

on study motivation. Beaty *et al.* (1997) classified orientations in their study into the following four categories (with a further distinction between intrinsic and extrinsic within first three of them): *vocational*, *academic*, *personal*, *and social* and called them "learning orientations," parallel with Vermunt (1998), who gave the following names to the sum scales measuring orientations: *personally interested*, *certificate-oriented*, *self-test oriented*, *vocation-oriented and ambivalent orientation.* It might be wise to call these "study orientations" rather than "learning orientations," when students' general perceptions of the meaning of their studies are in question.

Which is the Proper "Grain-Size" of Measurements and Analyses?

When comparing SAL models with the self-regulated learning (SRL) model presented by Pintrich (in this issue), the question arises of the proper "grain-size" or "domain specificity" of assessments. Pintrich was sceptical about the validity and utility of measuring student motivation at a more global level, and seemed to differentiate among the three levels of specificity presented above. It is true that for certain purposes and research problems, the level of the study course or the specific domain is the most relevant, for instance, this works well for investigating the effects of teaching on students' approaches to learning (Trigwell and Prosser, in this issue). However, it may be also useful to measure motivation or orientations at the general level (see also Volet, 2001a and her model on the connections between different levels of context).

We think it is also useful to measure students' general orientations based on culturally or experientially constructed structures of relevance (Schutz, 1970). The term *general* not only refers to the cognitive aspects of students' learning, and to students' motivation in situ, but also to the general personal meaning given to their university studies. Thus, the concept of study orientation is extended from the learning situations into the different frameworks in which studying takes place (cf. Entwistle, 1986). Regarding this concept, our own group has moved from the prestudies (e.g. Mäkinen, 1999) through the seven dimensional model of generalized study orientations (e.g. Mäkinen and Olkinuora, 1999) to the current version of Inventory of General Study Orientations, which appears to systematically produce the following eight scales of study-related personal structures of relevance: deep-, anxious surface-, achievement-, systematic-, work-life-, practical-, and social orientations as well as lack of interest. These structures or combinations of them (for multiple goals, see Linnenbrink and Pintrich, 2001) can be called general study orientations.

At the general level, study orientations serve as students' interpretative frameworks that are based on personal interests. Therefore, the intention of research on students' general study orientations is to analyze how students see the meaning of and locate themselves in their studies. Mäkinen *et al.* (2002) looked at general study orientations both in university and polytechnic contexts. They found significant variance in terms of general orientations among different study programs within both institutions.

General orientations may provide explanations for why certain students regard certain types of courses (for instance, practical courses) as most relevant. They may also be important background variables when we follow up the progress of university studies (cf. Zeegers, 2001). For instance, when Mäkinen *et al.* (2004) looked at all the faculties of one university, they could predict students' later probability of changing their major or dropping out on the basis of their general study orientations at the beginning of their studies. Students who changed their major subject or abandoned their studies were originally so called noncommitted students in terms of general orientation. These results emphasize the significant role of general study orientations in terms of the important decisions that all students have to make during their studies.

We assume that orientations as indicators of the basic meaning of studies essentially influence students' study goals and the way they plan and organize there studying. In the study of Mäkinen and Vainiomäki (2002), a group of medical students were classified as deep learners, systematic students, and anxious students on the basis of their scores in the Inventory of General Study Orientations (IGSO). Students' general study orientations were related to their self-evaluations of their professional expertise. A follow-up study showed that the students with the most anxious study orientation felt that they benefited significantly more from the practical training period in a local health center, while systematic students experienced more progress during regular academic studies. Thus, even very general structures of relevance may be connected with the ways in which we adjust in different learning environments. This conclusion is in line with Dart (1994), who showed that students' goal orientations mediated the influences of environmental and personal variables on their learning strategies. In general, motivational orientations are linked to students' study methods (Laurillard, 1993; Richardson, 2000, p. 52).

Measuring general study orientations may open up a possibility to study their mediating role between sociocultural background factors and study progress. Perhaps we shall find answers to the following kinds of questions: Where do orientations come from? Do they have cultural roots? Can these roots be analyzed and described by, for instance, such sociological theories as Bourdieu's (1986) theory of cultural capital as an alternative

to traditional psychological theories? General study orientations may have a mediating role even in the emergence of situational appraisals. For instance, a study by Mäkinen and Olkinuora (2000) indicated significant correlations between sociological background variables and students' study orientations. They found that parents' educational level, cultural capital, and family interaction in childhood were at least indirectly related to students' general study orientations. This indicates that general study orientations are affected, at least to some extent, by culturally adopted values and preferences, as Volet (2001a) suggested.

Differentiating Between Constructs and Criteria of Validity According to Appropriate Level

Most researchers of higher education are interested in investigating study processes especially at the study course level. Perhaps this is because at that level one can clearly identify the possible effects of teaching methods and instructional arrangements on students' study behavior (Trigwell *et al.*, 1999). The practical planning and development of university teaching (including the development of curricula) takes place mostly at course level. We argue, however, that in order to understand students' motivation and approaches to learning at this "middle level," we should take into account factors from all three levels, and remember that there are interesting and important research problems linked to the other levels as well.

Kaldeway and Korthagen (1995) claim that metacognitive reflection can also include such things as monitoring the comprehension of the subject as a whole. They look at whether the student understands how the subject as a whole is structured and which objectives should be achieved. This view is clearly different from Vermunt's (1996) definition of metacognitive activities. More macrolevel metacognitive orientations could be, for example, the *surface-apathetic* orientation discerned by Entwistle and Tait (1990) or the *ambivalent* orientation in the classification of Vermunt (1996), both leading to an inability to sustain sufficient level of effort. Such passive or irrelevant attitudes toward studying may also be linked to the so-called self-handicapping strategy (Eronen *et al.*, 1998), which includes activities that distract the student from being directed to the learning task. Achievement strategies may also be considered as general or macrolevel metacognitive orientations to studying. Several "achieving strategies" described, for example, by Eronen *et al.* are related to long-term study behavior, whereas strategies called "learning strategies" describe individual differences in more momentary learning situations. According to Pintrich (in this issue), achievement strategies also included regulation of motivation

and affect and were domain- or course-specific. He thought that they should therefore be assessed at some level below the general college or university level as well as in higher education.

In sum, depending on the nature of the research problems, it would perhaps be wise to use measurements either at a general or domain-specific level or at both levels (for an interesting example of the latter possibility, see Honkimäki and Tynjälä, 2001; Mäkinen and Olkinuora, 2004). Some achievement strategies, as well as learning strategies, may become generalized, especially among certain subgroups of students and may lead to some consistency over different study courses (cf. Vermetten *et al.*, 1999). It is also natural to assume that long-term achievement strategies may in many cases influence situational learning strategies and that the line between them is sometimes blurred or they become partly overlapping.

The Dynamic Interaction of Factors From Different Levels of Context

An individual's structures of relevance (or interests), which form the basis of general study orientations, are, to a great extent, adopted as a part of the socialization process in the form of cultural learning. Representatives of phenomenological sociology (Schutz 1970; Schutz and Luckman, 1973) argue that these structures of relevance contain such cultural elements as social norms, attitudes, and values. Once these elements have been internalized into the personality system they form the basis of individual interests, preferences, and motivational orientations (Volet, 2001a), which are composed of *value-related* and *feeling-related* valences (Krapp and Lewalter, 2001, pp. 212–215). We think that the general study orientations we have found through our inventory (IGSO) are related to the internalization of different types of values, each of which may have its own effect on educational preferences. The way in which a student relates studying to *intrinsic values* (the process and contents of learning as inherent ends in themselves),*instrumental values* (means of gaining credits, appreciation, vocational competencies, etc.),*exchange values* (e.g., the value of an academic degree from this perspective, cf. Bergenhenegouwen, 1987), and *social values* (cf. Urdan and Maehr, 1995) is therefore essential.

In addition to cultural values, the way in which a student relates the planned or current studies to his or her self-concept or self-beliefs (e.g. how one relates the assumed demand level of studies to his or her self-assessed capabilities) has an essential effect on his or her study orientations. In her study, Volet (2001a) explored the interplay of broad *sociocultural* and *specific contextual aspects* in reference to the construction of different forms of motivation. Regarding such interactive dynamics she asks, "Under what

conditions do students' domain-specific, instruction-specific or assessment-specific experiences mediate their general motivational beliefs?" On the other hand, Krapp and Lewalter (op. cit.) are interested in the process through which situational interests develop into dispositional or "habitual" entities, i.e. become relatively stable individual interests.

Parsons (1961) argued that cultural contents equip individuals of the same subculture with commonly shared situational definitions. Thus, we can predict that general study orientations influence situational appraisals (cf. Boekaerts, 1996) or situational orientations. On the other hand, affective experiences and consequences of one's actions in different situations, when accumulated in a certain way, may become generalized and change the structure and contents of domain-specific and general orientations (Lehtinen *et al.*, 1995).

Accumulated consequences of one's actions in certain kinds of situations influence individuals' self-efficacy beliefs as well as typical patterns of self-regulation (cf. Pintrich and Vermunt and Vermetten in this issue). However, cultural background factors (Bourdieu, 1986) may also influence not only students' study goals and their general orientations, but also their capabilities of adjusting to and acting in typical learning or study situations (e.g., Bienenstock and Stoloff, 1995).

Generalization of Originally Situational Orientations and Approaches

In terms of students' subjective experiences and their accumulation, the most important level is that of the situational and task-specific context. This logic of analysis resembles that of Volet (2001a, p. 58) who advocates the complementary rather than the contradictory nature of the cognitive and situative approaches for understanding the learner in context. What is very decisive from the point of view of the dynamic interaction between the different levels of context is the "experiential interface" (Volet, 2001a, pp. 60–69).

Situational orientations define certain alternative intentions and behavioral tendencies in the learning situation (Lehtinen *et al.*, 1995; cf. Dweck and Bembechat 1983; Maehr, 1983). These approaches are triggered when an individual interprets and experiences the situation and the task at hand in a certain way. It is assumed that repeated experiences of failure easily lead to a tendency to act in a dysfunctional way in a situation experienced as very demanding or threatening (e.g. Nicholls 1983; Salonen *et al.*, 1998; cf. Stipek and Weisz, 1981). Situational orientations therefore resemble "approaches" in the SAL tradition.

It has been repeatedly shown (Salonen *et al.*, 1998; Vauras *et al.*, 2001) that *task orientation* (or *learning goal,* cf. Boekaerts and Niemivirta, 2000) in learning or problem-solving situations produces more successful learning outcomes and progressive long-term development. On the contrary, the types of motivational orientations typical of learning disabled students are *social dependence* and *ego defensive* orientations, which can be regarded as variations of more general sociomotivational orientations: social and ego orientations (cf. Boekaerts and Niemivirta, 2000; Maehr, 1983). As a fourth situational orientation we can mention that of *noncommitment,* which also has very negative consequences from the point of view of the quality of learning (Olkinuora and Salonen, 1992).

Situational theories may offer possibilities for making finer distinctions within variants of the surface approach and, furthermore, may help in finding an understandable motivational background of each variant. A surface approach may be part of the intentional, metacognitively guided achievement strategy, but another kind of surface approach may be brought about by more situational coping strategies arising from certain feelings and interpretations of the situation. According to this theoretical view, a surface approach based on successful earlier experiences of applying reproductive learning strategies may be less harmful in terms of consequences than a surface approach expressed in the form of avoidance behavior based on "blind alley" feelings because of anticipated failure, by means of which one tries to avoid "losing face" (cf. so-called self-handicapping strategy).

The theory of situational orientations has been extensively tested among schoolchildren. It seems, however, to be applicable in higher education too. With university populations, situational orientations may even be measured in a rather reliable and valid way even by self-reports. Because small-case pilot studies gave some support to this view, it was decided to include such items in the questionnaire measuring mainly general study orientations (Mäkinen and Olkinuora, in press). We acknowledge that general study strategy inventories have been criticized for failing to measure situation-specific behavior in an exact way (cf. Boekaerts, 1996) and for failing to cover emotionally toned experiences of learning adequately (Entwistle and McCune, in this issue).

The original grand dichotomy introduced by Marton and Säljö (1976) has been a major inspiration for high-quality research in higher education. The initial authors themselves have continuously expanded their own perspectives toward more sociocultural and situated directions (Bowden and Marton, 1998; Resnick *et al.*, 1997). In general, recent development in research on motivation and learning systematically differentiates among various levels of context (cf. Volet, 2001b). In the future, we may be able to figure out in a more detailed way how different levels interact. This would

probably enable us to discern better the variety within the deep and surface approaches and the specific functions of each. Perhaps it is a high time to go beyond the powerful surface-deep dichotomy, which has dominated learning strategy research for decades. It is time to broaden the research perspective to also grasp some crucial sociological and cultural factors in addition to the variables emphasized by educational psychologists.

Both the European SAL research tradition, looking at students' approaches to learning (e.g., Entwistle and McCune, this issue; Richardson, this issue; Trigwell and Prosser, this issue; Vermunt and Vermetten; this issue), and the SRL tradition in North America, looking at self-regulated learning (e.g., Pintrich, this issue), have greatly influenced research in higher education. The articles in the present theme issue represent some of the best pieces of work, especially in developing new research instruments. The following articles will demonstrate in a concrete way the conceptual evolution and enrichment of the original notions. Especially, looking at the students' perception of their learning environment and analyzing the dynamic interplay between the student and the learning environment opens new pathways for understanding student learning in higher education.

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