The Meaning of Learning and Knowing

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The Meaning of Learning and Knowing, co-authored by Erik Jan van Rossum and Rebecca Hamer, brings together empirical studies on epistemology, student thinking, teacher thinking, educational policy and staff development forging a solid and practical foundation for educational innovation. Since the 1980s they developed and published about a six-stage developmental model describing the qualitatively different ways students and teachers view learning and good teaching. A model with far reaching consequences for education, educational innovation and democratic society. Their comprehensive review of research from many disciplines underpins the empirical evidence of over 650 students and teachers. Each of the six worldviews results in a unique way of meaning making. These six Ways of Knowing, or Orders of Consciousness, are characterised by increasing complexity of thinking, with fourth level thinking – or self-authorship – representing the most common espoused goal of higher education. Ample evidence is presented that higher education is not attaining its own espoused goals. One explanation may be that many teachers in higher education have not themselves reached the minimum required way of knowing, preventing them from constructing a developmental path for their students. Van Rossum and Hamer’s epistemological model provides clear signposts on the developmental education highway and has proven its worth as an instrument for curriculum design, measurement of epistemological development and as a tool for staff development.
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Ik ben wie ik ben
Ik ben wie ik zou zijn
Ik ben wie ik wil dat ik ben
Ik ben zoals de wereld mij gemaakt heeft
Ik ben wie ik ben zoals ik wil
Ik ben wie ik ben, zelfs al zou ik dat niet willen
Ik ben niet zomaar iemand
Ik ben dan ook niet iemand anders
Ik ben ook niet wie je denkt dat ik misschien zou kunnen zijn
Want, beste vriend
Ik ben ik

En niets of niemand anders
Wat er ook gebeurt

Jij kan zeggen dat ik iemand anders ben geworden, maar eigenlijk ben jij juist anders geworden.

(Veerle van Rossum)

I am who I am
I am who I would be
I am who I want to be
I am the way the world made me
I am the way I want to be
I am who I am, even if I didn’t want to be
I am not anybody
I surely am not someone else
I am not who you think I may be
Because, dear friend
I am me

And nothing or nobody else
Whatever happens

You may say I have changed, but in fact
it is you who has changed

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“I am me” © Veerle van Rossum
Acknowledgements

The seed of this study lies with the committee performing the international accreditation for the Hotelschool The Hague in 1993. Their recommendation to move towards a more activating curriculum opened the way for the use of our existing model of students’ learning conceptions for curriculum development. This study was in part financially supported by the Mobiliteitsfonds HBO, an institute concerned with promoting research in higher professional education in the Netherlands. The Hotelschool supported this initiative between 2005 and 2007. However first and foremost, our thanks go to all the students who, by freely giving us their time and repeatedly putting their thoughts in writing, provided the meat for this study. This concerns the students from our earlier university and Hotelschool based studies of course, but in particular we are grateful for the easy going and welcoming attitude of the many Hotello’s towards their teacher who just would not stop contacting them in all those far away places. Their responses were often heartwarming.

One former student in particular we would like to thank in more ways than one. He was involved at the beginning and at the end: the current study. Jan Vermunt, a psychology student at Tilburg University in the 1980s, contributed to our first study into learning conceptions as a respondent. And again, about a quarter century later he agreed to be the supervisor for our thesis. In the latter role he had full confidence in our abilities, providing us with the freedom to write this book as we had envisioned it. In addition, his insightful questions put us onto new avenues of thought, at the same time forcing us to sharpen our own thoughts and arguments. Thank you Jan for giving us space and support. We look forward to continued cooperation.

While writing we contacted many of the researchers included in the reference list who – with very few exceptions – all responded cordially and provided us with some difficult to obtain articles, often including their newest papers and insights as well. Thank you all. In particular we would like to thank Marcia Baxter Magolda for her fruitful comments in the early stages and for the opportunity to explore self-authorship more fully.

Then of course there are our colleagues and friends who took our lack of social involvement over the recent years in their stride. Many provided us with moral support and some slipped in a useful reference or two.

Finally we would like to apologise to our children who bore the brunt of our distraction. It may not be easy to experience one parent preparing a thesis while you are young, but to lose both to the lure of intellectual engagement for many an evening and weekend must have been frustrating on occasion to say the least. Thank you Tim and Veerle for accommodating us and for loving us still.

Rebecca Hamer and Erik Jan van Rossum
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CHAPTER 1

A MODEL OF STUDENTS’ DEVELOPING CONCEPTIONS OF LEARNING AND TEACHING

(The unexamined life is not worth living, Socrates, by Plato in Apology)

To set the stage for this study we will first introduce the model we have spent more than 25 years refining: a model about the different ways students view the meaning of learning (learning conceptions) and how they see good teaching (teaching conceptions). In discussing the views on learning we will draw mainly on Säljö’s (1979a) seminal study for the first five learning conceptions, examples from students (and teachers) of the current study are presented in the chapters about Enterprising Learning (chapters 6 through 9). For the sixth learning conception we refer to our own 1984 study where we described this learning conception for the first time, as well as to Marton et al. (1993) and Beaty et al. (1997). The examples used in the section on teaching conceptions are taken from our earlier work with university students and more recent work with students of the Hotelschool The Hague – higher professional education. Following the elaboration of the learning and teaching conceptions, in a third major section of this introduction, we will revisit three early studies where we linked students’ learning and teaching conceptions to their conceptions of a number of key concepts in education (van Rossum, Deijkers and Hamer, 1985; van Rossum, 1988; Taylor and van Rossum, 1986), and will discuss in particular students’ conceptions of understanding and applying, and students’ conceptions of intelligence.

Following this exposé we present our six-stage model of students’ learning and teaching conceptions. Finally, at the close of this chapter we propose that the epistemological development described in this study is only the first tier of human cognitive development, linking our model to adult cognitive development. We have fleshed out this thought more thoroughly in Hamer and van Rossum (2008).

Central to our work and the current study are students’ conceptions of learning and of good teaching. It is therefore important to try to make clear what we understand ‘conceptions’ to be. In 1992, Daniel Pratt formulated a description – a definition if you will – which we feel covers our understanding of conceptions well: “Conceptions are specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world” (Pratt, 1992, p. 204).
CHAPTER 1

Students’ Conceptions of Learning

To all, the teacher is a mirror that shows not only the self but the path and its choices, the task and its demands—the difficulties, the joys. To all and from all, the teacher is a learner, a person—and a prism through which the ordinary continuously reveals itself to be miraculous.

Gerald Grow, 1977

Learning conceptions play an important role in students’ study behaviour in higher (tertiary) education, because “we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world” (Pratt, 1992, p. 204). In 1979 Roger Säljö found that five categories were sufficient to describe the views on learning prevalent within a heterogeneous group of respondents, selected on age and exposure to formal education. The ages ranged from 15 to 73, and length of attended formal education ranged from 6 to 16/17 years. At the time of the study all participants were students (part time or full time).

In his studies into learning Säljö used the phenomenographic methodology devised by Ference Marton who reported in detail on this method for the first time in 1981 (Marton, 1981; Marton and Booth, 1997). Again we refer to Pratt (1992) for a succinct description of the phenomenographic method: “Phenomenography is a method for describing qualitatively different ways in which people understand or conceptualize an aspect of their world. It moves beyond individual, idiosyncratic understanding of a phenomenon [e.g. learning] to provide a general map of the qualitatively different ways in which the phenomenon is understood” (p. 205). So, phenomenography focuses on “revealing how things look from the point of view of the respondent”, taking a second-order perspective (Pratt, 1992, p. 204). Phenomenography and issues of reliability are discussed in the next chapter. This method is based on a repeated review and categorisation of the ideas of individuals about various aspects of reality – in our case learning, teaching, etcetera. Naturally, it is essential that in this type of research the respondents are given a lot of freedom to express their views and ideas. In Säljö’s original study interviews were used.

The five learning conceptions described by him are listed below:

1) Learning as the increase of knowledge.
2) Learning as memorising.
3) Learning as the acquisition of facts, procedures etcetera, which can be retained and/or utilised in practice.
4) Learning as the abstraction of meaning.
5) Learning as an interpretative process aimed at the understanding of reality.

These categories have been repeatedly confirmed in our research (van Rossum and Schenk, 1984; van Rossum, Deijkers and Hamer, 1984 and 1985; van Rossum and Hamer, 1985; van Rossum and Taylor, 1987; van Rossum, 1988; van Rossum, Würeffel and Hamer, 2002; van Rossum, Hamer and Würeffel, 2003 and van Rossum and Hamer, 2004). In our work we base our analysis on written answers to open questions (see chapter 2 and 6). In these studies we have shown that students’ conceptions of learning are related to
MODEL OF STUDENTS’ DEVELOPING

a) study strategies and learning outcomes;
b) conceptions of significant educational concepts (teaching, understanding, application, et cetera);
and that they
c) develop over time, and
d) do not differ between university and (higher) professional education.

In this type of research the naming of the categories is often not sufficient to infer what kinds of responses belong to each category. Often quotes are used to overcome this problem. We will use the same procedure throughout in the remainder of this book, sometimes quoting other research and sometimes quoting our own respondents.

Learning Conception 1: Learning as the Increase of Knowledge

Responses in this first category are characteristically vague and learning is taken for granted. Learning is not an object of reflection, it is simply something “everybody does”, like breathing, and as such the respondent doesn’t seem to understand the meaning of the question. As Säljö describes in a fragment of an interview:

[Interviewer]: What do you actually mean by learning?
[Subject]: What do you mean by “What do you mean”?
[Interviewer]: I just wondered what you mean by that... what’s the first thing that strikes you? …
[Subject]: Learning… It’s only a question of … well …
(Säljö, 1979b, p. 447)

It often seems like they are not answering the question at all, but list activities or synonyms.

… to learn, it’s to learn new things, other things that you did not know before… a lot of things in History and so on, you did not know about that before, and the same thing in Swedish and Grammar and so on… (Säljö, 1979a, p. 12)

… it’s to increase your knowledge … you kind of start with a small bag and there is not much in it, but then the longer you live, the more you fill it up…
(Säljö, 1979a, p. 13)

These two quotes address two aspects that are often separated in the answers but in fact are connected, namely the aspect of process (how you go about learning) and product (what you end up with – the outcome). In this stage the process seems to be collecting, and the outcome is fragmentary pieces of knowledge. Learning and knowledge are perceived as parallel tracks leading to the same destination. People “tend to equate knowledge with (…) ‘discrete units of information’ or simply ‘facts’, and learning is consequently the transfer of these discrete units into the head of the learner” (Säljö, 1979b, p. 446).

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3
The focus on collecting and possession, picturing the learner as an ‘avid collector’, who, once in a specialty shop (the classroom), purchases everything the shopkeeper (teacher) has on offer, supports shortening the label to Increasing Knowledge, focusing it on the process.

Learning Conception 2: Learning as Memorising

Learning is equal to memorising and the ability to reproduce what memorised, usually in a school test setting. Reproduction is the product, while the process is memorising. Like the previous conception, learning is seen in quantitative terms: learning more is being able to reproduce more.

... To learn... yes, that’s... you have to cram up your homework and learn a little bit of this and that by heart... well that’s about it... (Säljö, 1979a, p. 14)

... Well, it’s to learn what’s in the books. In principle it means to learn in order to be able to answer the questions which the teacher gives you ... (Säljö, 1979a, p. 14)

Here learning is seen as banking: “The students are not called upon to know, but to memorize the contents narrated by the teacher. Nor do the students practice any act of cognition, since the object towards which that act should be directed is the property of the teacher” (Freire, 2000, p. 80). The learner is an ‘honest Joe’ who works hard and puts aside his money (knowledge) to pay the bills (do the test) and perhaps save for a rainy day. There is also an awareness of not having to learn everything, of a selection towards

...[starting] to sort out things and you kind of learn what the teachers want, you learn to listen to them during the lessons and then you know more or less what the test will be like... (Säljö, 1979b, p. 448)

Here are the first signs of reflection, if not on the quality of what you learn, at least on the quantity. In banking terms, you don’t set aside all of your earnings, only what you need to pay the bills. The concept of putting aside part of what you know for a specific use justifies the distinction between learning conception 1 (saving everything) and learning conception 2. We shortened the label to Memorising.

Learning Conception 3: Learning as the Acquisition of Facts, Procedures, etc, which can be Retained and/or Utilized in Future

Here the process of learning is selecting and memorising those facts, procedures, ideas etcetera which may be useful later in life. Respondents value this process over the - in their eyes - inferior process of memorising only for (school) tests. The product is the “feeling” of being able to apply knowledge in practice (later on). Both aspects are present in the following quote.

... well I think of learning plain facts which you select from your head more or less that is, as regards studies..., but then it is... I mean you have to be
able to use it if, let’s say if you find yourself in a similar situation to the one you were in earlier or if it reminds you of it, then you should be able to pick our the correct facts so to say or the correct way to proceed …(Säljö, 1979a, p. 15)

Here as well learning is seen as a quantitative phenomenon and application takes on the character of applying an algorithm or copying. The learner starts to reflect further upon what is learned to decide whether or not it might turn out to be useful in the future. Our metaphor here is ‘Rembrandt’s apprentice’ able to copy the master’s (teacher’s) brushstrokes, colour choice and composition in such a way that it is difficult to distinguish the apprentice’s painting from the real thing. This view on learning has a flavour of not only memorising, but also “practicing until perfect” without changing the knowledge or the procedures. We re-labelled this category to Reproductive understanding/application or Application foreseen.

The three learning conceptions above form by far the most common set of responses found in literature and our studies. About 70% of the 600-plus students participating in our studies over the past quarter of a century could be categorised as functioning at one of these epistemological levels at the beginning of their studies. In the remainder of this manuscript at times we refer to students or respondents using level-x-thinker, with x standing for their dominant learning conception at that time, e.g. “a level-three-thinker” or “some level-two-thinkers”. In no way should this convention be interpreted as labelling or fixing the person in a particular category, nor should it be seen as implying that no change is possible. Indeed the crux of our model is that everyone is capable of change: epistemological development is a naturally occurring phenomenon that may be accelerated by formal education.

**Learning Conception 4: Learning as the Abstraction of Meaning**

This learning conception is the watershed in our model: seemingly a considerable obstacle that only about one in four of our respondents showed to have crossed at any time during our studies. At this level of thinking the focus shifts from taking in ready-made things (facts, procedures) existing ‘out there’ to constructing meaning. Säljö (1979a) describes this shift as follows “Learning is no longer conceived of as an activity of reproducing, but instead as a process of abstracting meaning from what you read or hear” (p. 16). The object of reflection here is understanding the subjects studied.

…take the subjects I’m studying, let’s say history for example, it means that I should be able to understand a lot more about what development really is, sort of understand the process in a country or among a people in some way … (Säljö, 1979b, p. 450)

The process within this learning conception is understanding, which is reached through relating ideas within the subject, finding out things, looking at the subject matter in a lot more depth, collecting various viewpoints on the studied material
and getting the big picture. By constructing meaning respondents take an active part in the construction of their own view of the world, which still may be strongly dominated by the perspective provided by external experts. The product of this learning conception seems to be the internalisation of a “way of thinking”, one of the purposes of higher education with its emphasis on the intellectual ability to think coherently, logically and analytically.

Yes, to learn … well it is not just a matter of learning facts. It is also to understand, to see contexts and to be able to use knowledge to draw conclusions, to think independently… I think I learned that at school… well perhaps everyone doesn’t learn that, but I think I have… (Säljö, 1979a, p. 17)

[To] have a process of thought that sort of “sets in motion” when you look at something… looking at something new in a far more logical way, and seeing the steps and the moves towards arriving at some sort of conclusion… learning is thinking clearer… Perhaps it is just the skill you have learned of thinking more coherently. (Beaty et al., 1997, p. 159)

Learning is seen as using a way of thinking (a skill) to arrive at an “informed view” (Beaty et al. 1997, p. 156). The students can perhaps be typified as the “criminal investigator”, where the classroom is the crime scene and the product is to think through all the clues and follow up on leads in such a way as to come up with a plausible explanation to present to the judge (teacher). In an educational context this means that the learner must really understand the subject at hand, and we re-labelled this fourth conception to Understanding subject matter.

**Learning Conception 5: Learning as an Interpretative Process Aimed at the Understanding of Reality**

Säljö found that learning at this level is characterised by the expectation that what you learn should help you interpret the reality you live in, implying an important difference with the previous level: that learning moves outside the limits of the school situation. A second characteristic is that learning acquires personal meaning as opposed to the more technical view on learning in the previous stage. This interpretation is supported by Morgan et al. (1981, as quoted in van Rossum and Taylor, 1987, p. 20) when they say “While to some extent this [fourth] conception involves the student as an active agent in learning, what is to be learnt is still not necessarily of personal significance. The emphasis can be very much on understanding other people’s ideas and theories [in 4], rather than on developing one’s own [in 5].” Fundamental here is taking other perspectives into account, instead of only one’s own, in a sense reintroducing the existence of multiple perspectives, but now including the benefit of evidence and argumentation.

.. what’s most important really, that’s the connection between what I read and what I do and see otherwise during the days. I guess I have discovered this in some way, I guess it’s the strategy. I’ve worked a little bit with problems like these in companies… I mean with problems of learning and teaching new
things and then I have tried to... well if you don’t see connections between what you read and your own situation, not very much will happen really. In some way I think I’ve found out that you learn things twice somehow. The first time could have been at school really, the second time is the connection, I mean it becomes conscious in some way… (Säljö, 1979a, p. 18)

Marton et al. (1993) and Beaty et al. (1997) expanded on Säljö’s original interpretation, using more examples to support and clarify the nature of this fifth learning conception. Discussing the process aspect of this conception, they refer to notions such as broadening your outlook on things, opening your mind and widening your horizons. The outcome of this process (the product) is seeing things differently, a different view of the world, a – provisional – personal and contextuated view of reality. In our opinion, this conception of learning, with its truly relativistic flavour, matches Perry’s fifth position (Perry, 1970 and below). One of subjects in Beaty et al. (1997) uses the expression “to look at the world with those eyes” (p. 156) to explain the role of the disciplinary framework learnt at university in developing a perspective. The relativeness of the perspective is explained by another subject when she says “You might have seen it in one way before and you sort of see it in a different way now” (p. 161). So looking at the world with eyes coloured by a particular perspective transforms this world to fit this perspective. By subsequently (consciously) changing one’s perspective, one transforms the way the world is perceived. The object of reflection here is now personal development.

In metaphor, learning here is seen as a journey, with the learner as ‘traveller’, accompanied by companions (teachers and peers) who examine and enjoy the local scenery with him along the way. Together, the travellers try to widen their horizon through this journey. In educational terms one could interpret this as the teacher and students seeking new ways to look at things together, finding different perspectives to come to a ‘better’ understanding of the world around them. The product here is seeing things differently: being able to transform the way of seeing things by changing perspectives. Beaty et al. (1997) – in one of the few studies discussing developments in conceptions of learning – observe about this widening of horizons that it “has important implications for seeing oneself as a participant (rather than only a spectator) in what is happening” (p. 161). Focusing on the process we now re-label this learning conception Widening horizons2.

While level-four-thinkers are already relatively scarce, less than 5% of all our respondents could at any time be categorised as level-five-thinkers.

Learning Conception 6: Self Realisation

In 1983 we came to realise that there was another, qualitatively unique view on learning and identified this as a sixth learning conception, described in van Rossum, Deijkers and Hamer (1984) as “Self realisation”. Some nine years later Marton et al. (1993) published what they thought was the first description of the sixth learning conception and named it “Changing as a person”. In a footnote (p. 292) they acknowledged that we found this particular conception earlier and, more importantly, they acknowledged that both conceptions refer to the same view on
learning. An important factor here is the rarity of this type of thinking, particularly in the usual age group of 18 to 25 years. In our sample of the 1984 study some relatively older students were included and Marton et al.’s study included adult students as well, which made detection more probable. In all our studies taken together we have found only few level-six-thinkers, slightly more than 1% of all respondents. However, once we recognised the response as belonging to a separate category, each new case encountered was distinct by the typical language used and the type of issues addressed in the response.

Learning conception 6 is characterised by an existential dimension, the self of the learner seems to be the focus of learning. The process aspect of this conception is growing self-awareness, looking for answers to the question “Who am I?” The self has become the ultimate object of reflection. The product is self-realisation: becoming the person you feel you are (van Rossum, Deijkers and Hamer, 1984; van Rossum and Taylor, 1987; van Rossum and Hamer, 2004). Quotes of our own respondents will be presented below, in the discussion of conceptions of good teaching.

Beaty et al. (1997) present two different aspects of learning in this conception: the organic nature of the metaphors used and the feeling of becoming an agent and “being in charge”. Both aspects can be seen in the quote below.

… something personal and it’s also something that’s continuous, once it starts it carries on and it might lead to other things. It might be like a root that has other branches coming off it… it is for the person before and for the person afterwards sort of thing … Learning is self-realisation … when I’ve been made aware of something … the effect of learning how I feel … I’ve got more positive views and more positive ideas and I know which side of the fence I am on. (p. 158.)

… expanding yourself. It is being more alive, more aware, feeling more in control. You tend to think that life just took hold of you and did what it wanted with you and I think that you come to realise that now you should take hold of life and make it go your way because you know it is possible. (p. 160)

The feeling of “being in charge” of your own life (or destiny) is very similar to having found an Internal Foundation, a concept used by Baxter Magolda (2001) to describe the final stage of her Epistemological Reflection Model (ERM).

The appropriate metaphor for learning here is growing, the self a ‘living tree’ firmly rooted in a garden (environment), providing shade and protection to and cared for by a number of gardeners (significant others), each with their own speciality. This conception of learning we re-label Growing self-awareness.

In Table 1.1 below we summarise the developing learning conceptions and in analogy to Säljö (1979b) we present the object of reflection central to each level.

Morgan and Beaty (1997) discuss three themes can be recognised in the development of students’ learning conceptions: confidence, competence and control. Their Open University students reported that over time they developed confidence in their own ability to learn, to decide what to study, and to question or debate
Table 1.1. Developmental model of students' learning conceptions

<table>
<thead>
<tr>
<th>Van Rossum-Hamer Learning Conception</th>
<th>Object of Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing knowledge</td>
<td>None</td>
</tr>
<tr>
<td>2 Memorising</td>
<td>Exam relevancy</td>
</tr>
<tr>
<td>3 Reproductive understanding/...</td>
<td>Usefulness later on</td>
</tr>
<tr>
<td>4 Understanding subject matter</td>
<td>Subject matter meaning</td>
</tr>
<tr>
<td>5 Widening horizons</td>
<td>Personal development</td>
</tr>
<tr>
<td>6 Growing self awareness</td>
<td>Self</td>
</tr>
</tbody>
</table>

It is remarkable that in their work with Open University adult students (distance education) Morgan and Beaty found similar stages as Perry (1970) found for college students, in our opinion indicating that Perry’s model – and our model for that matter – may prove to be more generally applicable than many researchers feel comfortable to consider. Morgan and Beaty (1997, p. 236) conclude that the development of confidence is “the key step, perhaps a limiting factor or prerequisite, in developing competence in learning.”

Students’ Conceptions of Good Teaching

To the sleeper, the teacher is the wake-up call of birds at sunrise. To clay, the teacher is potter, sculptor, and trainer in self-shaping. To the wanderer, the teacher is a knowing guide. To the developed mind, the teacher is colleague, listener, friend.

Gerald Grow, 1977

In 1984 we included a question on teaching in our essay questionnaire with the purpose to study students’ view on ‘good teaching’. Initially, we made a distinction in teaching conceptions that was loosely based on the dichotomy between surface level and deep level approaches to learning (e.g. Marton et al., 1997; Chapter 5). These two categories could be characterised as “teacher directed” conceptions and on the other hand more “student directed” conceptions.
This soon proved to be insufficient to cover the full range of views expressed by the students, and we adjusted our approach toward describing a conception of good teaching matching each of the six conceptions of learning. In this way we felt we were listening more closely to what the students actually said, than what theory proposed us to look for. In retrospect, it did not surprise us that we found that these conceptions could be ranked on a dimension teacher-student directedness. As students moved along this dimension, their influence on the teaching-learning process increased while at the same time that of the teacher decreased. A remarkable finding – at that time – was that, within a single student, learning conception and teaching conception would be (logically) congruent. This led us to propose that we could improve our learning conception model by including and linking the conceptions of good teaching. Over the years, new data from other educational contexts helped us to refine the descriptions, focusing on the student-teacher relationship, which culminated in our 2004 model of linked continua of conceptions of learning and good teaching (van Rossum and Hamer, 2004).

Below we will now describe the students’ conceptions of good teaching, using this six-stage model as point of departure and using quotes of a few typical students to illustrate each category.

**Teaching Conception 1: Imparting Clear/Well Structured Information**

This view on teaching is not found very often in higher education (and then only at the beginning of a student’s educational career). Its main characteristic is total teacher dependence, as Femke says,

> Good teaching to me is presenting the subject matter to be learnt in such a way that it is not too dry (presented with humour if possible). The subject matter needs to be explained well and presented in a well-organised way. Resulting in a situation where further learning by oneself does not lead to problems due to sometimes disorganised and unintelligible teaching.

This conception of teaching depends upon the transfer of knowledge from the teacher to the student whose role is in the teaching-learning process is minimal.

**Teaching Conception 2: Transmitting Structured Knowledge, Acknowledging the Receiver**

For these students teaching needs to be clear, orderly, efficient, entertaining and include opportunities to ask questions, implying a limited type of student-teacher interaction in a still very teacher dominated environment. Amelie elaborates,

> Good Teaching:

> - There are teachers who twaddle on a whole hour about their holiday, or football and ruin every class. It’s fun to talk about other things in class once in a while, as an interruption, and then continue with the subject. This makes a class pass more quickly. Further, a teacher needs to be clear, giving concrete examples, so you know what he/she is talking about.
– I detest it when a teacher shows contempt because you just happen to be not that good in this particular subject. A little bit more attention is more useful than remarks such as ‘you won’t ever learn’.

– I really dislike lectures when there is no opportunity at all for students to say something. I don’t always need to say something, but the idea that it is possible is agreeable.

– Having a chat or a bit fun occasionally, and for the rest a decent lecture, consequently not too many disruptions.

While the teacher in this conception is still dominant, students want to be recognised as the recipients of the message, and – e.g. through posing questions – become a little more involved. Students in this category are still very attached to structure and completeness of explanations.

**Teaching Conception 3: Interacting and Shaping**

The final predominantly teacher-directed view on teaching presented here, is characterised by teacher-dominated discussion, up-to-date examples, cases from practice, and an enthusiastic teacher who shapes and motivates the students using positive and negative feedback. Jeroen’s teaching conception shows this clearly:

[In good teaching] Lectures need to be short and to the point, be more like a discussion group. Furthermore topics need to be current and connected to practice. I found the Promotion Management lectures were best, because there cases from practice were discussed in relationship to the literature. Following this, a short case - related to the topic addressed in the lecture – was given as an assignment to be made in small groups.

[An ideal teacher is] a teacher who uses a lot of examples from practice and connects these to the literature, and he/she should invite discussions during the lecture so that sufficient interaction takes place. In addition, I feel it is important that a teacher motivates students for his subject using his enthusiasm; I feel humour is very important in lectures. Furthermore it is important that a teacher gives feedback to his students in a positive way. This means not only emphasising the negative, but also evoking the best in his students.

This third teaching conception is characterised by a wide range of elements displaying the student’s growing need for involvement in the teaching-learning process and an emergent independence within the student-teacher relationship. Students attach a lot of importance to being heard, and it is also a deeper reason for the emphasis on discussion, giving them the opportunity to express their opinions. These opinions can be related to the subject matter, but may also apply to more organisational aspects of the course, while students do not indicate anywhere that these opinions need to be informed. Petra says about this,

Most important is – I think – that a teacher and his students have a good contact. The teacher should not be too authoritarian and should not show that
he thinks that he’s superior to the students (which happens a lot!). Then the
student wouldn’t want to appear interested anymore and everybody will be
talking at cross-purposes. Also, I find that a teacher should not only make his
own opinion about something clear, but that he should listen to students’
options as well, so that these can be discussed. Consequently good teaching
can only happen in small groups.

Teaching Conception 4: Challenging to Think for Yourself/Developing a Way of
Thinking

For the students in this category of thinking about teaching most important in the
teaching process are

1) the challenge to (start to) think for yourself or to undertake something,
2) the new, coaching role of the teacher and a less formal contact
3) the realisation of multiple solutions to any problem and multiple ways of
reasoning
4) developing a “way of thinking” (logical and analytical).

Oliver catches almost all these aspects in his answer.

To me, [good] teaching is stimulating the train of thought. Or looking for
connections and using these for other purposes as well. To me, the ideal type
of teaching would be that connections are well documented and that you’re
not just taking anything at face value. I feel a trial and error process is the
best way to achieve this.

The ideal teacher would be someone who consciously challenges me to think to
achieve a goal (a grade). The teacher should then just let me go and not steer me
too much. In this way I can find out for myself whether something is or is not
possible or true. Assessment should then need to focus on the process and not so
much on the end result. An ideal teacher should also have an hour or two a week
to interact with students in a different way. Informal conversations in a bar for
instance, would be a stimulus for both student and teacher because of the
informal nature. The aim of teaching is not such much the knowledge
accumulated, but [that it] improves and broadens the way of thinking.

Martijn’s answer is much shorter covering most of the same points, while he also
addresses specifically the confidence building emphasised by Morgan and Beaty
(1997) as essential in the developmental process:

[Good teaching is] doing projects, a lot of learning and thinking for yourself.
There are not right or wrong answers, only many ways of reasoning and
many options.

[A good teacher is a] coach and mentor, (…) You must be able to walk in [his
doors] with problems and questions and not get the impression that you’re
badgering [the teacher]
[A good teacher...] gives structure. And makes students feel strong about themselves.

At this stage the student has become an active participant in the teaching-learning process, while the teacher’s role lies more in coaching the learning process. Both focus more on understanding and how solutions are found within a particular discipline (building expertise), and less on finding ‘the correct answer’.

Teaching Conception 5: Dialogue Teaching

Students at this level of thinking about teaching appreciate a teaching environment based on learning partnerships (Baxter Magolda, 2004); where – in dialogue – teachers and students become equal partners in the mutual construction of knowledge. This emphasis on dialogue is central in the quotes below from Diana and Maria.

Good teaching is – in my opinion – teaching that involves the students as much as possible in the subject. Consequently not that a teacher reels off his lectures while the students listen quietly – at least that’s what you hope. So, I think that dialogue teaching is best, for me too. Then you stay involved in the subject. There’s less chance that your thoughts wander. Furthermore I think that a teacher should be open to criticism, especially when it comes from the students: that he remains the teacher without putting himself on a pedestal. (Diana)

In my opinion good teaching is working through a specific class, chapter or problem together and discussing it (teacher and students together) so that all parties can learn. As student you ought to …oh well… have the impression that the whole group is on the same level and that you too can come out with a suggestion or solution. I find it very comforting and also in fact necessary, that there is someone (i.e. the teacher) who knows “everything” about a particular subject, to prevent students’ hopeless wanderings. Then, the teacher is a guide who stands amongst the students. In secondary education the teacher is still too far away from the pupils, which is not beneficial to a mutual relationship. The latter is, in my opinion, more important for the pupils and students than you would expect at first glance. (Maria)

The importance of relativistic teaching, teaching which addresses for example underlying assumptions is brought into focus in Minka’s answer,

Good teaching explicitly shows its own limitations. [This happens when] one first discusses the assumptions, implicit truths and methods [all] underpinning the discipline and one places the subject matter in a context. The context can be historical, societal, religious, etcetera. Then it makes more sense. ... Furthermore I prefer studying in a group as small as possible, because often lots of questions are raised and to answer them seriously the teacher needs to tell the other side of the story as well…
CHAPTER 1

The juxtaposition of dialogue and a personal perspective in this teaching conception is comparable to the blending of communion and agency that Baxter Magolda sees as the essence of the two highest levels of thinking about knowledge, teaching and learning (see Baxter Magolda, 2004 and chapter 3, Contextual Knowing).

Teaching Conception 6: Mutual Trust and Authentic Relationships: Caring

A good teaching environment, at this level, seems to be defined almost exclusively in language referring to emotion, autonomy and reciprocal relationships and seems to boil down to mutual trust and caring. At its most blunt it almost sounds like ‘I’ll learn something only when I feel good about it, when I want to and when the teacher is an inspiration to me’. Cora’s answer is a good example of this.

I don’t really have an idea of what good teaching is. I do know, that (this refers more to learning from people than to teaching) as soon as some one tells me ‘you have to do it this way or that way’ I start to bristle. I feel: Just show me what, who, how and why you are, do, feel etc… Live as you think is right and if I can learn from that (what is almost sure to happen) then I can pick that up myself.

I can only become wiser when I want to, you can’t make me. I do feel the latter is valid within teaching. Good teaching is presenting the subject matter in such a way that [for] those already interested it stays that way or becomes more so.

The students’ view on teaching shows a relative dismissive approach to the teaching technique or method. For good teaching freedom, enthusiasm and inspiration – within an authentic teacher-student relationship – have become essential, as Anna says:

Good teaching develops in a situation of total understanding between student and teacher. (...) To me [the] teaching method is no longer important. As long as I can see that the man/woman in front of the group is really interested in the subject and in the people before him/her, it doesn’t really matter how the subject is communicated. If he/she clearly is not interested in me or the things I want to learn, then I will not open myself up to communication of knowledge.

In these descriptions of good teaching learning has become ‘endless’ and fickle and it flourishes best in a free environment and with an inspirational teacher. The seemingly minimalist expression of good teaching is formulated by Craig Nelson in summarising Perry (1970) “Eventually, students here have just one question... Are you OK?” “Who the teacher is becomes an essential part of the learning experience in a new and deeper way” (Nelson, 1999). Exploring the kind of teaching that is most appropriate for these students, Perry himself (1970) concludes that to convince students of their care and be worthy of their trust, the teacher
must have “... a certain openness—a visibility in their own thinking, groping, doubts, and styles of Commitment”,
and have “the duty of confirming the student in his community with them—a membership he achieves (at the very least as an apprentice or colleague-to-be) through his own making of meaning, his daring to take risks, and his courage in committing himself”

These teacher requirements formulated by Perry – we feel – echo perfectly the quotes of Cora and Anna. In Table 1.2, we have completed our base model, including the linked teaching conceptions.

In the chapters 3 and 4 we will describe epistemological models that have strong resemblance to our model. This comparison is made to strengthen the fundament of our model for two reasons: first the observation of different approaches leading to very similar categories underpins the reliability and validity of our own findings, and second, all three types of models (phenomenographic, epistemological and quantitative), in fact describe and refer to the same kind of development. But first we will elaborate on the relationship between learning conceptions and the conceptions of three ubiquitous concepts in education, namely understanding, applying and intelligence. We include these three sets of conceptions because they form an integral part of the outcome space of the models discussed in chapters 3 and 4. Introducing these conceptions here increases the fullness of our comparison. Finally, in chapter 6 these concepts return in descriptions of ‘signature’ or key features of responses to our learning and teaching questions and so they are used to categorise data. The paragraphs below supply the background for the inclusion of these conceptions in our data analysis and categorisations.

<table>
<thead>
<tr>
<th>Van Rossum-Hamer Learning Conception</th>
<th>Object of Reflection</th>
<th>Teaching Conception</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing knowledge</td>
<td>None</td>
<td>Imparting clear/well structured knowledge</td>
</tr>
<tr>
<td>2 Memorising</td>
<td>Exam relevancy</td>
<td>Transmitting structured knowledge (acknowledging receiver)</td>
</tr>
<tr>
<td>3 Reproductive understanding/ Application foreseen Understanding subject matter</td>
<td>Usefulness later on</td>
<td>Interacting and Shaping</td>
</tr>
<tr>
<td>4</td>
<td>Subject matter meaning</td>
<td>Challenging to think for yourself / developing a way of thinking</td>
</tr>
<tr>
<td>5 Widening horizons</td>
<td>Personal development</td>
<td>Dialogue teaching</td>
</tr>
<tr>
<td>6 Growing self awareness</td>
<td>Self</td>
<td>Mutual trust and authentic relationships: Caring</td>
</tr>
</tbody>
</table>
CHAPTER 1

Students’ Conceptions of Understanding and Applying

...it was decided to read Das Kapital by Marx... And the torment began. However not because Marx immediately defeated us with complicated constructions or other difficult things. No, on the contrary, already in the first chapter we succumbed to very evident issues, of which Marx made ridiculously elaborate points. ... [each of which] I understood perfectly. What then is it really about? The case was that we understood every separate word very well. The words made sentences which we also understood. But when we wanted to integrate these sentences into a whole, everything came tumbling down and we remained – not understanding it at all – amidst the rubble after which, agonised, we started all over again.

(Doblaev, 1984)

In our research, and in other studies into epistemology, we frequently encounter the use of words such as understanding, comprehension, application etcetera when describing learning activities or learning outcomes. Very often this happens without these concepts being further elaborated upon, and without clarity as to what exactly is meant in each instance. Also in students’ group discussions we have observed that they use very divergent definitions of concepts as applying (knowledge) and understanding. While conceptions of understanding and application are not central to our developmental model, we feel it is necessary to discuss two of our early studies (van Rossum, Deijkers and Hamer, 1985; van Rossum, 1988) that clarified the qualitative differences in meaning of these important concepts as they relate to learning and teaching.

In van Rossum, Deijkers and Hamer (1985) and van Rossum (1988), we described a study in which 42 university Arts students were asked to fill in an open-ended questionnaire with eight questions, of which the following four are relevant to this study:

1. What do you mean by learning? (the learning conception)
2. What do you mean by (good) teaching? (the teaching conception)
3. What do you mean by understanding a text, insight into the subject matter?
4. What do you mean by (being able) to use/apply what you have learned?

Other concepts that were analysed in the above mentioned studies were the influence of the type of exam questions (assessment) on study strategy, and the difference between active and passive learning.

Below we will discuss the conceptions of understanding and applying as they were found to be related to learning and teaching conceptions.

Conceptions of understanding and applying 1. In the interpretation of concepts such as understanding and applying, the atomistic view of the first learning conception is expressed in a characteristic detail-directedness. The way the subjects
see it, they have ‘understood’ something when they have “understood everything”, every word, every sentence (see quote of Doblaev above). Similarly applying has a very absolute meaning, reminding us of Kuhn’s realist level of thinking (chapter 3, section on Kuhn): applying is comparing facts to reality.

Applying makes me think of comparing what is learned to reality. To see whether it is really so (Bert in Van Rossum, Deijkers and Hamer, 1985, p. 624)

**Conceptions of understanding and applying 2.** Characteristic for learning at this level of thinking is the exam directedness. Understanding and applying still are conceived foremost as reproductive activities, with understanding and applying both meaning being able to reproduce the original information, and to answer exam questions correctly. Two quotes illustrate this.

I have understood a text when I literally understand what is said and when I can apply this in an exam. For me to understand a “text” and to apply it is something very different from having insight into the subject matter: when I have insight and understanding of a text, I’ll get the best results. But I can also get good marks when I just understand the text, I only repeat what is said. (unnamed student in van Rossum, 1988, p. 203)

The ability to apply what is learned is: applying it at an exam, so that the questions are answered correctly and the results coming from this are favourable. (unnamed student in van Rossum, Deijkers and Hamer, 1985, p. 626)

For these students there seems to be no difference between reproduction, understanding and applying: “To me the application of the text is the same as the concept of reproduction that I have used already a few times in my answers” (Henry in van Rossum, Deijkers and Hamer, 1985, p. 626).

**Conceptions of understanding and applying 3.** At this level of thinking we see the developing ability to separate main issues from issues of lesser importance to the storyline of a text. This distinction is major in the conception of understanding. The criteria for understanding are whether one can reproduce the main issues of a text in general terms (showing selectivity), and whether one can use or discuss it.

“Understanding”, “having insight into the subject matter”: by this I don’t actually mean the fact that you can literally reproduce all kinds of facts and definitions, et cetera, but more so that you can follow the continuous thread of through the subject matter, that you know what it’s about in a broad sense (that you can reproduce it generally in your own words). Besides this I think that, if you understand the subject matter, you then must be able to use it, to apply it to other areas and problems, to discuss it. (Audrey in van Rossum, Deijkers and Hamer, 1985, p. 629)
Application is seen as more complex than before, there may be two expressions of application: 1) answering (exam) questions, doing sums and 2) practical applications, however, where application goes beyond an algorithmic level it is seen as problematic, see Rob’s answer to this question.

Very roughly you can say the “being able to apply what is learned” means that you must be able to solve a given problem, either at an exam, either from practice or otherwise, [using] the knowledge provided. This can be more exactly formulated if you let the applications also depend on the subject or speciality. For instance the application of mathematics is different from the application of sociology of literature. Mathematics you can apply in technical cases, ranging from architectural problems to computer programs; sociology of literature wants to provide an insight into the various views on literature and the application of this is vague and questionable… (Rob in van Rossum, Deijkers and Hamer, 1985, p. 629)

Conceptions of understanding and applying 4. Here we see a qualitative difference emerge in both conceptions of understanding and applying as compared to the previous, more reproduction oriented levels. Understanding is seen as tracking down the theme of a text, finding out the author’s intention. Making connections and constructing meaning out of the material is mentioned for the first time. Sometimes constructing meaning, when expanding beyond a single text, is seen as having insight into the subject matter, as Emmy says,

Understanding a text: knowing what the text is about, knowing what the theme of a text is, what the author of the text has tried to get across to the reader.

Insight into the subject matter: if you can see interrelationships between different texts and perhaps the lecture notes and then [you] discover the main lines in them (the entire subject matter) and [you] can maybe connect them to other subjects (Emmy in van Rossum, Deijkers and Hamer, 1985, p. 631)

Application at this level is seen as “use of knowledge” when the situation requires it and is based on “constructed meaning”. Use is perceived as more flexible, perhaps heuristic, in nature and there is no mention of a lag in time. Use can be immediate and/or much later in life, important is that it is constructive, and takes place outside test and exam situations. Jane and Emmy have the following to say about applying,

If you can apply what you have learned, you are also busy with it outside your study, when you’re not attending lectures or studying. Things strike you that you can connect with your study, for instance they confirm what you have learned or, on the contrary, evoke questions. You can also explain to others in a comprehensible way why these things strike you. (Jane in van Rossum, Deijkers and Hamer, 1985, p. 632)
... I can also imagine that you start using the studied subject matter in a small study or the writing of an essay (Emmy in van Rossum, Deijkers and Hamer, 1985, p. 632)

At this level we can see the recurring theme of construction: construction of meaning, focusing on meaningful activity when using knowledge, and being critical and creative while doing so. However, at the same time these descriptions have a clearly rational and somewhat technical flavour to them: creativity is something you can achieve by following (the) rules, thinking the way they – the successful professionals in your discipline – want you to think.

Conceptions of understanding and applying 5. Where students at the previous level sometimes express their thoughts in a somewhat technical way, devoid of personal involvement, at this level personal views are more prominently included in interpretations of learning, teaching, understanding and applying. Furthermore, examining the evidence, formulating arguments for or against and internally discussing the value of the content are frequent themes in these answers. During these internal discussions, conceptions of knowledge, learning, understanding, insight and applying sometimes seem to merge to a certain extent. For instance, Roger says

You probably have understood a text well when you can rephrase the content, the purport of the text rather easily in your own words, when you can support or oppose it with your own examples, when you can give a personal opinion about the clearness, the correctness, etcetera of the text, when you can include the content and the purport in your own argumentations. ……… I think “applying” is the only criterion for have learned something. If you can’t apply it (and here applying doesn’t mean correctly answering the knowledge questions – in a conventional sense – in an exam), you haven’t learned anything. Being able to apply means having understood it well. In that sense applying contains, among other things, that which I spoke of while answering the [question on understanding]. (Roger in van Rossum, Deijkers and Hamer, 1985, p. 634–635)

Vera discusses applying as problem solving and stresses its heuristic nature, while including the importance of evidence, critical thinking and the ability to take on another viewpoint.

Using your knowledge in a way which is not reproducing, but problem-solving. Using knowledge to clarify things that have no direct connection with the area concerned. You must also be able to use the knowledge, for instance, to relate new views, opinions to what you already know; to discern various viewpoints and to compare them critically. Based on the knowledge you have acquired, you must then be able to look at certain data or situations from a “different” viewpoint; to describe certain things from a viewpoint that is related to the acquired knowledge, even if it isn’t specifically your view. (Vera in van Rossum, Deijkers and Hamer, 1985, p. 635)
Here, Vera is formulating the basic requirements for true relativism and interprets understanding and application in a qualitatively distinct way from any previous level of thinking. Applying is not only something you can do after you have understood something, it is a necessary step in understanding and learning.

In these last three levels we find three distinct conceptions of applying, that are compared to each other in Treffers et al. (1982) discussing understanding and applying arithmetic: application can be seen “not only as application-afterwards, but also as application integrated in the formal arithmetic, and even preceding it as pre-plication, as point of departure for the development of understanding” (translated in van Rossum, 1988, p. 201).

**Conceptions of understanding and applying 6.** At this highest level of thinking about learning and teaching, we only found one student whose view on understanding texts reflects the sense of agency we – over the years – have come to expect at this level: “You understand a text when you could have written it yourself” (van Rossum, 1988, p. 205). However, having only one student to go on in this sample and lacking additional responses from other studies we will not include this level in the scheme below.

**Summarising Conceptions of Understanding and Applying**

In Table 1.3 below we have tried to capture the essence of the conceptions of understanding and applying for the first five levels of thinking. These descriptions are

<table>
<thead>
<tr>
<th>Van Rossum-Hamer Learning Conception</th>
<th>Conception of Understanding</th>
<th>Conception of Applying</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing knowledge</td>
<td>Understanding every word, every sentence</td>
<td>Comparing facts to reality</td>
</tr>
<tr>
<td>2 Memorising</td>
<td>Answering exam questions by reproduction</td>
<td>Reproducing at exams</td>
</tr>
<tr>
<td>3 Reproductive understanding/ Application foreseen</td>
<td>Reproducing the main points (using selectivity); using or discussing what is learned</td>
<td>Answering exam questions; Using knowledge algorithmically in practice</td>
</tr>
<tr>
<td>4 Understanding subject matter</td>
<td>Making connections between sources, constructing the author’s intention</td>
<td>Using knowledge in flexible ways; within and outside the educational setting; ‘creativity’ is reached by following disciplinary rules</td>
</tr>
<tr>
<td>5 Widening horizons</td>
<td>Formulating arguments for or against, and using what is learned in your own argumentations</td>
<td>Problem solving in a heuristic and relativist way</td>
</tr>
<tr>
<td>6 Growing self awareness</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
somewhat amended from the earlier work, because – in the years since these analyses (1985 and 1988) – we have come to see a broader picture, recognising more clearly the essential nature of each level of thinking. So, while staying true to our original model, we now occasionally have come to place our emphases slightly different than before, in an attempt to improve understanding.

**Students’ Conceptions of Intelligence**

*Intelligence is knowing what to do when you don’t know what to do.*

*(Jean Piaget)*

In 1986, Taylor and van Rossum published an internal (Dutch-language) report of the Tilburg University on the relationship between conceptions of learning and conceptions of intelligence. In this exploratory study, 47 first-year psychology students were asked about their views on learning, understanding, their ideal learning situation and intelligence. Only the responses to the learning and intelligence question were discussed in Taylor and van Rossum (1986).

Analysis of the learning conception responses revealed that this sample contained no students with learning conception 1. However, for the learning conceptions 2 through 6 this report contains examples of clearly different conceptions of intelligence. As with the learning conceptions, the development in views on intelligence is from intelligence as an unsophisticated, one-dimensional, and unchangeable type to intelligence seen as complex, changeable and difficult to ascertain. Like before, we will illustrate the different ways of thinking about intelligence with excerpts from responses of the students, beginning from level 2. The students in the report were identified by number.

**Conception of intelligence 2.** As learning at this level of thinking, intelligence is seen as a one-dimensional, self-evident concept: it says something about how smart you are, how little trouble you have with learning. However, intelligence is something that is not necessarily connected to ‘knowing a lot’; it’s more an innate talent.

I think intelligence is the ability to learn easily (in the broadest sense of the word). A person’s intelligence quotient reflects I think their intellectual abilities, the measure in which a person can take in information, process it and rephrase it in their own words, and to what extent he can reason logically and has insight.

Intelligence is something you are born with, so it’s hereditary, but I think the environment and circumstances you grow up in play a big role in the extent to which that intelligence is developed. (S16, Taylor and van Rossum, 1986, p. 13)

I see intelligence as the innate IQ. Intelligence cannot be increased. You can’t increase your IQ through studying, that only leads to becoming more learned.
I think that the IQ is best measured in children in pre-school [kindergarten]. They haven’t learned that much (I mean like reading, arithmetic, et cetera). As soon as children start to learn they increase their learnedness and then the IQ is only measurable with tests. (S6, p. 15)

This second level conception of intelligence can be summarised with the following key words: fixed, innate and testable with the current IQ-tests.

Conception of intelligence 3. Students at this third level of thinking about learning and teaching still feel that intelligence (IQ) is fixed and innate, but that intelligent behaviour is something that can be learned. The focus at this level is on applying or using one’s innate intelligence, the more one uses it, the more intelligent one’s behaviour.

I think IQ is innate, but that intelligence (or displaying intelligent behaviour) is learned. Someone – with a lower IQ - who is stimulated by the environment, can attain better results than someone with a higher IQ who is not stimulated. The former shows more intelligent behaviour than the latter. I think everyone can reach a certain level of intelligence (the one perhaps with more difficulty than the other) by using specific approaches to studying and problem solving.

… I think that you can’t talk about intelligence as having a high IQ. People with a high IQ can fail to use it and then they don’t show intelligent behaviour. People with a lower IQ can, with more effort, still show pretty intelligent behaviour. So, I think, there is actually no relationship between IQ and intelligent behaviour. (S2, Taylor and van Rossum, 1986, p. 16–17)

At this level students separate innate IQ from intelligent behaviour, where intelligent behaviour refers to the use you make of your innate intelligence.

Conception of intelligence 4. By students that see learning as understanding - and applying what is learned based on this understanding, both in academic areas and in everyday life – intelligence is viewed in a logically coherent way, as the ability to function well and independently in everyday life: as one student puts it, intelligence is “a way of life” (p. 19). Intelligence is also something that can be developed. It loses its absolutist interpretation and it leads to reflection about many things.

I think intelligence is the ability to learn everyday things in a relatively short time, such as filling in cheques. And being able to follow the classes at school, without needing continuous repetition of the meaning of something. Being able to act independently in situations in a way that there are no unpleasant or weird consequences. (S31, Taylor and van Rossum, 1986, p. 19–20)

I don’t think I’m that intelligent, but I think that is something that grows. It is important to develop yourself well, and I think that is a form of intelligence too.
It is not only learning (I notice this in my own environment) that makes someone intelligent, but also life experience and thinking about the meaning of it all, thinking about life etcetera now and then is also intelligence. I think you don’t really need to be intelligent to go to college or learn. If you are really interested, than you are willing to study things, to put in some effort. What then is intelligent behaviour? …

What is intelligent? I think everyone is intelligent, depending on the criterion you use. (S4, p. 21)

At this level intelligence is no longer a fixed personal aspect; it is something you can develop through thinking and learning (both from school and life). Being intelligent is expressed in everyday behaviour, including independently solving everyday problems and situations with relative ease.

Conception of intelligence 5. At his level, intelligence is sometimes seen as problem solving in the broadest sense. It includes a view on which (problem solving) skills are most necessary in society for it to function well, and intelligence is clearly seen as something that can be developed, and needs to be developed when society needs it.

One option is to define intelligence as problem solving ability and to specify this for a variety of problem areas that need to be addressed. (S7, Taylor and van Rossum, 1986, p. 22)

… Once you have made an inventory of the widest variety of skills, you would need to establish which skills are necessary in the society you want. Once you’ve made that choice (in the larger sense that society knows where it wants to go) then you can determine how people, who lack certain necessary skills, can be helped to acquire these skills (in much the same way dyslectic children are helped in learning to read). (S11, p. 23)

Here we see the signs of ‘widening horizons’ the associated learning conception is named after. The horizon of intelligence is now outside the individual, it includes society as a whole. A second aspect of intelligence that emerges at this level is personal development, taking one’s own route, and understanding the relativity of what one observes in everyday life.

I think an intelligent person pays attention to what happens around him in everyday reality, and is able to put things in perspective so he can continue to go his own way. An intelligent person will want to develop himself further and further, and tries to learn from his experiences, both positive and negative. This kind of intelligence is not easy to establish. (S20, p. 24)

Conception of intelligence 6. At this level, views on intelligence include cognitive and affective aspects, seeing it as a comprehensive, intellectual and non-intellectual phenomenon. Where at the previous level intelligence was seen as problem
solving, here it is seen as a creative process. Perhaps the distinction is between problem solving (5) and problem posing (6).

Intelligence occurs in many areas. Social-emotional intelligence for instance (where in particular mentally handicapped people show an enormous richness). So, intelligence is not only intellect. … You should have a comprehensive conversation with someone, about social, emotional, relational, cultural and intellectual issues. And then you would be missing quite some issues still, such as the areas of art, ethics, creativity of people etcetera. But I do think a one-on-one conversation is the best way to find out about all of it. (S28, Taylor and van Rossum, 1986, p. 25)

Intelligence is ‘something’ that is difficult to describe, but that, I feel, can express itself in a variety of ways such as (…) creativity. … With creativity I mean playing with the knowledge you have and creating new or adapted theories, so not parroting what other people say, but adapting what you do to your own norms and rules. (S26, p. 29)8

Comparing the two extremes found in this study we can see a development from intelligence seen as an innate, fixed IQ, towards a comprehensive conception of intelligence, including a variety of non-cognitive aspects. The study this section is based on was limited in scope and exploratory in nature, with some learning conceptions comprising of only a few respondents. Although these conceptions of intelligence show striking consistency with the associated learning conceptions, and have some resemblance with more quantitative epistemological belief dimensions (e.g. Schommer, 1990, see chapter 4), we would suggest further studies to properly define the (six) conceptions of intelligence.

Below in Table 1.4 we have summarised the found conceptions of intelligence and linked them to their associated learning conception.

Table 1.4. Developmental model of students’ learning and intelligence conceptions

<table>
<thead>
<tr>
<th>Van Rossum-Hamer Learning Conception</th>
<th>Object of Reflection</th>
<th>Conception of intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing knowledge</td>
<td>None</td>
<td>Innate and fixed IQ</td>
</tr>
<tr>
<td>2 Memorising</td>
<td>Exam relevancy</td>
<td>Innate and fixed IQ versus intelligent behaviour</td>
</tr>
<tr>
<td>3 Reproductive understanding/ application or Application foreseen</td>
<td>Usefulness later on</td>
<td></td>
</tr>
<tr>
<td>4 Understanding subject matter</td>
<td>Subject matter meaning</td>
<td>Not fixed anymore independently thinking and solving everyday problems with ease</td>
</tr>
<tr>
<td>5 Widening horizons</td>
<td>Personal development</td>
<td>Problem solving skills, as needed in society</td>
</tr>
<tr>
<td>6 Growing self awareness</td>
<td>Self</td>
<td>Creativity</td>
</tr>
</tbody>
</table>

| Intelligence is intellect and affect |

A Developmental Model of Students’ Learning and Teaching Conceptions

In the remainder of this study we will refer frequently to our learning-teaching conception model as presented in Table 1.2 (and repeated in the first three columns of Table 1.5 below). However as summary of this chapter in table 1.5 we have linked all the conceptions treated above in one model.

Table 1.5. Summary model of learning-teaching conceptions and related conceptions of some relevant educational concepts

<table>
<thead>
<tr>
<th>Van Rossum-Hamer Learning Conception</th>
<th>Object of Reflection</th>
<th>Teaching Conception</th>
<th>Conception of Understanding</th>
<th>Conception of Applying</th>
<th>Conception of Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Increasing knowledge</td>
<td>None</td>
<td>Imparting clear/ well structured knowledge</td>
<td>Understanding every word, every sentence</td>
<td>Reproducing exam questions by reproduction</td>
<td>Inmate and fixed IQ</td>
</tr>
<tr>
<td>2 Memorising</td>
<td>Exam relevancy</td>
<td>Transmitting structured knowledge (acknowledging receiver)</td>
<td>Answering exam questions by reproduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Reproductive understanding/ application or Application foreseen</td>
<td>Usefulness later on</td>
<td>Interacting and Shaping</td>
<td>Reproducing the main points (using selectivity); using or discussing what is learned</td>
<td>Answering exam questions; Using knowledge algorithmically in practice</td>
<td>Inmate and fixed IQ versus intelligent behaviour</td>
</tr>
<tr>
<td>4 Understanding subject matter meaning</td>
<td>Subject matter meaning</td>
<td>Challenging to think for yourself / developing a way of thinking</td>
<td>Making connections between sources, constructing the author’s intention</td>
<td>Using knowledge in flexible ways, within and outside the educational setting; creativity is reached by following rules</td>
<td>Not fixed anymore independently thinking and solving everyday problems with ease</td>
</tr>
<tr>
<td>5 Widening horizons</td>
<td>Personal development</td>
<td>Dialogue teaching</td>
<td>Formulating arguments for or against, and using what is learned in your own argumentations</td>
<td>Problem solving in a heuristic and relativist way</td>
<td>Personal development Problem solving skills, as needed in society</td>
</tr>
<tr>
<td>6 Growing self awareness</td>
<td>Self</td>
<td>Mutual trust and authentic relationships: Caring</td>
<td></td>
<td></td>
<td>Creativity Intellect and affect</td>
</tr>
</tbody>
</table>

Possible Development beyond the Sixth Learning-Teaching Conception

After describing the various developmental stages (see especially Table 1.2 before), one might wonder about the logic of why students develop at all. What is the process
and what are the questions that may drive development? We feel that it may be a
series of cycles of differentiation and integration. Because the majority of students
start higher education as level-two-thinkers we start with them, and not the level-
one-thinkers who are not aware of the option of reflection.

In traditional secondary education level-two-thinkers have learnt to focus on
what is important to pass examinations, addressing the important issue of “How do
I pass exams?” So exams define what to learn and know.

After a while, perhaps confronted with the demands of higher education and
life, level-two-thinkers may experience discomfort with memorising and passing
exams alone, and the need for (reproductive) meaning making and application
differentiates out of learning conception 2 into learning conception 3. Learners
then become level-three-thinkers trying to answer the issue “What is useful for
me to know?” For level-three-thinkers later work or practice define what to learn
and know.

The imminent future as a successful professional – or working experiences –
may stimulate learners to develop into level-four-thinkers (learning conception 4),
where the way of thinking of level-two-thinkers and level-three-thinkers become
elements in an integrated system focusing on autonomy and understanding within a
context, addressing the issue of “How should I think?” or “How do I make sense
of reality?” This is a big change in thinking and we have referred to this shift as
the watershed in epistemology within our six-stage model. The learning and
knowing of level-four-thinkers is defined by a professional’s (disciplinary) way
of thinking.

The realisation that there may be more contexts including other autonomous
people, leads to the differentiating move into learning conception 5. Level-five-
thinkers focus on connection and multiple perspectives: “How do I relate to other
people and perspectives?” and their learning and knowing is still defined externally
by these perspectives.

These five first tiers of development seem to focus on epistemology: knowledge
and knowing. We have referred to this first set of five as a model of “learning to
know” (van Rossum and Hamer, 2008), introducing a second shift in focus within
our original six-stage developmental model. We have discussed this second shift,
and the provisional second tier of development introduced below, which focuses on
“learning to be”, in more detail in Hamer and van Rossum, 2008.

Learning conception 6 can be seen either as the final stage or the first of a
second type of development. Either way it is characterised by the integration of
autonomy (level-four-thinkers) and connection (level-five-thinkers) into a new
structure addressing more ethical issues such as “Who am I?” Here, for the first
time the self becomes ‘the boss’ who defines learning and knowing. Level-six-
thinkers have made a step upwards to another, ontological plane which led us
before to propose a change of nomenclature: learning to be me or “knowing me”.

In response to a query what then would constitute learning to be 2 and beyond 9,
we have used both the idea of differentiation and integration used above, as well as
the idea of ‘stepping out of embeddedness’ that Kegan introduced (see chapter 3)
to extrapolate a possible developmental trajectory (see Hamer and van Rossum,
2008 for a more elaborate discussion). So if level-six-thinkers ask “Who am I?”, level-seven-thinkers might focus on differentiation and finding out “Who are you?”, embracing the other in a new way of knowing Parker Palmer might be referring to when he says “a way of knowing and of living that has moved beyond fear of the other into respect for, even a need for, its otherness” (Palmer, 1998, p. 56, italics ours). Level-eight-thinkers then – stepping out of ‘you-and-I’ – might integrate this into the question “What defines humanity (to me)?” Perhaps we see an example of these three levels in John Donne’s meditation XVII, where he links the self to others and mankind:

All mankind is of one author, and is one volume; when one man dies, one chapter is not torn out of the book, but translated into a better language; and every chapter must be so translated...

As therefore the bell that rings to a sermon, calls not upon the preacher only, but upon the congregation to come: so this bell calls us all: but how much more me, who am brought so near the door by this sickness....

No man is an island, entire of itself...any man's death diminishes me, because I am involved in mankind; and therefore never send to know for whom the bell tolls; it tolls for thee.

And after considering humanity, in becoming a level-nine-thinker, one might differentiate towards non-human life: “What about all other living things?”, perhaps in time progressing towards a new structure. Becoming a level-ten-thinker could mean addressing the issue of “What is humanity’s place and responsibility in the system, in and towards the ecology and the planet we live on, in short ‘life as we know it’?” Although, this speculation seems to call us “to boldly go where no-one has gone before”, we choose to leave the contemplation of “life, not as we know it” to another time and place.

This leaves the issue why people ask these questions undecided, although some schools of thought believe that making sense of our environment by asking questions (inquiry) may be “hard wired” into our brain (e.g. Pinker, 1997, 2002). On the other hand, perhaps it is only the beliefs – the results of these inquiries - that get hard wired or at least “hard set” at an early age.

It begins with the innate need of humans to make meaning out of their experience of the world. So we develop, at quite early ages – as five-year-olds, for example – basic sets of ideas about how the world works, what’s dangerous, who’s friendly, about right and wrong, what to like and how to behave, and so on. The scary part is that these childhood versions of reality tend to get pretty hardwired into the brain and prove quite resistant to change: Once we think we’ve figured out some corner of the world, we tend to see what we want to see and hear what we want to hear, bending subsequent experience into confirmation. I say “scary” because the existence of prior beliefs can be a major impediment to subsequent learning: The beliefs, after all, may be objectively wrong, or bigoted, or dysfunctional, and block fair and open encounter with the new or different.
CHAPTER 1

Very significantly, prior beliefs turn out to be especially impervious to classroom-based instruction, and especially to teaching as telling. (Marchese, 1998, p. 5)

Or it may be the human condition to struggle to balance the paradoxes inherent to the profound truths of life (Palmer, 1998, p. 62–63). As mentioned before, we have treated this further developmental tract more elaborately in Hamer and van Rossum (2008). In chapter 11, Educating the educators, we present a credible example of the seventh learning-teaching conception in discussing the way this could influence teaching.

Returning to terra firma, in the interpretation of such a developmental model as our own, in phenomenography (see also chapter 2) we often encountered views that implicated that when moving from one stage to the next, you lose the skills and advantages of the previous one. This interpretation likens development to buying new clothes to replace old, tattered ones. Perhaps this mindset came from a reticence to label one way of thinking as (inherently) better than another, going only so far as to label the one as more (or less) appropriate than another within a context. We feel that this interpretation ignores the hierarchical inclusiveness of the categories, as many students in higher levels clearly indicate that they have not forgotten – nor have become unable to function at - the lower levels when called for. We would suggest amending the analogy to purchasing new clothes, adding to your wardrobe in order to dress appropriately for a new situation: you may not need a suit when you’re at school, but one may prove necessary when applying for a job. In this case you usually don’t throw away your jeans. You simply reserve them for occasions when they are appropriate apparel. We speak not only from personal experience, as said above numerous respondents refer to using “old” ways of learning as well as new approaches or strategies (for examples see chapters 7 through 9 below). We also have some corroboration from a respected external source as well: when Blythe Clinchy - in revisiting Women’s Ways of Knowing - admits of sometimes growing “impatient with students who behave as Received Knowers” (McVicker Clinchy, 2002, p. 67) and continues

I can muster some compassion for Received Knowers by recalling how I revert to this position whenever I am faced with something novel, complex, and incomprehensible, like the first time I saw a game of cricket or heard a piece of atonal music. On such occasions I yearn for an expert who will just tell me what it all means. (p. 67)

In addition, keeping less sophisticated approaches alive while they are still useful is not limited to epistemology. It is a well-known aspect of (school or applied) science: Nelson discusses the uses of outmoded conceptions (of physics).

Consider the brilliance of the flat earth model. The earth is in fact very flat – precisely as flat as the surface of a small pond on a still day. Although the pond is wonderfully flat, it domes imperceptibly up in the middle to exactly
match the earth’s curvature. Moreover, the flat earth model is by far the most widely used quantitative model of the shape of the earth in practical human applications such as architecture and engineering. (We assume that in a square room, opposite vertical walls will be parallel rather than vertically divergent; this assumes that the earth is flat.) Thus, the flat earth model has precisely the same present scientific validity as do Newton’s laws of motion. Both capture important pieces of reality. Both are of immense, quantitatively precise, practical importance. And both are quite wrong and wrong in exactly the same sense. Each is a quantitatively quite good local first approximation that fails spectacularly on larger scales. Our current explanatory models in most, if not all, fields are useful in about these same senses, and many (perhaps all) either are now known to be wrong or will likely turn out to be wrong in about the same sense. (Nelson, 1999)

Higher levels of thinking are necessary when one becomes aware that knowledge and learning are more complex than one ever thought possible before. Entwistle and Walker (2000, see chapter 5) interpret models such as Säljö (1979a) and Perry (1970) as models of Expanding Awareness: the expanded awareness of the nature of learning, academic study, knowledge and interpersonal relationships.

We agree with this interpretation and would like to offer as well that such development leads to increasing competence, confidence and feeling of being in control in a complex world. Furthermore, if students’ fail to reach higher levels of thinking demanded in higher education – and thus are unable to perform at the level of complexity that is expected – in a very real sense they are In over their heads (paraphrasing Kegan, 1994 see chapter 3).

**Conclusions**

In chapter 1 we introduced our six-stage developmental model of linked learning and teaching conceptions. We found that each learning-teaching conception captures not only students’ views on learning and teaching, but that each stage or learning-teaching conception is a complex structure consisting of concepts with meanings specific to each stage. We have discussed the different interpretation of concepts such as understanding, application and intelligence within each of the six learning-teaching conceptions. This means that for important concepts commonly used in the teaching-learning process participants assign meanings to these concepts in a way congruent with their own way of knowing: both teachers and students use the same words to indicate different things. For research this means that

1) researchers can be deceived regarding the epistemological sophistication of respondents when they focus more on the words used than on the meaning that is conveyed;

2) the issues respondents spontaneously use themselves in describing their way of knowing are essential data in the analysis; and
CHAPTER 1

3) because the interpretation of words/concepts varies by developmental stage
the validity of typical inventory items is less than straightforward: you never
know exactly what the respondent meant with his/her answer (e.g. Perry,
1970).

In daily life when ways of knowing between students or between teacher and
students differ greatly, conversations in teaching and learning may consist mainly
of miscommunications of which participants are blissfully unaware.

Not only do people mean different things when using the same words or
concepts, the interpretations of these concepts have direct and indirect effects on
many aspects of learning: motivation, sense of control over what is learned and
how, expectations (and thus also the subsequent reaction) towards the learning-
teaching environment, study strategies and views on assessment to name but a
few. In 1984 we have seen that the complex of beliefs characteristic for each
learning-teaching conception has immediate effect on how students learn and the
quality of what they have learnt. Learning-teaching conceptions 1 through 3 can
be associated with surface-level processing and learning outcomes that are
mostly of a reproductive nature. Learning-teaching conceptions 4 through 6 in
turn can be associated with deep-level processing and learning outcomes that are
mostly of a constructive nature.

In learning-teaching conception 1, learning is not reflected upon: it is simply
something “everybody does,” like breathing. Learning is described as a list of
activities or synonyms. Students with this learning conception view teaching as the
transfer of knowledge. The role of the student is minimal and the teaching-learning
process is defined entirely by the teacher.

To students with learning-teaching conception 2, learning is equal to memo-
rising and the ability to reproduce what is memorised, usually in a school test
setting. Level-two-thinkers see learning in quantitative terms: learning
more is being able to reproduce more, but they also have a budding awareness
of not having to learn everything, being able to make a selection of the facts
to be memorised. For these students teaching needs to be clear, orderly,
efficient, entertaining and must include opportunities to ask questions, implying
a limited type of student-teacher interaction in a still very teacher-dominated
environment.

At learning-teaching conception 3, the process of learning is selecting and
memorising those facts, procedures, ideas, etcetera which may prove useful later in
life. Learning and understanding both are interpreted as being able to apply what is
learned in the future. The major focus of learning is still quantitative and
reproductive, and neither the learner nor what is learned is changed in any way.
Teaching is characterised by teacher-dominated discussion, up-to-date examples,
cases from practice, and an enthusiastic teacher who shapes and motivates the
students using positive and negative feedback. These students attach a lot of
importance to being heard, to giving them the opportunity to express their opinions.
They feel any opinion is as good as any other.

About three quarters of all our students could be allocated to one of the three
reproduction oriented learning-teaching conceptions described above.
In moving to learning-teaching conception 4, students move across what we call the watershed: the focus shifts from taking in ready-made things (facts, procedures) existing ‘out there’ to actively constructing meaning. Such students prefer teachers who: 1) challenge students to (start to) think for themselves, 2) encourage students to realise that multiple informed approaches and solutions to problems are possible, 3) encourage and coach students to develop “a way of (disciplinary) thinking” through 4) a less formal – confidence building – interpersonal relationship. Level-four-thinkers have become active participants in the teaching-learning process. Student and teacher both focus on understanding and finding evidence-based solutions within a particular discipline. They realise that most knowledge is uncertain and consequently authorities lose the exclusive ownership of it. Everybody may develop a point of view based on a set of arguments using the rules of the discipline. About one in four of our students had crossed this watershed to a way of thinking that is generally accepted as the outcome of higher education, on average about 20% of our students was allocated to this particular way of knowing at any time.

For students functioning at the fifth level of thinking, learning has acquired a more personal meaning as opposed to the relatively technical view on learning in the previous stage. This way of thinking is characterised by notions such as broadening one’s outlook on things, opening one’s mind, widening horizons, or looking “at the world with those eyes” (Beaty et al., 1997, p. 156). By changing the eyes one sees with, students can transform the way they perceive reality (i.e. self-transformation, Kegan in Debold, 2002). Level-five-thinkers appreciate a teaching environment based on dialogue, where teachers and students become equal partners in the mutual construction of knowledge. About 4% of our students could at any time be allocated to this category of description.

The most sophisticated learning conception that we have found in our student data is characterised by an existential or ontological dimension, the self of the learner seems to have become the focus of learning. This position is extremely rare, only slightly more than 1% of all our students studied over about three decades was identified as making meaning in this way. The process aspect of this conception is growing self-awareness, looking for answers to the question “Who am I?” The self has become the ultimate object of reflection. The product is self-realisation: becoming or defining the person you feel you are (i.e. self-definition, Hamer and van Rossum, 2010). Good teaching to level-six-thinkers seems to be defined almost exclusively in language referring to emotion, autonomy and reciprocal relationships and it boils down to mutual trust and caring while showing an almost dismissive approach to teaching techniques and methods.

Learning-teaching conception 4 can be interpreted as the expression of academic or scientific thinking: the ability to use the full range of rules and assumptions of a discipline or system such as scientific thought. The move from reproductive to constructive thinking, the move from learning-teaching conception 3 to 4, is the largest and most difficult one to effectuate in higher education: we refer to this move as crossing the watershed. In the latter part of chapter 1 we proposed that the move from learning-teaching conception 5 to 6 may be a
second large move: a shift in focus from learning-to-know towards learning-to-be, from epistemological development to an existential one. We summarised a model of continued development, linking our epistemological model to existing theories of adult cognitive development (see for more details Hamer and van Rossum, 2008).

NOTES

1. This category has been called ‘More than Memorising’ in some of our more recent studies.
2. In earlier studies we refer to this category as Understanding reality.
3. Rien Deijkers – having an active interest in Zen - initiated the discussions leading up to this discovery.
4. We feel that the change here is sufficiently large to consider a change of context, from learning-teaching conceptions to conceptions of being, with this position being perhaps conception of being 1: learning to be me (Hamer and van Rossum, 2008). See also the final section of this chapter.
5. In the US, and increasingly in the UK, this game is known as soccer.
7. We include this early study in particular because it relates to findings discussed in chapter 4: Quantitative Approaches to Epistemology and Learning. Students’ views on intelligence are important within learning contexts – regarding motivation and learning – as discussed by Dweck in a number of publications (e.g. Dweck and Bempechat, 1983; Dweck, 2002).
8. The learning conception of S26, who makes the distinction between knowledge and wisdom, is quoted in Dawn’s story, chapter 3, comments on Baxter Magolda.
10. Baxter Magolda, 2007 suggests that as ‘Internal Foundation’ (see chapter 2) evolves “wisdom” and “realising your own (and other’s) humanity” may become new themes. We will revisit this development in chapter 3, comments on Baxter Magolda.
11. Published in Devotions upon Emergent Occasions.
CHAPTER 2

A PRAGMATIC VIEW ON PHENOMENOGRAPHY
AND ISSUES OF VALIDITY AND RELIABILITY

I spy with my little eye ...........

In the previous chapter we have introduced our six-stage model for epistemological development that has its origins in a phenomenographic research approach to students’ views on learning and (good) teaching. We have refined this model over the years by remaining open to new information present in many students’ responses to open questions about learning and (good) teaching. In this sense we have remained phenomenographic researchers of student thinking, although more recently, we have also put this theoretical model to a more practical use, e.g. in designing a more activating curriculum (van Rossum and Hamer, 2004; see chapter 6) in order to improve the quality of student learning. In our daily life as well we have used this model to understand why sometimes communication breaks down: when, although objectively all parties are talking the same language, ideas don’t seem to pass through an epistemological barrier. For us this model is “real” in a very practical sense, while for many readers it still is mostly of theoretical interest and perhaps even fundamentally flawed because it grew from qualitative and unashamedly subjective seed, i.e. phenomenography.

Taking the issue of subjectivity in research and the assumption that quantitative research by its nature is less subjective than qualitative research by the horns, we would like to quote Bowden and Green (in press a).

Researchers are human beings, researching into human experience and communicating outcomes to other human beings. It is impossible to take the person out of such research and, therefore, impossible for such research to be objective. … The difference is not between objective, quantitative research and subjective, qualitative research but rather variation among different kinds of subjectivity and the situations in which it arises, in both quantitative and qualitative research. Subjectivity is the natural state of all research involving human participants.

Quantitative … research is subjective in that the ideas expressed by the researcher are central …. [E.g. the] processes by which researchers choose what items to include for scoring and what words they use to express them are subjective ….

Where subjectivity comes in [in qualitative research] is in the way that the interview is conducted (whether respondents are encouraged to be open and forthright, whether the interviewer asks leading questions or not, and so on) and how the data are analysed. ….
It should be acknowledged that all such research, whether quantitative or qualitative, has subjective elements whose negative influence on the quality of research outcomes can be offset by rigorous research practices (in press a, p. 4, 5 and 7).

Obviously, we agree with Bowden and Green, “The time has come to abandon the tribal conflict between quantitative and qualitative research with its spurious claims of objectivity for one but not the other” (p. 7 in press a). This discussion inevitably leads to the conclusion that while both approaches are always susceptible to subjectivity, quantitative and qualitative research differ most in the moment that the influence of subjectivity is greatest and the ready acknowledgement of this subjectivity. In quantitative research subjectivity is most noticeable in the preparation phase, for instance in choosing dimensions to study, items to include and words to use. Qualitative research is most vulnerable to subjectivity during data collection (e.g. qualitative interviewing) and data analysis.

The main purpose of this study is to introduce a larger public to the background of our model (chapter 1 and 2), the supporting evidence for it (see e.g. chapters 3, 4 and 5), its practical use for educational innovation (chapters 6 through 9) and the resulting consequences for educational policy (chapters 10 and 11). We have chosen to structure our attempt at dissemination around a limited number of fundamental research questions elaborated in the final paragraph of this chapter. However, first we discuss in more detail the roots and practicalities of the phenomenographic method followed by considerations regarding establishing validity and reliability within this interpretative research methodology.

Phenomenography

The first phenomenographic studies emerged from a fundamentally pragmatic research programme undertaken by Ference Marton and his colleagues at the Gothenburg University in Sweden. They had become dissatisfied with the traditional psychological approach to studying learning in formal settings as was common at that time, because they felt that “Mental models, which locate the objects of description in the minds of people, are in line with the ‘knowledge interest’ of psychology. However, [such] psychological models are not particularly helpful in solving practical pedagogical problems” (Marton, 1986, p. 43). In the early 1970s, the initial Gothenburg group started an alternative approach by collecting respondents’ verbal descriptions of their understanding of a particular study text. When reading (and rereading) the transcripts of the interviews the researchers noticed “a striking fact … Students understood the very same text materials in a number of qualitatively different ways” (Marton, 1986, p. 36). This fundamental finding, the occurrence of a limited number of qualitatively different understandings of a phenomenon, returned in study after study the group undertook. This led the group to assume that “it was reasonable to expect that people in general hold qualitatively different conceptions of all kinds of phenomena” (Marton, 1986, p. 37). In 1979 the group coined the name phenomenography to describe a research method aimed at
… mapping the qualitative different ways in which people experience, conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them (Marton, 1986, p. 31) …

[in order to] describe relations between the individual and various aspects of the world around them, regardless of whether those relationships are manifested in the forms of immediate experience, conceptual thought, or physical behaviour. (p. 41–42)

In the second section of this quote the most important characteristic of phenomenography is verbalised explicitly: the focus on the relations that exist between human beings and the world around them. This focus is expressed in the preoccupation of phenomenographers with describing the range of qualitatively different ways people experience reality, and not with describing reality as such, an experiential perspective. As Marton says,

… we try to describe an aspect of the world as it appears to the individual. This means that we adopt an experiential, or what phenomenographers call a “second-order” perspective (Marton, 1981). We do not try to describe things as they are, nor do we discuss whether or not things can be described “as they are”; rather, we try to characterize how things appear to people. (Marton, 1986, p. 33).

Realising that people do not just experience, but that they experience things, results in phenomenography necessarily being content-oriented: descriptions of experience are always made in terms of their content, be it learning, teaching or more concrete concepts such as motion, vision or price. Because these descriptions reflect how things are experienced or perceived, according to Marton phenomenography cannot be other than a fundamentally qualitative research method.

To characterize how something is apprehended, thought about, or perceived is, by definition, a qualitative question (1986, p. 33).

In short, phenomenography results in descriptions that are relational, experiential, content-oriented and qualitative in nature. In a sense, the observation that eventually led to the creation of phenomenography – that different people can perceive the same phenomenon in distinctly different ways – was the identical observation that about a quarter of a century earlier put Perry on the road to his model of ethical and intellectual development (see chapter 3).

Phenomenography focuses on the analysis of descriptions of experience: “Phenomenographers categorize their subjects’ descriptions, and these categorizations are the primary outcomes of phenomenographic research” (Marton, 1986, p. 33). These categorisations lead to a limited set of categories of description referring to a particular phenomenon. To give an example, in our model the phenomena of learning and good teaching are each categorised into six categories of description. In our research we have never made any meaningful distinction between the terms categories of description or conceptions: in our perception the nature of a conception is captured in the matching category of description.
The act of forming categories is central to phenomenography, however deriving categories of description from responses to open questions is far from easy (see also below). Relevant categories cannot be reached through applying algorithms and in the initial discovery phase chances are that different researchers may discover different categories. Indeed in many studies researchers have acknowledged this very difficult first phase of phenomenographic research and have developed different ways to deal with this (see e.g. Bowden and Walsh, 2000). In this study, however, the focus was not on the discovery of categories of description. Our existing model (van Rossum and Hamer, 2004) was the point of departure for the current study. We focused on refining elaborate categories of description (i.e. learning-teaching conceptions) by relating our own model to alternative models in chapters 3, 4 and 5, simultaneously enhancing the validity or accuracy of the categories of description (i.e. learning-teaching conceptions) in the model we subsequently used to analyse the empirical data of the current study. In a sense, the chapters 3 through 5 in particular are included as a pragmatic approach to establishing validity (by convergence of outcomes) and reliability.

Once categories have been discovered and defined in detail through what can be interpreted as an iterative procedure (e.g. Bowden and Walsh, 2000; Åkerlind, 2005), “it must be possible to reach a high degree of intersubjective agreement concerning their presence or absence if other researchers are to be able to use them” (Marton, 1986, p. 35). This consideration is the basis of the frequent use of interjudge reliability in the phenomenographic research tradition (e.g. Marton et al., 1993), and we have used it in the same pragmatic way: we applied our system of expanded learning-teaching conceptions to our empirical longitudinal student data discussed in the chapters 7 and 8 using traditional measures to establish reliability. A detailed account on how we performed our analysis can be found in chapter 6. However, there is considerable discussion on issues of validity and reliability within phenomenography from a less traditional and more philosophical perspective, which we will discuss in summary below.

To return to the formulation of categories of description, this involves much more than merely sorting data or counting utterances or words. Categories of description or conceptions need to differ from each other in an essential way: each category of description must represent a structurally distinct way of perceiving reality, i.e. it must describe a distinct way of knowing. As Marton formulated it, … we are looking for structurally significant differences that clarify how people define some specific portion of the world …. … we look for the most essential and distinctive structural aspects of the relation between the individual and the phenomenon (Marton, 1986, p. 34).

Furthermore, in phenomenographic research the categories of description do not only describe the relation between an individual and a phenomenon, the set of categories itself forms a logically related set of views on the phenomenon under scrutiny. Categories of description may be the primary outcome of phenomenography, however, we agree with Marton in stating that
each category is a potential part of a larger structure in which the category is related to other categories of description. It is a goal of phenomenography to discover the structural framework within which various categories of understanding exist. Such structures (a complex of categories of description) should prove useful in understanding other people’s understandings (Marton, 1986, p. 34).

And indeed this is exactly how we would like to position our elaborated learning-teaching conception model in this study. While the roots of this model lie firmly within the context of higher education, we have attempted to decontextualise our model by integrating insights from other models on knowing and thinking such as Belenky et al. (1997), Kegan (1994) and Kuhn (1991), see also chapter 3. At this moment in time we have come to believe that our model may provide a window onto the nature and dynamics of human interaction in society. The title of this study, The Meaning of Learning and Knowing, refers not only to its meaning to learning and teaching, but to society as well. From a traditional phenomenographic standpoint we could be criticised for leaving the original ambition of studying internal person-world relationships and taking a more psychological perspective (Säljö, 1997). We have always differed from the Gothenburg interpretation of phenomenography in this sense, and it would seem that Säljö is also referring to our work as well when he states … the observant reader can, without too much trouble, find research studies within this [phenomenographic] tradition in which, for instance, people “have” conceptions and in which the borderline between values/attitudes/conceptions appears far from clear… (1997, p. 176)

In a way, by returning to a more psychological perspective, we clearly deviate from the ideology as expressed at the programmatic level (Säljö, 1997) and therefore we can be best characterised as pragmatic phenomenographers: recognising the value of the methodology without adhering strictly to the ideology. Not only this, as we will discuss later we also perceive ourselves as developmental phenomenographers (Bowden, 2000).

The research that I do is developmental in that it is undertaken with the purpose of using the outcomes to help the subjects of the research, usually students, or others like them to learn. The insights from the research outcomes can help in the planning of learning experiences which will lead students to a more powerful understanding of the phenomenon under study, and of other similar phenomena. The outcomes from these research studies can also be used to develop generalisations about ways to organise learning experiences in the particular field of study. The research outcomes and the way they are obtained can also be used more generally—as an analogy—in programmes for teachers, to demonstrate ideas about teaching and learning. (Bowden, 2000, p. 4, italics ours).

Bowden, in fact, formulates exactly our purpose and approach to our learning-teaching conceptions model over the years. We used the model to deepen our own
understanding of learning and teaching in higher education in order to be able to provide guidelines and theoretical background for curriculum development and teacher training aimed at furthering students’ epistemological development and their more powerful understanding of core concepts of their study (chapter 6). Although in 1986, Marton did not affiliate himself with something like developmental phenomenography—a term introduced in the early 1990s—he did clearly acknowledge the educational value of phenomenographic studies.

Encouraging teachers to pay attention to students’ ways of thinking and to facilitate students’ realization that there are different ways of thinking may be the most important pedagogical implications of a phenomenographic view of learning (1986, p. 47).

Data Collection and Analysis

The primary method of data collection used in phenomenographic research is interviewing. As Marton discussed, the reason lies in that interviewing makes it possible to use questions that are as open-ended as possible in order to let the subjects choose the dimensions of the question they want to answer. The dimensions they choose are an important source of data because they reveal an aspect of the individual’s relevance structure. Furthermore, though we have a set of questions at the start of the interview, different interviews may follow somewhat different courses. (1986, p. 42)

In particular the final sentence of this quote refers to the fact that phenomenographic interviewing does not follow a comprehensive fixed protocol, phenomenographic interviews are more a semi-structured or open interview. The protocol in this case consists of one or more start-questions to open the discussion on the issue under study. Furthermore, phenomenographic interviewers are very careful to use only prompts that elicit further elaborations without priming the interviewees towards particular outcomes. Such prompts may look like “What do you mean when you say ……” or “Could you explain that further?” The route of the interview, the sequence of themes discussed, is thus inevitably dependent on the dimensions the respondent chooses. However, it is the responsibility of the interviewer to keep the interview focused on uncovering the particular way the interviewee understands a particular phenomenon or issue. It is also the responsibility of the interviewer to notice when a theme has been treated in depth and either the interview can stop or a new theme may be introduced. So while the interview may seem to wander, it is not a conversation in any everyday sense! As Bowden and Green have summarised it, a phenomenographic interview focuses on the voice of the interviewee and they recommend “a consistent opening scenario followed only by neutral questions and no judgmental statements (or body language) … as standard practice for the interviews” (in press b, p. 8). Bowden provides an excellent example of a good phenomenographic interview.
The phenomenographic interview has a focus—the way in which interviewees understand the chosen concept—and this focus is maintained throughout the interview. Interviewees are encouraged to express their qualitative understanding of the phenomenon under investigation. The researcher may ask interviewees to clarify what they have said, and ask them to explain their meaning further using questions such as ‘Could you explain that further?’, ‘What do you mean by that?’, ‘Is there anything else you would like to say about this problem?’ … Such questions aim to get interviewees to reflect on what they have expressed, to explain their understanding more fully and to reveal their way of understanding the phenomenon (Bowden, 2000, p. 9–10).

The interviews are then transcribed verbatim to prepare them for analysis. Considering the all important focus on the voice of the interviewee, it is of vital importance that these transcripts are complete and accurate. As Bowden and Green correctly emphasise, these complete and accurate transcripts form the only evidence for the research outcome of phenomenographic research, and therefore need to be of impeccable quality. Ashworth and Lucas (2000, p. 304) remark that transcribing interviews is “much more than a mere clerical task”, and recommend to “include anything that is likely to affect the interpretation of meaning.” For studies using interviews an approach could be to listen to the recording of the interviews before starting the analysis of the transcripts. Another approach can be to include information about changes in tone of voice, silences and emotional reactions by the respondents by adding such comments in brackets as follows: … (voice rising) …., …. (pause) …., .. (laughing) ….

In our studies (from the early 1980s onwards) we used not interviews but essays. The starting point of an essay-questionnaire is very similar to the start of a phenomenographic interview, namely posing an open-ended question about (in our case) the respondent’s view on (real) learning or (good) teaching. Furthermore respondents were given maximum freedom to describe their experience by encouraging them to use as much space/paper as necessary in describing their understanding of learning and teaching (see also Ashworth and Lucas, 2000). For full details on the question formulation for the current study, see chapter 7. Of course, this approach precluded the option of prompts, but facilitated using relatively large samples at low cost. Occasionally it was possible to ask respondents to come back in to elaborate and expand their essay. And with the introduction of email (halfway the 1990s) we were even better able to integrate prompting into our research procedure. This led us to coin the concept of email conversation for our internet-interview technique (see chapters 7 and 8). We feel that in this way we were able to combine the logistic and cost advantages of essays as data source with the information advantages of interactive interviews. Our email conversations in turn followed the phenomenographic interview approach, with non-priming prompts, as described above by Bowden, and so fulfilled the requirement of a “conversational partnership” (Ashworth and Lucas, 2000, p. 302). Our data then consist not of verbatim (and accurate) transcripts of interviews, but of complete and unabridged essays and
CHAPTER 2

email conversations including any emphases the respondents provided themselves through the use of exclamation marks, underlining, bold or capital lettering, emoticons, etcetera.

As we also noticed (and describe in chapter 7, section on email conversations) Marton indicated that phenomenographic interviewing in itself can have interesting by-products.

We have found that when fundamental issues are discussed during interviews, the subjects may become conscious of contradictions in their own reasoning and attempt to rid themselves of such contradictions by considering alternative ideas … [even up to observing students] shifting from an incorrect to an improved conception of reality (Marton, 1986, p. 44).

We expect that such by-products may even be more common when respondents are not interviewed but asked to write down their thoughts, because they can read them back themselves. This would also imply that a good phenomenographic interviewer could use email conversations to construct prompts that bring contradictions to the fore. Indeed it proved easy for us to do by including previous mails into each correspondence: we could simply refer back to earlier answers when asking for elaboration or explanation. This procedure is consistent with good phenomenographic practice, as Bowden says,

… pointing out to interviewees and asking them to comment on the apparent inconsistency between ideas they have expressed at different points in the interview is consistent with the principle of interviewing that I have outlined (2000, p. 10).

In the early publications of the Gothenburg group, procedures of data analysis were not described in such detail that other researchers could follow these in their own research. As a result, within the phenomenographic research community there is a range of similar, but definitely not identical, procedures for dealing with (mostly) interview transcripts. Åkerlind (2005) provides an overview of concrete descriptions of practice, observing that “there is a dearth of such concrete descriptions of practice in the phenomenographic literature, with only occasional exceptions … a point on which phenomenography has been criticized” (p. 324). However, Marton gives a consideration why such detailed analysis procedures are difficult to supply

… we cannot specify exact techniques for phenomenographic research. It takes some discovery to find out the qualitatively different ways in which people experience or conceptualize specific phenomena. There are no algorithms for such discoveries (Marton, 1986, p. 42).

Marton then subsequently explained his own way of proceeding with the task of data analysis. We will quote his description of the procedure in detail in order to contrast it to our own approach.

The first phase of the analysis is a kind of selection procedure based on criteria of relevance. Utterances found to be of interest for the question being investigated … are selected and marked. The meaning of an utterance
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occasionally lies in the utterance itself, but in general the interpretation must be made in relation to the context from which the utterance was taken. … The phenomenon in question is narrowed down to and interpreted in terms of selected quotes from all the interviews. … The selected quotes make up the data pool which forms the basis for the next and crucial step in the analysis.

Marton refers to this more or less decontextualised set of quotes as “the pool of meanings” which forms a new context for the selected quotes. While Marton himself claims that the interpretation of these quotes within the pool of meanings takes the original (interview) context into account, it is unclear from his following description how he reconciles these two contexts. In fact we feel using the pool of meanings decontextualises the selected utterances.

A step-by-step differentiation is made within the pool of meanings. As a result of the interpretive work, utterances are brought together into categories on the basis of their similarities. Categories are differentiated from one another in terms of their differences. In concrete terms, the process looks like this: quotes are sorted into piles, borderline cases are examined, and eventually the criterion attributes for each group are made explicit. In this way, the groups of quotes are arranged and rearranged, are narrowed into categories, and finally are defined in terms of core meaning, on the one hand, and borderline cases on the other. Each category is illustrated by quotes from the data. …

Marton admits that this phase of the research is hard, in his own words, this “continual sorting and re-sorting of data” (p. 43) is difficult, tedious and time-consuming, but eventually the iterative process will lead to a stable system of meanings. From this description it remains unclear whether utterances taken from one interview may provide input for (the description of) different categories, which only emphasises to us the controversial issue of decontextualising the utterances from their original context: the whole interview.

Marton refers to this procedure as the “pool of excerpts approach” and set this analysis approach in contrast to their own approach: the “whole of transcript approach”.

In the whole of transcript approach researchers choose to deal with the complete data of each interviewee, and not to select and “cut out” specific utterances. The pool of data then is not a pile of selected quotes taken from a number of interviews, but a collection of complete interviews. The interviews are then compared and sorted in their entirety. While sorting and re-sorting large transcripts as if they are one data item seems to us a very difficult task, it is probably more in keeping with the original premise of phenomenography, to “look at any particular utterance in
the context of what is said in the rest of the transcript” (Bowden and Walsh, 2000, p. 12). And how is this analysis of the whole transcript then performed? In its most bare form, an individual researcher reads and re-reads the transcripts, drafting and redrafting categories of description, until a stable system of categories of description covering all the interviews has been established. In this process any utterance is put into context by the researcher who is constantly moving backwards and forwards through the transcript, seeking clarification of the utterance in context. While utterances are still the major means to come to categories of description, here, instead of sorting utterances separately, utterances are sorted within the whole of the original context, keeping all utterances in one interview together and all the relations between them intact. The categories of description, on the other hand, are the “interpretation of the collective voice derived from the contextualised individual voices” (Bowden and Green, p. 10 in press b). So in the whole of transcript approach the researcher does not perform so much an analysis of each separate interview, but an analysis of all the interviews taken together as a choir with sopranos, altos, baritones etcetera, each group of singers with their own distinct tone of voice to be discovered. Considering the complexity of this particular analytic task, one might rightfully ask whether phenomenographic analysis is an appropriate task to assign to students or novice researchers in a particular field of study. Such a task would seem to us to require at least some expertise in the field of study, and extensive training in the fundamentals of phenomenographic research. Analyses performed by students and novice researchers of course have their value as educational tools, but should not, we feel, be used as basis for scientific publications. In their own analytic work, Bowden and Green (in press b) recognise the complexity of the analysis procedure and prefer to work with a group of researchers in which some researchers can be assigned to perform the role of devil’s advocate, continuously asking for justification of the emerging categories of description. To further prove that the task of phenomenographic data analysis is complex and a learning curve all in itself, we refer to the studies by Boulton-Lewis et al. (2000a, 2000b, 2001 and 2004) where she and her various collaborators describe the evolution of the categories of description for the learning experience of a sample of indigenous Australian students.

How does our own analytic approach compare to the “pool of selected quotes” approach and the “whole of transcript” approach? Initially, in the early 1980s we were interested in replicating the findings of Säljö (1979a), and were confronted with a lack of information about the theoretical background and procedural details of phenomenography. Based on what little information we had, we devised our own procedure of data collection (written essays about the meaning of learning) and proceeded to use the categories of description provided in the study by Säljö (1979a) to establish whether similar categories could be found in a sample of Dutch psychology students (van Rossum and Schenk, 1984). This type of study has proved to be common enough to merit a recognised status in the phenomenographic tradition, “much phenomenographic research has been replicatory in nature ….. This is a specific kind of phenomenographic research where the analysis is not a process of discovery, but a means of searching for predetermined categories” (Ashworth and Lucas, 2000, p. 301). It proved that the descriptions of the more reproductive
learning conceptions were easily recognised in the data as well as the fourth learning conception. Immediately we experienced that the description of learning conception 5 was not very effective. Using the first four categories, we categorised most of the essays (81%), but a small number remained that did not quite fit well, and sometimes not at all, in Säljö’s description of learning conception 5. However, all these essays clearly displayed a more complex view on learning than the others. Coming from a traditional research tradition, we can now, in hindsight, conclude that at that time we were more attentive to Säljö’s categories than to the voice of our respondent group.

However, some uneasiness remained particularly with regard to the essays that did not quite fit. In our opinion our first study was too much a traditional replication, and too little an attempt at true phenomenographic research. Furthermore, we had noticed in this first study that specific words (e.g. understanding) were used differently in the different learning conceptions. In a second study (van Rossum, Deijkers and Hamer, 1985) we wanted to improve our analysis procedure and address this issue of word use. This time in the analysis we came much closer to the analysis procedure that we more or less still use today: paying true attention to what the researched are saying, bracketing our knowledge of the learning conceptions model as much as possible, using the whole of the essay and not taking utterances out of context while looking for the specific alternative meanings given to important concepts in the educational environment. As we described then, our analysis procedure was as follows:

First, we repeatedly read, closely and empathically, the answers to the learning conception question. While reading we tried to be open to the unique meaning and substance that the respondents give to the learning phenomenon, to their interpretation, definition and elaboration of terms. We granted less importance to the statements or terms used themselves. What really is important is the students’ way of elaborating and giving substance to them. We feel that in this situation the nature of the intentional relationship between the learner and his/her learning environment, described either implicitly or explicitly, is particularly essential. We read with open minds for the uniqueness of the answer of each respondent, but at the same time tried to transcend the pure individualness by looking for similarities in [and contrasting differences between] the answers of the various respondents. This was done by seeking certain main themes and continuously returning leitmotifs, in the respondents’ description of the learning conception. We kept an eye open for new main themes but, of course, we could not ban earlier research results from our thought completely. In this way a number of groups of answers to the learning conception question, which display a stronger similarity to each other than to other answers, were formed: categories of description emerged (Van Rossum et al., 1985, p. 621).

Considering more recent reviews of the phenomenographic analysis procedures (e.g. Åkerlind, 2005; Bowden and Walsh, 2000) we have come to the conclusion that our self-developed analytic procedure regarding the conception of learning is
very similar to the more recently described “whole of transcript” approach (Bowden and Walsh, 2000; Bowden and Green, in press b). Considering the nature of our data, in comparison with interview transcripts relatively short written essays, it is perhaps not surprising that we were able to use the “whole of transcript” approach almost immediately. In 1985, we also looked at the relationship between the conception of learning and the interpretation of a number of other educational concepts. Because this study focused on “a much broader slice of the lifeworld” (Ashworth and Lucas, 2000, p. 304), we found that our outcomes were less sets of categories of description for each of the concepts studied, but more a set of five profiles, one for each conception of learning. In such a profile, central themes within a learning conception were described as they affected the respondent’s interpretation of other educational concepts. Ashworth and Lucas discussed that in certain types of phenomenographic research presenting research findings not only as categories of description, but also using profiles and themes can be an enrichment of the phenomenographic analytic process by increasing its validity and accuracy (2000, p. 305),

…it may be that an alternative means of presenting findings might be more appropriate, if one wishes to ensure faithfulness to the lifeworlds of the participants.

Following this 1985 study, in our attempt to listen even more closely to the voice of the respondents, one might in hindsight conclude that we went a bit overboard and started to make distinctions within learning conceptions (van Rossum and Taylor, 1987), albeit exclusively within the reproductive learning conceptions. Here we encountered the tension between being faithful to the detail in the data and wanting to create an elegant and preferably parsimonious outcome space (see also Ashworth and Lucas, 2000). In 1987 the parsimony was sacrificed in an attempt towards more faithfulness and accuracy. In later work we discontinued this practice, because the subdivisions made seemed to refer to non-critical variation within particular conceptions (Åkerlind, 2005). In this study we have again looked more closely at conceptions noticing small increases in complexity within a particular conception of learning. We have described these findings in chapter 7, where we focus more closely on the possible nature of the transitions between the different conceptions of learning.

Two major results of this more phenomenographic analysis procedure were a significantly improved description of learning conception 5 (van Rossum et al., 1985; van Rossum and Taylor, 1987) and the “discovery” of learning conception 6 (van Rossum, Deijkers and Hamer, 1984; van Rossum and Taylor, 1987), some 9 years before Marton et al. (1993) confirmed this latter finding. The themes that defined the improved learning conception 5 resulting from these early studies remain a central part of the fifth learning conception to this day. The major themes for learning conception 5 were recognised as referring to seeing things differently, from different perspectives or in a more differentiated way. In 1993, Marton et al. also confirmed this particular finding (see chapter 1). Learning conception 6 addresses a number of essentially different issues in learning than any of the earlier, less
complex, learning conceptions, namely the realisation and expression of the “true self” as a theme, coupled with a striving for autonomy, wisdom and happiness through a meaningful life (see chapter 1 and 3).

The 1985 study gave rise to expectations that the view on learning was not “just a conception” with little or no relation to conceptions related to other concepts in the learning teaching environment. So we expanded the model to link conceptions of learning to those on teaching and concepts such as understanding, application, insight etcetera (see chapter 1). As early as 1985 we discussed with Ference Marton during his visit to Tilburg, the possibility that learning conceptions were symptomatic for a more fundamental development in thinking. At that time we started to deviate from mainstream phenomenography by proposing a developmental model to replace the fundamentally contextual approach common in the early phenomenographic studies in education, and linking learning conceptions to the epistemological model of Perry (1970). Säljö (1997) recalled this early contextual approach as follows:

What eventually became codified as phenomenographic research started out as an attempt to scrutinise and understand human learning by focussing on what people are in fact doing in situated practices and when studying. In particular, the approach was driven by an attempt to replace the abstract and empirically unverifiable conceptual frameworks such as those that implied that people “process” or “store” information in various processing devices of dubious ontological status. The spirit was one of disregarding preformed categories and largely empty conceptual frameworks derived from unfounded analogies with computers and that could not be verified in any kind of realistic learning situation. The aim was one of reinstating a truly empirical approach to learning as a human an institutional phenomenon with an interest in clarifying functional relationships between what people do when they engage in learning activities and the nature of understanding they end up with. In every such attempt, it became evident that the actor’s definition must play a central role … The spirit … was one of adding sensitivity to understanding by showing that content and context were essential, and that any attempt to do away with these would lead to abstractions (Säljö, 1997, p. 188, italics ours).

In interpreting our learning-teaching model as one accessing a more fundamental epistemological or perhaps even an existential development, we have taken a more decontextualised theoretical approach to phenomenography, while we remained true to the procedures of data collection and data analysis fundamental to it. We position ourselves as pragmatic phenomenographers in this way. The current study, and in particular the chapters 1, 3 and 4, is the culmination of our journey towards our current thinking about the meaning of conceptions of learning etcetera for education and society.

One issue we have not yet discussed in detail here is the famous bracketing that is central in phenomenographic data collection as well as in analysis. Bracketing refers to the “need for the researcher to set aside his or her own assumptions, so far
as is possible, in order to register the student’s own point of view” (Asworth and Lucas, 2000, p. 297). Ashworth and Lucas list a number of presuppositions that researchers should recognise as potential hazards to the difficult task of careful listening to the respondents’ views. A number of these presuppositions that they feel must be firmly bracketed refer to previous findings and theories. We agree that during data collection and analysis a researcher should not impose these presuppositions onto the respondent’s experience. But, at the same time we feel, researchers should not take this bracketing too far: only with prior (theoretical or empirical) knowledge can a researcher recognise when to prompt respondents for e.g. much needed clarification. If taken too far bracketing would make interviewing directionless. However, a certain measure of bracketing would seem essential to be able to enter the respondent’s experience or lifeworld: empathic listening is only possible with some (or even considerable) bracketing of the researcher’s lifeworld.

Empathy requires a detachment from the researcher’s lifeworld and an opening up to the lifeworld of the student. For instance, views and factual claims which the student expresses in an interview may well be regarded by the researcher as quite erroneous. The temptation would be to marginalise such material. But the researcher who adopts an attitude of empathy with the student should find such views and factual claims of immense interest … Empathy in this context involves imaginative engagement with the world that is being described by the student. (Ashworth and Lucas, 2000, p. 299)

As is described above in our portrayal of our data analysis procedure in 1985, we already encountered the necessity of an empathic stance in phenomenographic research in our early studies and it has remained a permanent feature of our research approach. Furthermore, while bracketing our theoretical and empirical knowledge during the execution of all our subsequent studies, not bracketing this knowledge helped us to refine our data collection and data analysis and finally to improve our model in a complex iterative process over the years.

Validity and Reliability Issues

Considering that phenomenography has its roots in studies in higher education, it may not be surprising that, in 1997, Entwistle discussed the validity of phenomenographic studies in this context. In keeping with the initial pragmatic start of the methodology, Entwistle emphasised a pragmatic interpretation of the concept validity.

For researchers in higher education, however, the test is generally not [phenomenography’s] theoretical purity, but its value in producing useful insights into teaching and learning.

There are good reasons why phenomenography has been taken up enthusiastically. In higher education, we are generally intending to encourage the development of conceptual understanding in students, so a method which so
vividly portrays differing conceptualisations must have direct relevance to
teaching and learning. And so it has proved. …… phenomenography sees
learning as relational—its takes place through an interaction between the
student, the content of learning material, and the overall learning
environment …… This is a conception which offers a powerful insight to
many staff in higher education who have not thought about teaching and

This description of validity indicates that within phenomenography other than the
more traditional types of validity indicators need to be considered. Åkerlind (2005,
p. 330) looked into this issue and observed that

With the widespread understanding that an interpretive process can never
be objective and, in phenomenographic terms, represents the data as
experienced by the researcher …… the focus of research quality shifts to
ensuring that the research aims are appropriately reflected in the research
methods used.

In Åkerlind (2005), the focus of the two types of phenomenographically
appropriate validity checks she discusses is on the research method and practical
usefulness of the outcomes: communicative validity and pragmatic validity. We
propose to add a third validity check, convergence of outcomes validity, focusing
on establishing the accuracy of the description of the (experienced) phenomenon
by comparing the outcomes of different theoretical approaches to the study of
(more or less) the same phenomenon: in casu learning and knowing in (higher)
education.

Regarding reliability Åkerlind (2005) recognises two types of reliability checks
that are commonly used in qualitative research with answers to open questions:
coder reliability (interjudge reliability) and dialogic reliability. Sandberg (1997)
objects to coder reliability in particular, and feels that any reliability measure
descendent from an objectivistic epistemology is inappropriate for phenomeno-
graphic research. He proposed a different type of reliability check which he felt is
more in line with the “epistemology of intentionality underlying phenomenography”
(Sandberg, 1997, p. 211).

Three Approaches to Validity

Communicative validity

The core of communicative validity is the persuasiveness of researchers regarding the
appropriateness of their research methods and final interpretations as judged by
the relevant research community. In a strict sense, this could mean that commu-
nicative validity is most relevant to other phenomenographers. As another measure
of the communicative validity of phenomenographic research one can look at the
relative ease and frequency with which it appears in peer-reviewed journals, and at
the acceptance by intended audiences.
Pragmatic validity

This pragmatic approach to validity can be recognised in Entwistle’s remarks above and is a type of validity favoured by many phenomenographic researchers (ourselves included) as the most important test for their research results: “the extent to which the research outcomes are seen as useful … and … are meaningful to their intended audience” (Åkerlind, 2005, p. 331). In essence, research outcomes are pragmatically valid if e.g. an interested party can use the insights gained to improve teaching in higher education or when staff in higher education is supported in understanding and implementing curriculum innovations.

Convergence of outcomes validity

As Åkerlind says, “Validity is widely regarded as the extent to which a study is seen as investigating what it aimed to investigate, or the degree to which the research findings actually reflect the phenomenon being studied” (2005, p. 330). The phenomenon studied in the current study is the experience of learning and knowing in higher education, and we would prefer to check whether our description of this experience is similar to the descriptions derived from other research approaches than phenomenography. In this sense, convergence of outcomes validity lies closer to more traditional conceptions of validity, than the two types of validity commonly practiced in the phenomenographic community. Indeed, looking at validity in terms of convergence of outcomes can only be successful if, as Entwistle (1997) remarked

the categories [are] treated as provisional descriptions. They will remain open to some extent subjective interpretations, which further research will challenge and modify. It is important to recognise that qualitative research is necessarily interpretative, developing like historical research as much from contested interpretations as from definitive findings (p. 133).

We would like to add that, for us, this “further research” need not be only phenomenographic, but may come from unexpected fields of study. Of course, convergence of outcomes validity presupposes an empathic attitude to other research approaches and fields, the willingness to look for communalities without disregarding possible differences, and the open-mindedness to accept possible enrichments to one’s own work from other sources. In particular the latter aspect can help to improve the understanding – and the description – of rare conceptions, such as for instance learning-teaching conceptions 1 and 6.

The chapters 3, 4 and 5 of the current study are our attempt at exactly this validity check: a check that we feel aims at a more fundamental type of validity than communicative and pragmatic validity. This means that for our purposes chapters 3, 4 and 5 are more than merely a literature review and theoretical background, they are an essential part of our methodology. In addition these chapters are important for the message we want to communicate with this study: the meaning of learning and knowing is not a static phenomenon, people change and formal education should challenge its students to develop those skills and conceptions necessary to function well in today’s complex society.
Three Approaches to Reliability

Coder reliability

Coder reliability is more commonly known as interjudge or interrater reliability and it is the reliability measure used most often in phenomenographic research. In principle it is an indicator of the agreement between independent judges, usually two. Indeed it is the reliability check we have used in the current study (see chapters 7 and 9). The procedure is to allocate categories to the transcripts independently after which the categorisations of the two judges are compared, and the level of agreement is usually presented as a percentage. In phenomenographic research the norm is to resolve disagreements between judges by discussion, resulting in all transcripts being allocated to one, and only one category. Not uncommon is the choice to allocate transcripts to the highest (i.e. most complex) conception for which evidence was found in the transcript and we have always complied with this convention.

In contrast to the criticism that detailed accounts of the data analysis procedures are often missing (Åkerlind, 2005), the issue of interjudge reliability was clearly described by Marton et al. (1993), … two judges who had discussed a number of cases together, independently classified the remaining 16 cases. … On the basis of the description of the conceptions … there was agreement in 10 of the 16 cases (62.5%). …

When comparing the judgements, one of the judges came to the conclusion that the difference in all six cases was due to the fact that he failed to focus on some aspect of [the] student’s answer that was crucial for making a correct judgement. There was thus in the end a total agreement between judges. …

The interjudge reliability of 62.5% can, however, hardly be considered “reasonably high” (p. 295).

Marton et al. proceeded to argue that this low level of agreement was due to the fact that these 16 cases belonged to the least obvious transcripts to categorise.

The logical question to pose here would be about when one can say that the level of agreement is acceptable. In general, levels of agreement above 75% are deemed acceptable or good in phenomenographic research. An obvious critique on this measure is that it does not take into account the number of agreements due to chance. It is possible to correct interjudge reliability measurements for this chance agreement, by using another indicator, Cohen’s kappa (K) (Van de Sande, 1999). Obviously correcting for chance agreement results in lower levels or percentages of agreement. Cohen’s kappa values above 0.60 (60% or more agreement) are seen as indicating sufficient interjudge reliability. Nowhere in the phenomenographic literature (up to 2009) have we come across the use of Cohen’s kappa and our interjudge reliabilities are well within the accepted range. However, Cohen’s kappa is becoming more common in the literature on qualitative studies in general and so we have included this measure in chapters 7 and 9.
CHAPTER 2

Dialogic reliability

Dialogic reliability is not common in phenomenographic research (Åkerlind, 2005). It is a measure of agreement between researchers “reached through discussion and mutual critique of the data and of each researcher’s interpretive hypotheses” (Åkerlind, 2005, p. 331). Bowden uses this measure of reliability in his approach to phenomenographic data analysis, where he works within a group of researchers who together reach a stable set of categories of description through an iterative process of proposing draft versions, criticising these draft versions (playing devil’s advocate), amending them, re-reading transcripts, etcetera (Bowden and Walsh, 2000). We propose that our iterative process of refinement of and continuous discussion about the nature of each conception (since the early 80s) together with our attempt at convergence of outcomes validity, form a longitudinal and cross-methodological expression of dialogic reliability.

Reliability as the researcher’s interpretative awareness

In particular the common use of interjudge reliability as a measure of reliability in phenomenographic research has been severely criticised by Sandberg (1997). Issues regarding the quality of the researcher’s procedures and the quality of the data may remain unexamined when focusing on interjudge reliability alone. The researcher’s procedures in phenomenography should be appropriate to achieve a faithful description of, or fidelity to, the individuals’ conceptions of reality (Sandberg, 1997). A researcher may arrive at categories of description while these outcomes are heavily influenced by the researcher’s own preconceptions, a case of insufficient bracketing. However, if these descriptions are easily recognisable for co-judges, high interjudge agreement is the logical result, while meaningless. Considering that we have refined our research procedures over the decades aimed at increasing our empathic approach to data collection and data analysis (see above), and our singular preoccupation with improving the fidelity of the categories of description (introducing convergence of outcomes validity), we feel that there is no reason to reject interjudge reliability in the current study.

Sandberg’s other argument to reject interjudge reliability in phenomenographic research is more fundamental. He feels that because interjudge reliability is derived from an objectivistic epistemology and phenomenography is based not on an objectivistic epistemology, but on a phenomenological “epistemology of intentionality” (Sandberg, 1997, p. 211), phenomenography requires a different approach to reliability: reliability as interpretative awareness. This implies first and foremost that the researcher must demonstrate how he/she has dealt with his/her intentional relation to the individuals’ conceptions being investigated. That is, in order to be as faithful as possible to the individuals’ conceptions of reality, the researcher must demonstrate how he/she has controlled and checked his/her interpretations throughout the research process: from formulating the research question, selecting individuals to be investigated, obtaining data from those individuals, analysing the data
obtained, and reporting the results. Hence, based on the epistemology of
intentionality, establishing reliability of the researcher’s interpretation is
crucial; ....To maintain an interpretative awareness means to acknowledge
and explicitly deal with our subjectivity throughout the research process
instead of overlooking it. (Sandberg, 1997, p. 209, italics ours)

Sandberg (1997) proposes to use the phenomenological reduction as a means to
maintain interpretative awareness, which involves that “the researcher should strive
to hold back his/her known theories and prejudice in order to be fully and freshly
present to the individuals’ conceptions under investigation” (p. 209). Sandberg
(1997) gives five steps as a set of guidelines towards maintaining interpretative
awareness – explicating and documenting how researchers ideally can deal with
their subjectivity in the research process: 1) maintaining a clear focus throughout
the study, 2) a conscious orientation towards describing rather than explaining,
3) treating all aspects of the lived experience under investigation as equally impor-
tant, 4) searching for the basic meaning structure of the outcome space, and 5) using
an intentional analysis to explicate the variation in the conceptions identified (see
for example Marton et al., 1993).

Regarding these guidelines we feel that throughout this study we have
described clearly how we dealt with our subjectivity, and therefore that in this
study we have complied with this criterion of reliability as interpretative
awareness. The research questions are listed below and at the end of each chapter
we have addressed these questions. In this chapter and the empirical chapters
(7, 8 and 9) we have described our aim towards achieving maximum fidelity to
the experience of the individuals being investigated. In data collection and data
analysis we have attempted to clarify the students’ and teachers’ learning and
teaching conceptions from an empathic standpoint. However, this need not mean
that all words, sentences or issues in a particular essay are treated as equally
important to the focus of the study. For instance, when in discussing learning a
student referred to a particular instance of exam fraud, we interpreted this as
interesting background information, but not immediately relevant to establishing
the student’s conception of learning, the main focus of the study. Some issues
that came up with some regularity in the essays were not directly related to this
main focus. When these issues were considered relevant to the experience of
learning at the Hotelschool (e.g. the prominence of group work) they were
included in this study (see chapter 8). In this way we feel we have complied with
the issue of treating all aspects of the experience with equal respect. For further
details on the data analysis, see chapter 6.

Research Questions

After introducing our six-stage developmental model of linked learning and
teaching conceptions, and making a short extrapolation towards adult cognitive
development, the remaining chapters can be grouped as addressing specific research
questions that drove the current study.
CHAPTER 2

In chapters 3 and 4 we address what we have called convergence of outcomes validity through a comparative study using the following questions:

– Are there similar models, originating from different schools of thought and research approaches that describe the same epistemological or intellectual development underlying our six-stage model of student thinking about learning and teaching?
– Do these models enrich our understanding of the categories of description we have identified through our own research?
– In what way can the metaphor of an ecology provide additional insight in the plethora of education innovation strategies leading to sometimes disappointing results?

In chapter 5 we address the issue of matching student and teacher thinking. We have discussed this earlier in van Rossum and Hamer (2004), but here we have attempted to expand on the findings reported there. The leading questions in chapter 5 are:

– Is it possible to find additional evidence from literature that underpins the linking of our model of student thinking to teacher thinking on learning and teaching? In short is Yero (2002) correct in assuming that teachers are ‘merely’ students grown up?
– If so, does this exercise help to understand differences in teachers’ teaching practice?
– Do these differences in teacher thinking and teaching practice influence students’ learning?

In chapters 6 we introduce the empirical part of the study and in chapters 7, 8 and 9 we address the following questions:

– How did Enterprising Learning – as implemented at the Hotelschool The Hague between 1997 and 2007 – affect students’ epistemological development?
– In what way may teachers’ views on learning and teaching have affected the implementation of Enterprising Learning?
– What happens when students and teachers have widely different views on learning and good teaching?

In chapters 7 and 8 we have also discussed less central issues regarding for instance the influence of culture on epistemological development, retrospective questioning and the use and by-products of email conversations.

In chapters 10 and 11, we address the issue of practical consequences flowing from our model

– What are the consequences of applying our developmental model of conceptions of learning and teaching to existing educational systems? How can it help to change learning and teaching in higher education?
– How can our developmental model be applied to staff development? How can we educate our educators?

In the final chapter, chapter 12, we summarise the main results of this study and also we discuss important issues that seem to follow from or are related to these
results. Such issues are among others a deeper analysis of the influence of culture, discipline or gender on epistemology and its development. The final chapter closes with a number of suggestions regarding new avenues of research.

NOTES

1 Phenomenography as discussed here is restricted to the state of the art at the time of the inception of this study, the late 1990s. We do not discuss in any great detail more recent developments within the phenomenographic research community.