Understanding Learning and Teaching

The Experience in Higher Education

Michael Prosser and Keith Trigwell

The Society for Research into Higher Education & Open University Press
A scenario

Antony Capos failed to pass a core mathematics subject in his first year at university. Melissa Durimah achieved a pass with distinction in the same subject. They were taught the same syllabus by the same university teachers. They went to the same lectures and tutorials and completed the same assignments. They had similar entry scores on the university entrance examination. Both claim to have worked hard throughout the year, and there was no reason to question those claims. So why are their results so different? What was it about their experiences that might help understand these differences? How could the university teachers of this subject find out about the differing experiences, and if they knew, could they have affected this outcome?

We address these and related questions in the remaining pages, and in the process give university teachers some insight into the learning world of their students. For example, let’s look more closely at some of Melissa’s descriptions of her experience. She says,

I am doing mathematics for the purpose of improving a logical method of thinking rather than for the course specific subject matter...

She goes on to elaborate on this,

Well more than anything I say that it is probably a thinking process which is not something you get from any other subject and that is probably the reason I am doing it... More than anything as a way of thinking... Well I think I try to see what is being taught as part of the bigger picture, to see how everything comes into place and I find if I can get a broad sort of overview of things then it probably helps me to understand the work a bit better, because I can see where it is heading, where it is going to fall into place. I think someone who is not so good at mathematics might struggle to see where it is heading, and they’re just sort of interested in getting hold of one thing at a time.
An explanation

...
Teaching

Teaching education concerns the promotion of learning and learning outcomes in higher education. It involves the preparation of learning materials, the design and delivery of instruction, and the evaluation of student learning. This includes the use of various teaching methods and strategies to facilitate understanding and retention of course content. Effective teaching requires a deep understanding of the subject matter and the ability to communicate this knowledge in a clear and engaging manner. It also involves the ability to adapt to the diverse needs of students and to create a supportive learning environment.

Chapter 7

The process of teaching begins with the preparation of course materials. This involves selecting appropriate teaching methods, designing lesson plans, and preparing handouts and other aids to support learning. Effective teaching also requires the ability to engage students and maintain their interest throughout the course. This can be achieved through interactive activities, group discussions, and other activities that encourage active participation.

Chapter 8

In summary, the practice of teaching is multifaceted and requires a combination of skills and strategies. Effective teaching involves a deep understanding of the subject matter, the ability to communicate this knowledge clearly, and the ability to adapt to the diverse needs of students. By focusing on these aspects, educators can create a positive learning environment and promote student success.

References


Note: This summary is based on the provided textbook and highlights key points and concepts related to the practice of teaching. The original text contains more detailed information and examples that can be explored further for a comprehensive understanding.
Students such as Melissa and Antony come to the learning and teaching contexts university teachers establish with certain prior experiences of studying. When they enter those contexts, the situation they are in evokes, or brings to the foreground of their awareness, particular aspects of that prior experience. For example, Antony’s new university mathematics learning situation may evoke an awareness of a memorized list of secondary school formulae; an awareness that he hated calculus; an awareness that he has the ability to pass; an awareness of a range of largely unrelated mathematical concepts and ideas; an awareness that mathematics was mainly about the manipulation of numbers and formulæ; an awareness that by working with his friends and by rehearsing the range of problems presented in the subject, he had been able to pass; and an awareness that the university subject seemed to have fewer imposed deadlines, goals and expectations than his secondary school course. These aspects of his prior experience are evoked by the situation in which he now finds himself. Antony passed a previous examination involving basic mathematics, but this does not mean that the new situation will evoke the same awareness that led to that prior experience. We know that the prior experiences that are evoked are particularly important to the quality of learning in the new situation, and we know that the established context, and the way it is perceived, is similarly important. So what does this say to us about the way we might practise teaching and help students learn?

The answer to this question is the subject of this book. It is addressed through a range of sub-questions that a teacher who is trying to answer the question might ask. Each sub-question is, in itself, a part of the answer to the overall question. For example:

- What is the nature of students’ prior orientations to learning and how does this vary?
- What is the nature of students’ varying views on what is meant by learning and understanding and the subject matter when they began their courses?
- What sorts of things do students focus on, or are aware of, when engaged in studying their courses?
- How does what they focus on, or are aware of, relate to how university teachers have designed and constructed courses?
- What effect does this variation in perception have on the quality of the students’ learning?
- How do students go about their study? How do university teachers find out how they go about their study? What can university teachers do to affect the way they go about studying?
- What do students learn? How do university teachers find out what they learn?
- Do they learn a greater or less amount about something, or do they understand about something in different ways?
- What can students do with what they learn? What aspects of what they learn do they take beyond the subject?

Just as students experience learning in different ways, university teachers experience teaching in different ways. Their perceptions of their teaching context, the way they approach their teaching, and the outcomes of those approaches vary between individuals in the same context, as well as between contexts. While this type of variation has been the focus of much student learning research in the last decade, similar research on teaching has been given little consideration in the improvement of both learning and teaching despite the fact that it would appear to have profound implications for that practice.

In the previous section, we expressed our belief (supported by the research described there and in the following chapters) that there are better and worse ways for students to approach their learning – a deep approach being better than a surface approach. Research of a similar nature also suggests that there are better and worse ways for university teachers to approach their teaching, and better and worse ways to encourage that approach to teaching. Each of the questions above focuses on aspects of a student’s learning. Seeking the answers to these questions is a part of the better approach to teaching. The answers themselves provide the data university teachers need to address the final question, ‘What can university teachers do to improve the quality of student learning?’ The principles for teaching practice arising out of the approach taken in this book, and the examples used to illustrate those principles, lead university teachers towards and then beyond this final question.

In reaching the point of being able to address the final question, university teachers will have conducted a range of investigations into their students’ learning experience. This information is not just a source of data for the improvement of learning and teaching; it constitutes a resource from which research publications can be produced.

Researching teaching

Earlier in this chapter, we wrote about the excitement and relevance of the research that underpins this book. Its appeal stems from two related factors. First, all the data gathered come from students or teachers in their natural setting. They are not learning and/or teaching out of context. Second, the data are students’ and university teachers’ self-reports of their experiences, not the observations of the behaviours of students and university teachers by researchers. In addition to this, the results suggest that there is something the university teachers can do about learning – not by trying to change the student, but by trying to change the context experienced by the student. This is a much more attractive prospect for most university teachers.

In this analysis we have used research that is derived from and appeals to university teachers and students. In so doing it bridges the gap between educational research and teaching practice in higher education. Much of the type of research described could be conducted by university teachers in their own context.
The point of departure of this book is that it also addresses some of the ways that university teachers can find out about their students' learning experiences. It contains examples of the action research that has been conducted by university teachers to explore these experiences. And it contains information on those research approaches - sufficient for university teachers interested in researching their teaching/learning context to get started.

Take, for example, the study which has provided the data for the analyses involving Melissa and Antony. While the students' names are fictitious, the data are derived from a study of the experience of first year mathematics students in an Australian university. In three reports on the study, the authors supply information on students' conceptions of mathematics, perceptions of their learning situation, their approaches to learning mathematics, and their learning outcomes and relations between these variables (Crawford et al., 1994, 1998a, b). Because of the depth and inclusiveness of this study, we have used its results throughout the book. It began as a qualitative study based on students' written responses to open-ended questions. We describe the nature of the questions put to students. A small group of students were then interviewed in depth to add to and support the written data. The qualitative methods used to analyse these data are described. Quantitative methods, including correlation, factor and cluster analyses were used to demonstrate relations between variables. The results are presented in a manner that demonstrates the applications of these methods to this type of research.

The improvement of learning and teaching is dependent upon the development of scholarship and research in teaching. Research that is both applicable and accessible to higher education lecturers is presented in this book. It is offered as a source and an incentive: a source of information for scholarship and an incentive for university teachers to make their contribution.

In the following chapters we describe and illustrate a practical model for developing university teaching. It builds on research in student learning to demonstrate the relations between what university teachers do and think, what students do and think, and the quality of the student learning outcomes. The model links students' prior experiences with their perceptions of the learning context, their approaches to learning and their learning outcome. We have foreshadowed that practical implications for teaching, course design and research will be integrated into each of the later chapters and will form the basis of the value of the book to the practice of learning and teaching, and to scholarly pursuits into learning and teaching.

We saw how two mathematics students, Melissa and Antony, on starting their university studies, had different prior experiences of learning mathematics, and different conceptions of the nature of mathematics. In the same learning context those differences in prior experiences meant that different learning situations were constituted for each student and different perceptions of their learning situation were evoked. Antony perceived his situation as supporting a surface approach to learning. Melissa saw hers as encouraging a deep approach. Antony failed the subject, and Melissa achieved a distinction pass.

Summary of Chapter 1

In this chapter we have given a summary overview of the whole book and indicated why it may be of value to a university teacher. We have indicated that this is a book on teaching from a relational perspective. That is, students' perceptions of their learning situation evoke prior learning experiences that relate to their learning approach and their learning outcome.
A Model for Understanding Learning and Teaching in Higher Education

Introduction

In the first chapter we provided a summary overview of the book as a whole: the focus on individual variation, the relations between students’ prior experiences, their approaches to learning and the quality of their learning outcomes. We emphasized the special place of students’ perceptions of their learning situation in our argument, and how university teachers might use this information in teaching. We did not present the model or any of the theoretical ideas on which this book is based. That is the task of this chapter. The model links aspects of the student’s experience of learning, and the theoretical ideas are derived from a phenomenographic perspective. Essentially these ideas suggest that the world, as experienced, is non-dualistic. That is, students’ and teachers’ experiences are not constituted independently of the world of learning and teaching in which they are engaged, but they and the world of learning and teaching are constituted in relation to each other. In this sense the world of learning and teaching is an experienced world. From this perspective students’ and teachers’ experiences are always experiences of something. Students do not experience learning, they experience the learning of something. Teachers do not experience teaching, they experience the teaching of something (Marton and Booth, 1997).

In proposing a model to help describe and understand the ways learning and teaching are experienced, we are acutely aware that any such model will necessarily simplify the phenomenon being modelled. We are proposing a model as an aid to the analysis of a very complex phenomenon – teachers’ and learners’ experiences of learning and teaching.

While these ideas provide the background against which the rest of the book should be read, we acknowledge that they may not be equally accessible or of interest to all readers. To accommodate this variation, we have concluded the chapter with a substantial summary which captures the essential elements of these ideas, and a brief description of the model used as the unifying theme in the rest of the book.

The chapter addresses several questions:

- What are the theoretical models that have been used to provide meaning and coherence to the practice of learning and teaching in higher education?
- Is teaching fundamentally about transferring information from the teacher to the learner, or is it, as we would contend, about creating contexts which make learning possible?
- If it is about the latter, what does that mean, and what does it say about the way in which teachers should think about, and approach learning and teaching?
- Do university teachers and learners experience learning and teaching situations in different ways, and if so, what are these different ways?

We will be arguing that learning and teaching are fundamentally related, that good teaching needs to be defined in terms of helping students learn, that it is the learning of students that needs to be the focus of good teaching, and not the teaching activities of teachers. We will argue that good teaching is about bringing the teachers’ perceptions and understanding of learning and teaching (their awareness of learning and teaching) into closer relationship with the students’, and that good learning involves a focus on the meaning and understanding of the material students are studying.

We will contend that university teachers and students engaged in a learning and teaching activity all experience that same learning and teaching context in different ways. We believe that good teaching is about three things. First, it is about teachers developing a coherent and well-articulated view of what they are trying to achieve and how they are planning to achieve that outcome. Second, it is about teachers discovering the variation in the ways students perceive that planned learning context. And third, it is about working towards bringing their students into relation with, and understanding of, that articulated view.

This perspective is in contrast to views that good teaching in higher education is about presenting and structuring content or about developing good teaching skills, or about flexible delivery or about giving students choice. These are all important characteristics of good teaching, but should not be the primary focus of attention in efforts to improve teaching. They should be seen as the background, against which students’ perceptions and student learning is the foreground or focus.

The presage–process–product model of learning and teaching

The origins of the learning and teaching ideas in this book lie in the presage–process–product model of student learning (Biggs, 1978; Prosser
experience is a relationship between the person experiencing and the object experienced. This is fundamentally different from other perspectives of learning, such as cognitivist, individual constructivist and social constructivist perspectives. At the risk of grossly oversimplifying these perspectives, we will provide a brief interpretation of the model from each of the perspectives.

From the cognitivist or information processing perspective, sensory data is thought to come in to the student from the outside, be stored for a short time, processed internally and then put in longer term storage and/or an output is generated to the outside world (Gardner, 1987). In terms of the presage-process-product model, the various parts of the model would be considered to be independently constituted and to describe a causal chain from presage to product.

From the individual constructivist perspective, knowledge is constructed internally, and tested through interaction with the outside world (von Glasersfeld, 1995). From this perspective Biggs (1993a) has argued for a systems theory interpretation of the presage-process-product model in which the various parts of the model are independently constituted, but are in continuous interaction with one another. This model then does not describe a causal process, but a continuously interacting system. The process of knowledge construction is driven internally through processes of assimilation (integrating new knowledge into existing knowledge structures) and accommodation (changing knowledge structures).

From a Vygotskian social constructivist perspective, knowledge is thought to develop internally, but in a process driven by social interaction with the outside world (Wertsch, 1985). From this perspective, the context, and particularly the social context, is of prime importance. It is the context which brings about knowledge development within individual students.

For each of these perspectives there is a separation between the individual and the world. Knowledge is brought in from the outside or constructed on the inside. Each of these perspectives is dualistic; there are two elements: the student and the world.

The point of departure of a constitutationalist perspective from each of these is that a constitutationalist perspective is non-dualistic. From a constitutationalist perspective on learning there is an internal relationship between the individual and the world. The individual and the world are not constituted independently of one another. Individuals and the world are internally related through the individuals' awareness of the world. The world is an experienced world. There is not an internal structure of the mind which is composed of, or can be modelled in terms of, independently constituted parts. For analytical reasons we discuss perceptions, approaches and outcomes as separate entities, but they should be considered to be simultaneously present in the students' awareness and are not independently constituted. Marton and Booth (1997) have recently presented a comprehensive description of learning and awareness from this perspective which includes an analysis of why this perspective is appropriate for our current understanding of learning.
An Overview of Relational Student Learning

The current research on relational learning emphasizes the importance of understanding the interconnectedness of students' knowledge. Relational learning is not just about memorizing facts or procedures; it involves understanding the relationships between different concepts and how they interact. This approach encourages students to think critically and make connections between different areas of knowledge.

The key components of relational learning include:

1. **Interconnected Process and Understanding**: Relational learning involves understanding the interconnectedness of ideas and concepts. Students are encouraged to see how different pieces of knowledge are related and how they fit together.

2. **The Construction of Interpreted Understanding**: Relational learning involves students constructing their own understanding of concepts based on their prior knowledge and experiences. This process is iterative and requires students to engage in active thinking and reflection.

3. **The Development of Reflective Understanding**: Relational learning focuses on the development of reflective understanding, which involves students thinking deeply about the concepts they are learning and reflecting on their own thinking processes.

4. **A Understanding Increased in Knowledge**: Relational learning aims to increase students' understanding of the subject matter by helping them see the bigger picture and make connections between different ideas.

5. **The Appreciation for Interdisciplinary Methods**: Relational learning encourages students to appreciate the interconnected nature of knowledge across different disciplines. This helps students see the relevance of their learning and how it applies in different contexts.

Relational learning is not just about learning facts; it's about understanding the relationships between different concepts and how they interact. By adopting this approach, students are better equipped to make sense of the world around them and apply their knowledge in new and innovative ways.
A model for understanding variation in learning

Learning model described in the next section

The connections between theory and the empirical support for the student's experiences, perceptions, learning approaches and outcomes are complex and multi-faceted. This model attempts to capture the essence of the learning process and its impact on student outcomes. It is important to remember that learning is a dynamic process that involves both cognitive and affective components. Therefore, it is essential to consider how students interact with the content, as well as how their prior experiences and beliefs influence their learning. This model is intended to provide a framework for understanding the complex relationship between learning and its various components.
In our research, we found that the application of different approaches to teaching can have a significant impact on student learning. Our findings suggest that effective teaching methods involve a combination of strategies that engage students actively in the learning process. It is important to note that teaching methods are not static but rather evolve over time in response to changes in the educational environment and student needs.

The research on teaching methods has shown that different approaches can lead to varying levels of student engagement and achievement. Therefore, it is crucial for educators to adopt a flexible approach to teaching, incorporating a variety of methods to cater to diverse learning styles and preferences.

In this chapter, we will explore several teaching methods that have been shown to be effective in different settings. These methods include traditional lecture-based instruction, interactive learning through projects and discussions, and student-centered approaches that encourage active participation and collaboration. Each of these methods has its strengths and limitations, and it is important for educators to select the most appropriate approach for their specific teaching context.

In the context of teaching, there is a need for a clear understanding of the teaching environment and the learning objectives. Teachers must be aware of the expectations of their students and the resources available to them. This knowledge will enable them to design effective lesson plans and instructional strategies that meet the needs of their students.

Figure 2.4 illustrates a model of the teaching process, highlighting the key steps involved in effective teaching. The model emphasizes the importance of planning, delivery, and assessment in the teaching process. Teachers must be aware of their role in facilitating learning and providing feedback to students. This model can serve as a guide for educators in designing and implementing effective teaching strategies.

The research on teaching methods has shown that different approaches can lead to varying levels of student engagement and achievement. Therefore, it is crucial for educators to adopt a flexible approach to teaching, incorporating a variety of methods to cater to diverse learning styles and preferences.

In this chapter, we will explore several teaching methods that have been shown to be effective in different settings. These methods include traditional lecture-based instruction, interactive learning through projects and discussions, and student-centered approaches that encourage active participation and collaboration. Each of these methods has its strengths and limitations, and it is important for educators to select the most appropriate approach for their specific teaching context.

In the context of teaching, there is a need for a clear understanding of the teaching environment and the learning objectives. Teachers must be aware of the expectations of their students and the resources available to them. This knowledge will enable them to design effective lesson plans and instructional strategies that meet the needs of their students.

Figure 2.4 illustrates a model of the teaching process, highlighting the key steps involved in effective teaching. The model emphasizes the importance of planning, delivery, and assessment in the teaching process. Teachers must be aware of their role in facilitating learning and providing feedback to students. This model can serve as a guide for educators in designing and implementing effective teaching strategies.
each with a focus on the strategies teachers adopt for their teaching and the intentions related to the strategies. There are two qualitatively different groups of approaches within the range. The first group have a teacher or content focus with the intention of transmitting information or the content to the students. These approaches are in contrast to those in the second group, where the focus is on the student, and the intention is to develop or change the student’s conceptions of the material being learned (Trigwell et al., 1994).

Teachers who have prior experiences of teaching involving the more complete conceptions of teaching were found to be more likely to adopt approaches to teaching in the second group (student-focused) while the more limited conceptions were related to teacher-focused transmission approaches (Trigwell and Prosser, 1996b). Relations have also been observed between these approaches to learning and teachers’ perceptions of their teaching context. In a separate, but related, exploratory relational study we found systematic relations of the sort found for student learning (Trigwell and Prosser, 1997). The results suggest that if teachers perceive that they have some control over what is taught and how it is taught, then they are likely to adopt more of a student-focused approach to teaching. The same approach is also related to teachers’ perceptions that the workload is not too great, that student diversity is not too great, and that class size is not too large. An information transmission/teacher-focused approach is related to perceptions that the teaching unit does not have a strong commitment to student learning, and that the teacher has little control over what is to be taught.

What is the outcome of teaching? From the perspective of the model described in this section, it is a part of the teacher’s experience of teaching. It might involve an expanded awareness of a range of issues related to that teaching experience. For example, the teacher may be more aware of how to stimulate discussion in small groups; be more aware of the feeling of students who have never given an oral presentation; be aware that one of the fundamental concepts of the discipline is conceptually too difficult for most of the students; and be aware of a group of students who might be at risk. Research investigating teaching outcomes of this sort is yet to be reported.

From a more practical perspective, student learning could be considered to be the outcome of teaching. The relation between teachers’ approaches to teaching and students’ approaches to learning has been explored in two recent studies (Trigwell et al., 1998, Trigwell et al., 1999). In both studies it was found that the classes of those teachers who report using more of a student-focused teaching approach contained students reporting higher quality approaches to learning, while classes of teachers using more of an information transmission/teacher-focused approach contained students who reported using more surface approaches to learning.

These results support the model as conceived in Figure 2.4 and help explain the experience of university teachers in the same or different teaching contexts, and the variation in teachers’ approaches to teaching, their perceptions of their teaching situation, and their prior conceptions of teaching. As with students and their learning situations, each teacher will have a unique perception of his or her teaching situation. These perceptions, their prior experience, approach to teaching, and teaching outcomes will be simultaneously present in their awareness at all times, but some components may be more in the foreground than others.

Both teachers and students see and experience phenomena in the world in relation to other phenomena. We see things as they vary from, and are similar to, other things. If we are not aware of the variation in the way that learning and teaching can be conceived, then we cannot become aware of our own way of conceiving them. Becoming aware of the variation in the way our colleagues and others conceive of learning and teaching and approach learning and teaching is a key step in developing our own awareness of our own way of conceiving and approaching learning and teaching.

It might be argued at this point that we are providing an oversimplified account of learners’ and teachers’ experiences of learning and teaching. We would respond that in our account we are focusing on what we see to be the key aspects of the structure of the variation in these experiences. We are not attempting to provide a full account of these experiences. Other perspectives on learning and teaching are able to provide this. But we do argue that the aspects of the experiences that we focus on are powerful aspects in the sense that they are ones that are most likely to relate to the quality of the students’ learning outcomes—the improvement of which is the major focus of this book.

From the theoretical perspective described above, we argue two points through the remaining pages of this book. First, that good teaching is about teachers becoming aware of their own conceptions of learning and teaching, their approaches to teaching, and their teaching outcomes. Second, that in good teaching a major task that is to a large extent currently being overlooked is to ascertain the perceptions students have of their learning situation, and to work towards developing learning and teaching contexts which students experience in similar ways to that intended by the teacher. This involves putting the focus on the individual students and their experience—a student-focused approach.

Summary of Chapter 2

Students do not have a similar experience of the same world. In Chapter 1 we saw how two students, Melissa and Antony, studying the same mathematics subject at university, had quite different learning outcomes. We suggested that an important aspect in understanding this variation was in the students’ varying perceptions of their learning situation. Even though the context was the same for both students, their prior experiences varied and their placement in the same context evoked different aspects of their prior experiences. Differences in perceived learning situations are related to varied approaches to learning and assessment results. Similarly, teachers
do not have the same experience of the world. There is variation in their approach to teaching, their perceptions of their teaching situation, and their prior experiences of teaching. Their students do not necessarily experience the world in the way university teachers have intended them to experience it.

These variations in experience are the focus of this book. Through the investigations of the varying experiences of teachers and learners, we have been able to offer some ways of understanding the variation in outcomes of learning, and focus on approaches to teaching that are related to high quality of learning.

In this chapter we have outlined a conceptual underpinning for a student learning model which helps us to understand this variation. We have defined what we mean by a constitutional perspective, and used it to develop the model below (also Figure 2.2, and at the beginning of the next four chapters). A similar model has been developed for teaching. In the student learning version of this model we consider the learning situation (inside the box) for students entering a learning context as involving the students' prior experiences, their perceptions, their approaches and their learning outcomes, all interrelated and all simultaneously present in their awareness.

<table>
<thead>
<tr>
<th>Student's prior experience</th>
<th>Student's approaches to learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student's perceptions of his/her situation</td>
<td>Student's learning outcomes</td>
</tr>
</tbody>
</table>

The relations between the elements of awareness are not sequential or causal, but are conceived of as simultaneously consecutive. So, for example, a student with some prior experience of learning in a particular situation will perceive his or her situation in a certain way because of his/her prior experiences, and adopt a certain approach to learning. All aspects of this situation will be a part of the student's awareness at all times, but some components may be more to the foreground than others at any instant.

Here we mean that a student like Antony studying mathematics will, at any time, be aware of a great many things or phenomena that relate to that topic (and many that don't). He will have a greater focus on some of those things than on the others (some will be central, in the foreground; others less so, in the background). Ways of conceiving some phenomena will be in the foreground of his awareness and some others will be in the background.

He will be able to bring to the foreground of his awareness ways of conceiving some phenomena, and others will recede to the background (Marton and Booth, 1997). He will have many aspects of his experience of learning present in his awareness. Even when focusing on the way he will approach a mathematics learning task, he will be aware whether or not he has studied something like this before; what the assessment will involve; what the lecturer may be expecting; how he felt last time he studied this topic; what he is planning to do that evening; that he had forgotten to return an overdue book to the library and so on. His prior experiences, perceptions of his situation, approaches to learning and outcomes of learning will all be present in his awareness.

We have used this perspective on the model to try to understand the variation in individual acts of learning in terms of the individual learner's awareness of certain aspects of the phenomena or context in which he or she is engaged. We have argued that, according to this model, variation in students' perceptions of their situation with variations in prior experiences will evoke or bring to the foreground aspects of awareness that lead to variations in approaches to learning, and to variations in the quality of the learning outcomes.

When looked at from this theoretical perspective, a major task of teaching is to ascertain the perceptions students have of their learning situation, and work towards developing learning and teaching contexts which students experience in similar ways to that which the teacher designs.

In Chapters 3–7 we use the quantitative and qualitative relational research literature, and the models, to support and develop this argument. We suggest a range of teaching practices that are consistent with this argument and indicate how university teachers can use the research in their teaching, and in the process add to that research by investigating their own students' learning.

In each of these chapters we attempt to establish a context affording a deep approach, using the model to illustrate structures of awareness. We are all aware of many things at the one time. Some things are more to the foreground of our awareness than others. Part of a teacher's role is to assist students to bring the relevant aspects to the foreground of their awareness.

In a learning context students will be aware of aspects of their experience including aspects of their current situation. In Chapter 3 we aim to bring students' prior experiences to the foreground of the awareness of readers. But it will be done with the other elements (perceptions of the student's situation, approaches to learning and learning outcomes) as part of the background of awareness. In Chapter 4 perceptions are brought to the foreground with the other elements as the background, and so on through Chapters 5 and 6. In Chapter 7 the focus shifts to teaching, and conclusions from each of these analyses are drawn together in the final chapter.