Research on approaches to studying in higher education began in the 1970s with a programme of experimental investigations that was carried out at the University of Göteborg (Gothenburg) in Sweden. In this chapter, I shall describe the key findings of this research with regard to both the outcome and the process of learning. I shall then go on to discuss the results of subsequent, more naturalistic investigations that were carried out to explore the relevance of those original findings for how students actually go about learning both in campus-based institutions and in distance education.

A precursor to the kind of investigation to be discussed in this chapter was an experiment on the role of organization in human learning and memory that was reported by Marton (1970). In this study, the experimenter asked each of 30 paid volunteers (who were male students taking an introductory course in education) to learn a list containing the names of 48 well-known public figures. The list of names was presented on a recorded audio tape a total of 16 times in different randomized orders. After each presentation of the list, the participants were asked to recall as many of the names as they could remember in any order they liked. When the experiment itself had been completed, the participants received an informal, semi-structured interview in which they were asked about their experience of carrying out the learning task.

The experimental methodology in this study was not particularly original and the quantitative results were similar to those of previous experiments on which it had been explicitly modelled (for instance, Tulving 1962). In particular, as the participants learned the list of famous names, they tended increasingly to recall particular groups of names together on successive trials. This phenomenon was (and still is) generally taken to reflect the participants' imposing organization and structure upon the inherently random and constantly changing sequence of items (Baddeley 1996: 131). What was novel about Marton’s study was the use of interviews to obtain accounts from the participants themselves of what they had been doing during the learning task. These accounts confirmed what had been
inferred from the pattern of recall, in so far as the participants were duly able to describe the process of imposing a hierarchical structure on the list of names.

Although Marton was concerned to emphasize the limitations of this study, especially in terms of the generality of its findings and conclusions, it provided a clear basis for a heuristic strategy that might well illuminate the nature of learning in more naturalistic situations:

- the outcome of learning could be studied by a careful analysis of recall performance
- the process of learning could be studied by means of retrospective interviews
- the relationship between process and outcome could be compared across individual learners.

In his subsequent work, Marton criticized the simplistic, quantitative view of learning on which experimental investigations of this sort had been based: that what is learned can be reduced to a number of logically independent and personally neutral pieces of knowledge (see, for instance, Marton 1976c). Instead, he focused on 'non-verbatim' learning in the form of students' memory for the broad gist of academic texts. Nevertheless, in a series of studies carried out in the 1970s, Marton and his colleagues at the University of Göteborg employed the same heuristic strategy to make qualitative comparisons in the outcome and process of learning in individual students.

Levels of outcome in student learning

The first study of this nature was reported by Marton (1975; see also Marton and Säljö 1976a). This involved 30 paid volunteers (5 men and 25 women, all aged between 19 and 23 years) who had just enrolled on a programme in educational psychology at a campus-based institution of higher education. They were each asked to read through a newspaper article of roughly 1400 words concerned with impending curriculum reform in Swedish universities. There was no time limit, but it was suggested to the participants that about 15 minutes should be long enough for them to carry out the task. Immediately afterwards, they were asked to say what the article was about, and they were then given a structured interview concerning how they had set about the task of reading the article and their general approach to academic studies. Finally, the participants were unexpectedly invited to attend another session about 5 weeks later, when they were again asked to recall the gist of the article and to answer questions both about their approach to the task of reading the article and their approach to academic studies in general.

With the assistance of two independent judges, Marton found that it was fairly straightforward to classify the students' attempts to recall the article at each of the two sessions into different categories of learning outcome that reflected qualitatively different ways of understanding the article. The
relevant curriculum reforms had been proposed as a response to poor examination pass rates in some institutions of higher education; the author of the article had argued that pass rates varied between different groups of students and that, instead of blanket reforms, it would be more effective to introduce selective measures that were aimed at groups with low pass rates. The students’ summaries implied four different conceptions of the article’s intended meaning:

*Level A: Selective Measures.* (Meaning that measures were to be taken only for those groups of students that did not fulfil the necessary requirements.)

*Level B: Differential Measures.* (Measures to be taken which allow for differences between the various groups.)

*Level C: Measures.* (Measures to be taken only.)

*Level D: Differences.* (Differences between groups only.)

(Marton and Säljö 1976a: 8)

Marton noted that the entailment relations among these categories defined a partial ordering in which each category logically subsumed the categories below it: in other words, the categories defined a hierarchy in terms of the depth of the learning outcome. (In this example, A implies B, which implies both C and D, but the relationship between C and D is indeterminate.) For a particular text, Marton argued that the different categories of outcome and the logical relations among them defined an ‘outcome space’. Particular outcomes could be regarded as being more appropriate or desirable than others, in so far as they bore a closer relationship to the author’s original conception of the phenomenon in question (Marton, 1976c).

This general pattern was replicated in a number of other studies involving students at the same campus-based institution (Säljö 1975; Marton and Säljö 1976a, 1976b; Svensson 1976, 1977; Fransson 1977). To take one further example, Marton and Wenestam (1978) used four different texts, each of which described a certain principle and illustrated it by reference to some detailed example. For instance, one text (which was taken from a textbook on the philosophy of science) was concerned with the principle that hypotheses about causal factors are tested by comparing two otherwise identical situations, one in which the presumptive causal factor is present and one in which it is absent. This principle was illustrated by reference to an account of an Austro-Hungarian physician investigating the cause of childbed fever in the nineteenth century. Marton and Wenestam identified the following levels of outcome for each of the four texts:

(A) The principle and the example as well as the relationship between them is understood.

(B) The principle and the example are understood (separately) but not sufficiently to understand the relationship between them.

(C) The principle is not understood but constructed on the basis of the fragments retained.
(D) The example in itself is seen as the main point of the text.
(Marton and Wenestam 1978: 641)

Even so, these descriptions reflect only the structural similarities between the levels of outcome obtained from the four different texts, which were obviously different in terms of their actual content. In general, the number of levels of outcome (usually four), the levels themselves and the precise relations between them were dictated by the content of the text and were specific to that text.

A basic research question is whether the procedures for identifying different levels of outcome are a reliable means of classifying individual students. Marton (1975) found that 16 out of his 30 participants were assigned to the same level of outcome according to their performance at the first session and at the follow-up session after 5 weeks. None of the 14 participants who had been assigned to two different levels of outcome showed a superior quality of outcome at the follow-up session, and this suggests that these discrepancies were due to forgetting during the intervening interval and not to unreliability on the part of the classification procedure. Marton and Wenestam (1978) retested their participants after different follow-up intervals. They found that 14 out of 15 participants were assigned to the same level of outcome after 1 day; that 12 out of 14 participants were assigned to the same level of outcome after 1 week; but that only seven out of 14 participants were assigned to the same level of outcome after 1 month.

Of the ten participants who were assigned to two different levels of outcome, only one person (who had been retested after just 1 day) showed a higher level of outcome at the follow-up session.

In contrast, Marton and Säljö (1976a, b) described two (otherwise similar) studies in which the participants were given feedback and correction after the first session if they had not given a 'Level A' account of what the text was about. Not surprisingly, under these conditions, a few of the participants did show a higher level of outcome at subsequent follow-up sessions. Svensson (1976, 1977) described results along similar lines from Marton’s (1975) original investigation. After Marton’s participants had been interviewed at the follow-up session, they had been asked to read an elaborated version of the article about curriculum reform in Swedish universities that was roughly three times the length of the first version. They were then tested and interviewed as before, and they were retested and re-interviewed at a third session roughly 5 weeks later. Four out of the 30 participants showed a higher level of outcome as a result of reading the elaborated text, but, as Svensson noted, the dominant feature of the results was the remarkable consistency shown by the other participants in their understanding of the two different versions of the text. Similar results were obtained by Marton et al. (1992) when they asked 60 children at secondary schools in Hungary and Sweden to read a story by Kafka on four successive occasions.

Dahlgren (1975) attempted to determine whether a similar analysis could be applied to students acquiring a coherent body of knowledge: in this case,
some basic concepts in economic theory (see also Marton and Dahlgren 1976). He employed 38 paid volunteers (14 men and 24 women) who were sociology students at a campus-based university. He asked them to read the first two chapters of a textbook on economics and then interviewed them on the main topics. They were retested at a follow-up session about 45 days later. Each of the topics demonstrated an obvious 'outcome space', in that there were qualitative variations in the levels of outcome generated by different participants. Dahlgren and Marton (1978) went on to ask whether studying economics in higher education changed students' understanding of everyday economic phenomena. They interviewed 20 students who were taking an introductory course in economics and asked them questions such as, 'Why does a bun cost 50 öre?' Their responses fell into four categories:

A:1 The price of the bun is determined by the market price of its constituents: in other words, the price depends on the supply and demand situations for e.g. wheat, flour and transport services.
A:2 The price of the bun is determined by the supply of and demand for buns . . .
B:1 The price of the bun is the sum of the 'value' of its constituents . . .
B:2 The price of the bun is equal to its 'value' . . .

(Dahlgren and Marton 1978: 34)

The first two levels of outcome reflected what was taught in the economics course, whereas the last two levels of outcome reflected lay conceptions of 'price'. However, Dahlgren and Marton remarked that the latter were found even in students who had completed the economics course.

Levels of processing in student learning

The main objective of Marton's (1975) research was not simply to describe qualitative differences among individual learners in terms of different levels of outcome, but also to derive a parallel or 'commensurable' description of the levels of processing employed in non-verbatim learning. This was based upon a suggestion made by two experimental psychologists, Craik and Lockhart (1972), that remembering was a consequence of the learner's information-processing activities at the time of learning, so that differences in retention should be analysed in terms of the aspects of the material to be learned upon which the attention of different learners had been focused. A similar proposal had been made in the context of educational research by Anderson (1970), whom Marton also cited. However, Craik and Lockhart proposed more specifically that memory could be regarded as a hierarchical system of representations or 'levels of processing'. For instance, remembering a list of words printed on a page might involve any of the following:

- an orthographic representation (the visual appearance of each word on the page)
• a phonological representation (how each word would sound if it were spoken aloud)
• a semantic representation (the meaning of each word)
• an associative representation (the semantic relationships among different words).

In their account, Craik and Lockhart made the key assumption that the use of ‘deeper’ or more abstract levels of processing would lead to better retention than the use of shallow processing.

Craik and Lockhart’s analysis attracted a good deal of interest and led to some novel kinds of experiments on human memory. As Marton (1975) pointed out, in these experiments different levels of processing were experimentally induced by manipulating the conditions of learning. For instance, the participants might be instructed to go about learning in particular ways (such as by making up mental images of the things described by the words to be remembered), they might be given tasks designed to focus their attention on particular aspects of the material (such as deciding whether a word was printed in upper-case letters or in lower-case letters), or they might be encouraged to use particular levels of processing by virtue of how the items had been presented (such as learning an arbitrary sequence of letters or digits presented very quickly one after another, which might be expected to inhibit the use of semantic processing).

In contrast, Marton’s aim was to characterize qualitative differences in the process of learning under constant conditions of learning. To achieve this, he referred to the accounts that had been given by the participants in his study to the interview questions concerning how they had gone about the task of reading the academic text on curriculum reform in Swedish universities. Again with the help of two independent judges, Marton found that the 30 students could be classified in terms of whether or not they exhibited various ‘positive’ or ‘negative’ symptoms of the depth of processing they had used. The positive signs (that is, signs of ‘deep-level processing’) were: ‘having what is signified (what the discourse is about) as the object of focal attention’; and ‘active processing, the subject being the agent of learning’. The corresponding negative signs (that is, signs of ‘surface-level processing’) were: ‘having the sign (the discourse itself or the recall of it) as the object of focal attention’; and ‘passive processing, the subject not being the agent of learning’ (Marton 1975: 276; italics in original). Based on these criteria, nine of the 30 participants were classified as having exhibited deep-level processing, 14 of the participants were classified as having exhibited surface-level processing, and the seven remaining participants could not be unambiguously classified either way.

Marton and Säljö (1976a) subsequently paraphrased their findings in the following manner:

We have found basically two different levels of processing to be clearly distinguishable. These two different levels of processing, which we shall
call **deep-level** and **surface-level processing**, correspond to the different aspects of the learning material on which the learner focuses. In the case of **surface-level processing** the student directs his attention towards learning the text itself (*the sign*), i.e., he has a 'reproductive' conception of learning which means that he is more or less forced to keep to a rote-learning strategy. In the case of **deep-level processing**, on the other hand, the student is directed towards the intentional content of the learning material (*what is signified*), i.e., he is directed towards comprehending what the author wants to say about, for instance, a certain scientific problem or principle.

(Marton and Säljö 1976a: 7–8; italics in original)

As Gibbs *et al.* (1982b) pointed out, these two levels of processing reflect qualitative variation within the semantic domain, and so both would count as 'deep' processing in the sense defined by Craik and Lockhart (1972). Indeed, Marton and Säljö (1984: 42) noted that there was merely a 'metaphorical resemblance' between their account and Craik and Lockhart's idea of levels of processing. It may be more accurate to say that surface-level and deep-level processing amount to local and global forms of semantic analysis (Richardson 1983). The expressions 'the sign' and 'what is signified' appear to constitute a very oblique reference to the distinction between *signifié* and *signifiant* in the writings of Saussure ([1916] 1955: 99, [1916] 1959: 67), although for Saussure the former was spoken rather than written. Elsewhere, Marton (1976b) discussed the various ramifications of his distinction between 'the sign' and 'what is signified', but he never explored nor even acknowledged the Saussurian connotation in any of his subsequent writings.

Marton (1975) found, as expected, that there was a clear relationship between his participants' levels of processing when reading the academic text and the levels of outcome apparent in their recall of the same text. All of the participants who showed deep-level processing had produced the two highest levels of outcome, but all but one of the participants who showed surface-level processing had produced the two lowest levels of outcome. Svensson (1976, 1977) elaborated the distinction between surface-level and deep-level processing in terms of a contrast between 'atomistic' and 'holistic' approaches:

The **atomistic** approach was indicated when students described their activities as involving: focusing on specific comparisons, focusing on the parts of the text in sequence (rather than on the more important parts), memorising details and direct information indicating a lack of orientation towards the message as a whole. In contrast the **holistic** approach was characterised by students' attempts: to understand the overall meaning of the passage, to search for the author's intention, to relate the message to a wider context and/or to identify the main parts of the author's argument and supporting facts.
These two types of activity were also apparent in students’ reports on how they tried to remember the texts. ‘Atomists’ relied on remembering the introductory sentences, visualising the tables, parts of the text or the outline structure of the text, and/or a general orientation to details. ‘Holists’ mentioned their attempts to remember the main message, what the author had been trying to say, the basis steps in the argument, and the message in a wider context.

(Svensson 1977: 238)

This distinction was closely related to that between surface-level and deep-level processing, with 25 out of the 30 students being allocated to the corresponding categories. There was also a clear relationship between the atomist/holist distinction and the quality of the learning outcome. However, Svensson proposed that his terminology should subsume differences in both outcome and process, on the theoretical ground that knowledge and skill should be seen as unified, and on the conceptual ground that the categories of process and outcome were ‘internally’ (in other words, intrinsically) related to one another (see Marton and Svensson 1979).

Inducing different levels of processing

Of course, the research strategy developed by Craik and Lockhart (1972) would suggest that one could modify students’ levels of processing (and consequently their levels of outcome) by manipulating the conditions of learning. Marton and his colleagues carried out four studies to address this question. First, Marton (1976a) asked social-science students at a campus-based university to read a text (in this case, the first chapter of an introductory textbook on politics) and attempted to induce a deep level of processing by asking them a series of content-neutral questions after they had read each section in the text (for instance, ‘What subsections do you think there are in this section?’ and ‘Can you summarize the content of the whole section in one or two sentences?’). In comparison with students who read the text uninterrupted, this actually led to poorer retention of the text both immediately after reading it and at a follow-up session 2 months later. From the participants’ accounts at interview, Marton attributed this finding to ‘a kind of technification of the learning process’ (Marton 1976a: 45): the participants’ attention had been focused on the interpolated questions rather than the text itself, so that they interpreted the learning task in a much narrower manner than had been intended.

I mentioned earlier a study by Dahlgren (1975) in which 38 students had been asked to read two chapters from an introductory textbook on economics (see also Marton and Dahlgren 1976). In fact, for the first of the two chapters, half of the participants had been given explicit instructions to aim for depth, comprehension and an active approach in reading the text. Content-orientated questions (for instance, ‘Why is that?’ and ‘What does this mean?’) had been added to the page margins with the aim of reinforcing
these instructions. The remainder of the participants were given general instructions and an unannotated text. For the second chapter, all the participants received an unannotated text and were just told to read the chapter in the same way as the first. The first group demonstrated better retention of the second chapter but not of the first. Dahlgren suggested that the instructions to aim for depth and comprehension had indeed induced a deeper level of processing, but that this had once again been counteracted in reading the first chapter by the participants' attention becoming fixated on the marginal annotations rather than the text.

Säljö (1975; see also Marton and Säljö 1976b) attempted to induce deep-level or surface-level processing by the use of appropriate test questions after participants had read abridged versions of two successive chapters from a textbook on comparative education. The participants were 40 female first-year students at a campus-based university. Half of the participants were tested on bare facts and other surface properties after each of the chapters; the other half were tested on the underlying content of the texts. All of the participants were then asked to read an abridged version of a third chapter, which was followed by questions on both surface and deep aspects of its content. Feedback and correction were provided on all of the questions and the participants were recalled for a follow-up test 45 days later. The participants' comments at interview and a qualitative analysis of their recall of the chapters confirmed that they had tended to adapt to the intended level of processing. Those participants who had been led to expect factual questions uniformly reported that they had attended to the surface properties of the third chapter and were able to recall such details accurately immediately afterwards, though not at the follow-up test. The participants who had been led to expect deeper questions demonstrated two quite different strategies. Some did appear to have attended to the intentional content of the chapter. However, others attempted to master by rote one or two sentences that summarized the main idea, which Marton and Säljö (1976b) regarded as a further example of 'technification'.

These studies confirm that it is possible to manipulate students' levels of processing and hence their levels of outcome or understanding. For instance, leading students to expect to be assessed on the surface properties of the learning material seems to induce surface processing. Academic staff should therefore beware that they do not encourage undesirable approaches to learning by the use of inappropriate forms of assessment. In particular, with the increasing use of so-called 'objective' examinations that involve multiple-choice questions, teachers should ensure that the selected test items are tapping students' understanding of the subject-matter as opposed to their memory for surface facts. Nevertheless, if they attempt to induce more desirable approaches to learning, the effects might be rather different from what was intended. Providing instructions to engage with the material in an active way, embedding prompts within the text itself or attaching reflective questions at the end of the material may turn out to be counterproductive if students concentrate on fulfilling these extra demands at the expense
of normal reading comprehension. As Gibbs et al. (1982a) remarked, this casts considerable doubt on the value of self-assessment questions and other in-text teaching devices, which at the time were widely used in all kinds of self-instructional texts, including the course materials written for distance-learning students.

A fourth attempt to manipulate levels of processing was carried out by Fransson (1977), who examined the effects of test anxiety, intrinsic motivation and extrinsic motivation. In this study, the participants were asked to read a description of the examination system at the Institute of Education at the University of Göteborg. Roughly half of the participants were students from the Institute itself and were presumed to have a high intrinsic motivation to read this text; the remaining participants were sociology students, who were presumed to have a low intrinsic motivation. Within each of these two groups of students, roughly half of the participants were given instructions intended to make the task more demanding, and thus to produce a high level of extrinsic motivation; the remaining participants were given instructions intended to make the task undemanding, and thus to produce a low level of extrinsic motivation. All the participants had been classified in advance as being of high or low test anxiety on a simple questionnaire.

Unfortunately, it turned out that not all of the manipulations operated in the intended manner: some of participants assigned to the 'low extrinsic motivation' conditions perceived the task as demanding, and some of the sociology students found the text to be very interesting. However, when the participants were reclassified in terms of whether they had adapted to the expected demands of the experiment, the results were fairly clear:

Lack of interest in the text, efforts to adapt to expected test demands, and high test anxiety, were all found to increase the tendency towards surface-processing and ineffective, reproductive attempts at recall. However, an adaptive approach allied to strong interest and low anxiety produced a high proportion of deep-level approaches with good factual recall.

(Fransson 1977: 244)

Fransson concluded that the type of motivation for reading a particular text was an important factor influencing the level of processing and consequently also the level of outcome:

A subject motivated by test demands to read a text for which he has very limited interest is very probable to adopt a surface-learning strategy, while deep-level learning seems to be the normal strategy chosen by a student motivated only by the relevance of the content of the text to his personal needs and interests.

(Fransson 1977: 256).

In a subsequent study, van Rossum and Schenk (1984) asked 69 campus-based students to read a text under a standard set of instructions. They were give a short questionnaire about the kind of assessment that they were
expecting, followed by a longer, open-ended questionnaire about how they had approached the task of reading the text and what they could remember of its contents. On the basis of their accounts, 34 students were classified as showing deep-level processing and 35 students were classified as showing surface-level processing. Although all the participants had been treated in the same way, the former students were more likely to have expected to be tested on their insight or understanding of the text, whereas the latter students were more likely to have expected to be tested on their basic knowledge of the text. Moreover, male students were more likely to exhibit deep-level processing than female students, which may conceivably have had to do with the content of the text (an article about criminal gangs in eighteenth-century Holland). These results tend to confirm that levels of processing depend on the students' intrinsic motivation in the learning material and the expected form of assessment.

Approaches to studying in campus-based education

All of the research discussed so far in this chapter was concerned with how students go about reading isolated academic texts in relatively artificial experimental situations, but is there any guarantee that similar conclusions apply to how they go about their normal academic studying? Marton (1975) had, of course, asked the 30 campus-based students in his original investigation about their general studies. He provided no details and only a few illustrative quotations, but he commented that the categories of description that were used to characterize levels of processing in the text-reading experiment could be also be used to classify the students’ learning activities. He also claimed that there was an analogous relationship between process and outcome, in that the level of processing in academic learning was related to subsequent examination results.

Further evidence from this study was provided by Svensson (1976, 1977), who classified the 30 students as having an atomistic or holistic approach in their normal studies on the basis of their comments during the interviews:

Students adopting a holistic approach to their normal studies related new material to their own knowledge and experience, stressing the importance of reorganising new information in terms of existing knowledge structures . . . The atomists were more likely to stress the importance of over-learning and memorising in preparation for examinations.

(Svensson 1977: 240)

Svensson found that 23 out of the 30 students were assigned to the same category (atomists or holists) in terms of their level of processing when reading an academic text and in terms of their accounts of how they approached their academic studies. Moreover, there was a strong relation
between the latter accounts and academic performance. Of the 19 students who were classified as atomists in their academic studies, only seven passed all their first-year examinations; but of the 11 students who were classified as holists, ten passed all their examinations. Svensson was able to arrive at an even better differentiation of the students who passed or failed one particular examination by taking into account an individual’s approach to studying, the number of hours they had spent each day on private study, the amount of revision they had carried out for the examination and whether they had adopted an ‘elaborated’ study technique (making synopses, underlining important passages and making use of lecture notes) or a ‘restricted’ technique.

Clearly, then, the levels of processing identified in artificial experimental situations have their counterparts in the students’ everyday academic work. To describe these counterparts, Marton (1976c) talked of a ‘deep approach’ and a ‘surface approach’, and he concluded:

It would appear that a decisive factor in non-verbatim learning, both in experimental settings and in everyday academic work, is the learner’s approach to learning. Those who succeed best (both qualitatively and quantitatively) seem to have an approach that aims beyond the written or spoken discourse itself towards the message the discourse is intended to communicate. These students feel themselves to be the agents of learning; they utilize their capacity for logical thinking in order to construct knowledge.

(Marton 1976c: 37)

Although Marton's account suggested that the distinction between deep and surface approaches marked a qualitative difference between different kinds of student, the findings of his research on reading academic texts suggested that they were instead strategies adopted in response to the content, the context and the perceived demands of particular learning tasks. Indeed, despite his demonstration of consistency in levels of processing between experimental tasks and academic study, Svensson (1977: 242) suggested that there might well be ‘intra-individual differences in cognitive approach, depending on how the student conceptualises what is required of him’. In the same way, Dahlgren and Marton (1978) suggested that many economics students failed to acquire a sophisticated understanding of concepts such as ‘price’ because they had been forced to engage in rote memorization in order to cope with the demands of an overburdened syllabus.

These ideas were investigated by Laurillard (1978, 1979, 1984), who interviewed 31 students of science and engineering at a campus-based university about how they were tackling coursework problems they had encountered on different courses. She found that 19 of these students demonstrated both deep and surface approaches, depending upon the context, whereas the other students only showed a deep approach. Laurillard illustrated the first pattern by two quotations from the same student talking about his approaches in dealing with two different learning tasks:
Deep level processing:
'This has to be handed in – it's an operation research exercise, a program to find a minimum point on a curve. First I had to decide on the criteria of how to approach it, then drew a flow diagram, and checked through each stage. You have to think about it and understand it first. I used my knowledge of O.R. [operational research] design of starting with one point, testing it and judging the next move. I try to work through logically. Putting in diagrams helps you think clearly and follow through step by step. I chose this problem because it was more applied, more realistic. You can learn how to go about O.R. You get an idea of the different types of problem that exist from reading.'

Surface level processing:
'This problem is not to be handed in, but it will be discussed in the lecture because the rest of the course depends on this kind of thing. I knew how I’d do it from looking at it; it practically tells you what equation to use. You just have to bash the numbers out. I knew how to do it before I started so I didn’t get anything out of it. There’s not really any thinking. You just need to know what you need to solve the problem. I read through the relevant notes, but not much, because you don’t need to look at the system. It’s really just a case of knowing what’s in the notes and choosing which block of notes to use. You don’t have to interpret it in terms of the system. It’s only when things go wrong, you have to think about it then. In this sort of situation you’ve got to get through to the answer.'

(Laurillard 1979: 400)

Laurillard argued that different approaches to studying were characteristics not of individual students but of students in relation to particular learning contexts. She concluded that in their academic work students 'are responsive to the environment and their approach to learning is determined by their interpretation of that environment' (Laurillard 1979: 408).

Ramsden (1979, 1981) carried out a similar study in which he interviewed 57 students from six academic departments at a single campus-based university (see also Entwistle and Ramsden 1983: chapter 8; Ramsden 1984). The participants were asked about how they had tackled recent academic tasks set as part of their normal studies, about the context in which they had carried out those tasks, and about the main department in which they were based. Marton's distinction between deep and surface approaches to studying was very apparent in the students' accounts. Moreover, there was a statistically significant trend for those students who had shown a deep approach subsequently to obtain better degrees than those who had shown a surface approach. However, in explaining their approaches, the participants often referred to contextual factors, such as their relationships with members of teaching staff or the demands of assessment tasks. Indeed, many individual students indicated that they adopted different
approaches to studying in different courses or even in carrying out different assessment tasks on the same course.

Nevertheless, Ramsden claimed to have identified a third approach by reference to a particular group of students who had been described by Miller and Parlett (1974) in a study of final year physics students at a campus-based university as 'cue seekers'. These students

button-holed staff about the exam questions; sought them out over coffee; made a point of discovering who their oral examiner was, what his interests were and, most of all, deliberately attempted to make a good impression on staff. This for them seemed to constitute a very large part of what the exams were all about.

(Miller and Parlett 1974: 52)

Ramsden found evidence of 'cue seeking' among some of his participants who were studying in departments where the relationships between academic staff and students were informal and personalized. However, in departments in which staff-student relationships were more formal, students used other techniques to maximize assessment outcomes. Ramsden therefore devised the more general concept of a 'strategic' approach to assessment in higher education. As in the case of a surface approach and a deep approach, Ramsden found that those students who used a strategic approach did so in response to the specific demands made by the context of learning. Box 2.1 summarizes the defining characteristics of the three putative approaches to studying.

Unfortunately, subsequent research has failed to confirm the existence of a separate 'strategic' approach to studying. One possibility is that it reflects a sophisticated response in students with an extrinsic motivation to adopt a deep approach or a surface approach, depending upon which is the more likely to maximize their grades or marks in any particular context (see Newble and Entwistle 1986; Ramsden 1988). (The role of motivational factors in determining approaches to studying will be discussed in Chapter 4.) In contrast, there does seem to be good evidence for a third approach to studying among students in China and Hong Kong. Kember and Gow (1990) interviewed 20 students from a campus-based institution in Hong Kong: many showed a deep or a surface approach to studying, but others demonstrated a 'narrow' approach characterized by a systematic step-by-step processing of information. Subsequent studies have indicated that this intermediate approach, which combines memorizing with understanding, is fairly common among students in Hong Kong and China (see Tan 1994; Kember 1996; Watkins 1996).

Nevertheless, the basic distinction between deep and surface approaches has been confirmed in research carried out in campus-based institutions of higher education, not only in Europe but in other parts of the world as well. Indeed, nowadays, this kind of distinction is commonplace and perhaps even a cliché in discussions about teaching and learning in higher education. Of course, the use of the words 'deep' and 'surface' embodies a
Box 2.1 Defining features of three approaches to learning

Deep approach
Intention to understand
Vigorous interaction with content
Relate new ideas to previous knowledge
Relate concepts to everyday experience
Relate evidence to conclusions
Examine the logic of the argument

Surface approach
Intention to complete task requirements
Memorise information needed for assessments
Failure to distinguish principles from examples
Treat task as an external imposition
Focus on discrete elements without integration
Unreflectiveness about purpose or strategies

Strategic approach
Intention to obtain highest possible grades
Organise time and distribute effort to greatest effect
Ensure conditions and materials for studying appropriate
Use previous exam papers to predict questions
Be alert to cues about marking schemes

Source: Entwistle 1987: 16

judgement about the relative desirability of the two approaches (Webb 1996: 89, 1997). It is true that certain academic disciplines may require students to acquire a large knowledge base of bare facts (as in biology or medicine) or specific procedural skills (as in accountancy), and in these cases rote memorization may be an effective strategy. In general, however, the strategy of encouraging a deep approach to studying and discouraging a surface approach to studying can be readily justified by reference to the avowed goals and missions of institutions of higher education (for example, Entwistle 1997b).

Indeed, the latter strategy was explicitly adopted in a national programme which was carried out in the UK between 1989 and 1991 and which was aimed at improving the quality of student learning at institutions whose academic programmes were validated by a national body, the Council for National Academic Awards. In introducing a report on this programme, Gibbs (1992: chapter 1) provided two quotations from interviews with students at one campus-based institution of higher education. Box 2.2
Box 2.2 Interview extract illustrating a deep approach to studying

*Interviewer:* ‘When you are going through and underlining, what sort of things are going through your mind?’

*Student:* ‘Well, I read it, I read it very slowly, trying to concentrate on what it means, what the actual passage means. Obviously I’ve read the quotations a few times and I’ve got it in my mind, what they mean. I really try to read it slowly. There is a lot of meaning behind it. You have to really kind of get into it and take every passage, every sentence, and try to really think “Well what does this mean?” You mustn’t regurgitate what David is saying because that’s not the idea of the exercise, so I suppose it’s really original ideas in this one, kind of getting it all together.’

*Source:* Gibbs 1992: 8

Box 2.3 Interview extract illustrating a surface approach to studying

*Interviewer:* ‘When you use the word learning in relation to this course, what do you mean?’

*Student:* ‘Getting enough facts so that you can write something relevant in the exam. You’ve got enough information so you can write an essay on it. What I normally do is learn certain headings. I’ll write a question down, about four, five different headings, which in an exam I can go: “Introduction” and I’ll look at the next heading and I know what I’ve got to write without really thinking about it really. I know the facts about it. I go to the next heading and regurgitate.’

*Source:* Gibbs 1992: 8

contains an extract from a student interviewed about a geography course that clearly illustrates the use of a deep approach; Box 2.3 contains an extract from a student interviewed about a computing course that clearly illustrates the use of a surface approach.

Gibbs used the second quote to support his assertion that a surface approach was very common in higher education within the UK. He went on to point out that the student in the second extract managed to obtain a good honours degree, which confirmed the students’ own claim that the assessment system on the course in question served to reward rote memorization. Further, however, Gibbs pointed out that the extracts had been
obtained, not from two different students, but from the same student on two different courses. Clearly, he inferred, this was not a lazy, stupid, incompetent or unaware student, but a competent student who had only responded strategically to the perceived demands of the two different courses.

Gibbs argued that negative characteristics of their courses induced students to adopt a surface approach in their learning. He identified the following characteristics as especially important:

- A heavy workload
- Relatively high class contact hours
- An excessive amount of course material
- A lack of opportunity to pursue subjects in depth
- A lack of choice over subjects and a lack of choice over the method of study
- A threatening and anxiety provoking assessment system.

(Gibbs 1992: 9)

In contrast, Gibbs argued that a deep approach could be fostered by relatively low class contact hours, intrinsic interest in the subject and freedom in learning, and that these could be achieved through the use of appropriate course design, teaching methods and assessment. In his book, he described ten case studies that were specifically intended to foster a deep approach to studying.

Approaches to studying in distance education

At the Open University in the UK, the Study Methods Group (consisting of Gibbs, Morgan and Taylor) carried out a longitudinal study to explore approaches to studying among distance-learning students. They focused upon 29 students who were taking the Social Science Foundation Course in their first year of study with the Open University. They were interviewed three times during the year about their general notions of learning and about their understanding of certain key concepts covered in two blocks roughly half-way through the course on 'Production and allocation' and 'Work'. The interviews took place just before the beginning of the course, whilst the students were engaged in studying the block on 'Work', and at the end of the course. Some students dropped out of the course or transferred to other institutions, and others moved house too far away to be visited by the researchers; as a result, only 24 students were interviewed on the second occasion, and only 18 students were interviewed on the third.

Taylor et al. (1981a) reported the detailed findings from this longitudinal study with regard to the students’ understanding of the concepts of price control, political power and oligopoly (that is, a state of limited competition in a particular market among a small number of producers). In each case, the students’ responses reflected four different levels of outcome or understanding. However, there was only mixed evidence for any changes in
outcome that could be attributed to the students’ having taken the foundation course. There was an overall shift in the direction of more sophisticated conceptions of oligopoly, and so the course did appear to have enhanced the students’ understanding of competition and its effects on the price, quality or choice of relevant products. In contrast, positive and negative changes were equally likely in their conceptions of price control and political power; in both cases, all four levels of outcome were exhibited, even in students who had successfully completed the foundation course. Taylor et al. concluded that the changes in levels of outcome did not show any consistent effect of having taken this course. Taylor et al. (1981b) obtained similar findings when they examined the students’ understanding of another key concept covered in the course, that of social class. Even so, the results replicated those obtained by Dahlgren (1975; Dahlgren and Marton 1978), and hence it would appear that Marton’s (1975) analysis of levels of outcome applies to student learning in both campus-based education and distance education.

At the second interview, the participants in this study were interviewed in depth about how they had been studying the materials in the blocks on ‘Production and allocation’ and ‘Work’ and in particular how they had gone about producing the essay assignments for the course which they had recently submitted. Morgan et al. (1982) analysed transcripts of these interviews to try and uncover significant aspects of how Open University students study. They were able to confirm a basic distinction between deep and surface approaches to studying, analogous to Marton and Säljö’s (1976a) distinction between deep-level and surface-level processing. Nevertheless, these approaches appeared to be manifested in ways that reflected an individual student’s motivation. On the one hand, students seemed to adopt a deep approach either in an intrinsic manner (that is, related to their interests) or in an extrinsic manner (that is, related to the demands of their assessment). On the other hand, students seemed to adopt a surface approach either as a passive response to an overwhelming situation or as an active strategy to achieve verbatim retention of the course material. Morgan et al. concluded that approaches to studying in distance-learning students were constrained by the conceptions of learning that they held. This idea had already been anticipated by Marton and his colleagues and is the main focus of the following chapter.

Concluding summary

• In experiments where students are asked to read and recall short academic texts, they show a limited number of different levels of outcome. These define a hierarchy or ‘outcome space’ in terms of their proximity to the author’s original conception of the relevant phenomenon.
• In these experiments, different participants also show two levels of processing, a deep level and a surface level, which are highly associated with the
quality of the subsequent outcome. The level of processing depends on the participants' level of interest in the material and the expected form of assessment and can be manipulated by appropriate instructions or prompts.

- When students are interviewed about their studies, they exhibit analogous levels of outcome in their understanding of key concepts and an analogous distinction between two approaches to studying, a deep approach and a surface approach. The use of a deep or surface approach seems to depend on the content, the context and the perceived demands of the learning task.

- The original findings concerning approaches to studying in higher education were obtained in experimental investigations carried out with campus-based students. However, they have been replicated in more naturalistic research with both campus-based and distance-learning students. Consequently, they do not appear to depend critically on the actual mode of course delivery.