

Thinking About Learning

The purpose of this book is to help you become the best learner you can be. Everything we know about learning suggests that failure to learn well is overwhelmingly the result of going about it in the wrong way. Your teachers will do their best to design classes that will help you. But what *you* bring to this situation is also very important.

In this first chapter, we examine the particular demands that learning at university places on you. We address:

- ideas about the nature of learning
- the impact of different approaches to learning
- critical thinking
- independent learning.

Ideas about the nature of learning

As we engage in any activity, we naturally form an idea about what we are doing. We continually fit new information and ideas into what we already know, thus creating meaning and understanding and the ability to act in new contexts. We also constantly test the value and usefulness of our understandings through action in the world. In turn, we create new meaning from the processes and outcomes of these actions. Amazingly, all of this meaning making is mostly done without us having to think about it. However, when we enter a new situation, it is especially important to become conscious of our learning process so that we can enhance it as a means of improving how we learn.

We are continually making sense of our world.

Think of an activity that shows our ability both to make sense of the world and to adjust to a new situation automatically. Think of some activity where we need to consciously consider how to approach a new task.

Thinking

You have been involved in learning for a long time. As a natural result of this, you will have formed an idea of what learning is. Your **conception (idea) of learning** has been a useful one. It has enabled you to graduate from high school or university and brought you to your present study program. In the following activity, we are asking you to think about what your idea of learning is.

Activity

Ideas about learning

Complete the following statement to show what learning means to you.

When I say that I have learned something, I mean that I

Which statement below is *nearest* to your idea of learning?

- a Learning is when I add to my knowledge.
- b Learning is when I have successfully memorised something.
- c Learning is when I know something and can use that knowledge in a new context.
- d Learning is when I have understood something (it makes sense to me).
- e Learning is when I understand things differently.
- f Learning is when I am changed as a person because of what I have learned.

Note: Adapted from an activity designed by M. Buckridge, personal communication, January 2006.

All of the statements above are typical understandings of learning. They have been listed as the six conceptions of learning by Marton, Dall'Alba and Beaty (1993, pp. 283–284):

- 1 Increasing one's knowledge
- 2 Memorising and reproducing
- 3 Applying
- 4 Understanding
- 5 Seeing something in a different way
- 6 Changing as a person.

There are two good reasons for becoming aware of what we think learning is about:

- what we think learning is, is closely linked to the strategies and approaches we use to learn
- by becoming aware of what we think, we can change our approaches if new tasks require a new kind of learning.

As you can see from Table 1.1, different learning strategies are usually associated with different ideas about learning.

Students with different conceptions of learning tend to use different strategies to learn.

Table 1.1 Different learning strategies associated with different conceptions of learning

Conception	Learning strategies
Learning means:	If you think about learning this way, these are the things you would probably do in order to learn:
1 Increasing my knowledge	<ul style="list-style-type: none"> • Make a note of something • Highlight it in a text book • Listen to something, or read it, without taking further action
2 Memorising and reproducing	<ul style="list-style-type: none"> • Develop a mnemonic (a rhyme, an association) • Make a list of similar things • Say it or write it over and over • Test yourself or get others to test you
3 Applying	<ul style="list-style-type: none"> • Practise applying it, initially in simple ways • Look for examples • Work on projects that require this new knowledge • Use formulae to solve problems or do calculations • Practise using the knowledge in short answers or essays
4 Understanding	<ul style="list-style-type: none"> • Think about the new knowledge actively in relation to what you already know • Consider how the new knowledge relates to what you know (is it similar or different?) • Write about it in your own words to clarify it for yourself • Break it into parts and work out how the parts connect with each other • Talk about it • Find additional information about it • Draw a concept map or mind map or other diagram connecting it with other related knowledge • Engage in debates • Look for ideas and information that might show it is wrong or inadequate
5 Seeing something in a different way	<ul style="list-style-type: none"> • Think actively about the implications in relation to your own experience • Find out about what this means for others • Consider whether this makes a difference to everyday taken-for-granted ways of thinking • Look for how this changes other things you know
6 Changing as a person	<ul style="list-style-type: none"> • Change your ways of behaving and/or understanding because of what you now know • See yourself and your relationship to others differently

Note: Adapted from a table developed by M. Buckridge, personal communication, January 2006.

Activity

Strategies involved in learning

- 1 Examine Table 1.1. Tick all the strategies you have ever used for learning. (If you don't understand what is meant by a particular activity, do not tick it, as it means you have not done it.)
- 2 Go back to your initial conception of learning. Match it up with the main strategies associated with it.
 - a Have you ticked all these strategies?
 - b Have you ticked other strategies not included in your conception of learning?
 - c Consider all the strategies you have ticked. Which ones do you find *most useful* for learning? Underline these.
 - d Are the underlined strategies associated with your conception of learning?
 - e Are there any strategies you have *never* used?
- 3 Discuss the following questions with the student sitting next to you:
 - a Why might there be a difference between one person's learning conception and the strategies in which he or she has been engaged while learning?
 - b Why might there be a difference in learning conceptions between people?
- 4 Tell the tutorial the main ideas you discovered about learning conceptions and learning strategies.

You have probably noticed that there is some relationship between learning conception and the strategies employed in order to learn. One reason for the close association is probably that both are linked to the motivation or intention a student has in learning.

Students whose main intention is just to pass a course tend to employ strategies that (in their own estimation) allow them to accumulate as much information as possible in the shortest time. They use the strategies associated with learning conceptions 1 and 2, and perhaps also 3. Their general aim is to reproduce the content in the course.

On the other hand, students whose intention to learn is based on their own interest in the content of a course favour those strategies that enhance understanding. They are likely to use strategies associated with the learning conceptions 4, 5 and 6. Their overall aim is to find meaning.

Intention shapes how we learn.

Thinking

Are your learning strategies linked to your aim in studying? Think of particular courses.

Approaches to learning

In order to succeed at university, students need to upgrade their approaches to learning. Marton and Saljo (1984) developed a **theory** of learning, and named two broad approaches: surface and deep. These describe patterns in the intention the student has in learning and the strategies employed as a means of fulfilling that intention. The aim of university education is to help students reach a deep approach to learning.

Students with a **surface approach to learning** are not interested in the content, but in some extrinsic factor (outside of the task). They may, for example, be aiming just to pass in order to obtain employment, or they may be studying because their parents expect it. As a result of a lack of interest and motivation, these students do not aim to understand the content, but to reproduce it. They learn as if they were filing information in a computer. Each new file is given a name and a place. However, the files are not linked. Such students also have a poor search function. While they can easily retrieve a particular file, they find it difficult or impossible to think about ideas that occur in different files.

Some students consistently employ a surface approach in their learning. However, most students act in a much more strategic manner, using it only occasionally, when the task demands it.

A student with a surface approach to learning aims to learn by accumulating separate items of information.

Thinking about a surface approach to learning

- 1 What happens when you ask a person who has a surface approach to learning *why* something occurs? Why do you get this response?
- 2 Can you think of anything you have learned with a surface approach? How did you learn it?
- 3 How long do you find you can retain (keep) information you have learned with a surface approach?

Activity

Students who have a **deep approach to learning** are quite the opposite. Such students have an intrinsic (linked to the task itself) motivation or intention. They want to find meaning in the content by:

- looking for connections between ideas
- looking at the way ideas and information are organised
- examining how their new knowledge fits in with what they already know
- critically assessing ideas and information.

A student with a deep approach to learning aims to create meaning by emphasising connections.

The term deep approach is usually reserved for speaking about students' intentions and strategies within an educational context. However, to reveal the importance of the deep approach in creating meaning, understanding and enjoyment, it is useful to think of it in terms of learning outside of an educational setting.

A student with a deep approach to learning is like a well-informed spectator at a sporting event. Such a spectator not only recognises each player, but also notices how he or she adds to or detracts from the game as a whole; and assesses what is happening in the game in terms of what has occurred in other games. These skills enable the spectator to understand what is so exciting, interesting or poor about the particular event being watched. A student needs to employ these same skills when learning at university.

Activity

Recognising when we have a deep approach to knowledge

- 1 Find someone else in the tutorial who shares a similar interest to you (such as football, cricket, soccer, table tennis, gymnastics, heavy metal music, travel, or surfing).
- 2 Take one particular instance (such as a particular player, band or beach). Describe what makes it memorable (or important).
- 3 Review with your partner how you described it:
 - a Did you make *connections* between aspects of the person or thing you described?
 - b Did you make *connections* to other similar persons or things?
 - c Did you make some judgment of the person or thing?
- 4 Do you consider you have a deep approach to learning about the topic you have discussed?

Whether a student has the desire or intention to learn in a surface or deep manner depends upon both the student and his or her educational environment. Clearly students have certain preferences for how they learn. The educational setting also encourages students to take a particular approach to knowledge. If a course is structured to provide a vast quantity of information, and if the assessment is aimed at testing how well students can memorise, then students are led into taking a surface approach to their learning. On the other hand, if a course aims to show how ideas and information are connected, and if the assessment tests and encourages students to show how ideas are linked, then students are encouraged to approach learning in a deep manner.

Every university course aims, to some extent, to encourage deep learning. While many courses require some memorising, this is always expected to be carried out within the context of a general understanding of the content.

All university courses require a deep approach to learning.

Although there is much variation in how particular courses are presented, the underlying aim is to encourage deep learning by:

- leading students to see how ideas and information are linked
- encouraging students to become curious and interested in the content
- enabling students to participate in discussion on course topics
- developing students' ability to display their knowledge of the course through assessment that tests not just knowledge of information and ideas, but also how students have thought about and integrated (put together) these.

Thinking about past experience

Find someone who has come from the same country or the same kind of schooling as yourself.

- 1 Together, examine the bullet-point list of ways that a university uses to encourage deep learning.
- 2 Think of how you learned previously (for example, in high school, or in the university in your home country). Were you encouraged to engage in deep learning? Explain your answer.

Activity

It is important to reassess our conception of learning as we enter new contexts. In particular, it is necessary to give thoughtful consideration to what kind of learning is expected at university. Domestic and overseas students who have succeeded at school by focusing on memorising separate pieces of information will find they have to transform how they learn in order to be successful at university. Moreover, all students, no matter what their preference is for an approach to learning, need to upgrade their learning skills to cope with the more demanding context at university.

Specific features of learning at university

Critical thinking

Part of the deep approach to learning is the ability to critically assess ideas and information. Indeed, **critical thinking** is one of the most highly prized qualities at university. Although there is debate about its meaning, it can be seen as involving:

- the ability to judge the credibility of a claim and the adequacy of an argument
- the ability to recognise and judge the effect of the social and/or power context on the production and use of knowledge.

Critical thinking traditionally involves considering the credibility of claims and the adequacy of arguments.

The traditional interpretation of critical thinking stresses the skills required in judging the credibility of a claim and the adequacy of an argument. It is based on the belief that claims may not be well supported by evidence, and arguments may not be well made. It involves (Facione, 1990, pp. 12–16) skills in:

- interpretation (finding the meaning of a claim or argument)
- analysis (breaking the argument into parts in order to see the relationship between parts and to the argument as a whole; and recognising assumptions)
- evaluation (judging the credibility of each claim and the degree of confidence that a person could have in the argument as a whole)
- inference (identifying ways to produce evidence in support of a claim; considering opposing views and formulating one's own view)
- explanation (providing reasons for your own conclusions)
- self-examination (reflecting about your own processes of thinking).

Probably in high school or in ESL classes you have engaged in critical thinking in relation to non-academic texts such as news items or political speeches. These are often constructed as arguments in the form of a series of claims leading to, or explaining, a conclusion. They are often adversarial as they are constructed as an argument made against another point of view. They are also likely to be emotive, appealing to the reader's feelings rather than being addressed to their thinking ability.

Activity

Critical thinking in relation to a non-academic text

Read the following text taken directly from the World Nuclear Association website <www.world-nuclear.org/education/intro.htm>:

Nuclear power produces wastes which are contained and managed ... The main wastes produced by 'burning' uranium in a nuclear reactor are very hot and radioactive, placing them among the most unpleasant wastes from modern industry. However, these 'high-level' nuclear wastes are modest [i.e. small] in quantity. Handling and storing them safely is quite straightforward, they simply need to be shielded from human exposure, and cooled. Shielding can be by water, concrete, steel or other dense material, cooling is by air or water.

About 30 kg of spent fuel [waste] arises each year in generating enough electricity for about 1000 people in the western world ...

One characteristic of all radioactive wastes which distinguishes them from the very [much] larger amount of other industrial wastes is that their radioactivity progressively decays and diminishes.

- 1 Interpretation:
 - a Make sure you have understood the text.
 - b The word 'simply' [sentence 4] is emotive. Why does the author use it?
- 2 Analysis:
 - a There are two statements (or claims) made to support the conclusion that 'nuclear power produces wastes which are contained and managed'. Underline these.
 - b What is the assumption that is made, but not written, in the claim 'they simply need to be shielded from human exposure'?
- 3 Evaluation:
 - a What evidence is produced to show that: 'these "high-level" nuclear wastes are modest in quantity'?
 - b Is this sufficient evidence to draw the conclusion that such wastes can be 'contained and managed'? Give reasons for your answer.
- 4 Inference:

Describe what evidence you would look for if you wanted to show that nuclear wastes are effectively 'shielded from human exposure'?
- 5 Explanation:

Explain why you think this is a good argument for the safety of nuclear waste, or a weak argument.

Although the meaning of 'critical thinking' at university is related to the general idea outlined above, it is not the same. The material at university is complex and non-emotive, quite different from, for example, news items or political speeches. More importantly, the concept of argument is not the same in academic and non-academic contexts. At university, an **argument** is generally not made to support just one side of a debate, as for example, in politics; nor does it merely outline advantages and/or disadvantages of some idea. Typically, it is not adversarial. An argument in a university context generally means the stating and supporting of a position in such a way that an understanding of a topic is displayed. It often also means the presentation of new knowledge with evidence to support it. As well, university work has its own rigorous styles for the presentation of arguments and evidence. Hence, the meaning of 'critical thinking' at university is quite specific to that context.

This book teaches you how to engage in critical thinking at university in relation to:

- understanding (interpreting), analysing and evaluating what you listen to (Chapter 3) and what you read (Chapter 4)
- recognising, creating and presenting academic arguments (Chapter 6 especially, but also Chapters 7, 8, 12 and 13)

University work has its own style of critical thinking.

- recognising and using academic evidence (Chapters 5 and 6)
- evaluating the status of claims within research (Chapters 12 and 13)
- assessing the quality of inference (the support for conclusions) in research reports (Chapters 12 and 13).

Critical thinking includes considering the social and power context of knowledge.

The second way in which critical thinking can be done is to consider the social and power context in which knowledge occurs. The traditional form of critical thinking considers some of these aspects of knowledge, although usually not in any depth. By using a separate category for the social and power context it allows a greater focus to be given to these features. Consider:

- who has produced the knowledge
- who has funded (paid for) the research
- what the impact of the knowledge is.

Knowledge is always produced in a social and power context, and this may lead to problems in credibility. For example, a company or government or institution that performs its own research may create a biased result. As well, any knowledge produced within a social context that sees one group of people as not being equal to those who are researching them may be inadequate or even incorrect. This can be seen in the work of some Western university academics who made misleading claims about Aboriginal people or international students, just because they were working within a culture that holds assumptions about these people.

It is equally important to consider the funding for the research. For example, if a pharmaceutical company funds (pays for) someone to conduct research into one of the company's own drugs, it is reasonable to consider the results may be biased.

A deeper level of critique considers not just the social and power context of how knowledge is produced, but also the effect of the way knowledge is used. Some knowledge can be harmful. It is thus wise to ask a series of questions about knowledge in terms of its effect and use. Burbules and Berk (1999) advocated asking questions such as:

- How does this research benefit some people and not others?
- How is the knowledge generated by the research being used?
- Who is using the knowledge generated by the research?

The process may lead to a more complete analysis of the research on which the knowledge is based as a means of judging its credibility. It may leave the questioner with a moral or ethical decision about the best way to act.

Critical thinking is a skill that is developed over a long period of time and through constant practice and development. The aim is to produce an attitude to knowledge and skills in thinking about it that you can use in your work and your life.

Activity

Critical thinking at university

Here is an academic argument. It is an extract from Wong (2004, p. 154).

One of the issues that relates to Asian international students' perceptions about the quality of higher education is with regards to the difficulties and problems they face while studying in an Australian university ... interviews were carried out with nine Asian international students to gain insights into their difficulties and learning experiences. Based on these interviews, the three main difficulties highlighted by Asian international students are: different learning styles, cultural barriers and language problems ...

- 1 How is Wong's (2004) argument different from the argument given in Activity: Critical thinking in a non-academic text? Think of as many differences as you can.
- 2 What type of evidence does Wong use to support his argument?
- 3 What further evidence do you think Wong supplies about the types of students who were interviewed?
- 4 Do you think that it helps the credibility of the argument that the research was conducted by a person who is likely to be of Asian origin (Wong)? Explain your answer.

Independent learning

Learning well at university means being able to learn independently. Teaching and assessment are set up to place the responsibility of learning on you. Most of the time in each week is 'free', as lectures and tutorials only take up a small number of hours. Teachers at university are not as likely as high school teachers are to check regularly on how much you have learned, or even if you have understood. Most significantly, perhaps, in many subjects, you have to learn by producing your own knowledge beyond that presented in lectures in textbooks. Your assignments, which can be a significant percentage of your final mark, usually require that you find information, organise it, and produce an outcome entirely on your own or within a group of your fellow students.

Independent learning skills are essential for success at university. They also will enable you to deal intelligently with new situations as they arise in your future work and life.

Independent learning means to take responsibility for your own learning. It requires that you:

- develop the academic skills needed for independent learning
- organise your time well
- reflect about what you know and how you learn
- seek help when required.

Independent learning means taking responsibility for your own learning.

Academic skills are independent learning skills.

Developing academic skills for independent learning

All academic skills are built around the concept that when you learn you do not just memorise what is given to you in lectures and textbooks. You create your own learning. As Biggs (1991, p. 2) remarked, 'it is the learner who constructs knowledge'. This occurs not just in the processes of understanding the content of lectures, tutorials and textbooks, but also in finding other information and organising it to display your own understanding of a topic. This book teaches you the extensive independent learning skills involved in most university work:

- how to learn in a lecture and tutorial context (Chapter 3)
- how to find ideas and information by reading beyond the textbook (Chapter 4)
- how to organise your own thinking about a topic area through the production of an argument (Chapter 6)
- how to present your knowledge in a range of formats that show your own assessment and understanding (Chapters 5, 6, 7, 8 and 10)
- how to learn within a group context (Chapter 9)
- how to do your own research as a means of producing new knowledge (Chapters 12 and 13).

Organising time

It is crucial to organise time while studying at university because of the demanding context in which you are learning. Some work is regular, so is easy to plan for. Each week you need to attend and prepare for lectures and tutorials and learn their content. However, the greatest part of university work is irregular, with significant peaks occurring around mid semester and at the end of semester. This requires good planning. For example, you must estimate times for the production of assignments and learning for examinations. You have to engage in the difficult task of taking into account all the factors involved. In the case of assignments, it is essential to plan for accessing sources, reading, production, checking, seeking help, printing and travel. For examinations, you need to consider the time required for the learning of complex material, solving problems, seeking help and practising answers.

Allocate possibly 30 or more hours in total for each assignment. You will need additional time if your reading speed is slow, or English is not your first language, or the assignment is particularly long, or it is the first time you are doing such an assignment, or if it is a group assignment. For examinations, it is best to set up regular revision each week, with additional intense learning time in the days or weeks immediately before the examination.

Further complications that require careful planning are caused by paid work and other life commitments. Most students are not only studying at university but are also engaged in paid employment. The combination can be difficult

to manage. Indeed, McInnis and Hartley (2002, p. 37) found 41 per cent of students engaged in paid work reported that it 'gets in the way of their academic study'. As well, all students need to spend time attending to their own lives, ensuring they are adequately cared for and have enjoyment and exercise. Some students also have family responsibilities. Planning will help you to maintain, to a certain extent, a healthy balance of all your needs.

In general, a full-time university load should take up a total of approximately 45 hours per week, including contact hours. However, because of the irregular work load at university you may do less in some weeks and much more in others. Be prepared to be flexible.

To organise your time, try the following:

- choose lecture and tutorial times that fit in with your work and other commitments
- ensure paid work commitments are doable for the whole of the semester (not just in the first weeks)
- allocate time for your own life (such as housework, leisure, sport and socialising)
- allocate some time each week for the regular work at university (attendance at and preparation for lectures and tutorials and learning of content)
- map out on a semester timetable the due date for all set assignments and examinations, and other forms of assessment
- select times that suit you for any assignment where you have a choice in time (it is usually best to choose a time early in the semester)
- allocate times for the preparation of assignments and examination revision
- check if it is possible to fit in the preparation times for all assignments. If not, strategically move your preparation times for some assignments to an earlier, less busy period in your semester (for example, use the first weeks of a semester, or the mid-semester break)
- use mid-semester break week as an intense study period
- use the 'study break' (examination revision period) at the end of the semester as an intense study period
- continually monitor how your timetable is going and make changes where necessary.

When planning, be flexible and maximise the use of 'free' time in a semester.

Using reflection

One of the keys to successful independent learning is the ability to reflect on both the knowledge that you are learning and the processes involved. **Reflection** is a part of learning intelligently (see Chapter 7). The first step in reflection is to stop and consciously think about what is happening. You may discover areas of knowledge that need attention; for example, points you do not understand,

Reflect on what you are learning and how learning occurs.

formulas you do not know how to use or skills that you do not have; or you may be satisfied with what you have learned. As well, you may notice that your learning processes are not as good as they could be; or perhaps you assess them as efficient. The next step in reflection is to plan ways to improve your knowledge, understanding and skills, and enhance your learning processes; or to maintain and strengthen what is working well. Finally, you need to try out your plans. Obviously, reflection is a continual process. The aim is to deepen your learning and to make it more efficient.

Seeking help

Be aware of when you need help and of what support is available.

Universities realise that independent learning places great demands on students both academically and practically, so they provide a wide range of support. In order to make use of this you have to be aware of both your need for help and how to access it. Good time-management plans and reflection will allow you to notice when support is required.

You can receive free help with your academic work by:

- meeting your tutor or lecturer during their consultation times
- emailing your tutor to request a meeting time
- attending workshops (usually organised through the library) to learn skills in any aspect of the presentation of an assignment or on how to use computer software such as PowerPoint or EndNote
- making an appointment with a learning adviser or academic adviser for help with assessments or study
- reading the online documents that explain how to study at university, work on assignments or use computer software
- using the online training tutorials on how to study at university, work on assignments or use computer software
- using the library help desk or other facility (email or chat or phone) for help with searching for sources
- using the services provided for developing English skills and editing assignments
- using other services, such as PALs (peer-assisted learning).

Students also find that other problems and challenges in their life can create difficulties for their academic work. The university offers support in many of these non-academic areas. Students can receive free help from a large range of services, including:

- Indigenous student units
- disability support services
- financial support
- accommodation support

- career and employment support
- counselling (for help with personal issues and also study concerns)
- health (nurses and doctors).

As can be seen, quite extensive help is available. Two problems can occur. The first is that you are not aware of your need for help. The second is that you do not know where to find it. Make it a task for the first week of your first semester to find all the support that is available to you.

Be prepared: Find all the sources of help early in your first semester.

Finding the academic and general support available at your university

- 1 In groups of two or three students, find all the support available at your university. List:
 - a What is available
 - b Where to find it (such as in the library or online)
 - c How to access it (for example, how to make an appointment, or the phone number or email address to use).

Activity

Go to our website <www.oup.com.au/orc/turner2e> for more activities on the skills covered in this chapter.

Activity

SUMMARY

In this chapter we have explored the nature of learning at university. It calls for a deep approach to knowledge, and the ability to think critically and learn independently. By becoming more aware of what we think learning is, of what kind of learning is required and how learning occurs, we have the power to alter and develop how we learn, and so increase our chances of success.

This book has been written to help you learn at university. It provides you with the essential skills in listening, reading, writing, speaking and researching that are required in undertaking most university courses. In each chapter we show you, in a step-by-step manner, the basic skills needed to complete each learning task. More importantly, we consistently encourage and support you to stretch your skills in learning. Our aim is to help you become the best learner that you can be, for success both at university and in life.

GLOSSARY

argument the statement of a position together with the evidence for each point.

It is constructed in such a way that an understanding of a topic is displayed.

conception of learning an idea of what we mean by learning.

critical thinking the consideration of the credibility of claims and the adequacy of arguments, as well as of the social and power contexts in which the knowledge is produced and used.

deep approach to learning the approach to learning where the learner seeks meaning by looking for connections and structures.

independent learning the taking on of the responsibility for learning by the learner.

reflection the technique that involves thinking about the effectiveness of processes and the adequacy of outcomes, and planning and acting as a means of improving the situation.

surface approach to learning the approach by which the learner seeks to remember information as a series of discrete or isolated facts.

theory a description and/or explanation of what occurs, which is supported by evidence and usually produced through a careful process of research.