

[Note: A revised version of this discussion paper has been published as Healey, M. & Jenkins, A. (2000) Kolb's Experiential Learning Theory and Its Application in Geography in Higher Education, *Journal of Geography*, 99, pp.185-195]

Learning cycles and learning styles: Kolb's experiential learning theory and its application in geography in higher education

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ACKNOWLEDGEMENTS

Many colleagues helped in the preparation of this article by pointing out useful references. We are particularly grateful to John Bradbeer and David Robotham for their comments on an earlier draft of the article and for David's permission to quote from an unpublished paper.

ABSTRACT

Kolb's experiential learning theory is one of the best known educational theories in higher education, yet it appears to be hardly used by geographers outside the UK. The theory presents a way of structuring a session or a whole course using a learning cycle. The different stages of the cycle are associated with distinct learning styles. Individuals differ in their preferred learning styles and recognizing this is the first stage in raising students' awareness of the alternative approaches possible. The article presents some case studies of ways in which the theory can be applied in geography at university and K-12 levels.

Key Words: *Learning cycles, learning styles, Kolb's experiential learning theory, learning and teaching, geography in higher education*

"learning is a process as well as an outcome"

(Zuber-Skerritt 1992a, 103)

"an understanding of learning styles is a necessary component in the groundwork of an emancipatory pedagogy"

(Fielding 1994, 394)

INTRODUCTION

David Kolb's experiential learning theory is one of the best known educational theories in higher

education (Kolb and Fry 1975, Kolb 1984) and is frequently cited in the literature on geography in higher education in the UK. However, judging from the published literature and the responses we received to an inquiry we put out on the International Geographical Union Commission on Geographic Education (IGU-CGE) listserv, the theory appears to be less well known among geographers in North America and elsewhere. This is somewhat surprising given that Kolb is an American organisational psychologist, whose work has attracted a lot of attention in North America, particularly in the education, management and psychology literature (see, for example, the twelve page bibliography at the end of Smith and Kolb (1986)). Since the publication of his seminal *Experiential Learning* in 1984, Kolb's ideas have had an increasing impact on the work of teachers and trainers, particularly those involved with students of 16 years and upwards (Fielding 1994; Robotham 1995).

Kolb is one of the most influential researchers in the field because he provides a firm theoretical base, which is lacking in the work of many other writers (Holman *et al.* 1997). According to Kolb (1984, 38) "*Learning is the process whereby knowledge is created through the transformation of experience*" (author's italics). The theory presents a way of structuring and sequencing the curriculum and indicates, in particular how a session, or a whole course, may be taught to improve student learning. It suggests that learning is *cyclical*, involving four stages, sometimes referred to as sensing/feeling, watching/reflecting, thinking, and doing (Fielding 1994). An important feature of the theory is that the different stages are associated with distinct *learning styles*. Individuals differ in their preferred learning styles and recognizing this is the first stage in raising students' awareness of the alternative approaches possible and helping them to become more flexible in meeting the varied demands of learning situations (Gibbs 1988). Teachers also need to recognize their own learning styles as a basis for the development of effective teaching and learning strategies. Learning may suffer where there is marked mismatch between the style of the learner and the approach of the teacher (Fielding 1994).

With the expansion of higher education in many countries and the increasing emphasis on access, diversity, retention rates and life-long learning there is good reason to explore the nature of different learning styles. Indeed given the increased recognition within geography of recognizing and valuing gender and cultural diversity, the theory is particularly relevant as "it is rooted in a theory of learning that affirms all major aspects of active learning, usefully accounting for an array of individual and ... culturally derived ... differences" (Anderson and Adams 1992, 25).

The theory appears to offer a valid and plausible framework to many people and it is often the main or only theory referred to in many papers and books on experiential learning (Henry 1989) and geography in higher education (at least in the UK). Some of the appeal of the theory is that it provides a rationale for a variety of learning methods, including independent learning, learning by doing, work-based learning and problem-based learning, which have recently received much attention within higher education (e.g. Gibbs 1992, Henry 1989) and geography (e.g. Gold *et al.* 1991, Gravestock and Healey 1998). Moreover, the theory has a wide range of applications in geography, including helping students to become self-aware (e.g. Bradbeer 1999, *Geography for the New Undergraduate*, 1999); assisting staff to become reflective teachers (e.g. Burkill *et al.* 2000); identifying students' learning styles to select mixed groups (e.g. Hertzog and Lieble 1996); developing and teaching key skills (e.g. Chalkley and Harwood 1998, Haigh and Kilmartin 1999); designing group project work (e.g. Brown 1999, Mellor 1991); deciding how resource-based learning and information and communications technology (e.g. Healey 1998, Shepherd 1998) can support the learning process in geography; and developing the overall geography curriculum (e.g. Jenkins 1998).

In summary we believe that the particular strengths of Kolb's theory are that it:

- provides ready pointers to application;
- directs us to ensure that a range of teaching methods are used in a course; provides a theoretical rationale for what many of us already do as teachers and then points us as to how to improve on

- that practice (in particular ensuring effective links between theory and application);
- makes explicit the importance of encouraging our students to reflect and providing them with feedback to reinforce their learning;
- support us in developing a diverse aware classroom;
- makes us aware of the way in which different learning styles have to be combined for effective learning;
- can be readily applied to all areas of the discipline, from a GIS laboratory exercise to a feminist analysis of a landscape;
- can be used by individuals and course teams; and
- can be applied widely from a single classroom session to a whole degree programme.

In this article we have two main aims. First, we outline the main features of Kolb's experiential learning theory. Secondly, we describe and assess some of the range of ways in which the theory has been, or could be, applied in geography in higher education. The ideas we discuss are equally applicable for learning about geography at K-12 level.

KOLB'S EXPERIENTIAL LEARNING THEORY

Kolb (1984), building on earlier work by Dewey and Lewin, provides "a comprehensive theory which offers the foundation for an approach to education and learning as a lifelong process and which is soundly based in intellectual traditions of philosophy and cognitive and social psychology" (Zuber-Skerritt 1992a, 98). Kolb's model can be used as a description of the learning process in general (Henry 1989), but his emphasis on reflection places it firmly in the experience-based learning camp. The importance of reflection is emphasised by Boreham (1987, 89), who notes that "the term 'learning from experience' really means learning from *reflection on* experience". A similar point is made by Boud *et al.* (1985), who coined a slogan in the title of their book *Reflection: turning experience into learning*. Without reflection on experience students are in danger that they may keep making the same mistakes.

The core of Kolb's four-stage model is a simple description of the learning cycle which shows how experience is translated through reflection into concepts, which in turn are used as guides for active experimentation and the choice of new experiences. Kolb refers to these four stages as: *concrete experience* (CE), *reflective observation* (RO), *abstract conceptualization* (AC) and *active experimentation* (AE). They follow each other in a cycle ([Figure 1](#)). The cycle may be entered at any point, but the stages should be followed in sequence. The learning cycle thus provides feedback, which is the basis for new action and evaluation of the consequences of that action. Learners should go through the cycle several times, so it may best be thought of as a spiral of cycles. In brief Kolb conceptualizes the process of action research as "a spiral of action and research consisting of four major moments: *plan, act, observe* and *reflect*" (Zuber-Skerritt 1992b, 11). Race (1993) has proposed a variant on Kolb's model also using more everyday language. He refers to the stages as: *wanting, doing, feedback* and *digesting* and has been used by one of the authors to explore the nature of the learning process with several groups of geography students and staff (Healey 1998).

As its name indicates, the 'experiential learning theory' affirms the importance of experiential activities such as fieldwork and laboratory sessions, however it does not prioritise those forms of learning. What is important is to systematically take the learner around each stage of the cycle, ensuring that effective links are made between each stage. The model offers an explicit critique of those highly theoretical programmes or courses that do not value the prior experience or knowledge of students. It is similarly critical of those experiential activities (for example, certain field courses, simulations and games) where students receive little preparation for the experience and/or no effective chance to reflect upon the experience and relate it to their wider reading or the more explicitly theoretical aspects of the course (Jenkins 1997).

There are two primary axes that lie behind the cycle: an 'abstract-concrete' dimension (AC-CE) and an 'active-reflective' (AE-RO) dimension. These reflect the two main dimensions to the learning process which correspond to the two major different ways by which we learn: the first is how we perceive or grasp new information or experience, and the second is how we process or transform what we perceive (Smith and Kolb 1986). The way we perceive or grasp experience ranges from immersing ourselves in the experience using our senses and feelings in a 'concrete' way to thinking 'abstractly' using logic and reason. Having perceived the experience we need to understand it through transforming it. Here individuals differ in their predilection for doing (active experimentation) and watching (reflective observation) (Fielding 1994). When plotted graphically at right angles the two axes give four different clusters, which may be used both to describe the preferred learning styles of students ([Figure 2](#)) and to identify disciplinary groupings ([Figure 3](#)).

Kolb (1984) suggests that students develop a preference for learning in a particular way. The preferred style reflects a tendency rather than an absolute and students may adopt different learning styles in different situations, but they tend to favour some learning behaviours in preference to others. He identifies four learning styles ([Figure 2](#)), each of which is associated with a different way of solving problems:

1. *Divergers* - view situations from many perspectives and rely heavily upon brainstorming and generation of ideas.
2. *Assimilators* - use inductive reasoning and have the ability to create theoretical models.
3. *Convergers* - rely heavily on hypothetical-deductive reasoning.
4. *Accommodators* - carry out plans and experiments and adapt to immediate circumstances.

The particular choice of learning style reflects the individual's abilities, environment and learning history (Nulty and Barrett 1996). According to Kolb, learners learn better when the subject matter is presented in a style consistent with their preferred learning style ([Table 1](#)).

Left to their own devices students tend to do what is easiest for them, which is to use their own learning style. Similarly individual teachers may teach in ways that reflect their own learning styles and implicitly assume that all their students learn that way. However, there is evidence that learning (or at least retention) is enhanced as more of the learning stages are used (Stice 1987). This confirms Kolb's argument that teachers need to encourage students to engage with all four stages of the learning cycle. Indeed Kolb (1984) suggests that there are potential long term benefits where there is an intentional mismatch between learning style and instructional style on the grounds that:

"The aim is to make the student self-renewing and self-directed; to focus on integrative development where the person is highly developed in each of the four learning modes; active, reflective, abstract and concrete. Here, the student is taught to experience the tension and conflict among these orientations, for it is from these tensions that creativity springs."

Kolb (1976) produced a learning style inventory (LSI 1976) that enables the identification of students' preferred learning styles. An updated version (LSI 1985) was produced a decade later (Kolb 1985). Kolb's LSI 1985 has been found to be an instrument of high reliability and there is also some evidence for validity, although variation has been found between disciplines (Willcoxson and Prosser 1996). The LSI 1985 requires the ranking of 48 short sentences about learning (comprising twelve sets of four response alternatives), which can be completed and self-scored in 10 to 15 minutes.¹ The subject obtains scores for each of the four learning stages: CE, RO, AC and AE. The AE-RO (active-reflective) score gives a value for plotting on the x-axis, while the AC-CE score gives a value for the y-axis. The resulting single point identifies the subject as a *diverger*, an *assimilator*, a *converger*, or an *accommodator* ([Figure](#)

2). Other researchers have also produced their own learning style inventories. For example, Honey and Mumford (1986) have adapted Kolb's inventory and used simpler language: *pragmatist*, *reflector*, *theorist* and *activist*. They also give advice on how to make the best use of one's learning style, how to improve each style and how to choose learning activities to suit one's style.

Results using Kolb's (1976) LSI 1976 have shown some measure of agreement about clusters of disciplines based on the learning styles predominant among their students (Kolb 1994). More agreement is apparent if disciplines are subsumed under descriptions such as social sciences or humanities (Willcoxson and Prosser 1996). Although it should be noted that in reporting a numerical majority as the predominant learning style it obscures the range of styles found. Moreover, the groupings are not absolutely precise, because different modes of discourse and forms of teaching may be adopted which are non-traditional to that discipline (Nulty and Barrett 1996). There is also evidence that learning styles are related to the stage the students are in their studies. Nulty and Barrett (1986) found that students in the first third of their studies adopted learning styles that were similar to each other irrespective of main disciplines. However, the learning styles of students in the final third of their studies tended to be related to the discipline that had formed the primary focus of their studies.

The position of geography varies between studies. Kolb (1984) found that American students studying geography favoured an assimilative learning style, while Nulty and Barrett (1996) report on an Australian study which found that geography students were predominantly accommodators (Figure 3). Bradbeer (1999), in commenting on these differences, suggests that in all probability the British picture for geography would be closer to the Australian than the American. However, what is not known is the extent to which the students analysed were specialising in human or physical geography. It might be expected that the physical geographers would have similar learning styles to the earth and natural scientists (predominantly assimilators in Figure 3), while human geographers would have greater similarities with students in the social sciences (predominantly accommodators in Figure 3). At first this seems at variance with the findings in the United States, where geography is predominantly human geography. However, in the late 1970s and early 1980s applying a scientific method was the predominant mode of explanation in human geography. Today with the plurality of approaches that exist in geography, the need for geography students to have a flexible approach to learning has probably never been stronger.

APPLYING THE THEORY TO GEOGRAPHY TEACHING

As geography teachers when we first hear the central ideas of Kolb's theory it may well have an intuitive appeal for it connects to, even legitimatises, what we already do as teachers. As researchers we may note that it in part parallels the (scientific) research method of observation, hypothesis building, theory, and testing. For geographers it gives a theoretical rationale for the importance of fieldwork, which many of us would agree with Sauer (1956) should be central to the geography curriculum. It can also be readily applied to our teaching, whether we are teaching the practical aspects of GIS or the theoretical ideas of feminism. But like all powerful theories it takes us beyond what we already know, and transforms how we conceive and how we act in our role as geography teachers. It is important to emphasise that though the theory does emphasise the importance of learning from experience, through experiential activities, such as fieldwork or using a computer-based learning package, it is just as relevant to the planning of a lecture or seminar-based course or session.

The central practical applications of the theory include:

- how a session, or a whole course, can be developed in a way that takes students systematically around the whole cycle; and
- a consideration of the teaching methods that are particularly valuable at particular stages of the

cycle.

Gibbs (1988) usefully links Kolb's cycle to educational practice by relating teaching methods to four common experiential methods placed within the sequence of Kolb's model: planning for experience, increasing awareness, reviewing and reflecting on experience, and providing substitute experiences (Figure 4). For example, under 'planning for experience' (a stage spanning the conceptualisation and experimentation stages), he includes action plans and learning contracts. Under 'reviewing and reflecting on experience' (which spans the experience and reflection stages), he suggests structured discussions, peer appraisal and self-assessment. Svinicki and Dixon (1994) provide a not dissimilar list of instructional activities that may support different aspects of the learning cycle.

In setting out the pedagogic implications of Kolb's theory, Gibbs (1988, 9) argues:

"It is not enough just to do, and neither is it enough just to think. Nor is it enough simply to do and think. Learning from experience must involve linking the doing and the thinking."

We demonstrate this by showing how as geographers we could systematically take students around the cycle. Though based on real courses the following descriptions are 'factions' that demonstrate more clearly the practical applications of the theory.

Using the Theory to Teach How Theories of Gender Explain Aspects of Suburbia

In an opening lecture

Stage 1 (CE): Students individually read brief excerpts from three or four novels that describe aspects of living in suburbia. Effectively this is giving them a 'substitute' 'concrete experience'.

Stage 2 (RO): In groups of 3-4, students consider key questions, such as does it appear that these experiences were differently shaped by gender? Students here are being required to reflect back on their reading and are being primed for the next theoretical stage.

Stage 3 (AC): 15-minute lecture setting out key ideas in how contrasting gender theorists have analysed the suburban landscape. This is the abstract conceptualisation phase.

Stage 4 (AE): Students are directed to the section of the course guide concerned with assessment, and the course reader which includes articles that exemplify contrasting theoretical positions on gender and landscape that were outlined in the last lecture. Each student group of 3-4 is allocated one of these theoretical positions and directed to read and present at the next class session a poster that illustrates how that theory would 'explain' aspects of suburbia. In this stage students are actively experimenting with the theoretical position(s).

In the next class session

Stage 5 (CE): Students display their poster and view the posters from other groups (experience).

Stage 6 (RO): In small groups students discuss questions that push them to reflect on the posters and the theoretical positions presented. At this stage the questions may also be directing them to look for links between, and inconsistencies in, the theories. Though the teacher leads this stage, the students are doing most of the talking and the thinking (reflection).

Stage 7 (AC): In this key stage a teacher-led plenary session draws out the different theoretical positions and what they reveal about suburbia (conceptualisation).

Stage 8 (AE): Students individually (or in groups) write an analysis of a novel (or a film) from one of the theoretical positions analysed so far (experimentation).

At this point the course moves on to another topic, where Kolb's theory may be used again to structure the learning experience. The hope, of course, is that students will at times reflect back on the course and use the method of analysis (AE) the next time they drive through suburbia (CE). They might discuss that experience with the people with them (RO), and perhaps suggest that if they read this theory (AC), they would see this landscape differently and their experience would be transformed by that learning.

Using the Experiential Learning Cycle to Teach a Field Course or a Student Placement/Internship in Industry

Before the field course (or internship)

Stage 1 (AC): Students are required to read about competing theories on the geography of post-industrial societies.

Stage 2 (AE): In project groups, students plan questions to test these models, with defined interest groups and set up interviews for the opening days of the field course (first weeks of the internship).

On the field course

Stage 3 (CE): Initial interviews (or structured analysis of internship activities).

Stage 4 (RO): Structured discussion, or journal writing, that encourages the student to reflect.

Stage 5 (AC): Tentative statement about validity of models as applied to this location/interest group (or internship company).

Stage 6 (AE): Planning questions to further test revised model in subsequent interviews (or in work activities).

Stage 7 (CE): Further interviews.

The cycle can be maintained but at some point (probably at AC or AE) there is closure.

Using the Experiential Learning Cycle to Make Students More Aware of Themselves as Learners

In the first session of the semester one, year one, introductory geography course, the course team use the following set of activities to help the students reflect on themselves as learners and to explain the variety of teaching methods and the teaching philosophy they will encounter as geography majors.

They are first asked to think of one context where, in their view, they individually have learnt something effectively outside the classroom; and then they are asked to explain to another student how they had gone about that learning. On the basis of the discussion in these pairs the instructor builds up the variety of ways students have learned. At this stage the instructor is developing an implicit classroom culture that values different ways of learning, but introducing no explicit theory or conclusions as to how people learn. Students then individually complete one of the learning style inventories (e.g. Kolb 1985, Honey and Mumford 1992).

Based on the discussions that came out of that exercise, students are formally introduced to experiential learning theory and the implications for them as learners both as individuals and collectively. It is

emphasised to them that though they may have preferred learning styles it is important that they develop the ability to use the range of learning styles so as to improve their overall learning in a variety of situations. Finally, the teaching team describes how this introductory module and the geography programme as a whole is structured to recognise individual student learning styles. This exercise is particularly effective because the teaching team previously undertook the staff development exercise described below.

Using the Experiential Learning Cycle to get Staff to Reflect upon and Rethink their Teaching both Individually and Collectively

As part of a department retreat, staff effectively experienced a similar set of exercises to those that their students encountered the following year (see above). After the staff had understood and discussed the basic features of the theory, they individually applied it to the way that one of the courses for which they were individually responsible was taught; and then were challenged to redesign that course making more explicit use of the theory.

This exercise was followed by discussions on theoretical concerns about both the validity of the theory and on staff's practical concerns about applying it. These discussions were well informed and effective because staff had experience of both applying the theory and reflecting on that experience. Thus there was a very constructive discussion around identifying types of teaching associated with developing particular learning styles ([Figure 4](#)) and how a linked set of GIS computer labs could be restructured to take students systematically around the cycle.

The staff were then divided into project groups each to consider a particular course in the geography major. Two groups considered the semester one introductory course, one of which designed the activities described above. Other groups considered the final year capstone course and the other courses that were taken by most of the geography majors. Just as they had done with their 'individual' course, the project groups applied the theory to these more collective courses, firstly analysing the course as it was currently taught, and then redesigning those courses making explicit use of the theory.

Though there were some reservations and disagreements, the department decided to require selected key courses to be redesigned to explicitly use the theory. A budget and a time scale for implementation over three years was agreed, starting the following academic year with the introductory course and the activity described above.

To repeat, the case studies above, though based on real examples, have been written to make more explicit the use of Kolb's theory and to ensure that they are immediately relevant to geographers. Other published examples of geographers using the theory were referred to in the introduction, and give further pointers to how widespread is the theory's potential for improving student learning in the discipline.

DISCUSSION AND CONCLUSION

Teachers deciding to develop courses explicitly using experiential methods, including the learning cycle, need to be reassured that this does not mean rejecting what they usually do, or adopting wholesale the theory and its associated practical applications. The approach can readily be developed from what we already do. For example, a simple introduction of reflective elements in a lecture can be a way for our students and us to gain confidence in using the theory. Both Gibbs (1988) and Svinicki and Dixon (1994) provide excellent advice for staff who decide to adopt this approach.

In presenting Kolb's theory we argue that it presents teachers of all disciplines with key insights and practical applications from cognitive and behavioural psychology. Entwistle (1991), one of Britain's major theorists on higher education, argues that this well developed literature demonstrates that teachers

should:

- a. take full account of the range of learning styles that any class or group of students will exhibit;
- b. recognise that the teachers' own learning styles are likely to shape their teaching and the approaches they adopt to course design;
- c. avoid the dangers of allowing one particular approach to teaching to exclude the others.

However, in presenting the value of the experiential learning theory to geographers we need to be careful not to privilege it above other theorists who seek to explain student learning. For example we commend the work of Prosser and Trigwell (1999) who bring together the extensive literature on deep and surface learning (i.e. on how students approach their studies) to argue for a pedagogy that starts from teachers investigating individual student's prior conceptions of what they are studying. Bradbeer (1999) uses this work to suggest how geographers can approach the design of interdisciplinary courses. Given the current focus on assessment in most state systems we also commend the 'constructivist' perspective of Bigg's (1999, xii) with its theoretical arguments that course design or teaching is "enhanced by aligning objectives, teaching methods, and assessment tasks."

Since Kolb's theory was first proposed in the mid-1970s several writers have suggested alterations. For example, Mann (1999) has modified the theory to make it more developmental. Bradford (2000) provides an application of Mann's model in geography. Kolb's theory has also attracted many critiques, both from a theoretical viewpoint (e.g. Holman *et al.* 1997) and an applied perspective (e.g. November 1997). For example, there is much debate in the literature about the effectiveness of matching teaching methods to learning styles. Robotham (1999) found that "for each research study supporting the principle of matching instructional style and learning style there is a study rejecting the matching hypothesis." Fielding (1994, 403), moreover, emphasises that "Learning styles are flexible structures, not immutable personality traits." This raises the question of the extent to which learning styles are stable or changeable. However, the evidence is unclear, as Robotham (1999) concludes, "Research into the relative stability of learning style ... remains both confusing and confused."

We should also note how aspects of Kolb's theory parallel the work of the Harvard psychologist Gardner (1999), whose theory of 'multiple intelligences' has had major impacts on many K-12 teachers in the US. Both Gardner and Kolb's theories emphasise the different learning styles of individual students and the necessity for us as teachers to use a wide range of teaching methods to meet their needs.

We commend the experiential learning theory for being a well-developed theory that has now received careful analysis and some testing in the educational research community. We are particularly drawn to it for the reasons that we hope we have demonstrated in this article. It is a theory whose central features are relatively easy to grasp and that can be applied readily to an individual session by one teacher and to a degree programme taught by many. Despite some questions which have been made raised about the reliability of Kolb's learning style inventory it is clear that using it with students helps them to improve their learning effectiveness in different learning situations (Loo 1997).

For geographers it has a ready connection to our concerns with students learning directly from the environment, particularly in fieldwork. Its particular appeal to us is that it legitimates the wide variety of teaching methods that have now been developed by geographers, and also gives us theoretical and practical pointers to improvement. Crucially, Kolb's ideas still allow us as teachers to emphasise the particular stages of the cycle, which fit with our own learning and teaching styles, *as long* as we are careful to ensure that we take our students right round the entire cycle. However, the characteristic learning styles of geography students remain unclear. It is important that we establish whether geography students in higher education in the early twenty-first century have a predominant learning style and whether this varies between countries and the stage the students are in their studies. We hope that the

next time someone surveys the application of Kolb in geography, there will be a wide range of US and other non-UK examples of its use in the discipline.

NOTES

1 We found difficulty in obtaining a library copy of Kolb's 1985 Learning Style Inventory in the UK and we are grateful to Kathryn Booth, who lent us hers. Fortunately, readers wishing to use the LSI may find a copy of the 48 items used for identifying predominant learning style reproduced in an article by Loo (1999, 219). The full LSI may be obtained direct from the publisher McBer. Details may be found at <http://trgmcbcr.haygroup.com/learn01.htm>.

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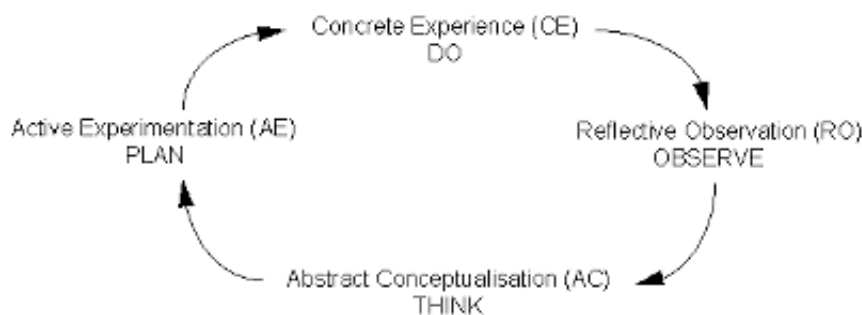
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Table 1. *The relationship between learning style and learning conditions.* [Return to text](#)

Learning style	Conditions under which learners learn better
Assimilators	When presented with sound logical theories to consider
Convergers	When provided with practical applications of concepts and theories
Accommodators	When allowed to gain 'hands on' experience
Divergers	When allowed to observe and gather a wide range of information

(after Kolb 1984)

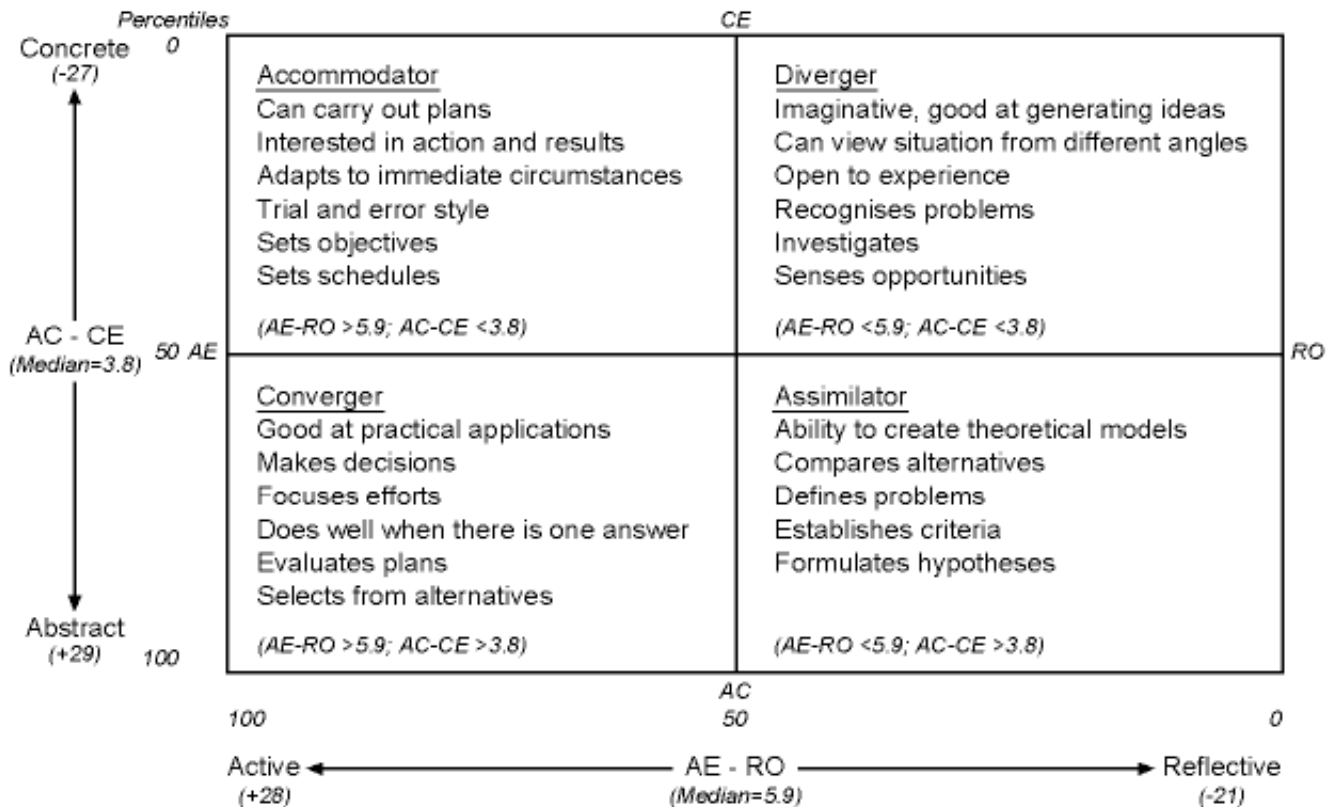
Figure 1. *Kolb's experiential learning cycle.* [Return to text](#)



- Concrete Experience:* Where the learner is actively experiencing an activity (e.g. a laboratory session, field class)
- Reflective Observation:* Where the learner is consciously reflecting back on that experience
- Abstract Conceptualisation:* Where the learner is being presented with/or trying to conceptualise a theory or model of what is (to be) observed
- Active Experimentation:* Where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience

Source: Based on Jenkins (1998, 43)

Figure 2. *Characteristics of Kolb's learning styles.* [Return to text](#)



Source: Adapted from Kolb (1984, 86) and Gibbs (1988, 20)

Note: Individual scores can be compared with the standardised percentile scores based on a mixed sample of 1446 adults between 18 and 60 in a survey undertaken by Kolb (1985). The average education of the sample was two years of college. The four learning styles have scores above or below the AE-RO and AC-CE medians. Thus convergers, for example, have an AE-RO score >5.9 and an AC-CE score >4.3 (though any individual can only obtain an integer score), whereas divergers have scores below these median values and often have negative scores.

Figure 3. Disciplinary groupings. [Return to text](#)

ACCOMMODATORS Commerce Demography Education Environmental studies Geography Political Science Public policy	DIVERGERS English History Philosophy Sociology
CONVERGERS Applied economics Applied physics Art history Computing Demography	ASSIMILATORS Astronomy Chemistry Classics Earth sciences Economics Mathematics

Engineering Forestry Law Medical research	Physics Theoretical physics
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Source: Based on Nulty and Barrett (1996, 335)

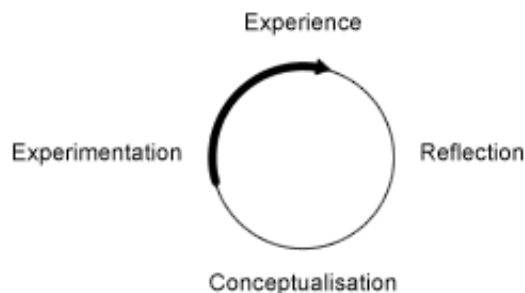
Figure 4. *Practical methods to implement the experiential learning cycle.* [Return to text](#)

Planning for experience



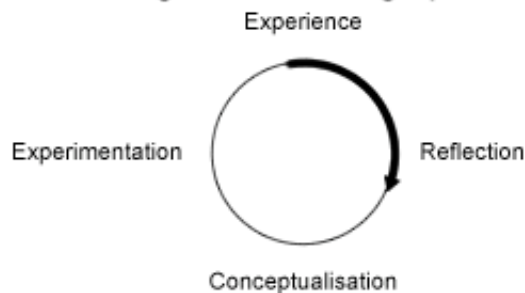
- Action plans
- Setting objectives
- Designing experiments
- Observation checklists
- Devising criteria
- Learning contracts
- Action research

Increasing awareness of experience



- Log books
- Listening exercises
- Questions
- Increasing awareness of feelings
- Silent demonstrations

Reviewing and reflecting upon experience



- Diaries
- Using video and audio recordings
- Peer appraisal
- Structured discussions
- Structured de-briefing
- Self assessment
- Reflection checklists and questionnaires
- 'Shared time' and 'mutual interviewing'
- Modelling reflection

Providing substitute experiences



- Case studies
- Games
- Simulations
- Role plays
- Assessing through substitute experiences

Source: Based on Gibbs (1988, 23-63)

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