

# How People Learn: A Learning Spiral

Prepared by Ian Moll & Sheila Drew, 2008.

SAIDE works within a constructivist framework of learning. This article provides a theoretical basis for the notion of a learning spiral designed into learning materials.

## The Learning Paradox

The learning paradox is a recognition that the only basis on which you can learn something, in other words gain an understanding of something that was previously unfamiliar to you, is if you have some way of apprehending it. You can't apprehend something new unless you already know something about it, but you don't know anything about it until you have learned about it.

So to understand learning, we need to have some kind of theoretical account of how someone can come to a new understanding of something without already having knowledge of that thing. The question is 'How is it possible for somebody to come to know something that they don't already know?'

## Dealing with the Learning Paradox

Over time different people have dealt with the paradox in different ways. The classical explanation comes from Plato writing about Socrates. His answer was that people are born with that knowledge. Using a questioning strategy, a Socratic teaching method, you can unleash that existing knowledge. You have to be a skilled questioner and tap into what people already know, challenging them in order to draw out what is in them.

## Behaviourism

The opposite position is behaviourism. Behaviourists are interested in the conditions in the environment which lead to an increase in the frequency of a particular behaviour. Their answer to the paradox is to suggest that the way in which the paradox is set up is misleading. It shouldn't be about the way people think. It should really be about what the conditions are that should be set up to produce these learnings. If you reinforce responses that look like the final outcome they will get stronger and stronger and that is how people come to know things.

## Constructivism

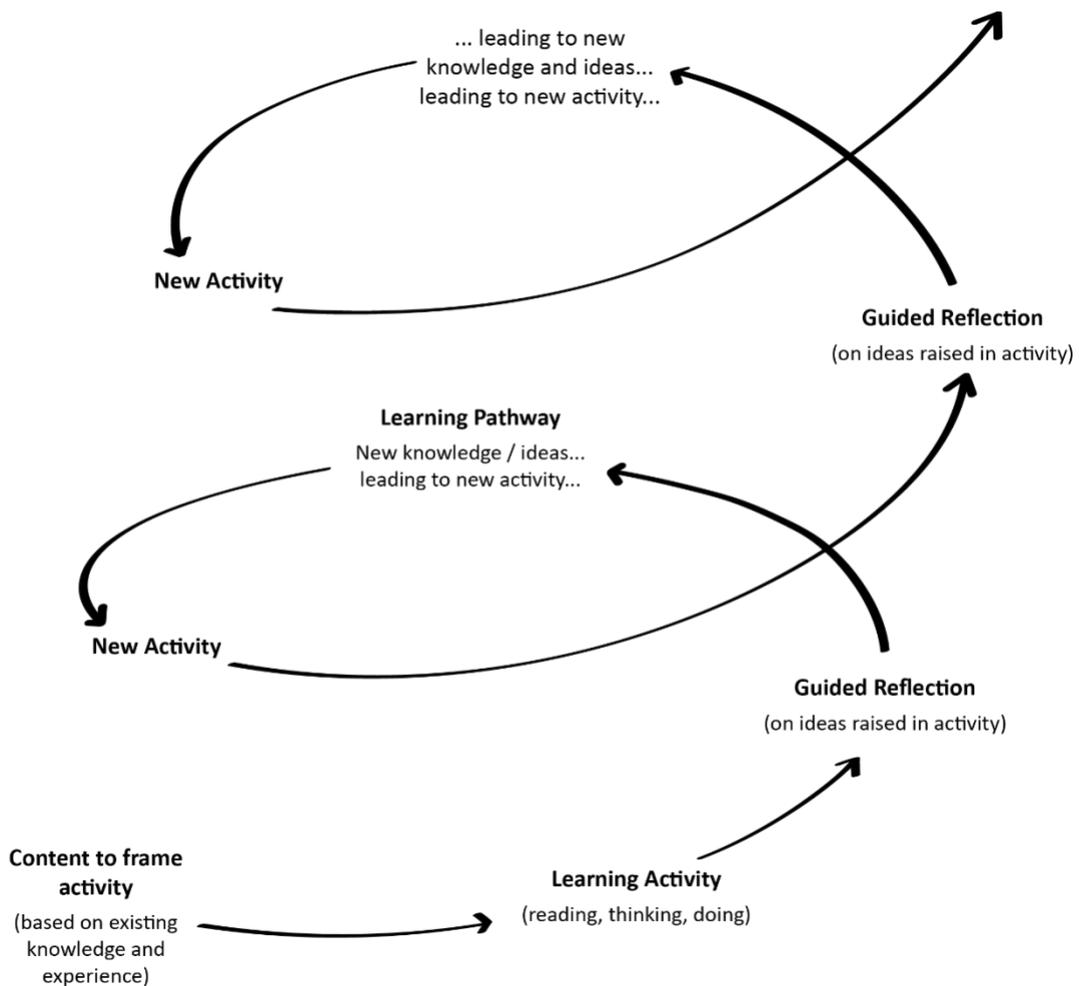
Differently, constructivists are interested in the way that people engage in certain kinds of action that lead them to construct their own new knowledge. It becomes an active rather than a passive conception of knowledge. The constructivist answer to the question 'How is it possible for somebody to come to know something that they don't already know?' is that people start engaging in actions related to something new, even, without understanding it.

Then if that action is facilitated or mediated in some way, the person will begin to understand and reflect on their own actions and in that way start to internalize their learning.

Constructivists argue that people don't learn something by being told about it. They engage in a genuine activity once they start doing they reflect on what they do, think back about what they have done and learn something from it. That constructivist notion of learning can be thought of as a learning cycle or spiral. In the cycle of learning learners are given access to knowledge and new ideas, and guidance to think about what they did, whatever thoughts they had, or answer they gave, and why and how they came to have new ideas and new knowledge. Further new ideas and knowledge is then constructed within that same framework, along a learning pathway.

## The learning spiral

We can see this visually in the following diagram:



Activity is not just doing something – thinking is also an activity. How do you think about something you don't know? A thinking task takes you through a particular set of procedures which require you to focus your attention on particular concepts or issues and scaffold those in relation to what you already know, in relation to a new task or a new problem or new concept. That is what the design of a learning activity has to achieve. It is not just something new in a vacuum. We always respond to the world in relation to something we already know.

This is how people learn in any situation. So the concept of a learning cycle or spiral is not just about distance learning. The learning process is the same whether the guided reflection is immediate and face to face, or whether it is mediated through the materials.

In face to face tuition the learner and the teacher are able to have a conversation in which the teacher can respond very quickly in an *ad hoc* way to what the learner does or says and start to challenge and shift the conceptions that the learner is developing. In distance learning you, the writer, have to anticipate what the learner is likely to do and think and say. You cannot always anticipate correctly, but you can construct a set of activities that are likely to take that learner in the required direction in terms of the development; in other words in the direction of the learning pathway.

In a learning text, we know what is required to establish such a learning pathway. In the absence of a mediator (teacher), the text must take over the dialogic role of providing structured and systematic support to the learner as s/he moves from familiar activity ("the known") to unfamiliar activity ("the unknown"). A designed learning text must consist of a series of learning activities, organised in a developmental sequence, which together require the learner to engage in thoughts and practices characteristic of what the course is trying to teach.

The question is, how does a piece of text substitute for what a teacher does? Think about it: in an ordinary learner-centred context (one in which activities that the learner engages in are set up as the basis on which learning occurs), a teacher is constantly giving feedback to learners on the ongoing outcomes of what they are doing – Is your answer to the question accurate and well-developed? Is the essay that you are writing well-argued? Is the solution you have developed to a geometry problem mathematically sound? Is your reading fluent and accurate? Etc. – and how they might improve their performance. When one writes a learning text, the idea is to construct feedback in such a way that the reflection encourages students to think critically about what they have done, and provide a framework against which students might be able to discover and reflect on mistakes they may have made. The materials become a mediator or educator.

The text can also help people to come to understand for themselves how they come to learn something new, for example by asking a question or by reading something new so that they are more aware that they can learn and they can take their own learning forward.

The populist notion of experiential learning is that if you have experienced something you have learned it. A good example is beading. Bead work has a complex set of skills in it and beaders probably do learn something while they are beading. But one does not reflect on an

activity just by doing it. A reader doesn't automatically ask questions about geometric patterning and sequencing. There may be an implicit notion of design, but it only becomes mathematics when there is deliberate, sustained and systematic reflection on those aspects. One of the main theorists of experiential learning, David Kolb, says precisely that. That it only becomes experiential learning when there is a reflective component to it.

Let's look at how the learning spiral can help us to design materials, whether for self-study purposes or for learning in face to face contexts, or for a combination of both - blended learning.

## Designing and developing course materials: A distance education focus

Key elements in the learning spiral	Materials design features
<p><b>Content to frame activity</b> (Based on existing Knowledge &amp; experience)</p>	<p>As far as is possible, the content needs to be written as a statement of what we expect the learner to know already. At the beginning of the text, we will have to rely on our own understanding of the students' prior learning in relation to the topic in question. However, as the text evolves, and we incrementally introduce new ideas, we will also be able to draw on and frame what we understand to be prior knowledge. It is critical that, from the second activity onwards, that we build conceptually on what has been learnt in the previous activity/ies that we have designed. This activity-by-activity development is what is meant by a 'learning pathway'.</p>
<p><b>Learning activity</b> (reading, thinking, doing)</p>	<p>The key point here is that we do not learn by simply being told something. We also do not learn by simply "having an experience" of something. When we listen to a good lecture, we can learn a lot, but only when we actively think about and reflect on what the speaker is saying. If the content of what is being said is not phrased in such a way as to engage with our prior knowledge, or if it is simply a restatement of what we already know, then we learn nothing. In both instances, this kind of lecture (or, designed learning texts) will only serve to bore us.</p> <p>So the activity is the moment or episode in the learning process in which we actually acquire new understandings and new forms of knowledge – this is the pivotal notion in a constructivist approach to learning. This is why we talk about activity-based learning texts, and why the inclusion of developmentally-conceived activities in learning texts is a non-negotiable feature of the design and development of quality learning materials.</p>
<p><b>Guided reflection /response to activity</b> (discussion of issues raised in activity)</p>	<p>This is the point at which the text needs to operate as a teacher – it needs to anticipate the possible responses that learners may have come up with in relation to an activity, and provide them with an opportunity to reflect on what they have written in such a way as to allow them to learn from the actions (mental actions and others) that they have just engaged in. Obviously a sensitive</p>

	<p>teacher in a classroom does this all the time, but the trick here is to get the text to be able to do this in some way for the learner. You are not wanting simply to give the right answer or to affirm any old thing that the learner may have produced – often, learners are wrong because they make mistakes or because they have a misunderstanding. Rather, what you want to do as a writer is to get the learner to think about what s/he has just done or said or written in a critical and reflective manner, and thus to be able to learn from it.</p> <p>There needs to be a deliberate structured reflection in relation to the task. The reflection helps to give a focus and to create the conditions for learning from own experience. That is why the reflection does not necessarily produce a right or a wrong answer. Instead, one is trying to put the learner in a position in which s/he thinks about whatever answer s/he gave and the reason for arriving at that answer. The learners are required to engage in meta-cognition to reflect on the activity. To simply provide the answer will not tell you whether the learner has learnt something or not. Some people think that even in activity based learning you have only learned when you are given the answer. The reflection cannot be the answer because the reflection is part of the activity. There may be cases where the conversation between different people in the activity is part of the learning process, and it may be helpful to give a kind of answer to clarify that the conversation was on the right track but that is still not the point of the reflection.</p>
<p><b>Learning pathway</b> (New knowledge/ideas leading to new activity)</p>	<p>As you move on in your writing, try to pull a question out of what has gone before. Try and identify an issue that will add new content or will deepen the understanding that the learners have built up so far. Of course, then, this will be introduced to set up the next learning activity which is conceptualised in terms of the learning pathway that you have planned.</p>