

Learning in the context of health and childhood

Alan Pritchard

We do not always realise the difficulty children have in understanding what is happening to them when diagnosed with an illness such as diabetes. Often, it is difficult enough for parents to understand. For those helping children come to terms with a new condition, including parents, wider family, friends and health professionals, a basic understanding of the processes involved in learning can be extremely useful. Children hear, and generally take in, much more than many adults realise. Many adults give little credence to childrens' ability to understand new and complicated ideas and, for this reason, they do not attempt to explain things to them in a suitable way. All that this does is to increase the misunderstanding that can arise from partially explained ideas. A certain level of anxiety can be associated with, and generated by, misunderstanding, something that we should really be trying to avoid if at all possible.

There are essentially two branches of learning theory. There are many subdivisions within the two established descriptions of learning, but for our purposes here, it will be sufficient to consider the two top level schools of thought.

Behaviourism

First, there is behaviourism. This is one of the earliest notions of learning and was developed in the later years of the nineteenth century. It was originally described by Pavlov (1927), who noticed that dogs form a connection between a stimulus and a response. For this reason, the theory is also known as the stimulus–response (SR) theory, or connectionism.

Some of the work of behaviourist psychologists was translated into teaching programmes that could more correctly have been known as training. Behaviourism depends upon a precise response to a

particular stimulus, and does not involve the all-important notion of understanding. For example, a child can be taught to stay away from, say, a fire if every time they approach the fire they experience something unpleasant – a shout perhaps. The possibility of the administration of a punishment will have the effect, for most children, of them staying well away from the fire. This is very useful in the context of the dangers of the fire, but the child does not understand the situation, they have simply *learnt* to stay away from it.

In an educational context, the chanting of multiplication tables, which can be a useful tool when used in conjunction with other approaches to learning multiplication facts, was seen as the best way to learn the tables. Drilling, and memorising, along with rewards in the form of teacher approval, or perhaps house points of some sort, led to good results. However, there is ample evidence

Article points

1. For those helping children come to terms with a new condition such as diabetes, including parents, wider family, friends and health professionals, a basic understanding of the processes involved in learning can be extremely useful, especially if it allows for certain theory-related approaches to be used.
2. There are many activities that can be employed to help children to engage with new and important information and understanding. Some can be dressed up as games, others just undertaken for their own sake.
3. Learning depends upon what is already known and understood, it proceeds better in familiar contexts and, above all, it is a social, active process; not a solitary, inactive one.

Key words

- Learning
- Children
- Behaviourism
- Constructivism

Alan Pritchard is Associate Professor of Education at the Warwick Institute of Education, University of Warwick.

that children do not understand the principles involved in the formation of the tables when taught in this way and in many cases they can not work out answers from first principles. Many were good at instant recall, but not at all good at applying an understanding of the processes in new situations; for example, finding the answer for a question outside of the range of their direct experience. Instant recall is certainly useful, but it is much more useful to understand principles.

Constructivism

The second, and by far the most important theory concerning learning is constructivism. Constructivism is founded on the premise that we construct our own understanding based upon information received through our senses and the links that we can make with what we already know, or understand. Individuals create mental models sometimes referred to as 'schemas' that are then used to make sense of experience (Wadsworth, 2004). According to constructivist theory, learning is the process of adjusting mental models to take new experiences into account (Piaget, 1952).

Learning through assimilation and accommodation

As humans, we strive to make sense of our surroundings. Sometimes this is a conscious act, but more often it can be an unconscious process. We are continually presented with new data through each of our senses and when we come across a new piece of information or a new idea, we add it to the relevant mental model. If the new information fits in well with what we already know, so much the better, but there are times when new information contradicts what we already know. We have to deal with a contradiction

and this can be done in two ways – first, we could, either consciously or unconsciously, choose to ignore the new information. This may work for some situations, but eventually a denial of this kind can lead to problems. Secondly, and what tends to happen in practice, is that we assimilate the new information if it can be incorporated into our existing schemas without any disruption; that is, if it does not contradict other information. If the new information does lead to a contradiction, we accommodate; that is, make changes to our existing state of understanding. We seek to have a state of equilibrium in which we do not have any conflicts between what we know or understand. Learning proceeds through the processes of assimilation and accommodation and new understanding is constructed at what can be a fairly rapid rate, especially with very young children.

One important feature of constructivist learning is that the ability to make sense of something new depends upon what is already known. The state of a mental model can determine the ability of an individual to be able to cope with new information. That is to say that new learning is dependent upon what is already known, because new learning has to mesh with and build upon existing knowledge. When existing knowledge is sparse, the ability to correctly understand something new is limited.

Constructivist learning: The difference between cats and dogs

A simple example of this might be that a very young child has experience of dogs because the family has a pet dog. She can say the word dog and she can recognise dogs in new situations, at the park for example. Apart from dogs, she has no other experience

of animals. When she comes across another creature, perhaps a cat who wanders into the garden, she will, in all probability, relate it to what she already knows and, again, in all probability, say the word 'dog', and point in the way that young children often do. At this stage, there is no contradiction. When an adult intervenes and says: 'No that's a cat', the contradiction occurs. The child has an existing schema for four-legged furry creatures with a tail. This schema is simple and has no real links with other schemas. The new information is added, eventually, to the schema and accommodation has taken place. There is a two-way divide in the schema that can now relate to both cats and dogs. When a small goat is encountered, it will be compared with the existing schema, and eventually added to it. The notion that it will happen *eventually* is important as there could be a stage of denial, and it may take several occasions when a cat (or goat) is experienced before the reality of the situation is finally resolved.

When young children experience something new, they will attempt to make sense of it. In order to help them to do this, they will relate it to what they know already. This is as true for meeting a new and interesting animal in a zoo as it is for being told that they have a particular medical condition.

Constructivist learning: An example from a healthcare setting

Allied to this is the fact that most young children actually take in a good deal more than many adults realise, or give them credit for, and, naturally enough, they will attempt to make sense of what they hear or see. As an example of this, we could consider a scenario that is not uncommon. A child present at a discussion between a healthcare professional and a parent

listens to, and attempts to process, comments that were really not intended for the child. Some time later at home, having taken in and attempted to understand what had been said in the consultation, a question arises for the child which is in need of an answer: 'Am I going to die?' The question may seem bizarre, and out of the blue for the unsuspecting parent, but it can be clear what lies behind it if the detail of the conversation is recalled.

The discussion centred upon a new diagnosis of diabetes and, rightly or wrongly, the extreme case of death as a result of the diabetes was mentioned. For a child, much of what was said was simply not understandable, but some of the words and some of the ideas were understandable at one level or another, and piecing together new ideas with previous knowledge and experience (such as the death of a pet or grandparent, the notion of hospitals and illness or the seriousness with which the conversation was undertaken), the child has reached a conclusion that could be very difficult to deal with: that is, they are about to die.

In this and in many other ways, it is possible for children to misunderstand, through a process of misconstruction based on a foundation of limited previous knowledge, the real situation that they find themselves in. They assume that they will not be able to go to any more birthday parties, or that they will not be able to run, or go swimming, that they will never be able to have sweets, or even that they will not be able to get married or have children. This may seem extreme, but the truth of the situation is that we cannot tell what processes are taking place in the minds of children and we cannot tell how they will process a simple piece of information because it depends to a large extent on the

state of particular mental models that the children hold and the extent to which they are able to relate what they have just experienced to what has gone before. In this way, all children are different. It is not possible for two children to have had identical experiences and, therefore, to process new information in an identical way.

For these reasons, adults, including those who should know better, sometimes talk inappropriately in front of children. One way in which we can have a little insight into the state of a child's understanding is to talk to them and to pose simple questions. Once we have a little knowledge of what the child knows, we can plan an approach to explaining new ideas to them. This is how planned education proceeds. Teachers help children to build upon their current knowledge and understanding; to help them to do this, they carry out different types of assessment, both formal and informal.

Social and contextual learning

We can now look in a little more detail at the processes involved in learning, according to the constructivist model, and consider how we can best help children to come to understand the situation that they find themselves in when an illness is first diagnosed. As well as many other things, constructivist theory tells us that learning is:

- A process of interaction between what is known and what is to be learned
- A social process (Vygotsky, 1978);
- A situated process (Lave and Wenger, 1991).

Social learning

We have considered the first of these points already. The second is concerned with the notion that learning is not, and for most people should not be,

a solitary activity. Learning usually proceeds best in social situations where shared activities and shared dialogue are encouraged. It is possible for two learners to support each other by bringing different experiences to the learning situation and sharing these as comments, questions and suggestions as part of an informal conversational exchange. Discussion of different types and at different levels supports learning. Both child-child discussion, and child-adult interaction can be immensely valuable. For adults, listening to and responding appropriately to children's comments and questions is a crucial role to take on in all learning situations, both in school, where the most likely adult involved will be a teacher, or in less formal situations, where the adult could be a parent, or in the case of health-related contexts, a nurse or other health professional.

Contextual learning

The third point refers to the context in which learning takes place. It may be that something is understandable in one context but not in another. It could be that if new information is presented in a context that is alien to the child (an American book designed for children with diabetes perhaps, set in a typical American setting which is not familiar to the child), then learning and understanding is difficult.

From these three aspects of constructivist theory, three principles for teaching and learning are formulated.

- Learners need enough previous knowledge and understanding to enable them to learn new things; they may need help making links between the 'new' and 'old' explicit.
- Provision should be made for social

Page point

1. Activity leads to engagement with factual information and with ideas. When the ideas have been engaged with, or the facts considered, the processes of accommodation or assimilation comes into play, and understanding is developed.

Box 1. Benefits of adults interacting with children.

By talking to children about their condition, adults will be:

- helping them reflect upon what they already know
- providing appropriate guided discussion
- posing questions to challenge and move on understanding
- providing appropriate materials at an appropriate level of difficulty
- providing resources in a familiar context
- giving opportunities for activity and engagement.

interaction and discussion in groups of varying sizes, both formal and informal, with and without the teacher/adult.

● Meaningful contexts for learning are very important; what is meaningful for a teacher/adult is not necessarily meaningful for the child.

We all have a range of misunderstandings that are founded upon flawed models. This is because we are all capable of misconstruing knowledge. Since knowledge is a personal construct, if we construct inaccurately, we are often in a position of 'knowing' something that is not actually true. Understandably, this situation is more common in children than in adults; this is largely a function of children's limited experience. For this reason, when we take on the informal role of teacher, our aim is to guide the process of construction. This process of guiding or assisting with the construction of understanding is called scaffolding. To scaffold means to give the sort of support that will allow construction to take place accurately and without unnecessary upset.

Some of the possible misconstructions that can arise in the context of diabetes include:

- Painful daily injections;
- No more parties
- No more football
- No more sweets
- Friends might catch diabetes
- Imminent death.

If we are to do our best to help young children to understand their situation fully, we need to remember certain ideas about learning. We need to be aware that learning

is a process of interaction between what is known and what is to be learned. We therefore need to ask what they already know, how we get to know what they already know and how we can arrange this interaction.

In addition, it is important to remember that learning is a situated process. We need to ask what the context of their current knowledge and understanding is.

We also need to think about how to scaffold. For some children, this could mean providing suitable materials for them to look at, read and digest, but remembering that for most people, learning is a social process: we need to think about providing interaction with others. Adults or 'more knowledgeable' others need to talk and to interact with them. *Box 1* explains some of the benefits of this.

Activity and engagement

Activity means doing more than simply being in the presence of information. A child, or a parent for that matter, may be given information leaflets about aspects of their condition, but unless they actually engage with the information in some way and think about it, it might as well not exist. Activity leads to engagement with factual information and with ideas. When the ideas have been engaged with, or the facts considered, the processes of accommodation or assimilation comes into play, and understanding is developed.

Consider the first piece of text in *Box 2* that could be presented to a child. They would have access to the information.

Now consider the difference if you present them with the amended second piece of text, and then work with them to help fill in the spaces. This would constitute activity (leading to engagement) and it would satisfy the need for social interaction and support. It would be a far more valuable and socially interactive way of helping the child to engage with the important ideas in the text, and possibly in helping them to remember and understand them.

The level of difficulty of this sort of activity can be altered by missing out fewer words,

Box 2. An example of active learning. The first text is information about diabetes. The second allows the child to engage with the information by filling in the blanks.

Everyone (kids and adults), with or without diabetes, can improve their health by following a nutritious and balanced diet. If you have diabetes, keeping an eye on the food you eat is especially important because food has such a big effect on your blood sugar levels. Still, you may be surprised to learn how many different foods can be included in the diet of a person with diabetes.

Everyone (kids and ____), with or without diabetes, ____ improve their ____ by following a nutritious and balanced diet. If you have diabetes, keeping an eye on the ____ you eat is especially important because ____ has such a big effect on your blood sugar levels. Still, you may be surprised to learn how many different foods can be included in the diet of a person with ____.

or perhaps by providing a list of the missing words to be considered and discussed.

The same might apply to an interactive quiz for children in which they answer multiple-choice questions about diabetes. For example, 'Exercise and insulin will make your blood sugar level a) rise, b) fall or c) stay the same'. This sort of activity can be directed towards helping children to make choices.

Word searches like the one in *Figure 1* can be great fun, but we must remember that some children simply do not like them, especially if they are given as something to get on with alone. Learning is a social activity, and working on a word search with someone else can be far more interesting and engaging than being left alone to get on with it.

There are many activities that can be employed to help children to engage with new and important information and understanding. Some can be dressed up as games, others just undertaken for their own sake. They will all be more effective if they are undertaken as a joint, social event. For example, children can be encouraged to make decisions, choose, predict, question, discuss, answer, draw or fill gaps.

Stories

Part of the human condition is the appreciation of 'story'. Almost all children enjoy listening to stories and can relate to 'appropriate' stories. If we remember the notion of learning being situated, and the importance of context, then we should be able to assess the relative merits of different stories that have been written with the aim of helping children to understand more about their situation. If the context seems a little remote then it does not necessarily mean that the story should be discounted, just that the story will need to be accompanied by some careful scaffolding, enabling the young listener to enjoy the story to the full. When considering the appropriateness of a story we should ask the questions in *Box 3*.

Conclusion

There is a lot being said about individualised learning currently, and from what has been

discussed in this article, we can see that since all learners approach their learning from what can be very different starting points, and with different preferences in many cases, knowing an individual child, taking the time to find out a little about what they know, how they feel, and how they might prefer to approach new and complex ideas, can go a long way towards helping in the process of learning in the individualised context of coming to terms with a new and worrying situation.

Most importantly, we should bear in mind that: children are capable of understanding more than we sometimes give them credit for – especially if we give them support; learning depends upon what is already known and understood; learning proceeds better in familiar contexts; and, above all, learning is a social, active process, and not a solitary, inactive one. ■

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Page points

1. There are many activities that can be employed to help children to engage with new and important information and understanding. Some can be dressed up as games, others just undertaken for their own sake.
2. Since all learners approach their learning from very different starting points, taking the time to find out a little about what they know, how they feel, and how they might prefer to approach new and complex ideas, can help in the process of learning and coming to terms with a worrying situation.

Box 3. Questions to ask when considering the appropriateness of a story.

- What prior knowledge does the story need?
- Can it be supplied?
- What is the context of the story? Will it need explanation at any point?
- Is the story well presented/illustrated?
- Is it a story to read or to have read?



Figure 1. A diabetes wordsearch as an example of active learning.