

Why should a geography teacher know about learning theories?

1. Social constructivism

This is a widely accepted theory of learning. The idea is that students actively ‘construct’ their own understandings by relating new information to their existing ideas. We learn about the world through making sense of it ourselves and everyone understands the world differently, depending on their experiences and their assumptions. We can only construct meaning in relation to what we already know and through interactions with other people. Knowledge cannot be transmitted to us ‘ready-made’; we must be actively involved.

How is this important for learning geography?

All students have their own ‘personal geographies’ that they bring into the classroom. Students should be made aware that geography knowledge has been constructed by people at particular times and in particular places. In geography lessons students must be given the opportunity, and time, to explore new information and relate it to what they already know. They must be cognitively engaged in constructing geographical knowledge through some learning activity. The transmission method of teaching will not be effective. Margaret Roberts’ teaching approach using intelligent guesswork is rooted in constructivist theory. This approach is described in more detail in the GA resource sheet *Intelligent guesswork*, available in the Initial Teacher Education section of the GA website.

Reading for trainee teachers

- Roberts, M. (2013) *Geography Through Enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association. pp 19–20
- Leat, D. (1998) *Thinking through geography*. London: Chris Kington Publishing. pp 157–9

2. Jerome Bruner

Brunerⁱ believed that information should be structured so that complex ideas could be taught at a simplified level first, and then re-visited at more complex levels later on. This is known as a *spiral curriculum*. To achieve progression in learning, teachers should plan to revisit, reinforce and refine students’ thinking.

Bruner also believed that teachers should give children respect for their own powers of thinking. He constructed a course of study based on the ‘*discovery method*’ of learningⁱⁱ. This introduced questioning, using first-hand sources, learning through discussion and reflection on experiences. The teacher should be a resource rather than the ‘authority’. A good teacher will design lessons that help students discover the relationship between different information. To do this a teacher must give students the information they need, but without organizing for them.

Bruner distinguished between different ways concepts could be represented to children: enactive – through activities; iconic – visual representation; and symbolic – the use of language and number. He argues that the easiest form of representation for learners is through activity and that the most difficult is symbolic. He also argued that if we want to make numbers easier to understand we can enact them – *active numbers*.ⁱⁱⁱ

How is this important for learning geography?

- Sequences of lessons and geography curriculum should be planned with the spiral curriculum in mind. Students should revisit key aspects of geography over time, to develop their understanding at a progressively higher level e.g. in learning map skills and understanding physical processes.
- Bruner introduced the notion of enquiry, which led to geographical enquiry being seen as the preferred means of ensuring learning in geography.
- Bruner's ideas of representation are very relevant to geography. We should seek ways to use enact learning – e.g. House *et al* 'Risky fieldwork' in *Teaching Geography*, Summer 2012 outlines how students can display data while they are still 'in the field' using 'human graphs'. We should use opportunities to use visual representations whenever we can (e.g. diagrams, photos, maps) because students find concepts easier to understand when taught in this way compared to symbolic representation in words and numbers.

Reading for trainee teachers

- Roberts, M. (2013) *Geography Through Enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association, p 56 on Bruner's ideas on accessing data
- Roberts, M. (2003) *Learning through enquiry: Making sense of geography in the key stage 3 classroom*. Sheffield: Geographical Association, pp 23–4 and page 105 for active numbers
- Totterdell, R. 'What makes a geography lesson good?', *Teaching Geography*, Spring 2012

3. Lev Vygotsky

Vygotsky identified the difference between what learners can do without help and what they can do with help which is called the *zone of proximal development*. It is an important idea in social constructivism. If learners are given some support they can be assisted to develop their conceptual thinking and they achieve a higher level. If the task is beyond their zone of proximal development, it will be beyond what they are capable of achieving even with support. Vygotsky saw interaction with peers as an effective way of developing skills and strategies. He suggested that teachers use cooperative learning exercises where less competent children develop with help from their more skilful peers, working within the zone of proximal development.

How is this important for learning geography?

When planning geography activities the challenges presented to students should be *just beyond* what they can do without help. Students need the intervention of the teacher and their support to assist their learning – this is often described as *scaffolding*. 'Scaffolding' is based on Vygotsky's ideas that students should be given 'light assistance' to handle problems they cannot solve on their own. In geography this means asking students a leading question, suggesting, correcting – so they can find the answer for themselves. It does not mean telling them! To use scaffolding well a teacher must have a precise knowledge of the characteristics and starting point of the learner. It aims to enable learners to attain higher levels of understanding than they could on their own so they ultimately

achieve independence. A large part of teaching involves successfully deploying scaffolding in the classroom, for example when designing a worksheet, structuring a task or setting up an activity.

Reading for trainee teachers

- Roberts, M. (2013) *Geography Through Enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association, p 20
- Jones, M. (ed.) (2017) *The Handbook of Secondary Geography*. Sheffield: Geographical Association, p 140–1
- Roberts, M. (2003) *Learning through enquiry: Making sense of geography in the key stage 3 classroom*. Sheffield: Geographical Association, pp 28–31
- Leat, D. (1998) *Thinking through geography*. London: Chris Kington Publishing, pp 159–160

4. Learning through language

Vygotsky believed we need to provide students with the opportunities to use language, particularly talk, to shape their thoughts. Later research by Barnes^{iv} showed how students exchange ideas through talk in the classroom to build up 'common knowledge'. *Exploratory talk* is important according to Mercer^v; this is where students engage critically but constructively with each other's ideas.

How is this important for learning geography?

We must provide students with the opportunities to use language to shape their thinking through discussion and through writing in geography lessons. We should make good use of purposeful, small group discussions that actively involve all students so that they can clarify and develop ideas through both talking and writing. We should encourage them to be tentative and exploratory in their discussions in geography lessons, and not always look for them to give 'right' answers.

Reading for trainee teacher

- Roberts, M. (2013) *Geography Through Enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association, Chapter 2, 11

5. Jean Piaget's stages in child development

Piaget saw cognitive development as a progressive reorganization of mental processes as a result of both biological maturation and environmental experience. Children *construct* an understanding of the world around them. They experience discrepancies between what they already know and what they discover in their environment. Before Piaget's work^{vi}, the common assumption in psychology was that children are merely less competent thinkers than adults. Piaget showed that children think in strikingly different ways compared to adults.

Piaget^{vii} considered that 'readiness' was important; students should not be taught certain concepts until they have reached the appropriate stage of cognitive development.

The two stages, most relevant to KS3 are:

- **Concrete thinkers:** younger children cannot think abstractly and better understand what they can see and hear and experience. They find it difficult to hypothesise, handle several variables or make links between factors.

- **Formal operational thinkers** can handle more complex relationships. Piaget thought this begins around age 11 when children develop the ability to think about abstract concepts, and logically test hypotheses.

How is this important for learning geography?

Students in early KS3 are making the transition between these two stages. Geography teachers need to be aware that concrete thinkers will often describe accounts that concentrate on what happens, but not why things happen. Therefore, teachers need to consider how to accelerate the move from concrete to formal operational thinking if students are to make progress in geographical understanding. Building on their experiences is important, so is the use of visual material and fieldwork. Thinking strategies have been developed to help this (as described in the GA resource sheet *Why thinking through geography is important*, available in the Initial Teacher Education section of the GA website). It is worth considering these ideas when developing 'starters' for lessons, so that the content of these is 'concrete' and something the students can readily relate to. Later in the lesson you can introduce more complex, conceptual ideas and develop these through discussion.

Reading for trainee teachers

- Biddulph, M., Lambert, B. and Balderstone, D. (2015) *Learning to Teach Geography in the Secondary School*, 3rd edition. Abingdon: Routledge, pp 136–8

6. Benjamin Bloom

Bloom devised *Bloom's taxonomy* (a classification) of educational objectives that have become a key tool in structuring and evaluating learning. It was created as a tool for categorising the level of cognitive challenge in test items and to help discuss assessment with greater precision. It also was designed to promote higher levels of thinking, such as analysing and evaluating concepts, processes, procedures, and principles. This conceptual taxonomy was presented as a hierarchy, meaning that learning at the higher levels is dependent on having attained the lower levels and there is an expectation of increasing complexity and competence; the lowest level requires remembering facts (rote learning). The taxonomy has been reinterpreted and revised on several occasions e.g. by Anderson and Krathwohl^{viii} with creativity at the highest level, as shown below.

		In geography, this involves (for example):
Creating		Reorganising into a different pattern or structure; creating something new; imagining or designing a solution; planning and predicting/hypothesising/speculating
Evaluating		Critically examining information; making a judgement and justifying my opinion; understanding the views/opinions of others; empathising; balancing arguments and decision making; reflecting on the effectiveness of an enquiry
Analysing		Exploring relationships between factors; investigating and unpicking information; putting new and old information together; inferring new information from evidence; drawing conclusions
Applying		Using information in a new context such as applying a model; simple problem solving; illustrating with an example
Understanding		Making sense out of information, such as interpreting a graph or describing a process; comparing places; explaining the pros and cons of a site or location
Remembering		Recalling facts, identifying a place on a map

How is this important for learning geography?

In geography there are few explanations that are simple cause and effect. More often explanations are complex and require the synthesis of different aspects of knowledge and understanding, or even speculation regarding possible causation. Geographical learning involves applying new information to different contexts and requires analysis and understanding. Evaluation is another high order thinking skill that is important in geography when considering evidence and ideas.

Bloom's ideas are widely used by teachers to write objectives in geography with increasing cognitive demands because it acknowledges that higher level thinking requires much more than mere recall or comprehension. Refer to Figure 4 on p 43 in Jones (2017) to see how the taxonomy can be used to evaluate the level of cognitive challenge of learning objectives for a scheme of work. If all fall into the left-hand boxes, there is a lack of challenge and they need to fall further right in the table to achieve a greater degree of analysis, evaluation and creative opportunity.

However, Roberts (2013) urges caution in the application of the Bloom's taxonomy to high order and low order geography *questions*. She suggests that geography teachers should use professional judgement to distinguish specific questions depending on the subject matter.

Mastery learning

Bloom proposed that students should demonstrate 'mastery' of knowledge before they move on to learn new knowledge and he believed that all students are capable of learning anything if presented in the right way. This is discussed in more detail in the GA resource sheet *Mastery learning and geography*, available in the Initial Teacher Education section of the GA website).

Reading for trainee teachers

- Biddulph, M., Lambert, B. and Balderstone, D. (2015) *Learning to Teach Geography in the Secondary School*, 3rd edition. Abingdon: Routledge, pp 138–9
- Roberts, M. (2013) *Geography Through Enquiry: Approaches to teaching and learning in the secondary school*. Sheffield: Geographical Association, Chapter 10 pp 99–101

(Last updated May 2017)

ⁱ Bruner, J. S. (1960) *The Process of education*. Cambridge, Mass.: Harvard University Press.

ⁱⁱ Bruner, J. S. (1961) The act of discovery. *Harvard Educational Review*, 31, 21–32.

ⁱⁱⁱ Bruner, J. S. (1966) *Toward a theory of instruction*, Cambridge, Mass.: Belkapp Press.

^{iv} Barnes, D. (1992) The role of talk in learning. In K. Norman (ed) *Thinking Voices*. London: Hodder and Stoughton.

^v Mercer, N. (1995/2000) *The Guided Construction of Knowledge. Talk amongst teachers and learners*. Clevedon: Multilingual Matters Ltd

^{vi} Piaget, J. (1936). *Origins of intelligence in the child*. London: Routledge & Kegan Paul.

^{vii} Piaget J (1994). Cognitive Development in children: Piaget Development and Learning, *J. Res. In Sci. Teaching*, 1964, 2: 176– 186.

^{viii} Anderson, L. W. and Krathwohl, D. R., et al (Eds.) (2001) *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. Boston, MA: Allyn & Bacon (Pearson Education Group).