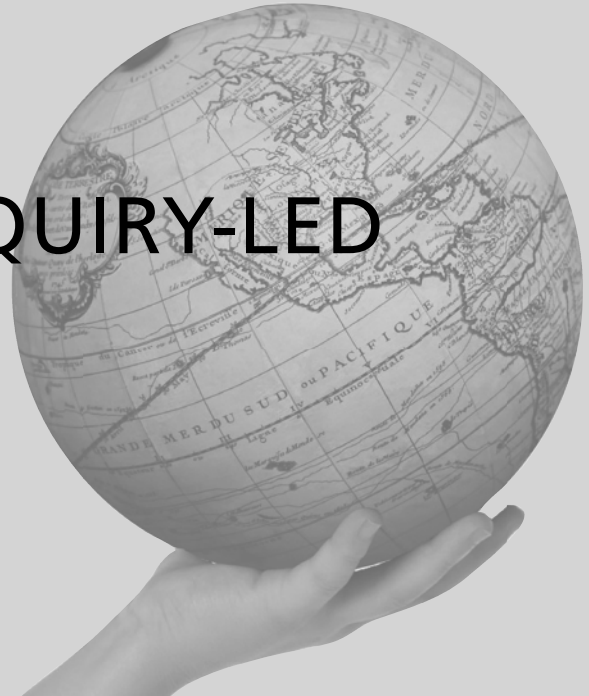# WHY DO ENQUIRY-LED LEARNING?

By the end of this chapter you will be able to:

- explore the notion of enquiry as a pedagogical approach;
- consider historical perspectives of learning and teaching approaches in humanities;
- relate enquiry to inductive and deductive reasoning;
- consider psychological perspectives and the relationship of enquiry to learning theory;
- analyse relevant research and consider implications for future practice.

Introduction

'Enquiry' is a term which is generally perceived as referring to the process of focused questioning and research. Ultimately this is with a view to reaching a reasoned conclusion, although the process of enquiry itself is also of significance to the learner. Enquiry is an accepted learning and teaching

approach within primary history and geography and, as a pedagogical context, there are a number of perspectives from which the notion of enquiry might be explored.

Historically the pedagogical method of enquiry is not new and evidence for the use of enquiry in primary history and geography dates back to at least the early 1900s (Garner, 2007; Collingwood, 1939, as cited in Cooper, 2000: 3). The enquiry method is firmly rooted within psychological theories of learning and this provides a clear rationale for its use within the primary humanities. There is, however, much research to indicate that there is a significant discrepancy between rhetoric and practice. Therefore, within this chapter, all of these perspectives will be explored and analysed and you will be encouraged to take a critical stance.

Historical perspective

It is useful to reflect on how school geography and history have been planned and taught over time, and to discuss the extent to which enquiry methods are really a modern phenomenon or whether such methods have always been a part of humanities curricula.

📁 Geography in primary schools

Even as far back as the early twentieth century, within a short paper detailing 'what the primary school geography teacher should know and be', it was suggested that the teacher should 'encourage children to talk, and (dangerous as it may seem) to ask questions about the subject' (Unstead, 1928: 315). A similar view was taken within an early experiment in a junior school where pupils were encouraged to undertake independent enquiry. Pupils had to identify a focus for geographical research and were required to use a number of sources to actually present a lesson on their chosen topic to the rest of the class. This was with a view to encouraging the children to take a 'sufficiently *active* part' in the lesson (Cullis, 1919: 27). The project reported a number of benefits, not least in terms of the enthusiasm of those involved. A later study had similar outcomes, finding that the 'class literally teaches itself' when pupils have opportunities to lead research and participate actively in their own learning (Haddon, 1948: 190).

Benefits identified included increased motivation, proficiency in the use of sources and an increase in pupil questioning about geographical topics (Haddon, 1948). Other small-scale experimentation in elementary schools revealed that teaching seemed to be most effective when pupils' work was framed by the teacher but also self-directed in terms of choice of resources and methods of approach (Jones, 1925). The approach detailed in this particular case study is very similar to the model of mediation identifiable within constructivist models of learning and the notion of a 'framed enquiry' which has been presented more recently as an expression of the level of participation of pupil and teacher in school-based learning environments (Roberts,1987, 2003).

The shift away from 'chalk and talk' or highly didactic methods for primary-aged children continued and within a report commissioned by the GA in 1964 (based on the structure of the Hadow Report of 1931), it advised that the 'curriculum . . . be thought of in terms of activity and experience rather than of facts to be stored' (GA, 1964).

The teaching of geography continued to change in this direction from the early 1970s, moving increasingly towards the use of what was known as 'models' and the employment of problem-solving or 'hypothetical' modes of instruction. This gradual change in teaching methods represented a continued shift away from learning geographical facts to learning how to learn and how to be a young geographer.

Reasoning and enquiry in primary humanities

Deductive and inductive reasoning

The notion of 'models', generating and testing models, theories or generalisations, is akin to what is known as inductive and deductive reasoning. That is, types of reasoning which may be used by students or pupils within any line of enquiry. Both forms of reasoning can be used to test or form hypotheses, but in different and distinct ways.

☁ **To think about**

Key features of 'deductive reasoning'

General to specific

Hypothesis to confirmation or negation of hypothesis

Conclusion (which may be valid or invalid) as the logical consequence of premises/hypotheses

Deductive approach in **geography** is where students generate aims and hypotheses based upon prior theoretical knowledge, then select appropriate methods, collect data and carry out analysis within a specific case study context.

Students choose the cheapest mode of transport when travelling long distances (Premise A)

Travelling by coach is the cheapest mode of travel for travelling long distances (Premise B)

Most students travel by coach when travelling long distances (conclusion based on premises/data analysed)

Deductive approach in **history** is where students generate aims and hypotheses based upon prior theoretical knowledge, then make observations of and analyse sources within a specific case study context.

The use of coal was limited by cost of transportation (Premise A)

Canals reduced the cost of transporting heavy goods (Premise B)

The use of coal rose in areas linked by canals to coal mines (conclusion based on premises/data analysed)

☁ **To think about**

Key features of 'inductive reasoning'

Specific to general

Hypothesis formulated on basis of data collected; Observation – theory building

Explains relationships between facts and allows predictions of the future through formulation of laws/rules/hypotheses

Inductive approach in **geography** is where we collect first-hand data and then make generalisations/build theory based on this

Collect data about physical features of glaciated valleys in the French Alpine region – make generalisations about features which may be common to all glacial valleys (concepts of patterns and processes)

Inductive approach in **history** is where we make observations from a certain period and then make generalisations about the identified period

Make observations of political documents, letters, census data from the Victorian era – make generalisations about how people lived based on this (concepts of similarity and difference, cause and effect)
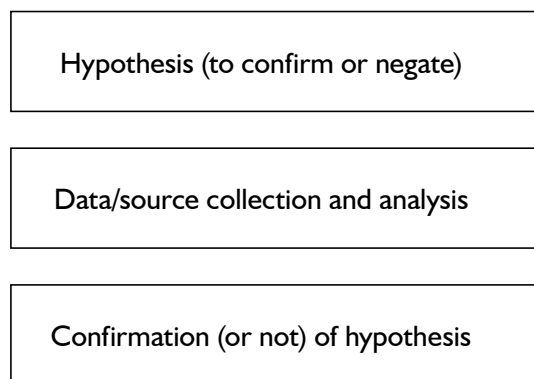
Hypothesis (to confirm or negate)

Data/source collection and analysis

Confirmation (or not) of hypothesis

Figure 1.1   Deductive model

Observation

Data/source collection and analysis

Detect patterns

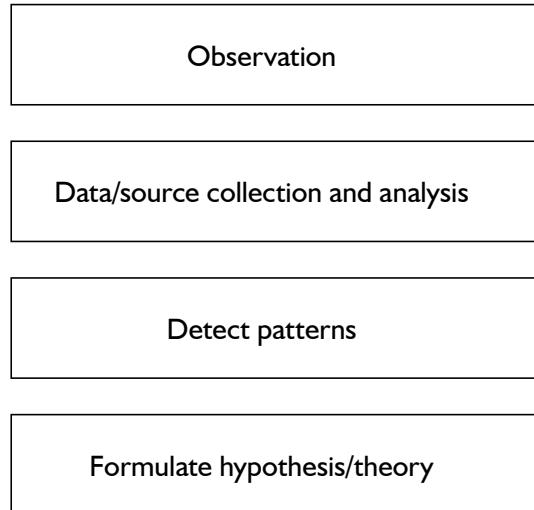| Formulate hypothesis/theory |
|---|

Figure 1.2   Inductive model

There are many advantages of using hypothetical methods of teaching. First, greater intellectual potency can be achieved when children learn to use hypotheses or models to solve problems. There is opportunity for learners to progressively relate new instances to their framework of fundamental ideas, this of course being directly related to the theory of constructivism. The intrinsic reward in terms of success and failure is more about information rather than reward and punishment. In other words, using this method helps children to construct their own learning and to develop confidence in their ability to learn rather than to be faced with an answer which is either simply correct or incorrect.

A further potential advantage, relates to conservation of memory and how 'discovery of things for oneself' (Crisp, 1969: 13) can lead to more personal and relevant storage of cognitive information; that this in turn can facilitate ease of retrieval later. Enhanced levels of motivation and participation of learners, coupled with the development of key and transferable skills, are also arguments in favour of this approach.

The distinction between inductive and deductive reasoning in relation to primary history and primary geography will be explored further within Chapter 2.

Types of reasoning and the enquiry process

In terms of enquiry then, what is the relationship between these types of reasoning and an enquiry-based approach?

As described above, both inductive and deductive reasoning can be classed as hypothetical modes of learning and teaching, the main distinction being where the enquiry begins. With inductive reasoning, an enquiry may start with an observation of a phenomenon which raises questions that then subsequently shape the investigation. Deductive reasoning however, begins with a hypothesis and, through research, the key objective is to confirm or negate the hypothesis.

While starting points are different, the key elements within each process are similar; data/source collection and analysis and hypothesis testing and formulation. These aspects are important features of an enquiry-based approach (see Figure 1.3).
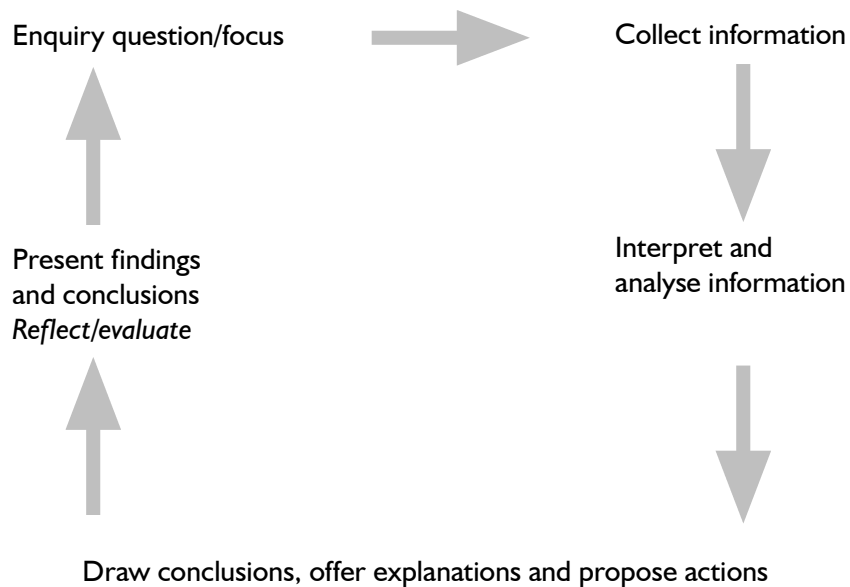
Enquiry question/focus → Collect information

Present findings and conclusions
Reflect/evaluate

Interpret and analyse information

Draw conclusions, offer explanations and propose actions

Figure 1.3   The enquiry process

The enquiry question or focus can be based on inductive or deductive reasoning. For example, in history, the question may be essentially deductive: 'What was domestic life like during the Victorian era? Does the evidence we have support the idea that there was poor sanitation, overcrowding?' By comparison, in geography, the question might be more inductive: 'What is this glaciated valley like?' From this point data may be collected and patterns and processes identified in terms of the character of glacial landscapes. The key point here is that there is a distinction between inductive and deductive reasoning but that both represent key aspects of an enquiry-based approach.

Psychological perspectives

Historical and geographical enquiry is generally perceived as being related to the theory of constructivism. Constructivism is based on the scientific study of mental events in terms of the learner and how the learner uses information to make sense of the world around them. The role of the learner in developing strategies to build knowledge and understanding is central to this theory; it is about how they perceive, interpret, store, retrieve and use information which is critical in effective learning. It is about information and the relationships forged between units of information which leads to the construction of knowledge and understandings.

The implication of this for enquiry is that it should represent a process through which pupils can 'learn about the world by actively making sense of it themselves', in contrast to models of learning where knowledge is seen as being 'transmitted to us ready-made' (Roberts, 2003: 27). Learning is about constructing meaning in relation to what is already known. All learners understand the world in different ways due to varying social and cultural factors and contexts. Because of this phenomenon, new information must be accommodated and assimilated within an individual's existing constructs, as opposed to being 'bolted on' as ready-made knowledge (Barnes and Todd, 1995, as cited by Roberts, 2003).

Two key proponents of this theory of constructivism include Bruner and his notion of '*discovery learning*' and Vygotsky and his model of the '*Zone of Proximal Development*'.

Bruner and enquiry

For Bruner, education and learning is about the construction of our own version of reality through personal experiences and the development of relationships between concepts ('coding systems' or 'categories'). The implication of this for pupils and students in education is that they should

not be presented with information in its final form, but that they should be active in processing the information themselves. Because of this, the role of the teacher is not only to impart knowledge but also to guide learners in discovering new knowledge and understandings for themselves.

In terms of enquiry, curriculum models should help to facilitate the development of coding systems through the incorporation of methodologies which will help learners to develop their thinking. Related to this, Bruner describes the 'act of learning' as involving three processes. First, there is 'acquisition' of new information; second, 'transformation' of knowledge; and third 'evaluation' (Bruner, 1977). According to Bruner, after or while the information is being acquired, transformation occurs; transformation is about 'the process of manipulating knowledge to make it fit new tasks' (Bruner, 1977: 48). This refers to the application and development of new and existing knowledge so as to make sense of new facts, problems and issues. Bruner goes on to identify the third process of learning as being 'evaluation' and notes how this essentially refers to the process of reflection on one's learning and the extent to which knowledge has been appropriately applied and manipulated. This tripartite model, although not necessarily sequential (the three processes may be almost simultaneous (Bruner, 1977)), does clearly relate to the models of enquiry and reasoning detailed earlier.

Vygotsky and enquiry

Again, for Vygotsky, education and learning is about the construction of our own knowledge and understanding; it is about developing the knowledge of *how* to write a book as opposed to noting down dictated instructions, verbatim. The role of language and culture is seen as having pivotal significance within this variation of constructivist theory.

Social constructivism, of which Vygotsky is a key proponent, emphasises the significance of others in helping us to understand the world; Vygotsky identifies the 'Zone of Proximal Development' as a model representing the level of achievement that can be reached unaided, compared with the higher levels of achievement facilitated through mediation by teacher or peers.

> the Zone of Proximal Development is . . . the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers.
>
> (Vygotsky, 1978: 86)

This assistance by others in pupils' learning is often referred to as 'scaffolding' (Daniels, 2001). The teacher (for example) can help 'a child or novice to solve a problem, carry out a task or achieve a goal which would (otherwise) be beyond his unassisted efforts' (Woods (1976) as cited by Daniels, 2001: 107). 'Scaffolding' helps to simplify the role of the learner rather than the task, through structured help by more capable others. It is the difference between learning how to develop a new skill or concept unaided compared with having the opportunity to do this with an appropriate expert or a more knowledgeable other. In short, without language and mediation, the Zone of Proximal Development remains 'untouched' and the shift from elementary to higher-order functioning is not facilitated.
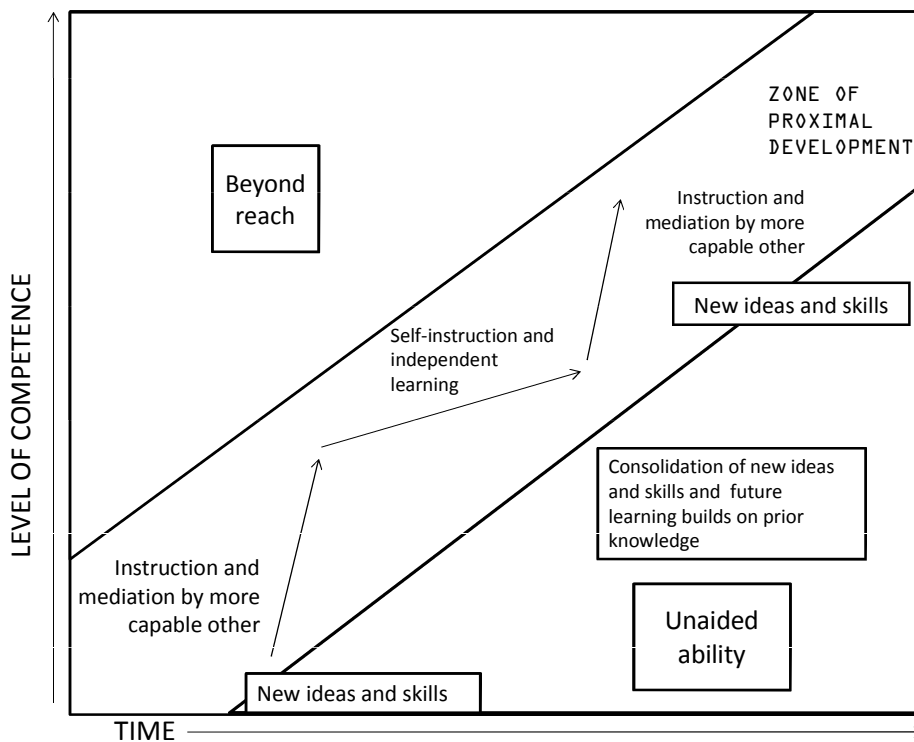

Figure 1.4 Zone of Proximal Development – scaffolding through focused and facilitated enquiry

To think about

What are the implications for the role of the learner and the teacher (or 'expert other') within this model proposed by Vygotsky (see Figure 1.4)?

Think about a time when you have been guided by a more expert learner in your own learning, in such a way that your competence subsequently improved.

What starter activities did the expert use?

How did they continue to instruct and to guide you?

Did they provide you with information?

Did they ask questions and probe for explanations?

Did they correct mistakes and misconceptions?

In terms of what was being learned, how did you make the transition between teacher-assisted and independent learning? At what point did you feel the scaffolding was no longer necessary, and why not?

Try this activity

With a partner, think about the analogy of using a map to guide you to a specific location. The map provides important directions and information to guide you to your destination and this is similar to the role of the teacher in Vygotsky's model of the Zone of Proximal Development (Figure 1.4). Select a topic for a history- or geography-focused lesson. Note down what starter activities you might use and how you will then go on to instruct and mediate so as to enable the learner to reach improved levels of competence.

In conclusion, the implications of constructivism for pupils, focusing on the work of Bruner and Vygotsky, include the need to take prior learning into account and to provide pupils with the opportunity to relate new

knowledge to what is already known. In addition to this, the significance of others in helping to reshape knowledge and understandings should also be taken into account, by both the teacher and the learner.

Thinking skills and enquiry

More recent pedagogical innovations within the geography and history curriculum have focused on 'thinking skills', a movement which really started to have an impact around the 1980s and links to the work of many important pioneers (Feuerstein et al. (1980); Lipman et al. (1980); de Bono (1992). Both the notion of an enquiry process and an increased emphasis on 'thinking skills' represents a shift towards more progressive educational ideology as both aim to develop increased autonomy in learners, as learners.

There is considerable overlap between 'thinking skills' and 'enquiry', and it could be argued that they are, in essence, the same thing, or one a part of the other. However, they are often referred to separately within educational contexts and literature, including curriculum documentation found in schools. As described in Table 1.1, the process of learning and the role of language and discussion are central to both thinking skills and enquiry. This relates directly to the work of Bruner and Vygotsky identified and discussed earlier.

Table 1.1   Thinking skills and enquiry

'Thinking skills' (Feuerstein et al. (1980), Lipman et al. (1980), de Bono (1992))	'Geographical enquiry' (National Curriculum)
Focuses on proces of learning in a way that helps learners to reach higher levels of achievement.	Focuses on the process of learning by following an enquiry route and by reflecting on methods, sources and outcomes in an ongoing way. This process has the potential to inform future enquiries.
'Thinking skills' pioneers stress the importance of language, articulation and discussion ('thinking together').	Within the context of 'geographical enquiry', group work, discussion, reflection and decision making are all identified as important features.

In line with the argument that the boundaries between the two may be artificial, historical and geographical enquiry could be viewed as encompassing all thinking skills, rather than either being a separate entity. Roberts shares this view and critically considers the list of five thinking skills within the context of the National Curriculum:

> What is odd about the list is that all the other skills listed – information processing, reasoning, creative thinking and evaluation – are all needed for different aspects of enquiry work. Enquiry skills are not a sub set of thinking skills, enquiry includes them all.

<div align="right">(Roberts, 2003: 24)</div>

Blooms et al. and enquiry

The process of enquiry can be justified in relation to theories of learning relating to constructivism and particularly because enquiry focuses on the higher-order thinking skills within the cognitive domain as identified by Blooms et al. (1956).

Anderson and Krathwohl (2000) have made some minor but important modifications to this model. Of note here is a significant shift from the use of nouns (as originally used by Blooms et al.) to verbs, implying that learning within the cognitive domains is active in an ongoing way.
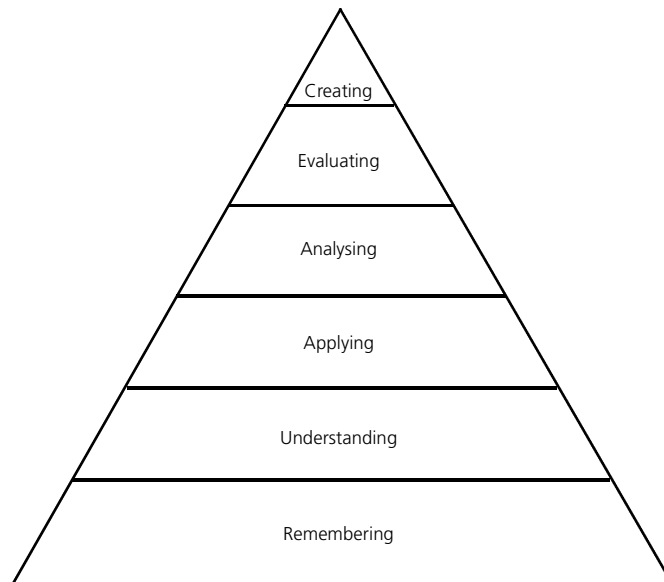
Creating

Evaluating

Analysing

Applying

Understanding

Remembering

Figure 1.5   Taxonomy of cognitive domains

Source: Based on Anderson (2001) after Blooms et al. (1956)

> ☁ **To think about**
>
> Critically reflect on Blooms et al. and Anderson's taxonomy of cognitive domains (Figure 1.5).
>
> Is the hierarchy appropriate?
> Are skills more important than facts?

Create 3-D model of river system drawing on theoretical models and case study detail

Evaluate the theoretical models and argue which aspects are more likely to vary depending on geographic location

Test and examine whether the features of a specific river are consistent with theoretical models

Interpret the field site so as to identify key river features and processes

Explain that because it gains more water as it flows downstream, a river will flow faster as the hydraulic radius increases

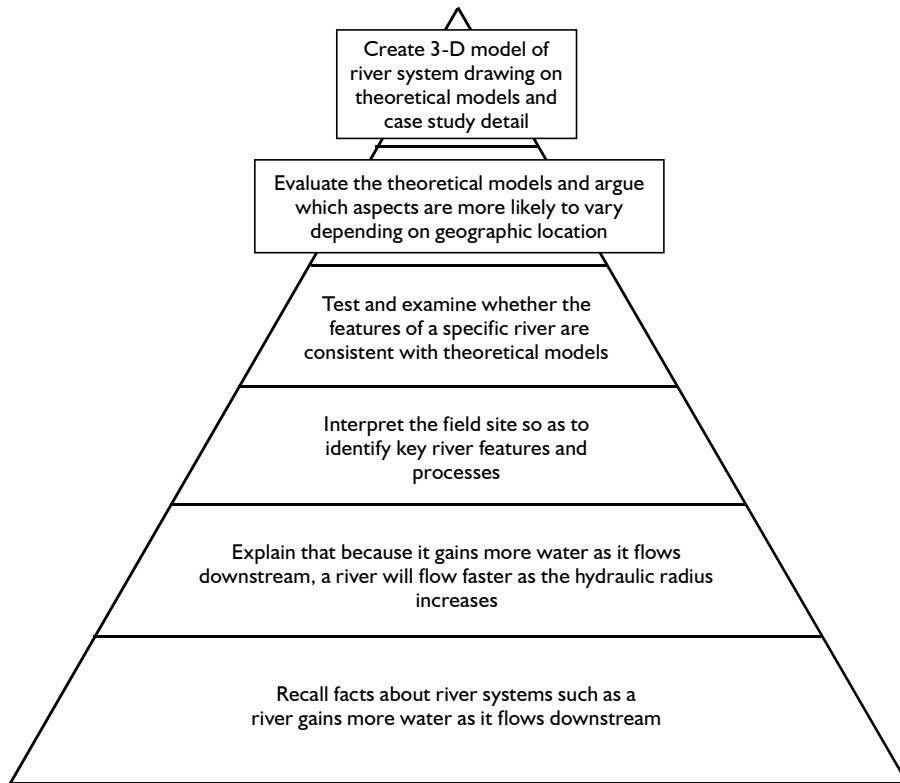Recall facts about river systems such as a river gains more water as it flows downstream

Figure 1.6 Taxonomy of cognitive domains as applied to humanities education
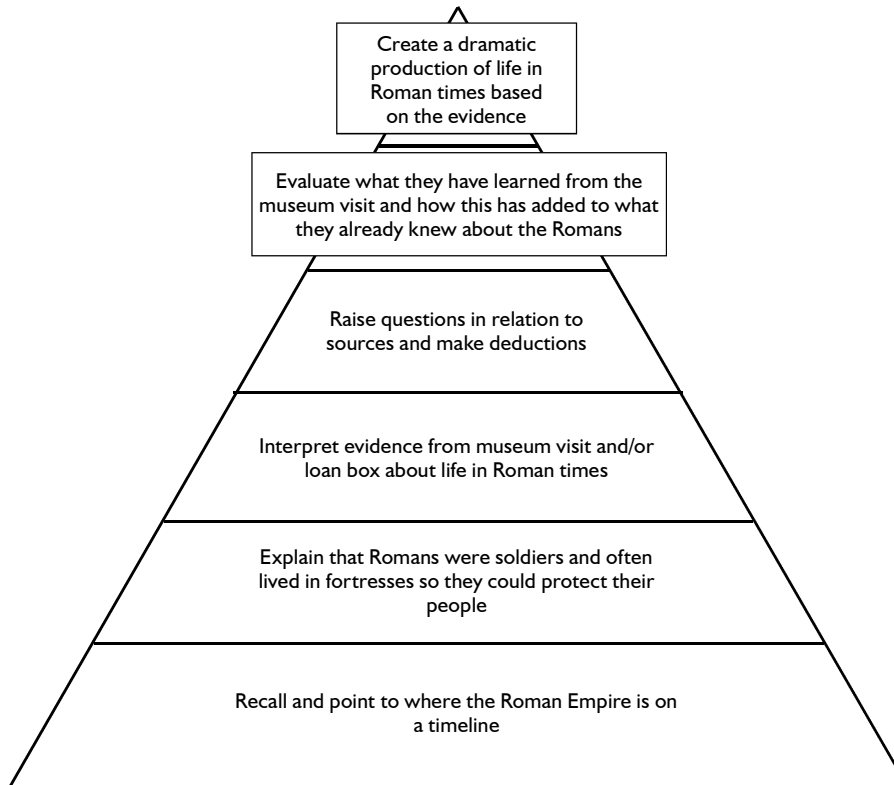
Figure 1.7 Taxonomy of cognitive domains as applied to humanities education

---

✎ Try this activity

With a partner, analyse Figures 1.6 and 1.7. Select a history- or geography-focused lesson or concept and map the progression onto Blooms et al. and Anderson's model.

How does this relate to types of reasoning and enquiry, as explored earlier within this chapter?

What are the implications for classroom practice?

What mechanisms need to be in place to ensure progression?

Enquiry-based learning relates to this model proposed by Blooms et al. and Anderson. As it is not only about focusing on the relatively low-status activities of the process of knowledge acquisition, an enquiry approach should facilitate the development of deeper understandings, the ability to apply and analyse information, and to synthesise and evaluate. All of these more complex and advanced levels of cognitive activity are seen as key in helping the pupil to reach higher levels of achievement.

Research into practice

Research into perceptions of enquiry and how enquiry might manifest itself as a learning and teaching approach in the classroom environment was explored by Garner in 2007. Responses from a survey of Initial Teacher Training Tutors from across a number of institutions were used to generate a shared view of an 'Ideal Enquiry-based Learning Task'. The 'Ideal Enquiry-based Learning Task Inventory' (IELTI) was administered electronically by e-mail and a total of 15 out of 40 academics responded. This gave an acceptable response rate of 37.5 per cent (Tilley and Norton, 1998; Garner et al., 2002). The process of content analysis was used to identify, hone and merge categories so as to arrive at the composite view shown in Table 1.2.

It is clear from these findings that the perception of an Ideal Enquiry-based Learning Task (IELT) is that it will facilitate autonomous learning and present children with opportunities to ask and answer geographical and historical questions. Usually, the task will be based on a number of stages within the enquiry cycle which comprise asking questions, collecting, recording, analysing, discussing data and drawing conclusions. Evaluation and reflection of the planned enquiry will also feature. The task will have a clear purpose which is meaningful and motivating to pupils. It will be well conceived in terms of exploiting opportunities to develop other aspects of humanities education and knowledge skills, understandings, attitudes and values across the whole curriculum. The task will involve the use of a wide range of high-quality geographical resources and, ideally, will involve some fieldwork and use of artefacts. Children will have the opportunity to work collaboratively and, in planning the task, prior knowledge and varying levels of ability will be taken into account.

Table 1.2   Ideal Enquiry-based Learning: composite view of Initial Teacher Training Tutors (Garner, 2007)

Rank order (based on response frequency)	An Ideal Enquiry-based Learning Task
1	The task facilitates autonomous learning – opportunities to ask and answer geographical/ historical questions – and fosters creativity;
2	The task is based on the 'enquiry cycle', i.e. ask, plan, collect/record/analyse/discuss data and sources, make deductions, draw conclusions, evaluate, identify further questions, etc. (comprising some higher-order thinking skills/ reflection);
3	The task has a clear purpose which is meaningful and motivating to pupils;
= 4	The task connects with other aspects of humanities teaching and cross-curricular concepts and skills – including development of attitudes and values;
= 4	The task involves the use of a wide range of good-quality geographical and historical resources and sources;
=4	The task involves fieldwork and artefacts/objects (including buildings) as appropriate;
5	The task is organised as a collaborative group activity;
6	The task takes prior geographical and/or historical knowledge into consideration and differentiation is appropriate.

> **To think about**
>
> **Reflection: Implications for practice**
>
> Taking a critical stance, and given what you have read, what are the implications for your classroom practice with specific reference to the following:
>
> ?   The quality of questioning and role of the teacher;
> ?   The unique child and prior learning;
> ?   The curriculum contexts in which enquiry approaches may be used – time frames, structures and feasibility;
> ?   The opportunity for creativity;
> ?   The significance of resourcing and learning outside the classroom;
> ?   The role of enquiry in engagement, self-esteem, motivation and attainment;
> ?   The role of enquiry in lifelong learning and the development of key and transferable skills.

Summary

The enquiry approach can be justified in relation to theories of learning (constructivism), particularly because enquiry focuses on the higher-order thinking skills within the cognitive domain (as identified by Blooms et al., 1956) and therefore has the potential to lead to improved gains in achievement.

The composite view of an IELT presented within the latter section of this chapter, based on the responses of ITT tutors, presents a definition of enquiry from a practitioner perspective which can be justified in relation to the literature. The features of the IELT described here relate not only to good practice in humanities teaching as documented from a historical perspective, but also closely to learning theory and, in particular, constructivism.

The challenge for the teacher of primary humanities is to consider how these theoretical and research perspectives apply to learning and teaching with young children and how and when these approaches might be best applied and managed. The following chapters will explore these aspects further and in greater depth.

References

Anderson, J. and Krathwohl, D. (eds) (2000) *A Taxonomy for Learning, Teaching and Assessing; A Revision of Blooms' Taxonomy of Educational Objectives.* London: Pearson.

Blooms, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H. and Krathwohl, D.R. (1956) *Taxonomy of educational objectives: the classification of educational goals; Handbook I: Cognitive Domain*. USA: Longman.

Bruner, J. (1977) *The Process of Education.* USA: Harvard University Press.

Cooper, H. (2000) *The Teaching of History in Primary Schools,* 3rd edn. London: David Fulton.

Crisp, J.A.A. (1969) 'New approaches to teaching geography', *Geography*, 54(1): 11–17.

Cullis, O.M. (1919) An experiment in junior school work', *The Geographical Teacher*, 10(1): 27.

Daniels, H. (2001) *Vygotsky and Pedagogy.* London: Routledge Falmer.

De Bono, E. (1992) *Teaching Your Child to Think.* London: Penguin.

Eliot Hurst, H. (1995) 'Geography has neither existence nor future', in R.J. Johnson, *The Future of Geography.* London: Blackwell, pp. 32–46.

Feuerstein, R., Hoffman, M.B. and Miller, R. (1980) *Instrumental Enrichment: an intervention programme for cognitive modifiability.* Baltimore, USA: University Park Press.

Garner, W.P. (2007) Unpublished thesis, available at: http://chesterrep. openrepository.com/cdr/handle/10034/97297

Garner, W.P., Norton, L.S., Asquith, S., Beaumont, A. and Caldecott, S. (2002) *The distance learning task as a pedagogical context*, in Institute for Learning and Teaching (ILT), *Conference proceedings from the 9th Improving Student Learning Symposium*. Oxford: Oxford Brookes University Press, pp. 247–57.

Geographical Association (1964). 'Geography teaching in primary education: a memorandum', *Geography*, 49(4): 410–15.

Ginsberg, H.P. and Opper, S. (1988) *Piaget's Theory of Intellectual Development.* USA: Prentice Hall.

Haddon, J. (1948) 'An experiment in teaching geography', *Geography*, 33(4): 190–93.

Jones, E.W. (1925) 'Results of experiments in teaching geography in elementary schools', *The Geographical Teacher*, 13(1): 64.

Lipman, M., Sharp, A. and Oscanyan, F. (1980) *Philosophy in the Classroom.* Princeton, USA: Temple University Press.

Marwick, A. (2001) *The New Nature of History: Knowledge, Evidence, Language.* Hampshire: Palgrave.

Norton, L.S., Morgan, K. and Thomas, S. (1995) 'The Ideal Self Inventory: A new measure of self esteem', *Counselling Psychology Quarterly*, 8(4): 305–10.

Roberts, M. (1987) 'Teaching styles and strategies', in A. Kent, D. Lambert, M. Naish and F. Slater (eds) *Viewpoints on teaching and learning: geography in education*. Cambridge, UK: Cambridge University Press, pp. 231–59.

Roberts, M. (2003) *Learning through Enquiry.* Sheffield: Geographical Association.

Tilley, A. and Norton, L.S. (1998) 'Psychology lecturers' conceptions of the ideal student using the Ideal Self Inventory (ISI)', *Psychology Teaching Review*, 7(1): 14 –23.

Unstead, J.F. (1928) 'The primary school geography teacher: what should he know and be?', *Geography*, 14(4): 315–22.

Vygotsky, L.S. (1978) *Mind in Society.* USA: Harvard University Press.