

Research File

Mind friendly learning in geography

Ruth Ward reports on the findings from a classroom-based research project into the transferability of strategies for learning in mind friendly ways

The research described in this article was completed as a result of a Cheshire local education authority course entitled 'Thinking in geography, history and religious education – a classroom based research project at key stage 3'. The aim was to investigate the transferability of 'mind friendly' learning skills through classroom-based research. During a topic on Italy, three techniques – Maps from memory, Mysteries (Leat, 1998) and Concept mapping (Nichols with Kinninment, 2001) – were used with year 8 middle and lower achievers. The same strategies were also employed for a second suite of lessons on economic geography.

My focus was on the following objectives:

1. For students to learn mind friendly learning strategies – specifically Maps from memory, Mystery solving and Concept mapping.
2. For students to apply these techniques to improve their learning in specific geography topics.
3. For students to transfer their use of mind friendly learning techniques to new situations.

In essence, the aim was to discover whether the students would be able to transfer the skills to other learning situations initially within geography, but subsequently to other subject areas.

The rationale for the research

Mind friendly learning encourages students to make the most effective use of their skills and offers a variety of

teaching and learning styles that may enhance learning and improve motivation (Gardner, 1993). Teaching them techniques aimed at improving their memory or learning skills can improve learning for a wider range of students (Smith, 2000). The work of the Thinking Through Geography Group (Leat, 1998; Nichols with Kinninment, 2001) has been widely accepted as improving both the depth of students' answers and their understanding of more difficult concepts as evidenced by Ofsted (Krause and Thompson, 2000). This is underpinned by the use of evaluation skills and sorting and classifying information using strategies such as Mysteries. These thinking skills approaches appeal to many senses: kinesthetic, auditory, visual, mathematical and logical, inter- and intra-personal. It can help students who do not enjoy writing because, in the case of card sorting activities, the writing framework is provided. In addition, it also motivates students and encourages the development of reasoning and evaluation skills (Leat, 1998).

I believed that where students could learn to apply some of these skills in one lesson they could employ the technique on subsequent occasions – especially in situations where they were required to deal with increased amounts and/or more complex information with less teacher intervention.

Method

The research focused on a year 8 group of middle to lower achieving students. The thinking skills techniques were taught through two topics which were in need of some changes: the study of a European Union country (Italy) and a unit on economic geography which focused on farming. I decided to focus on three thinking skills techniques:

- Maps from memory,
- Mysteries, and
- Concept mapping.

These three strategies (Leat, 1998; Nichols with Kinninment, 2001) were chosen because they vary in difficulty and learning styles and because it should be possible to transfer their use from geography to other subject areas.

The timescale for the work was three lessons in December:

- Lesson 1:** Maps from memory – learning how to produce a map from memory and practicing using the skill with a wall map of Italy.
- Lesson 2:** Mysteries – learning how to 'solve' a mystery about migration from southern Italy to Germany, and practice using it.
- Lesson 3:** Concept mapping – learning how to map concepts by producing and organising notes about the features and issues of southern Italy from a textbook.

The follow-up work (January to March) was intended to ascertain whether the students were able to transfer the learning styles to another topic area and to vary their learning experience:

- Lesson 4:** Producing a Map from memory on the economic geography of north west England
- Lesson 5:** Solving the 'Mystery of Loxley Farm' (Leat, 1998).
- Lesson 6:** Concept mapping on the factors affecting farming.

During each lesson data was collected from at least three sources. This 'triangulation' approach is often used in research, whereby evidence from three different sources is collected. The different sources of evidence offer more rigour to the research and greater validity to any findings because each one confirms the other, i.e. teacher observation, student interview and the piece of work as outcome. Where anomalies occur, these can be identified and further research carried out.

Maps from memory

For the Maps from memory lesson the task was to develop an understanding and knowledge of a map of Italy. Students were asked to work in groups of four or five, as follows:

- one student from each group looked at a wall map of Italy (placed in one corner of the classroom and screened off from the class) for ten seconds in order to memorise as much information as possible and report back to the group;
- the group then started to draw the map from memory;
- the task was repeated until all members of the group had visited the wall map twice; and
- each group's resulting map was compared with the real map.

Individual students were then provided with an outline map, which they were required to 'fill in' so that all students had a completed map to memorise.

A sixth-form media studies student recorded the lesson using a video camera. She was asked to focus on the introduction, groups working and discussing the tasks, the visits to the map, and the feedback and plenary sessions. When I was able to analyse this later, it provided an overview of progress made throughout the lesson, how groups worked together on the task, how decisions were made and tasks divided up and any changes that were made. Viewing the video offered an insight into students' thinking processes and *how* they felt they had learned as well as *what* they had learned. It also allowed me to reflect on the teaching and learning process with this technique and how to improve it for the next lesson. I kept a log of the lesson, and distributed a questionnaire to students for completion at the end of the lesson (Figure 1). The latter includes both closed and open questions, and space for students to record their opinions about their learning and their feelings about the lesson.

Immediately after the lesson, six students (interview group 1) (selected from a variety of friendship and ability groups), were invited to a short interview with the deputy headteacher who had a whole school interest in promoting different learning styles. The interview questions focused on their learning experience. The results from the map test on Italy were also collected as evidence (see Figure 3).

The Maps from memory technique was used during another lesson which focused on economic geography, this time using a map of North West England. I used the same data collection techniques, but made adjustments to the questionnaire (Figure 2) to reflect the idea of transfer of skills. Similarly, the interview questions were adapted and a different group of interviewees (interview group 2) were selected on the same basis.

STUDENT QUESTIONNAIRE 1

(Circle the correct response)

Year group: 7 8 9 10 11 12 13 Gender: F M

Set: 1 2 3 4

Use the key to circle the number that best describes how you feel about each of the statements

Key: 5 = strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree

Compared with other geography lessons I felt the activity:

1. Was enjoyable	5 4 3 2 1
2. Made me take more part in the lesson	5 4 3 2 1
3. Made me discuss ideas more	5 4 3 2 1
4. Made me think	5 4 3 2 1
5. Made me work as a team member	5 4 3 2 1
6. Taught me new skills	5 4 3 2 1
7. Helped me understand the topic better	5 4 3 2 1
8. Helps me remember the work better	5 4 3 2 1
9. Taught me skills I can use in other geography lessons	5 4 3 2 1
10. Taught me skills I can use in other subjects	5 4 3 2 1

■ How did the activity help you to learn about this topic?

■ What skills did you learn/practice?

■ What did you enjoy about the lesson?

■ How might it be improved?

Figure 1: Student questionnaire 1.

STUDENT QUESTIONNAIRE 2

(Circle the correct response)

Year group: 7 8 9 10 11 12 13 Gender: F M

Set: 1 2 3 4

Use the key to circle the number that best describes how you feel about each of the statements

Key: 5 = strongly agree 4= agree 3= not sure 2= disagree 1= strongly disagree

Compared with other geography lessons I felt:

1. I was able to remember how we did the task last time	5 4 3 2 1
2. I was able to complete the task more quickly	5 4 3 2 1
3. I felt more confident about the work	5 4 3 2 1
4. I contributed more to the group discussion	5 4 3 2 1
5. My work/answers have improved	5 4 3 2 1
6. I understand the topic better	5 4 3 2 1
7. I will remember the work better	5 4 3 2 1
8. I will use these skills in other geography lessons	5 4 3 2 1
9. I will use these skills in other subjects	5 4 3 2 1

■ How do you think could you use these skills again?

■ Any other comments?

Figure 2: Student questionnaire 2.

Mysteries

For the Mystery, both the lessons were audio-tape recorded so that timing and depth of response could be analysed and judgments made about quality of transfer of skills. The first Mystery concerned migration from southern Italy to Germany. I developed a set of cards with clues for students to help them solve the Mystery – the key question for which was ‘Why did Gianni move to Hamburg?’ Working in small groups students were asked to sort and classify the cards, and then encouraged to come up with possible answers to the question. They were then asked to summarise their findings in writing.

The introducing skills questionnaire (Figure 1) was handed out to individual students to complete, and immediately after the lesson interview group 1 from the Maps from Memory lesson were interviewed about their learning in the Mystery lesson.

This process was repeated for the Mystery of Loxley Farm (Leat, 1998) lesson on economic geography. Students were given cards to sort and classify to answer the question ‘What has happened to the lost livestock of Loxley Farm?’ They were encouraged to discuss their thinking processes in a feedback session, and their findings were summarised in a plenary session before they were asked to write up their reasons. Again, to test for transfer of skills, a student questionnaire was used as were post-lesson interviews. A teacher log of both lessons was kept as well as the student outcomes for both lessons (the written summary of reasons) so that these could also be compared.

Concept mapping

For the Concept mapping lessons student questionnaires were again used to obtain data. The introducing skills questionnaire (Figure 1) was used during the first lesson, but this time students working in pairs were asked to make and organise notes about the features and issues of southern Italy using a textbook. In the follow-up lesson students were asked to make notes on factors affecting farming as part of the economic geography unit. An adapted version of the second questionnaire (Figure 2) was used to test for transfer of skills.

Both Concept mapping lessons were observed by the special needs co-ordinator, who had been provided with a list of issues and criteria for focus. Again, a teacher log was made of both lessons and an evaluation of the Concept maps gave a measure of the outcome. Improvements in using the technique are illustrated in Figures 3 and 4. Figure 3 shows one group’s work on southern Italy during the first lesson.

As Figure 4 indicates, when the Concept mapping activity was repeated for the economic geography topic on ‘Factors affecting farming types’ the resulting work was much more detailed because students had a better idea of how to set out and develop the work.

The results

There were a number of positive results from the thinking skills work. Evaluations of the video and audio recordings and teacher’s log indicate that students spent longer discussing tasks and worked well in groups. Evidence from the student interviews, peer and teacher observation indicate that this was especially the case during the second lessons using each technique. Students said they were more involved in the task than with previous lessons and felt they worked in groups more effectively. Tests of knowledge and understanding of the topic area indicated that students’ ability to recall information had improved as a result of the thinking skills tasks. This was especially true of the Concept maps where the average mark for the test map was raised from 51% to 81% on the second activity. In addition, their note taking skills improved in depth and detail. In the second lesson on concept mapping, organisation and presentation were much improved and links were made between the different factors showing understanding in greater depth. Other benefits related to transferability of skills include:

- an improvement in students’ ability to undertake their tasks more quickly (for example, at the first stage students took 10 minutes for the first Mystery card sorting activity and only 4 minutes for the second) and complete them more efficiently and effectively;
- students’ responses to the questionnaire indicate that they used the strategies in other subjects (e.g. science, English, history and religious education) as well as other topic areas in geography. In their replies to the questionnaires, students mentioned being able to transfer the classification skills to science and Memory and Concept mapping skills for use during revision;
- improvements in more effective group and discussion work which could also be transferred to other topics and subject areas. This was mentioned by peer observation and in student comment in addition to being observed by the teacher. It was clear from all three sources

that boys in particular were able to contribute more effectively; and

- the students demonstrated an improved ability to reflect on how they learn. This was obvious during the discussion in the lesson and in the interviews of students who were more aware of the kind of learning which suited them.

At the end of the three different mind friendly lessons the students were asked to complete student questionnaire 1 and a second questionnaire (Figure 1 and 2) when the techniques were repeated. The latter was intended to identify how well students had built on their experience of the learning technique from the first occasion and whether it helped their understanding. Figures 5 and 6 show the results of the surveys for each questionnaire. In these graphs the average score for the answer to each of the questions is used. Most (86%) students agreed that all the activities made them think (question 4 on Figure 5), would help them to remember the work (question 8), and that the skills could be used in other subjects (question 10). After the techniques were repeated, the graphed results from questionnaire 2 (Figure 6) indicated that most students felt able to transfer the skills learned from the first task to the second (question 1) and would be able to use the skills again (question 8). It was also clear that for the Mind maps and Maps from memory work, students were able to complete the task faster (question 2) and develop a better understanding of the topic area (question 6).

All average scores were high, reflecting a positive learning experiences, which was also reflected in the comments students added to their answers. However, students clearly found the Mystery a slightly more challenging approach to learning than the other two methods, even on the second occasion. These results indicate that most students recognised the transferability of the mind friendly learning skills – not only within geography lessons but also to other subjects.

Evaluations of the video and audio evidence indicates that, on subsequent occasions, students remembered the skill, were able to settle to the task more quickly and their method of working was more effective. For example, during Lesson 4 on the second Mystery some students had already started to categorise the cards before instructions were given, and their subsequent written work showed more detail and a deeper understanding of the issues.

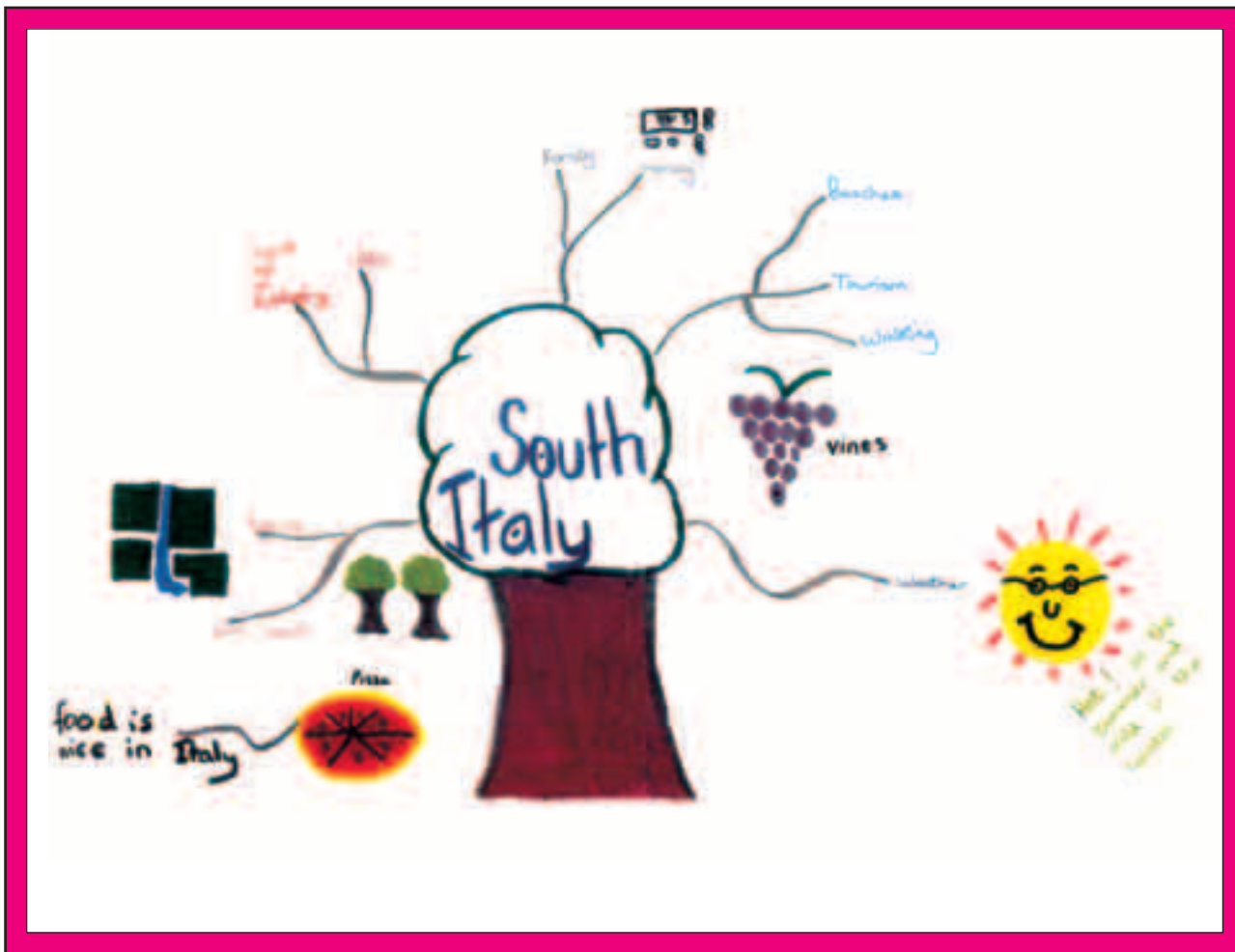
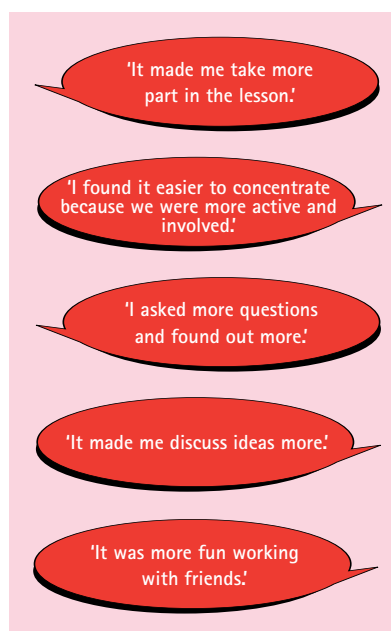


Figure 3: One group's 'facts about Italy' mind map from lesson 1 – i.e. before the thinking skills activities had been undertaken.



Figure 4: The same group's 'factors affecting farming' mind map from lesson 2 – i.e. after the thinking skills activities had been undertaken.

With repeated experience of the techniques the students' retention of information on a topic and their use of thinking skills improved, as did the quality of group discussion. The students enjoyed the lessons: the boys were more motivated and engaged – particularly enjoying the competitive element of Maps from memory; while the girls appreciated being able to work in a group or pairs, and felt more confident in contributing to class discussion. Some student responses to the questionnaires indicate that they enjoyed the activities in themselves, but they felt that the most effective activity (in terms of transferability of skills) was Concept mapping:



Issues and limitations

With mind friendly learning because teachers are more involved in the learning process and take a greater interest in students' learning indirectly (as well as directly), the students themselves respond better. This has a positive influence on learning, contributing to raising standards and impacting on results. Other issues that have arisen as a result of this research, include:

1. Thinking skills approaches to learning make students *think* about their thinking, which may make the topic area seem more difficult to get to grips with. This is especially the case when students compare their work in geography with those subject areas in which

they are not yet using these approaches. I would suggest that this could have an impact on the number of students opting for geography, if it is perceived to be a more difficult subject because our expectations are high. This aspect of the work requires further investigation, but is a good reason for implementing mind friendly learning across the curriculum.

2. There is a concern that the impact of innovation is lost when the strategy is repeated and the task could become formulaic.
3. The methods used for collecting data are useful for departmental self-evaluation.

There were a number of limitations to my research approach, which include:

- The research had to be concentrated to a once a fortnight lesson on a Monday because the other geography lesson with this year 8 class took place on Friday afternoon, the timing of which was not conducive to the best student work.
- This uneven lesson spacing caused longer gaps between lessons and, therefore, continuity within a topic was sometimes lost.
- Interruptions to lessons, both unplanned (e.g. one student was ill during a lesson) and planned (e.g. a delay to the start of a lesson when extra tutor time was devoted to one class) had an impact on student concentration and outcomes.

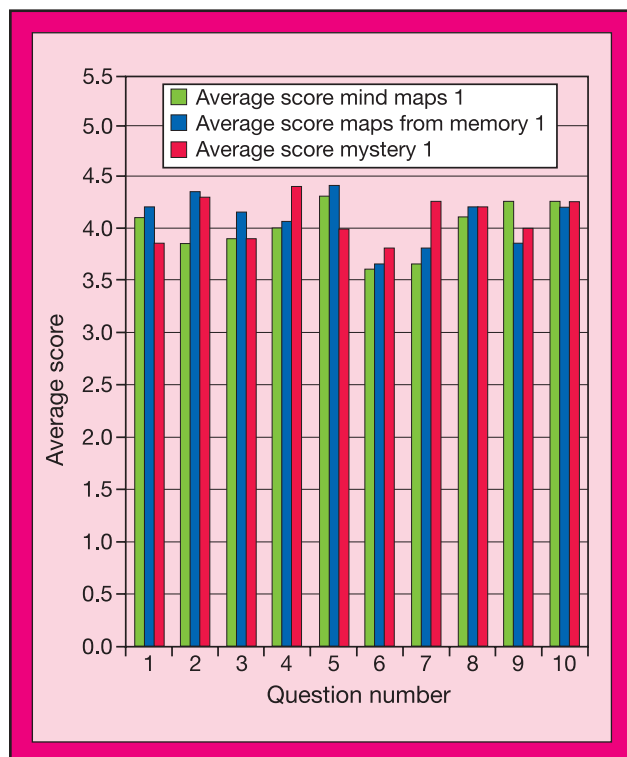


Figure 5: The results from questionnaire 1.

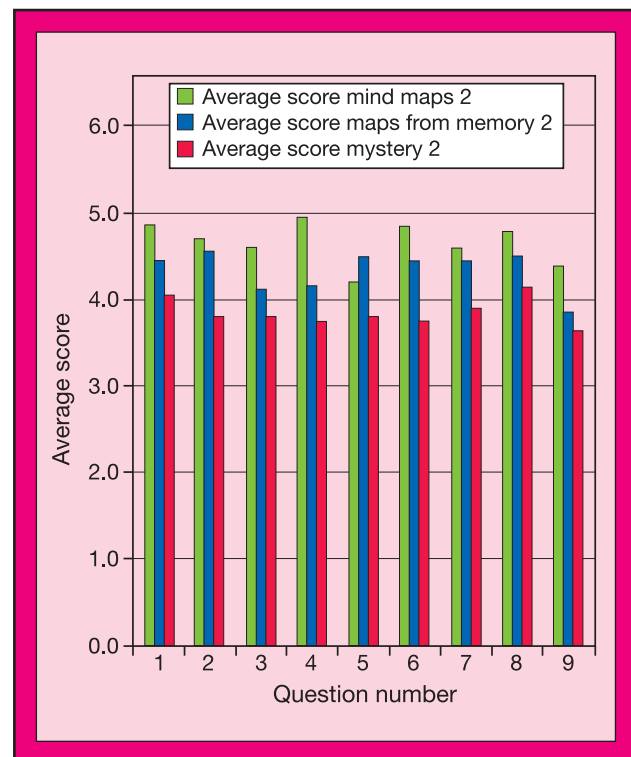


Figure 6: The results from questionnaire 2.

- The presence of another person in the room or a video or audio tape recorder proved to be a distraction for some students. There was evidence that students 'acted up' for the video on the second occasion, rather than concentrating on the task.
- As students become more used to the tasks they are inclined to think less and follow the formula – thus the impact of innovation is lost.
- There may be an issue related to overuse of questionnaires and interviews, students may tend to tick any box on questionnaires or to say what they think is required rather than give their own opinion.
- The tasks were repeated for different topic areas, which may not have been as popular or as easy to complete as the first topic so it can be difficult to compare outcomes.
- In my experience, students were not always ready to take part in debriefing sessions towards the end of each lesson.

Implications for the future

Monitoring the long-term effects on the groups selected for interview would help ascertain whether the standard of

their work and their achievement has been raised. It would also be useful to follow the transfer of skills learned across subject boundaries and to monitor and encourage the uptake of such strategies in other curriculum areas. It should then be possible to evaluate the impact on students' performance.

The strategies described here can be valuable for providing lower achievers with alternative methods of learning and memorising information, for higher achievers to improve the depth and detail of their answers, and for all of the students to develop their

thinking and decision-making skills. Aiming to help them become independent learners provides a stronger foundation for future study and should help to raise attainment.

Conclusion

The research described here has convinced me that mind friendly or thinking skills are readily transferable; they help make lessons more varied and interesting, act as a motivator to students' learning, and improve outcomes and attainment for students of all abilities. ■

Acknowledgements

This research was completed as a result of a Cheshire LEA course 'Thinking in geography, history and religious education – a classroom based research project at key stage 3' and with help from course tutors: Jeremy Krause, Linda Thompson, Jane Brooke and Peter Greenhalgh. I would also like to acknowledge the help and encouragement given by the headteacher and other colleagues at Helsby High School, Cheshire, and of course the students who took part in the research


References

- Gardner, H. (1993) *Frames of Mind: The theory of multiple intelligences (tenth anniversary edition)*. New York: Basic Books.
- Krause, J. and Thompson, L. (2000) 'Thinking in geography, history and religious education', unpublished LEA course statements.
- Leat, D. (ed) (1998) *Thinking through Geography*. Cambridge: Chris Kington Publishing.
- Nichols, A. with Kinninment, D. (2001) *More Thinking Through Geography*. Cambridge: Chris Kington Publishing.
- O'Brien, J. (2002) 'Concept mapping in geography', *Teaching Geography*, 27, 3, pp. 126-30.
- Smith, A. (2000) *Accelerated Learning in Practice*. Stafford: Network Educational Press Ltd.

Ruth Ward is Head of Geography at Helsby High School, Cheshire, and a Regional Co-ordinator for the Valuing Places project.

DISCOVER


Fieldwork & Expeditions in France & Morocco



- Choose from work units written specifically for the new KS3 / GCSE / AS / A2 / IB syllabuses for geography, biology and environmental science.
- Based at the Eagle's Nest in the Cevennes National Park, France, or at the Kasbah du Toubkal, in the Toubkal National Park, Morocco.
- Inclusive door-to-door rates from £334 (8 day option) France.

“...our pupils are still buzzing about their wonderful experience...”

Sean Dovey, Christ's Hospital



For further details including a video please contact:
 Jacquie Crofts direct, Discover Ltd., Timbers, Oxted Road, Godstone, Surrey RH9 9AD
 Tel: 01883 744392 Fax: 01883 744913 Email: info@discover.ltd.uk www.discover.ltd.uk www.kasbahdutoubkal.com