



Pedagogy and Practice: Teaching and Learning in Secondary Schools

Unit 19: Learning styles

**Senior leaders,
subject leaders
and teachers in
secondary schools**

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How to use this study guide

This study unit offers some practical strategies that teachers use to accommodate pupils' preferred learning styles. The techniques suggested are tried and tested; they draw on both academic research and the experience of practising teachers.

By working through this guide you can build your teaching repertoire step by step, starting with strategies that are easy to implement and moving on to those that will help pupils develop their skills still further. The unit contains 'reflections', to help you reflect on an idea or on your own practice, as well as practical tips and tasks to help you consider advice or try out strategies in your classroom. There are case studies to exemplify particular points, a summary of the research and some suggestions for 'next steps' and further reading. The final page invites you to reflect on the material and to set your personal targets for the future.

You can work through this unit in a number of ways:

- Start small; choose one class to work with. Ask another teacher to help by talking through what you intend to do and to act as a mentor.
- Work with another teacher or group of teachers who teach the same class. Work together on developing your approach to learning styles. After three weeks compare notes. Discuss which strategies are the most effective and why.
- Find someone to pair up with and team-teach. Design the tasks together and divide the role of teacher in the lesson between you.
- Work with a small group of teacher-researchers within your school. Use the guide to help you focus your work as a professional learning community.
- Identify sections of the unit that are particularly relevant to you and focus on those.

There is space in this study guide for you to write notes and responses to some of the questions, but you may also find it helpful to keep a notebook handy. For some tasks, you might want to make an audio recording or video of yourself in action so you can review your work more easily. You could add this, along with any other notes and planning that you do as part of your work on this unit, to your CPD portfolio.

The evidence of work you gather in your portfolio could count as points towards accreditation of an MA, or could support your application for membership of a professional body, such as the General Teaching Council of England (GTCE). It could also be used to support an application to reach threshold or Advanced Skills Teacher status.

You will need access to [video sequence 19, Learning styles](#), when working through this unit.

Learning styles

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Introduction

The importance of understanding learning styles

Successful learning takes place when teachers play to pupils’ strengths and build their capacity to learn in a range of styles. For this to happen, teachers need to:

- have an understanding of the different learning styles within the class;
- create learning opportunities through a variety of teaching strategies and techniques.

Pupils are then more likely to:

- access easily the activities presented to them;
- be enthusiastic and committed to the subject they are studying;
- remain on-task and focused during group or practical activities.

Common issues

Many teachers feel frustrated by pupils in their classes who fail to engage with the material presented and who appear to make little progress, no matter how hard they try. Some of these pupils ‘opt out’; others become disruptive and troublesome. The frustration is sometimes compounded when teachers in other curriculum areas describe the same pupils as ‘well motivated’ and ‘making good progress’. One explanation for this phenomenon is the match or mismatch between pupils’ learning styles and their learning opportunities. Through an understanding of learning styles, teachers can exploit pupils’ strengths and build their capacity to learn.

Resolving the issues

The inclusion statement in the revised National Curriculum charges all teachers with the responsibility to remove barriers to learning. One significant potential barrier is the mismatch between pupils' preferred learning styles and learning opportunities. To accommodate pupils' preferred learning styles, the teacher needs to:

- have a clear understanding of the preferred learning styles of the pupils within a class;
- provide, on a regular basis, learning opportunities that address the full range of preferred learning styles within a class;
- know how to create a match between the nature of the learning opportunity and the learning style of the pupil;
- take account of those pupils who have mainly one learning style, ensuring that they can access the learning but not letting them work only within this style;
- provide a choice of activities where appropriate and encourage pupils to choose the most suitable for them.

It is not realistic to provide equally for all learning styles within each lesson, but it should be possible to do so over a sequence of lessons.

Two teachers who addressed these issues commented:

'I have often neglected pupils who appeared to "opt out" because I did not realise why they did so. I now feel able to accommodate the various learning styles that pupils possess.'

'I now emphasise the learning styles that are being used so that pupils are much more aware. I have been able to encourage pupils to focus more when they know an activity is not their preferred learning style and shine out in class when it is something they enjoy.'

And a head of department said:

'I am aware that the staff in my department prefer a certain teaching strategy and I wanted to encourage them to use different strategies to engage all the pupils.'

1 Learning styles – considering the research

For over 30 years, researchers have questioned the idea that all learners learn in the same way. They have attempted to describe differences in the ways in which learners access and process new information and ideas. Many teachers have used these findings to shape their classroom practice and develop more inclusive classrooms. This unit draws on three influential bodies of research into learning styles, especially those which have had an impact on classroom practice in recent years. (These are outlined in the [summary of research](#) on pages 16–18.) Particular attention is given to the theory of visual, auditory and kinaesthetic learning styles in this unit.

Below is a list of techniques for helping pupils to learn key words. Put a tick by those you would favour using in your own teaching.

On the board: Key words are written up as they are used.

Personal workbooks: Pupils record words in their own workbooks as they are introduced.

Highlight: Key words in worksheets, notes and text are highlighted in colour.

Jigsaw cards: Pairs of pupils match key words with their definitions.

Hear and repeat: You speak a key word aloud and ask pupils to repeat.

Lucky dip: A pupil picks a word out of a box, then has to explain that word and what they know about it.

Group words/concepts: Each pupil in the class or group is given a different word. Pupils sort themselves into groups according to theme or concept.

Making sentences: Pupils use words on the board to make sentences that show their meanings.

Just a minute: A pupil selects a word from the board and talks about it for a minute.

Guess my word: A pupil picks a word out of a box and talks about it without saying the word. The rest of the group guess the word as quickly as possible.

Draw my word: A pupil picks a word out of a box and draws it for the rest of the group to guess in 30 seconds.

Word bingo: You read out definitions or examples and pupils cross the words off their bingo cards.

Calligram posters: Pupils produce posters with visual representations of words that reflect their meanings.

Anagrams: Pupils solve anagrams based on key words.

Cloze: Pupils work out subject-specific words deleted from a passage.

Wordsearches

Mnemonic rhymes or chants: Pupils make up ways to remember definitions of key words.

These techniques are adapted from *Literacy across the curriculum*.

Now turn to the part of the [summary of research](#) explaining about visual, auditory and kinaesthetic learners on pages 16-17. For each technique above, decide whether it is most suitable for pupils with visual, auditory or kinaesthetic learning preference, marking each one with V, A or K.

Look at the techniques you ticked as ones you would prefer to use. Is there a pattern in the approaches with which you feel more comfortable?

Reread the description of visual, auditory and kinaesthetic learners in the [summary of research](#). Which do you think is your preferred style? Does your personal learning-style preference appear to be reflected in your choice of techniques?

Task 2

Classroom assignment: matching techniques to learning styles

1 hour

Look again at the list of activities in **task 1**. Choose six activities so that you have two that would be suitable for each learning style.

Choose a class that you feel comfortable with and use the activities to teach the meanings of some key words over one or two lessons.

When you have tried all six activities, ask pupils to say which approach they, as individuals, preferred and why.

Use the information gained from the discussion with pupils and your own observations of the outcomes (e.g. whether pupils understood the key words) to begin to identify the preferred learning styles of individual pupils within the class.

2 Identifying pupils' preferred learning styles

In the last task you probably found that pupils preferred to learn in a variety of different ways. In any one classroom there will be different groups of learners whose engagement and understanding will be supported by different sorts of learning opportunities. If you want to get the best out of all your pupils, it is important to have an understanding of their preferred learning styles. You can then use that understanding to make them aware of their own learning preferences as well as to plan and deliver appropriate learning activities.

Research indicates that in general 35 per cent of people are mainly visual learners, 40 per cent of people are mainly kinaesthetic and only 25 per cent are mainly auditory.

Many schools systematically compile information on pupils' preferred learning styles and use it to inform their lesson planning and classroom management. There are two main methods by which the data can be collected: questionnaires and teacher observation. Each has equal validity and you might choose the one you feel most comfortable with or use both to check results.

Questionnaires

Various questionnaires can be used to gather data on pupils' preferred learning styles. Questionnaires based on three theories can be found in the following publications.

Visual, auditory and kinaesthetic learning: *Accelerated learning in the classroom*, Alistair Smith.

Multiple intelligences: *Accelerated learning in the classroom*, Alistair Smith.

Gregorc's four thinking styles: *The learning revolution*, Dryden and Vos (this may need some mediation for younger learners) and *The teacher's toolkit*, Ginnis (a more pupil-friendly learning-styles questionnaire, based partly on the work of Gregorc).

Many interactive ICT resources can be accessed through the Internet, for example: www.glencoe.com/ps/peak/selfassess/learnstyle (VAK) or www.surfaquarium.com/MI/intelligences.htm

Whilst many schools use such questionnaires, others prefer to generate their own. A further example is provided in [appendix 1](#).

Teacher observation

Observing and talking to learners will give you results as reliable as questionnaires. Some of the indicators of different learning styles include:

A visual learner:

- prefers to read, to see the words, illustrations and diagrams;
- talks quite fast, using lots of images;
- memorises by writing repeatedly;
- when inactive, looks around, doodles or watches something;
- when starting to understand something says, 'that looks right';
- is most distracted by untidiness.

An auditory learner:

- likes to be told, to listen to the teacher, to talk it out;
- talks fluently, in a logical order, and with few hesitations;
- memorises by repeating words aloud;
- when inactive, talks to self or others;
- when starting to understand something says, 'that sounds right';
- is most distracted by noises.

A kinaesthetic learner:

- likes to get involved, hands on, to try it out;
- uses lots of hand movements;
- talks about actions and feelings; speaks more slowly;
- memorises by doing something repeatedly;
- when inactive, fidgets, walks around;
- when starting to understand something says, 'that feels right';
- is most distracted by movement or physical disturbance.

Talking to pupils about their favourite learning activities and curriculum subjects can also help build this profile and can provide an insight into learning preferences, multiple intelligences and thinking styles (see [summary of research](#)).

Task 3

Collect information on preferred learning styles 80 minutes

Use your understanding of VAK learning styles to construct a questionnaire or interview schedule to profile the preferred learning styles of six students whom you have identified as underachieving. If you are short of time, or find this task difficult, try using or adapting the questionnaire in [appendix 1](#).

There is some evidence that, when designing lessons, teachers are influenced by their own preferred learning styles, so it would be interesting to fill in the questionnaire yourself. This information will be needed for [task 6](#).

Finally use the list above as an observation schedule to check your findings.

A teacher who shared the results of the questionnaire with her pupils commented:

‘My pupils were very eager to know what kind of a learner they were and I found that it helped them to understand their own behaviour in the classroom.’

Task 4

Review the learning opportunities in your lessons 40 minutes

Refer to the grid on page 14, which relates tasks to the VAK learning styles. Take a recent unit of work you have taught, preferably one that spans between six and ten lessons, and use the grid to help you determine roughly how many tasks there were for each learning style in the visual, auditory and kinaesthetic categories.

Taking into account your findings from the questionnaire in [task 3](#), to what extent did you accommodate the learning styles of the six pupils through the tasks you have included in this unit?

Were there any pupils who rarely had the opportunity to use their preferred learning style?

Case study 1

One school helped pupils identify their own preferred learning styles and ‘SMARTS’. Watch [video sequence 19a](#) to hear what the pupils think and note that they recognise that, although they may have a preferred learning style, it is also important to use a range.

Pupils need to be given opportunities to learn in a range of ways and so extend their styles.

3 Principles for developing lessons that take account of learning-style preferences

In many classrooms there is a mismatch between the learning opportunities presented to pupils and their preferred learning styles. Research evidence suggests that the reasons for this include:

- lack of understanding of the range of learning styles within the classroom;
- the impossibility of providing sufficient learning opportunities to address the full range of preferred learning styles within any one classroom;
- the tendency for teachers to create learning opportunities in keeping with their own preferred learning styles, believing that if it works for them it should work for the majority of their pupils;
- unwillingness to provide a choice of outcomes because they are difficult to standardise;
- the likelihood of pupils making inappropriate choices from a range of tasks so that the mismatch persists;
- concern about behaviour management when using kinaesthetic activities;
- time constraints in producing resources.

Reflection

Consider the list of factors that limit the range of learning opportunities. Would any of these inhibit your attempts to accommodate a variety of learning styles? If so, which?

Having identified pupils' preferred learning styles, teachers face the challenge of planning lessons to accommodate them. It is clearly unrealistic to expect that every lesson will cater equally for visual, auditory and kinaesthetic learners. However, it is possible to ensure that each unit of work includes opportunities for all pupils to learn using their preferred learning style. Planning for a range over time is the key.

Task 5

Lesson planning for preferred learning styles 20 minutes

Look at the principles for planning for different learning styles below. You have reflected on factors that might inhibit you in accommodating differing learning styles in your planning. Which of the principles might help you to address those inhibiting factors?

Whilst all have their place, some might be more appropriate for you and your situation. Select from the range those that you can use to guide your planning. Make a list of these. (You may wish to add some of your own.)

- Research the range of learning styles in your classroom.
- Make sure that your pupils understand their own learning preferences. This will enable them to make informed choices when selecting from alternative tasks.
- Take account of the needs of learners who have a very strong preference for one learning style: for example, the visual-only learners.
- Make sure that you do not overlook planning for kinaesthetic learning opportunities. The needs of kinaesthetic learners are the most neglected, particularly in the secondary sector.
- Accept the fact that you cannot accommodate all learning styles every lesson. Make sure, however, that your schemes of work provide regular opportunities for all types of learners to use their preferred styles. A good rule of thumb is that no pupil should have to go through three consecutive lessons without some opportunity to use his or her preferred style. If the opportunity is not provided, there is a danger that you will lose that pupil.
- Don't allow pupils to work only within their preferred learning style. Providing opportunities to work in a variety of ways will help them to become more flexible learners. Research suggests that the most successful pupils are those who can access and process information in a variety of ways.
- Visual and kinaesthetic activities are often resource-dependent. Work collaboratively as a department to generate and share such resources to avoid duplication of effort.
- Provide a choice of activities and/or outcomes where possible so that pupils can opt to use their preferred learning styles.
- Prompt pupils to think about different ways of achieving the same outcome. Ask successful pupils to share with the whole class their approaches to the same task and avoid being prescriptive about a single approach. A particular approach might be helpful for some learners, but will not suit all.
- If you are concerned about the behaviour management of kinaesthetic activities, keep them brief, keep to tight timings, always explain how they relate to the lesson objectives and take account of group dynamics when pairing individuals.
- Use Gardner's multiple intelligence framework (see the [summary of research](#)) to plan choices of outcome in units of work. Coming up with a comprehensive selection can be challenging, but it is much easier to do collaboratively than on your own. We tend to think first of learning opportunities that match our own preferred styles, so plan in teams where there is a range of learning styles, where possible.

Tips continue

- Be conscious of your own preferred learning style and monitor your planning to ensure that it is not creating an unbalanced diet of learning opportunities for your pupils.
- Meet as a team to agree success criteria for different types of outcome and to standardise assessments.
- Plan to secure the engagement of pupils with multisensory starter activities in the first 5 minutes of a lesson.

4 Designing tasks to suit differing learning styles

Reflection

Think of the class from which you selected your six underachieving pupils. Think about the lessons that you have taught over the last week. Focus on the key learning activities.

Can you see any patterns in the activities you have set?

How did you decide on those activities?

To what degree did those activities match the preferred learning styles of those pupils?

Case study 2

Lesson 1 of 6, Algebra 1 from the Key Stage 3 Strategy sample medium-term plans. Pupils are familiar with simple number patterns in terms of counting on and back. The teacher knows that pupils have a wide range of preferred learning styles, with about 35% preferring kinaesthetic approaches.

Year 7 Lower-attaining mathematics lesson **60 minutes**

Lesson objectives

- Generate and describe simple linear sequences.
- Generate terms of a simple sequence given a rule in words.

Episodes

- 1 Explain the purpose of the lesson, highlighting how the work done today will develop over the course of the unit on algebra. (2 min)
- 2 Play Factaerobics. Class to chant consecutive integers, 1–20 and put right hand up on all multiples of 2. Now repeat, raising the right hand on multiples of 2 and the left hand on multiples of 3. Repeat for a second time, this time asking class to raise right leg on multiples of 4. Ask class what the next number requiring them to raise all three limbs will be? What about the one after that? Ask class if they can see any pattern linking the numbers when all three limbs are raised. (10 min)

Case study continues

- 3 Explain that we are going to develop our understanding of patterns in number. Show a simple linear sequence on the board, where each term is covered with a card. Remove the card for the first term, using the key word 'term'. Ask pupils to predict the next term on show-me boards. Take feedback. Repeat for next two terms. Ask pupils to work in pairs to draft a rule that describes this sequence using fewer than 15 words. Take brief feedback. Now chant the first 10 terms of the sequence using a counting stick. (10 min)
- 4 Repeat activity 3 using a different linear sequence. Before chanting the first 10 terms using the counting stick, ask pupils to work in pairs to draft a rule using fewer than 10 words. Take brief feedback. (8 min)
- 5 Explain that we are going to practise describing sequences. In non-friendship pairs, pupils sit back-to-back. Give each pupil three cards with different sequences on. (Differentiate using different sequences.) Each pupil should describe their sequences to their partner, using no more than two words in the description. The second pupil should write the sequence down from their partner's description. Pupils alternate between being describer and writer. Bring class together and select pupils to report back on the most useful things when describing a sequence. (15 min)
- 6 Display a Venn diagram showing two overlapping sets, each labelled with a rule for a linear sequence. Pupils work in same pairs to put numbers into sets as appropriate, being careful with intersection. (5 min)
- 7 Display a Venn diagram showing two empty sets. Do not reveal the rules for each set. Ask pupils for different numbers and put the numbers in the relevant sets. Pupils to work out the rules for each set. (5 min)
- 8 Review learning – what are the most important things to remember when describing a sequence? (5 min)

Case study 3

A teacher of a low-attaining group of Year 8 pupils, having profiled the learning styles of his group, found that over 40 per cent of the group had a kinaesthetic preference and 35 per cent a visual preference. He planned and taught the following lesson.

Year 8 Lower-attaining English lesson

50 minutes

Lesson objectives

- At the end of the lesson pupils will understand how pictures communicate and how advertisers use pictures to persuade by layout, framing, cropping, anchoring the meaning and selecting appropriate visual images.
- They will understand and be able to use the terms: *framing*, *cropping*, *anchoring* and *connotation*.

Episodes

- 1 Explain the purpose of the lesson, how it links with the previous lesson on slogans and how learning today will contribute to the production of the advertising campaign. (3 min)

Case study continues

- 2 Begin lesson by establishing home pairs. Share slogans (see homework above). Decide upon and justify the best slogan. (8 min)
- 3 Explain that they are going to consider how pictures communicate, because the next stage in the production of the campaign materials will necessitate finding a visual image which will persuade. This means they will examine: the content of photographs; the technique of photographs; the way photographs work with text. (3 min)
- 4 In a space, in non-friendship pairs (away), ask them to imagine the frame is a viewfinder of a camera. Take it in turns to look at their partner kneeling down and looking upwards and then standing on a chair and looking downwards. Ask them to discuss and agree which subject looks more powerful, bigger, more important. (10 min)
- 5 In the same pairs ask them to look at the three charity adverts in front of them. Give class questions to consider: Where is the camera in relation to the face? What is the effect of this? Report back. No hands up. (10 min)
- 6 Now explain that often we don't have the full picture in an advert: the maker of the advert often cuts it down to make the message stronger. Ask pupils individually to take the pictures of the traveller family and use their frames to cut down the picture to make the picture as sympathetic as they can to the subjects. Now ask them to reposition the frame to make the picture unsympathetic. (5 min)
- 7 Explain that to make sure that we read the picture in the way the maker wants us to read it, they often include text alongside as we have seen. Ask pupils individually to write two captions: one for the sympathetic frame and one for the unsympathetic frame. (5 min)
- 8 Review learning – how can we make the viewer react to pictures in the way we want them to? (No hands up) (6 min)

Homework

Find one advert in black and white and one that uses colour. Look at the content of each and think about how it affects you. Think of five reasons why charity adverts often use black-and-white photographs rather than colour.

Task 6

Planning for preferred learning styles

20 minutes

Case studies 2 and 3 are examples of teachers planning to accommodate a variety of learning styles. Analyse how they did this by categorising each episode in the lesson according to the learning style to which it appeals. Identify each episode with V, A or K, and where more than one learning style is used put the styles in order of significance.

You may like to try adapting this task according to your personal learning preference. For example, if you have a kinaesthetic preference, photocopy the lesson plan, cut it up into separate activities, then group the activities according to learning style.

Alternatively, if you have a visual preference, you might like to use coloured highlighter pens to differentiate the activities.

Or if you have an auditory preference, try discussing the activities with another teacher and annotate the text to show your decisions.

Case study 4

A teacher of a Year 7 class wanted to review and consolidate her pupils' understanding of formal and informal language. To secure their engagement she designed a multisensory starter activity for the first 10 minutes of the lesson.

To each pair in the class she gave two very different postcards and asked them to consider which card they would send to a close friend and which to a distant relation with whom they had little contact.

She then asked them to write an appropriate greeting for each card. Several pupils were invited to read out one of their greetings and the rest of the class identified the intended audience by holding up the appropriate card.

During this process the teacher reminded the class of the terms 'formal' and 'informal' and related these terms to the cards and the associated language.

The starter activity finished with the teacher allocating to pupils cards on which there were several different phrases: some formal, some informal. Pupils were asked to work in pairs to place each of the phrases on the postcard which represented the appropriate type of language.

Task 7

Making lessons multisensory

10 minutes

The teacher in [case study 4](#) sought to engage learners early in the lesson by providing a multisensory experience. Within a tight time frame, she provided a variety of learning tasks that demanded auditory, visual and kinaesthetic responses.

Highlight or annotate the account of the starter activity to identify these different responses.

Refer to Gregorc's styles of thinking in the [summary of research](#) on pages 17 and 18, illustrated on page 14. Which style of thinking is favoured in this starter activity?

Task 8

Planning for preferred learning styles

100 minutes

This activity will ask you to apply what you have learned so far.

Take a scheme of work that you intend to deliver in the near future to the class from which you selected the six underachieving pupils for [task 3](#). Choose one lesson plan from the scheme, if possible one that you have delivered in the past.

Review the lesson plan to determine how it caters for the learning styles of those six pupils.

If necessary, adjust the plan to accommodate their preferred learning styles. Refer to the grid below to help you plan suitable activities. Further support for designing tasks appropriate for different learning styles is available in the series of publications on learning styles and writing, available from the Key Stage 3 website.

Deliver the plan and monitor the response of your target pupils.

What did you find out? Were the outcomes of the lesson what you had expected? Compare pupils' outcomes with their previous work. What differences can you see?

One teacher described how much he learned from observing a colleague:

'I discussed the group with a colleague and observed her teaching them using strategies I have rarely employed. Consequently, I am now teaching the group using a broader range of strategies and, even after a short period of time, feel they are happier learners making more progress.'

Visual, auditory, kinaesthetic	Multiple intelligence	Four styles of thinking	Learning tasks
Visual	Visual–spatial		Diagrams, charts, videos, films, graphs, posters, concept maps, pamphlets, textbooks, drawing, visualisation (creating mental pictures), collages, colour highlighting
Auditory	Linguistic		Discussion, group work, pair work, debates, interviewing, expositions, presentations, improvisations, listening to guest speakers, mnemonics, writing notes and essays, poems, sketches, stories, reading
Kinaesthetic	Bodily–kinaesthetic		DART, role-play, dance, model making, simulations, ‘show me’ cards, freeze-frames, improvisation, associating ideas with movements, human graphs, human sentences or timelines, field trips, games, competitions
	Logical–mathematical	Abstract sequential	Puzzles, problem-solving tasks, predicting or hypothesising tasks, investigations, sequential tasks, summaries, pattern spotting
	Musical		Chants, rhymes, songs, mnemonics, raps, poems, musical interpretations
	Interpersonal		Collaborative group work, pair or team work, interviewing, teaching or coaching others
	Intrapersonal		Individual research, learning journals, reflecting on own learning, identifying own questions, self-evaluation, diaries
	Naturalistic		Multisensory experiences, collecting and classifying data, analogies with natural world, observation, experiments, investigations
		Abstract random	Open-ended tasks, improvisation, creative or imaginative responses, personal responses, narrative responses, brainstorming activities
		Concrete sequential	Sequential tasks, use of checklists, concept maps, overview of tasks, closed tasks, individualised learning programmes
		Concrete random	Specific outcomes to tasks, practical tasks, problem solving, investigations, open-ended tasks, experiments, trial-and-error opportunities, competitions

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5 Creating environments to support a range of learning styles

Accommodating a range of learning styles not only affects lesson planning, but also has implications for classroom design and management. The checklist below can be used to audit your classroom to determine how well it supports a variety of learning styles.

- The seating arrangement is flexible, allowing for movement around the room and for a variety of working contexts such as pair work, group work, whole-class work and performance.
- Display supports learning through the use of charts, posters, key words etc.
- Pupils have ready access to a range of learning resources that support different learning styles, for example writing and reading resources, drawing and modelling equipment, simple musical equipment, ICT hardware and software, puzzles, games, reference materials, audio and video equipment, OHP, and rules for group work.
- Displays of pupils' work celebrate and validate a variety of outcomes, for example photographs showing work from kinaesthetic activities, models, drawings, and tape recordings of spoken or musical products.
- Displays model thinking processes, for example storyboards into writing, reading into tableaux, data into analysis, and discussion into key principles.
- Displays make explicit reference to learning and learning styles and encourage pupils to reflect on the 'how' of learning as well as on the 'what'.
- Classrooms are multisensory: they contain elements that stimulate all the senses, for example images and eye-catching displays, opportunities to hear appropriate music, plants and mobiles.
- Elements of the displays are frequently changed (at least once per half-term) to maintain the levels of stimulation.

Task 9

Accommodating preferred learning styles

90 minutes

Take a tour of your school. Look for examples of the characteristics listed above in other teachers' classrooms.

Use the checklist to audit the layout and appearance of your own classroom.

Finally, thinking of the class you planned for in **task 8**, decide on three actions you will take to modify the layout and appearance of the classroom to support their learning. Use a teaching assistant to help implement those actions.

Make a note in your diary to reflect in two weeks' time about how aspects of your lessons have changed since you modified your classroom.

Extract (opposite) from Marzano, Pickering and Pollock (2003) ASCD. Copyright © by McREL. Reprinted by permission. The Association for Supervision and Curriculum Development is an international association for educators at all levels and of all subject matters, dedicated to the success of all learners. www.ascd.org

Summary of research

There is a reasonable research consensus that information our brains receive is processed and stored in long-term memory in two forms: a word or linguistic form and a visual or imagery form (Paivio 1990). There is strong evidence that when students have to produce diagrams from text, or when texts contain diagrams, then they engage in 'dual processing'. This means that they use both their linguistic processing and visual processing powers and as a consequence the information is understood and recalled better. Furthermore, the creation of visual forms and representations is known to increase brain activity (Gerlic and Jausovec 1999). However, in the majority of classrooms new information is presented mainly in a verbal form.

Marzano, Pickering and Pollock (2001) have summarised the research on activities that enhance the creation of non-linguistic representations and therefore improve understanding:

- creating graphical representations (see for example Robinson and Kiewra 1996);
- making physical models (see for example Welch 1997);
- generating mental pictures (see for example Willoughby et al. 1997);
- drawing pictures and pictograms (see for example Newton 1995);
- engaging in kinaesthetic activity (Aubusson et al. 1997).

These non-linguistic representations help students elaborate their understanding because, as indicated earlier, information is being processed twice.

During the past 30 years, writers and researchers have constructed different models of learning styles which are purported to represent preferences in processing and representing information. Riding and Rayner (1998) have provided a valuable review of these frameworks and summarise the difficulties associated with these models, such as being based on self-report data. The review presents two dimensions – (i) holistic–analytical and (ii) verbal–imagery – as the best supported in research terms. A number of frameworks have become popular in encouraging teachers to think more critically about the mode in which they present information and the tasks they offer to pupils. Some of these frameworks are outlined below.

Learning style frameworks

Visual, auditory and kinaesthetic learners

From the moment we are born we make sense of the world through our five senses. However, neuro-linguistic programming (NLP) practitioners argue that those five senses may not contribute equally to that perception and that individuals may have a sensory preference for receiving and making sense of new information and ideas. They have identified three types of learner.

Visual learners: These people learn most effectively through the visual channel. They find it easier to receive information if it is in the form of diagrams, pictures, charts or demonstrations and to process information by converting it into a visual form, for example turning a description of a process into a flow chart or a narrative poem into a cartoon. Some visual learners also prefer to access information through the written word.

Auditory learners: These people learn most effectively through listening. Their preferred learning activities include teacher explanations, discussions and lectures. They prefer to process information by converting it into an aural form, for example thinking aloud, contributing to exploratory group discussion or giving an oral presentation.

Kinaesthetic learners: These people learn best when physically engaged in learning activities. They find it easier if they do something physical with the information they are receiving, for example role-play, simulations, practical experiments or model making.

Multiple intelligences

The work of Howard Gardner has challenged the traditional view of intelligence as a facility with language and logic only. He has argued that each individual has at least eight types of intelligence and that pupils may be intelligent in different ways. The balance of those intelligences will affect the way a learner prefers to learn. They are:

- linguistic intelligence;
- logical–mathematical intelligence;
- musical intelligence;
- visual–spatial intelligence;
- bodily–kinaesthetic intelligence;
- intrapersonal intelligence;
- interpersonal intelligence;
- naturalistic intelligence.

Gregorc’s thinking styles

Anthony Gregorc provides a different account of the ways in which different learners access and organise information. He identifies four preferences.

Concrete sequential: These learners are more comfortable thinking in the concrete. They access new ideas through tangible examples and they like to be physically involved in their learning. They learn most effectively when learning is broken down into incremental steps and are content to follow instructions.

Concrete random: These learners also like to work with tangible examples, but are more disposed to an experiential approach to learning. They like to consider problems from different angles and create personal solutions or approaches. Their preferred learning tasks are open-ended, though they do like to have a specific, practical outcome at the end of a learning experience.

Abstract sequential: These learners are logical and linear in their thinking. They prefer to think in the abstract and follow a sequence of activities which enables them to explore the relationship between ideas or arrive at the underpinning principles or concepts. They enjoy activities which ask them to identify core ideas or the reasons for a specific phenomenon, but welcome a structure to their work provided by the teacher.

Abstract random: These learners like to be personally engaged in their learning. They learn most effectively when they are able to give their learning some personal significance. They process information holistically and then organise it through a process of reflection. They prefer learning opportunities which enable them to follow their personal inclinations and to explore those with others through group discussion. They will often want to explore their ideas through visual or kinaesthetic means.

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Next steps

This unit has explored an aspect of teaching and learning. You may wish to develop your ideas further, to consolidate, apply ideas in different contexts or explore an aspect in more depth and innovate.

Reflect

What have been the key learning points for you?

What has been the impact on pupils?

Here are some suggestions as to how you may develop practice further:

- Work with other teachers to:
 - undertake an audit of the learning styles of the pupils you teach in a specific year group, or even key stage;
 - review the schemes of work in the light of that audit to determine how well they accommodate the range of learning styles that you have identified (you could audit the schemes of work from the perspective of a chosen theory, either VAK, multiple intelligences or Gregorc's four styles of thinking);
 - work collaboratively to modify those schemes of work to take account of your findings, providing both range and choice in learning opportunities and outcomes.
- With another teacher, create an observation schedule which focuses on the way in which the lesson accommodates different learning preferences and the impact of this upon the pupils' learning. Use this schedule with one or more of each other's lessons and give feedback.
- Investigate the impact on motivation of changes in teaching to accommodate different learning styles. How will you assess improvements in motivation? Prepare a report of your findings for distribution to colleagues.

For further reading, the following publications are recommended:

- Dickinson, C. (1996) *Effective learning activities*. Network Educational Press. ISBN: 1855390353.
- Gardner, H. (1993) *Frames of mind: the theory of multiple intelligence*. Fontana. ISBN: 000686290X.
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Setting future targets

Having considered your next steps, you may wish to set yourself some personal targets to support your own continuing professional development. You could use these ideas to inform your performance management discussion.

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Task 10

Setting your targets

40 minutes

When setting targets for the future you may want to discuss the possibilities with a colleague or your line manager.

Whatever you decide to do, you will need to consider the following.

- What are your objectives for the next year?
- What are the expected outcomes in terms of pupils' achievements?
- What strategies will you employ to achieve these outcomes?
- How will you track progress over the year?
- How will you know whether you have been successful or not?

Appendix 1

Which sense do you prefer to learn with?

Situation: When you ...	Your preferred course of action:		
	Visual	Auditory	Physical
Spell a word	Try to visualise it (Does it look right?)	Sound it out (Does it sound right?)	Write it down (Does it feel right?)
Are concentrating	Get most distracted by untidiness	Get most distracted by noises	Get most distracted by movement, or physical disturbance
Choose a favourite art form	Prefer paintings	Prefer music	Prefer dance/sculpture
Reward someone	Tend to write praise on their work in a note	Tend to give them oral praise	Tend to give them a pat on the back
Talk	Talk quite fast, but keep idle conversation limited. Use lots of images, e.g. 'It's like a needle in a haystack'.	Talk fluently with an even pace, in a logical order and with few hesitations. Enunciate clearly	Use lots of hand movements, talk about actions and feelings. Speak more slowly with longer pauses
Meet people	Remember mostly how they looked / the surroundings	Remember mostly what was said / remember their names	Remember mostly what you did with them / remember their emotions
See a movie, watch TV or read a novel	Remember best what the scenes / what the people looked like	Remember best what was said – and how the music sounded	Remember best what happened / the character's emotions
Relax	Generally prefer reading / TV	Generally prefer music	Generally prefer games, sports
Try to interpret someone's mood	Mainly note their facial expression	Listen to their tone of voice	Watch body movements
Are recalling something	Remember what you saw / people's faces / how things looked	Remember what was said / people's names / jokes	Remember what was done – what it felt like
Are memorising something	Prefer to memorise by writing something repeatedly	Prefer to memorise by repeating words aloud	Prefer to memorise by doing something repeatedly
Are choosing clothes	Choose almost exclusively by how they look, how they coordinate and by the colours	Take a lot of notice of the brand name, what the clothes 'say' about you	Choose mainly on how they feel, the comfort, the texture
Are angry	Become silent and seethe	Express it in an outburst	Storm about, clench your fists, throw things
Are inactive	Look around, doodle, watch something	Talk to yourself or others	Fidget, walk about

Appendix continues

Situation:	Your preferred course of action:		
When you ...	Do you ...		
	Visual	Auditory	Physical
Express yourself	Often use phrases like: I see / I get the picture / Let's shed some light on this / I can picture it	Often use phrases like: That sounds right / I hear you / That rings a bell / Something tells me / It suddenly clicked / That's music to my ears	Often use phrases like: That feels right / I'm groping for an answer / I've got a grip on it / I need a concrete example
Contact people on business	Prefer face-to-face contact	Rely on the telephone	Talk it out while walking, eating etc.
Are learning	Prefer to read, to see the words, illustrations, diagrams, sketch it out	Like to be told, attend lectures, talk it over	Like to get involved, hands on, try it out, write notes
Assemble new equipment	First look at the diagrams / read the instructions	First ask someone to tell you what to do	First work with the pieces
	And then your second choice would be to ...		
	Ask questions / talk to yourself (A) as you assemble it, and then do it (P)	Ask them to show you (V) and then try it (P)	Ask questions (A) and then look at the diagram/instructions (V)
Total responses			

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