Key Principles of Visible Learning

Introduction

Students of all ages develop their historical knowledge and understanding most effectively and then perform better in examinations if teachers build their courses around the problems students have year-in, year-out – notably how to carry out historical research, construct arguments and communicate their ideas. At exam level, specifications and content may change but the underlying problems students face in carrying out research, constructing arguments and communicating their ideas do not. Learning is best conceived as a process and we need to support students through that process by making it visible if we are to fully realise the potential of our students as learners.

John Hattie argues that 'Observations of classrooms typically show that there is little direct instruction in 'how to learn', or the development and use of learning strategies.' This is an important omission because, while students must have a deep foundation of subject knowledge, they also need to learn to take control of their own learning – their ability to employ effective and flexible strategies that help them reason, memorize and problem-solve is crucial if they want to achieve success in history. Providing students with these learning strategies in the context of studying history is far more effective than through 'learning to learn' programs that are not embedded in the context of a subject.

Students who struggle are most in need of these strategies to help them learn effectively. Teachers cannot assume that students have appropriate strategies for resolving their problems so we need to help pupils see what good learning looks like. We therefore believe that 'visible learning' is crucial - taking what is so often implicit and making it explicit to our pupils. It means identifying the areas where pupils struggle and converting these into explicit teaching opportunities to lift pupils higher and push back the boundaries of pupil progress.

Key Principle 1: Teach how to decode questions

One key reason why students underperform in exams is because of a lack of precise focus on the question – often on the conceptual demands of the question. Typically, an examination presents a range of questions in a limited amount of time. Each question creates the possibility of losing

crucial marks by mis-reading or mis-interpreting the question. Students must therefore be taught explicitly how to decode a question identifying the following key features:

- conceptual focus (for example, is it causation, significance, change and continuity?)
- content focus
- question type (do they need to describe, explain or reach a judgement? The student needs to understand that each question type requires a different approach. The phrase ‘How far do you agree?’ means you need to weigh the evidence for and against a statement before reaching a balanced judgement. ‘Explain why’ means that you need to explore a range of reasons why an event happened or why the pace of change during a period was fast or slow.
- date boundaries (What period are they expected to select information from?)
- marks available (a crucial guide for how much candidates are expected to write - many candidates spend too long on low tariff questions)

See example Page KP1-a

Long-term planning - it is important to develop students’ ability to decode questions at Key Stage 3. Therefore ask them to unpick the key concepts involved in enquiry questions and build in question types that mirror the style of questions that are asked at GCSE.

Question relevance

A related problem is that many students experience difficulty when faced with the complex task of selecting and rejecting information for a particular question – finding it difficult to ‘see’ that, out of a wide variety of facts and ideas, some are relevant and some are not. Many students resort to ‘including everything’ so as to avoid the difficult selection making process. This can lead to lengthy and unfocussed essays. This crucial skill of learning to select does not just happen – it needs to be taught explicitly through modelling the thought processes students need to go through. It is important that the teacher ‘thinks out loud’, explaining to the class why they would select one piece of information but choose not to use another piece as it is not relevant to that particular question. In addition, to address the issue of students putting in too much information they can be provided with

over-long answers that contain irrelevant information and given the task of cutting the answer down to a given word limit.

See example Pages KP1-b and c

Key principle 2: Promote wider reading and model important research skills

Build a reading and research culture

It is important to build a reading and research culture within a history class. Reading around a topic should be set as a clear expectation. Students need to be shown the importance of going beyond the textbook or google. They can be set reading, watching, surfing and listening lists for each key topic, with refinements such as those below:

- The reading list might include a reference to a chapter from a novel as well as an article or chapter from a history book.

- In terms of a watching list, students might be set the task of watching 5 different you tube clips on the end of the Cold War. They could make notes on the interpretation presented in the clip, how the message is conveyed, before reaching a judgement on how credible the interpretation is.

- Listening lists might include references to a good podcast or a song.

- Whilst surfing lists direct student to useful websites and steer them away from an overreliance on google and Wikipedia. At the same time students need to be introduced to the necessity of evaluating a website as they would a historical document – who's writing it and why? Can its statements and views by corroborated by cross-referencing to other sites or to books?

Developing effective research skills

Too often students are asked to research topics from sources without explicit instructions on how to complete this process. Four key skills need to be explicitly developed through teacher modelling

and class discussion of the different roles of these skills in effective learning, identifying their value:

- Generating questions from the text
- Skimming (in order to get a broad overview of what the text is about before reading again for detail)
- Scanning (being able to detect key information)
- Identifying 'loaded language' in sources and texts and scripts of various kinds (paying close attention to words of phrases that change the context of a sentence)

See example Page KP2-a

Effective note-taking also needs to be taught explicitly. For example, students can be introduced to the Cornell method of note-taking which encourages students to review and reduce their notes, producing a summary of the key points and question cues for memory.

See lsc.cornell.edu

The importance of Knowledge Organizers

We'll begin with our definition of the term 'Knowledge Organisers' because, while this term is widely used, it is interpreted in different ways. Knowledge Organisers are sorting frames which help students deal with problem of organising the information they collect during their research but the key point in our approach is that they are NOT completed in full by teachers and then given to students as a concise, ready-organised summary of content. If such a complete Knowledge Organiser is given to students this rarely leads to deeper learning as students play no part in choosing which details to include and where to place them in the Organiser.

Students need to work semi-completed Organisers, even when first introduced to their use, and then are given more and more responsibility for filling in the Organisers as a course continues. It is therefore crucial that this use of Knowledge Organisers for organising research is modelled for the students as you progress through an historical enquiry. It's important to go well beyond simply providing students with large pre-designed frames by encouraging 'thinking out loud' and

discussing with them where to place information in the sorting-frame and what information to include. Over time students should be encouraged to design their own knowledge organisers or to select the most appropriate knowledge organiser from a toolkit that has been built up during the course. The tool box analogy helps students see that they have options and need to think about choosing the most appropriate Knowledge Organiser, depending on the nature of the research task and the conceptual focus of the enquiry.

For example:

1. Mind maps are useful for recording key features of a period.

See example Page KP2-b

2. Living graphs can be used to plot change over time and identify turning points

See example Page KP2-c

3. ‘Compare and contrast’ mats or venn diagrams can help students explore similarities and differences. For example, if students are exploring how similar two periods are within the thematic study a venn diagram can be used to record features that are distinctive to each period, whilst also recording similarities where the two circles overlap.

Venn diagrams can also be used to explore similarities and differences between the motives of people in the past. In the example below the venn diagram helps students explore patterns relating to the reasons why many barons turned against King John.

See example Page KP2-d

4. Factors tables help students explore and weigh the importance of causal factors

See example Page KP2-e

5. Individuals charts or top trump cards help students structure their notes on the short and long term impact of individuals, events or discoveries

See example Page KP2-f

Key Principle 3: Model how to construct arguments

A different set of strategic thinking frames can be added to the history 'toolbox' in order to help students construct arguments. These thinking frames are important because they help students speak, think and write at a higher level. Once again, students need to think carefully about fitness for purpose, developing understanding of which approach fits each type of question or activity. For example:

- Layers of inference diagrams – help students make inferences from a source

See example Page KP3-a

- Concept Maps are a great way for students to see and explain the links between causes. The visual experience of creating and using such maps makes more complex thinking accessible than trying to hold the ideas in your head.

See example Page KP3-b

  Concept maps can also be used to help establish the significance of key discoveries, events or developments.

See example Page KP3-c

- Diamond Nines help pupils prioritise causes but it's important to be flexible and enable students to choose the pattern of causes that suits the explanation.

See example Page KP3-d

- Language continuums help students think more precisely about their argument and develop the ability to use precise vocabulary. For example do they agree totally, mainly or partially with a statement or interpretation? Did a particular period see overwhelming, fundamental, significant, important or minimal change?

See example Page KP3-e

- Argument Bridges helps students build well-organised, sustained and coherent arguments.

See example Page KP3-f

There should be a strong focus on speaking and listening during the phase when students are constructing arguments. Talk is important in building children's powers to think and reason. Debates and discussions help to generate ideas and construct arguments that may otherwise have remained incomplete if they remained as unarticulated thoughts. Such tasks help students shape their learning and understanding in a low-risk activity, whilst at the same time keeping them involved and motivated. These reasons for activities need to be explained to students so that they understand why such activities are taking place. There's a similarity here to teachers 'thinking out loud' by explaining the thought processes they go through when constructing arguments and selecting evidence in answer to questions.

'Talk for writing' strategies are therefore tremendously helpful. When a student makes a statement or answers a question, we need to prompt them to speak like a historian. This means not only using subject-specific key words but also using language in a way that a historian would. Modelling the process and encouraging students to re-phrase their arguments using academic language is crucial.

Do this by challenging pupils to be more precise and considered with their use of language when expressing arguments. They should find some interpretations 'compelling' as opposed to 'well good', whilst counter arguments should not begin by labelling opposing interpretations as 'rubbish' or 'stupid'. Instead encourage students to articulate the specific 'limitations' of an interpretation that they do not agree with or 'the lack of convincing evidence' to support it. High quality talk should lead to high quality writing.

Within schemes of work, teachers should make a conscious effort to position speaking and listening activities before written tasks. In addition, look for opportunities to discuss differing interpretations and controversy and hold debates. For example, at the end of an enquiry into how Hitler kept control of Nazi Germany debate who was his key henchman – Goebbels or Himmler?

See example Page KP3-g and h

When exploring opposition to Hitler discuss which group represented the biggest threat. The following Scheme of Work shows how debates were built into each unit of the Germany 1918-45 depth study.

See example Page KP3-i

The nature of debates can take different formats. For example, when evaluating the significance of individuals in Medicine a balloon debate could be set up or a 'Big Brother House' - where students have to enter the video diary room and explain why their individual is so important that they should stay in the 'significance house'.

Key Principle 4: Model how to communicate effectively

Students who can write well are hugely advantaged in any subject which examines learning through writing. Writing is powerful. To quote Nelson Mandela 'A good head and good heart are always a formidable combination. But when you add to that a literate tongue or pen, then you have something very special.'

The extent to which students can demonstrate their knowledge and understanding of a topic is dependent on their ability to organise and communicate their ideas. However, writing in history is difficult. It is at once a memory task, a thinking task (the challenge of what to say) and a language task (the challenge of how to say it). This can place severe demands on students. In addition, the emotional demands of writing are just as challenging as the cognitive demands. Some students are fearful of extended writing and tend to give up before they even start. These students need to see what good writing looks like and feel that it is attainable. The teacher needs to nurture a 'can do' mentality which makes the student believe that they can construct a piece of writing to be proud of. This means careful planning and lots of scaffolding, modelling and encouragement.

If we do not explicitly address the problems that our students face when writing analytically, we are inviting a large percentage of them to fail. Well-structured analytical writing does not have to be the preserve of the high ability pupil. Clear, effectively presented strategies that focus on the skills and thinking necessary for analytical and discursive writing can enable students of all abilities to achieve success in history. These strategies need to be developed rigorously through the course, providing systematic and explicit guidance on how to express themselves in written form. Addressing writing skills in history is not about doing the job of an English teacher: it is about

inducting learners into how knowledge is expressed and how thinking occurs in that subject's disciplinary context.

The way that students are expected to write in history is also different to other subjects. It is important that the teacher "explicitly teaches the discourse of their subject". For example, students need to be provided with and armoury of appropriate connectives, phrases and sentence starters that allow them to write with fluency and think and express themselves clearly. To do this is to empower students with the means by which they can produce sustained, fluent analytical responses.

See example Page KP4-a and b

History mats, printed out as desk-sized mats, provide a constant reminder of key phrases and language for different purposes and tasks, the structures of paragraphs and conclusions and any other aspect of writing that your students will feel helpful.

See example Page KP4-c

Students also need to build up a rich subject-specific vocabulary. Encouraging students to keep a glossary at the back of their books is only a first step. Far better for pupils to write a definition of the word, add a visual image or reminder cue and then demonstrate that they can use the word in context.

Departments also need to decide what are the key "game-changing words and phrases that help pupils to read, write and speak like an expert". They can turn these into word walls that are regularly revisited during the course. Key words should be given to pupils to learn as homework with follow up quizzes or key word games (such as taboo, odd one out, pictionary, charades and dominoes) in lessons.

See example Page KP4-d

High expectations are crucial. When a class begins a new piece of writing the teacher should introduce a "taste of excellence" – showing models of work by former students and models of work from professional historians. Discussions should focus on what makes the work effective and powerful. Good modelling includes a commentary where the teacher breaks down complex

processes into simple steps, providing time to check understanding and making sure students have opportunities to ask questions.

Ideally display work will be annotated by students and the teacher and displayed on the wall so that students can weigh their efforts against strong work in the past. It is also important to show examples of earlier drafts next to a completed piece of writing so that students can see the importance of the refinement process.

To sum up - students need to know what constitutes good writing in history. Modelling is important, no amount of words can convey what one good model can show. It provides a visible picture of what quality writing looks like and demonstrates that it is achievable. It is not enough to simply give students a checklist.

Key Principle 5: Use the power of functional analogies

Analogies and metaphors are crucial to thinking and memorising, helping make new knowledge memorable. Structural analogies help pupils understand content/concepts. For example, analogies linked to building can be used to highlight different interpretations of the reforms introduced by Stresemann in 1920s Germany. Did he build strong foundations or simply paper over the cracks that had appeared in Weimar Germany's economy and society? However, functional analogies – those that make thinking visible and help pupils organise and communicate their ideas - are also very important.

For example:

- 'hamburger paragraphs' help students 'see' how to structure a paragraph and provide a potent source of analogy for teaching. Analogies can explain how all three components of a paragraph (the opening statement, the evidence, the mini-conclusion linking back to the question) combine to make an effective piece of writing, just as the three components combine to make a hamburger.

See example Page KP5-a

- 'Connective ropes' help students see the importance of linking what they know to the question they are answering and therefore help them move from 'saying' that an individual or event

was important to 'proving' that they were important. Exemplar causal connectives include 'this meant that' and 'this resulted in'. These should be incorporated into the 'word walls' that are built up during a course as they empower students to think at a deeper level.

See example Page KP5-b

- Iceberg visuals help students see that there is more to a question than initially meets the eye. In questions such as 'The Wall Street Crash was the main reason Hitler got into power. How far to you agree?' students can use the iceberg analogy as a reminder to look below the surface and weigh the impact of the Wall Street Crash against other factors.

See example Page KP5-c

Key Principle 6: Build regular testing into the course

Memory plays a central role in our ability to carry out complex cognitive tasks but many common study habits turn out to be counter-productive. Rereading text books is 'often labour in vain' even if picking up a textbook, revision guide or old exercise book and simply reading it again is the number one study strategy of many students. Unfortunately this re-reading is time consuming, does not result in durable memory and often involves a kind of "unwitting self-deception" – where pupils confuse growing familiarity with the content with mastery of the content. The ideas expressed below are based on the influential 'Make it stick: The Science of Successful Learning' by Peter C. Brown, Henry L. Roediger III and Mark A. McDaniel (Harvard University Press, 2014)

Retrieval practice - recalling facts or concepts or events from memory - is a more effective learning strategy than review by rereading. Retrieval strengthens the memory and interrupts forgetting. For example, a single simple quiz after a lesson produces better learning and remembering than rereading a text book. Testing should therefore be used as a learning tool as opposed to an end goal or summative assessment. One of the most interesting features of research findings is the power of active retrieval "testing" to strengthen memory, and that the more effortful the retrieval then stronger the benefit. The act of retrieving learning from memory has two significant benefits. Firstly, it tells you what you know and don't know and therefore to focus further study where you are weak. Secondly, recalling what you have learned causes your brain to reconsolidate the memory, which strengthens its connections to what you already know and makes it easy to recall in the future.

If we want our students to learn key content within a specification we should test them on it regularly. Such testing experiences need to be low risk, frequent and designed to include variation. Students seem to enjoy this type of exercise so long as you make the rationale visible, explaining to them why you are doing it and the theory behind it. In addition, because testing helps is to identify whether we have learned and understood key information we have been studying, it provides a useful meta-cognitive insight. This means that students become more aware of what they know and what they do not know and regular testing helps them become more self-aware of their own learning and able to plan the focus of future revision sessions.

Finally, many students put off revision until exam time nears and then cram their revision. It's a common but mistaken belief that you can burn something into memory through sheer repetition in a short period of time. Lots of practice works, but only if it's spaced. Regular opportunities to review and reduce notes, revise key topics and test your understanding need to be built into a GCSE or A level course. In our efforts to cover the specification, we can jump from topic to topic, ensuring pupils are familiar with each topic and then moving on. Typically though, learners forget a good deal of the information we encounter within a few days of learning it. Ebbinghaus's curve of forgetting demonstrates that without review there is a rapid decline in recall. To make learning 'stick' we need to regularly revisit what has been learned earlier.

See example Page KP6-a

Key Principle 7: Model how to revise

Strategies for how to revise should be built into the course, as opposed to being bolted on at the end. Students should be expected to experiment with strategies that 'stretch their memory' as they begin to revise during the course itself (see Principle 6). Different revision techniques work for different students. Over a course the teacher can model different techniques, building a revision toolkit for students.

Mnemonic Devices help retrieve what you have learned and serve as handy ways to store information and find it when you need it These are useful for remembering specific events such as the key terms of a treaty. The acronym LAMB can be used to remember the key terms of the Treaty of Versailles (Land taken away, Army cut, Money to be paid in reparations, Blamed for the war). Visual techniques can be surprisingly effective as imagery helps to contribute vividness and make

connective links. Humans remember pictures more easily than words so associating vivid mental images with verbal or abstract material makes that material easier to retrieve from memory. To continue the above example, students can visualise Germany as a vulnerable lamb at the mercy of the allies.

See example Page KP7-a

Photo revision can help pupils revise the key features of a period or the importance of an individual in an engaging way. In this case it's not simply the visual product that helps memory but the process of creating a picture through identifying necessary content and its significance, thinking of and collecting props and visuals and the process of setting up the visual image, plus the impact on emotional memory of the satisfaction of creating an effective summary image.

See example Page KP7-b

Summary circles can help pupils revise the key events of a period in a visual and engaging way.

See example Page KP7-c

A memory palace is more useful for organising and holding larger volumes of material in memory. It involves associating mental images with a series of physical locations to help cue memories. You imagine yourself within a space that is very familiar to your (for example, your home or school) then you associate prominent features of the space with a visual image of something you want to remember. For example, as we study Medicine through Time our Middle School becomes the location for the Middle Ages and we visit the RE room to stress how religion played an important role in shaping medical practices. We then move on to the Art department for the Renaissance whilst the discovery of DNA is located within the biology labs. Walking round the school in this order helps pupils to reinforce chronological understanding and the background provided by the rooms triggers important contextual knowledge and creates a sense of period.

A key point with all of these techniques is that for the students to be able to construct effective mnemonics or memory palaces, the content needs to have been thoroughly covered in class so that they understand it. The value of memory strategies to raise attainment comes after mastery of new material.