

Learning to learn with Logo Visual Technology

With teachers eager to cater for students with different learning styles, the search is on for practical ways to include visual, auditory and kinaesthetic learners in lesson activities. Logo Visual Technology provides a learning tool that teachers can use to design activities that will appeal to all types of learners, while also developing thinking and collaborative skills. Brin Best, Charlotte Carter and John Varney explain how

Logo Visual Technology (LVT) is the name given to a methodology and associated tools that permit visual thinking:

- Logo – refers to meaning
- Visual – implies that meaning is made visible
- Technology – relates to the way we can deal with meanings as if they were objects, flexible in their position, relationship or hierarchy.

Originally developed in the 1960s in higher education by Anthony Blake and a team of researchers from Imperial College, London, the LVT approach has been developed over many years in business to improve thinking and strategic planning.

Recently, the Centre for Management Creativity (CMC) has worked with the education consultancy, Innovation for Education, to develop the methodology for use in schools. This use of LVT is pegged to the national curriculum and provides a way to accelerate learning and improve the quality and diversity of thinking.

The main elements of LVT are simple:

- moveable objects that can be written or drawn on to give them meaning
- a display surface capable of being written or drawn on.

For many years, teachers have used approaches similar to LVT by using flashcards, paper and Blu-Tack or Post-it notes. However, LVT takes the process one step further by providing simple, robust and reusable tools, combined with appropriate strategies and methodologies, that integrate these techniques in a way that offers teachers an explicit way to improve thinking and enhance learning for all.

CMC sells toolkits that include magnetic boards and hexagons, known as MagBoards and MagNotes respectively, that teachers can use to deliver activities based on this style of teaching. These classroom kits include a book of eight applications all linked to specific national curriculum subjects with lesson plan summaries. Both the moveable objects and the display surfaces can have text or drawings removed and others put on them, or changed as ideas develop. A computer-based version of LVT, *Visual Concept*, which can be readily

networked, is also available and allows work to be permanently recorded, recovered and transmitted much more easily than the non-computer version.

Classroom applications

The following applications show just some of the ways that LVT can be used in secondary school classroom activities:

- recall
- revision
- planning written work
- classifying
- notetaking
- issue analysis
- sequencing
- decision-making
- determining a hierarchy
- mindmapping
- thinking skills exercises.

The box on page 4 provides activity examples that illustrate how two of these applications can be developed.

The first example shows how LVT can be used to develop an understanding of a hierarchy. Although referenced specifically to the science curriculum, this is an example of a generic skill that can be applied to a range of other subject areas.

The second example shows how LVT can be used in a more advanced classroom task to develop a deep understanding of a complex problem – why so many parts of

the UK are polluted. Although referenced specifically to the geography curriculum, again it is an example of a generic skill that can be applied to a range of other subject areas. When working on the higher-level applications, LVT is a powerful way to reveal the underlying pattern from many separate ideas, bringing with it new insights. The fact that these LVT processes reveal the relationships between groups of ideas leads to holistic understanding.

Providing for different learning styles

Recent research suggests that the more of our senses we use when we learn the better we learn. LVT allows teachers to unify the three main senses when teaching about a specific concept, topic or skill. It allows learners to see, hear and feel what they think, embedding learning as they do so.

The box below shows how LVT appeals to students with different learning profiles. LVT can also be used to develop learners' multiple intelligences, and is particularly suitable for developing and improving linguistic, visual and spatial, inter- and intra-personal and kinaesthetic intelligences.

Developing thinking skills

LVT works well in classroom situations because it is inherently participatory and inclusive in its ethos. No ideas are excluded,

Appeal of LVT to different types of learners

Visual learners

- Text and icons can be clearly seen
- The relationship between ideas and the patterns created are visually supportive of thinking
- You can see how what you think relates to how others think
- LVT develops visual intelligence, which supports mental dexterity
- MagNotes are colourful
- LVT provides a visual prompt to aid discussion and presentation of ideas

Auditory learners

- LVT encourages discussion and the sharing of ideas, as the relative positioning of ideas become easy points of discussion

- Students' ideas are challenged verbally and they get the chance to challenge others
- Nuances of thinking can be readily discussed
- The fact that ideas are out in the open enables them to be discussed without the person feeling at risk
- LVT develops auditory intelligence, complementing intelligent reasoning

Kinaesthetic learners

- LVT requires bodily action to move ideas around
- Kinaesthetic intelligence informs the thinking process as people explore the significance of relative positions of ideas to find meaningful patterns

TEACHING AND LEARNING TOOLS

the views of individuals are valued and the diversity of the group can be appreciated as an asset. It also encourages enquiry and makes it clear that there is not a single 'right' answer to every question. In a world of increasing complexity, people need to be trained in more divergent thinking and LVT can help to do this. Often collaborative thinking can become narrowed by an overt focus on contributing to linear discussion. LVT encourages lateral thinking, which can be liberating and productive. Through making ideas visible, students are better able to understand how others' ideas have developed. LVT can also help to create, support and develop communities of enquiry. It can be used to bind together a whole-school strategy to develop thinking skills.

Social learning

Social learning is a powerful way to enhance learning. Underpinning this

approach is the principle of exploratory dialogue, where language is used to encourage thinking. During this process students and teachers engage critically but constructively with each other's ideas. They speculate, offer relevant information for joint consideration and build contributions on previous comments. Pupils give reasons for their views and seek them from others. Such conversations improve thinking, raise intelligence and are an essential prerequisite for raising standards.

LVT provides a structure for groupwork and the management of group talk, and with practice can be used to construct positive contexts for group communication and interaction.

LVT also develops emotional literacy on a number of levels. A safe environment is provided to try out ideas and explore self-identity in collaboration with others. The flexible approach of LVT encourages a

culture where 'mistakes' are accepted or even encouraged.

Classroom management

As the basic equipment needed for LVT can be as simple as paper and writing equipment, it is readily accessible to every teacher. Teachers who have used LVT have found that it helps students to concentrate and stay on task because it is engaging to use. It fits seamlessly into any lesson as a tool for learning and thinking that can be used flexibly and when the need arises.

Any teacher or group of students new to the LVT approach will need to be aware of how the process works and the groundrules for effective classroom working. These include that learners:

- value the ideas of others – LVT reinforces the fact that there is no single 'right' answer and that a group can come to more powerful

LVT activity examples

Determining a hierarchy

Aim: To show the hierarchical relationship between different elements or concepts.

Stimulus question: What does a food web from a woodland ecosystem look like?

Context: This lesson would take place after students have been studying the topic of ecology for several lessons. It would rely on their understanding of food chains and knowledge of the feeding relationships in a woodland.

Activity: Each group of up to six students is given a MagBoard, plenty of MagNotes and pens and asked to copy the stimulus question on to their MagBoard.

The teacher writes out the names of each species in turn and the students write each word on a separate MagNote and put it on their group's board. Photographs or other visual information could be used to bring the species to life.

Each group arranges the words in an appropriate pattern to show a woodland food web, adding arrows to show energy flow (who eats who!). At this stage discussion should take place among the students to clarify each other's thoughts and consolidate what has been learned.

The teacher then asks each group to show their MagBoard to the class with the finished woodland food web, correcting any mistakes as they do so. A correct version of the food web is presented on the teacher's board. Students can then copy the finished hierarchy into their books.

To consolidate learning and extend the activity, the teacher can use a complete version of the food web on a board to demonstrate how fragile the ecosystem is. For example:

- the oak tree can be taken away and the students must say what would happen to the food web if this occurred
- the goshawk can be poisoned to see how this would affect the food web.

Issue analysis

Aim: To break down a complex issue into its key elements to aid understanding.

Stimulus question: Why are so many parts of the UK polluted?

Context: This lesson would take place after students have been studying the topic of pollution for several lessons. It would rely on their understanding of what pollution is and how it is caused. Some knowledge of the industrial history of the UK would also be useful.

Activity: Each group of up to six students is given a MagBoard, plenty of MagNotes and pens and asked to copy the stimulus question on to their MagBoard.

The students in each group record their ideas in answer to the question, writing each on a separate MagNote and placing them on the MagBoard.

The students then organise the separate ideas according to sameness and difference to create clusters of similar ideas. The students give each cluster a simple title that summarises the ideas it encapsulates.

They draw arrows between the clusters to show the relationships between the different elements to help determine an underlying pattern.

Each group in turn shows their MagBoard to the class, reading out their cluster titles and explaining the reasoning behind the clusters and the way they are connected as they do so. The teacher draws together the cluster titles of all the groups to create an overall summary in response to the stimulus question.

With the aid of the MagBoards and the teacher's summary each student constructs their written answer in response to the question, which will be based on the collective thinking of the whole class.

Based on material from Best, B. (2002) *The LVT classroom guide: using Logo Visual Technology to infuse thinking skills into Key Stages 3 and 4*, Centre for Management Creativity

conclusions if the ideas of all its members are included

- can disagree but should not argue
- think carefully and in a focused manner before writing ideas down – the quality of the initial array of ideas directly affects the quality of the final outcome; to begin with learners may be a bit sloppy about this, but it is worth persisting to develop their ability to clearly articulate their ideas
- respect the process and the equipment.

The groundrules for the teachers include that they:

- take care to prepare the learners for the task – the prior knowledge or experience of the learners has a strong influence on the quality of the outcomes
- frame the stimulus question carefully
- develop the skill of eliciting consistently-framed ideas from the pupils
- encourage students to value the quality of their work – quality thinking is relatively easy using the LVT approach compared to 'logical' linear thinking, so it can be easy to undervalue the results

- be aware that the end result should rarely be an LVT display – LVT is a means to an end so it is likely that the intended output may take a variety of forms, such as a presentation, essay, report, diagram, which do not necessarily reveal how they were arrived at.

There are many benefits of using LVT for teachers and learners, and in terms of groups and the whole school. These are set out in the box below.

Strategic planning tool for managers

As well as helping to improve thinking and creativity in the classroom, LVT is a tried and tested tool in management situations. It is especially effective at a strategic level and in development planning. Education managers are beginning to use LVT to develop whole-school strategies and are finding it a successful way to bring together the ideas of the senior management team and synthesise these into a long-term plan of action.

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For details of LVT courses for teachers and advisers on using LVT in the classroom and for strategic thinking provided by CMC see www.changeandinnovation.com/education LVT educational kits and guides are available from the Centre for Management Creativity, High Trenhouse, Malham Moor, Settle, North Yorkshire, BD24 9PR; tel. 01729 830322; email: info@changeandinnovation.com Innovation for Education is an education consultancy set up by Brin Best in 2002 to provide training, publishing and consultancy for schools and the education community. See: www.innovation4education.co.uk Charlotte Carter completed a PhD on rights, relationships and identities in the secondary school, using LVT-type methodologies to develop emotional literacy

Value of LVT

For teachers

- Provides a means to model thinking and exploratory talk – LVT supports the systematic development of social and communication skills
- Allows them to see, understand and readily facilitate students' thinking
- Allows them to analyse their students' thinking to help them move on to the next level
- Aids continuity between lessons
- Engages pupils in processes of discovery leading to true understanding
- Opens up new teaching approaches
- Makes classroom management easier because it engages students with different learning styles, improving their behaviour and concentration levels

For learners

- Provides a dynamic, engaging way of learning
- Involves them in thinking
- Plays an active role in shaping ideas
- Learners of all ability can take part
- Provides the chance to share ownership of outcomes

- Encourages them to benefit from the stimulus of others
- Allows them to learn to create mental constructs
- Develops confidence in:
 - articulating ideas
 - generating new ideas
 - handling open-ended questions
- Encourages them to value the process of thinking and become conscious of the skills involved, helping them to make more sophisticated choices
- Supports them in moving from being a passive to an active participant
- Raises levels of engagement and motivation – particularly for students who enjoy learning through interpersonal activities
- Develops higher-order thinking skills
- Aids memory

For groups

- The group benefits from the cumulative thinking of its members
- The group's diversity of thinking can create novel solutions
- Ideas in formation can be shaped more readily than 'finished' ideas

- The group setting provides a safe space for thinking to take place
- The group setting provides challenge for those with strong ideas
- Groups learn that through deconstructing ideas they can restructure ideas

For the school

- LVT provides a methodology for learning and thinking that readily transfers across subject areas and helps to unify the curriculum
- Has the potential to improve teaching and widen teacher repertoire
- Improves the thinking capacity of the whole school
- Can improve lesson design
- Communication is greatly enhanced by improving people's ability to articulate and also directly use LVT displays to communicate complex ideas
- Knowledge of all types can be mapped and referenced using LVT
- Can develop better strategic thinking for management
- Develops a 'common language' for thinking
- Thinking is valued and as a result the quality of thinking improves

For ideas on how to provide for different learning styles and multiple intelligences in the classroom see *Curriculum Briefing: Managing effective learning*, Vol 1, Issue 3. This looks at how students learn, and shows you how you can apply learning theory in the classroom to bring about real improvements in achievement. It includes learning frameworks you can use to plan effective lessons that are inclusive of all students. For details of how to order contact Optimus Publishing on 020 72519034.