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*for a living planet*

# linking thinking

Curriculum for Excellence:  
Joined-up Thinking for the Classroom  
A PROFESSIONAL DEVELOPMENT TOOLKIT

## **Acknowledgements**

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# Curriculum for Excellence: Joined-up Thinking for the Classroom

## A PROFESSIONAL DEVELOPMENT TOOLKIT

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# linking thinking

## Introducing the Resource

### Foreword

Scotland and the world face unprecedented challenges at this point in history. In meeting them successfully, we will also need to take into consideration the needs of future generations. In short our response has to be sustainable.

In this context, educators and learners have to confront particular challenges in making sense of the world we live in. In the introduction to the Curriculum for Excellence<sup>1</sup>, the Curriculum Review Group recognised that global factors would have as much influence on the curriculum as specifically educational factors. All children and young people in Scotland have an entitlement to 'develop knowledge and understanding of society, the world and Scotland's place in it'. While reducing "overcrowding in the curriculum" the Curriculum for Excellence aims to equip young people with

the skills they will need in tomorrow's workforce. However helping young people to become successful learners, confident individuals, responsible citizens and effective contributors will not easily be achieved by continuing to use traditional approaches.

WWF Scotland developed the Linkingthinking resource<sup>2</sup> to help develop teachers' and students' understanding and skills, in the belief that the ability to think in a more connected way is essential to living in a highly interdependent world. The approaches are particularly useful as an interdisciplinary learning tool 'which can help children to see links between

and the relevance of different aspects of the experiences and outcomes (Building the Curriculum 3).<sup>3</sup>

WWF takes action to stop the degradation of the planet's natural environment and to build a future in which humans live in

harmony with the natural world. We are strongly committed to a balanced approach to conservation that addresses social and economic issues in the context of the environment.

*"No problem can be solved  
from the same consciousness  
that created it. We have to  
learn to see the world anew."*

Albert Einstein 1879-1955

1. *A Curriculum for Excellence*, The Curriculum Review Group, Scottish Executive, 2004

2. *Linkingthinking. New Perspectives on Thinking and Learning for Sustainability*, WWF Scotland 2005

3. *Building the Curriculum 3 A Framework for Learning and Teaching*, Scottish Government 2008

## About this Toolkit

This professional development facilitator's toolkit is an additional support intended for those educators responsible for introducing the ideas and concepts of systems thinking to colleagues. We hope that they will find it useful in a variety of contexts and that participants will find the practical activities useful in their own teaching and professional development.

Given the broad range of interests and motivations of participants as well as the variety of contexts in which these activities might be presented, a menu of options has been compiled to meet differing needs. In deciding which specific activities to employ in any given context, facilitators should consider the following:

- **The likely mix of backgrounds of participants**
  - **primary/secondary**
  - **subject specialists**
  - **senior management looking at development of school policy/interdisciplinary initiatives**
- **The intended application of activities**
  - **directly in the classroom**
  - **in staff development**
  - **in applying linkingthinking concepts to the development of citizenship and sustainable development education**

Finally, it is intended that facilitators should find this practical guide supportive without being prescriptive. As stated in the Linkingthinking foreword, "The citizens and professionals of tomorrow will require such qualities as flexibility, resourcefulness, creativity, self-reliance and empathy and the ability to participate actively and responsibly." Any and all of the activities and approaches suggested here should not detract from the qualities above. Users should feel free to adapt and amend to suit their own situation and objectives, including the age range and ability of their students – and to share their insights with others.

## What is Linkingthinking?

*Linkingthinking: New perspectives on Thinking and Learning for Sustainability*, WWF Scotland 2005 provides a flexible package of learning and teaching resources which introduce teachers and their students to joined-up thinking skills that are broadly applicable to different situations and contexts.

Linkingthinking is the term used in this resource to refer to thinking about the nature and consequences of relationships or connections, also referred to as 'systems thinking' and 'holistic thinking'. In piloting this toolkit with teachers we have also used the term 'joined-up thinking' which has come into everyday use. It recognises that our world is highly complex and interdependent. Analytical thinking and reductionist thinking tries to understand things by taking them apart. Linkingthinking complements this with a problem-solving approach that looks at the whole picture and tries to understand connections.

This approach is beginning to be recognised in curricula and policy objectives and can clearly be seen as essential in the delivery of the purposes and aims of the Curriculum for Excellence.

While the tools and activities included here focus primarily on issues of environmental sustainability, the methodology is applicable in a wide range of learning situations and educators are encouraged to extend their use into different situations and contexts, both for personal use and with students.

The suggested activities included in this Facilitator's Toolkit are only a sample of the full range of activities included in the Linkingthinking resource. Linkingthinking is neither a course nor a programme of work to be used in its entirety but a flexible resource that can be dipped into or used in any order to meet the needs of learners. Educators are strongly encouraged to explore the full package for themselves to develop their own understanding and confidence in using this approach.

# Activities and Tools

## Planning a Linkingthinking Workshop

### 1. Learning outcomes

The toolkit offers a set of participatory professional development activities, based on the WWF Linkingthinking resource and designed to help educators

- Understand the need for ‘joined-up thinking’ as a vital thinking skill
- Be familiar with activities that demonstrate ‘joined up thinking’ skills in problem solving, based on real world issues such as climate change, food and resource use that are relevant to pupil’s lives
- Be familiar with activities that develop ‘joined up thinking’ skills in the classroom
- Explore how global citizenship and sustainable development education link with current education Initiatives to deliver many of the Purposes of Education
- Consider how the WWF linkingthinking materials can be used in their own teaching/ learning situations to make connections across the curriculum
- Link other resources to the linkingthinking approach

Not all activities referred to need necessarily be used in any particular session but may be considered as options for use with particular groups.

### 2. Timing and Materials

This guide has been developed to enable educators to familiarise themselves with the concept of ‘joined-up thinking’ for the purpose of improving their own practice as well as introducing the skills involved to their own students.

In the current context of Scottish education, with the priority being given to values and attitudes, skills and involvement, this resource will assist committed professionals to reflect on their own practice and discover ways to incorporate these priorities into their teaching without over-burdening the curriculum.

In presenting any of the sessions outlined in this guide, we have tried to allow a reasonable time for discussion of the activity so that learning points can be emphasised and participants can comment from their own perspective. Given the inevitable time constraints present in any context, it is nevertheless important to keep the activities moving, concentrate on the value of the skills being practised and avoid the tendency to become involved in discussion of the real-life issues which arise. Time constraints are always a consideration in shorter sessions. It may be advisable to reduce the number of activities rather than rush participants without allowing time to draw out learning points.

Good preparation will enable participants to take maximum value from the session. The workshop venue should be large enough for participants to work in a circle as a whole group and in small groups with a flip chart each. Wall space is needed to display flip chart posters.

Check carefully the resources required for the activities you plan to use. Some of the suggested activities have made use of published resources such as photo packs, but these can be replaced by your own resources if you have time to research them. The photo packs suggested here are available from WWF’s Teachers’ website [http://www.wwf.org.uk/what\\_we\\_do/working\\_with\\_schools/resources/](http://www.wwf.org.uk/what_we_do/working_with_schools/resources/) and on loan or for sale from the six regional development education centres listed on the website of IDEAS [www.ideas-forum.org.uk](http://www.ideas-forum.org.uk) or at the following addresses:

**Highland One World Group**

www.globaldimension.highlandschools.org.uk  
 Tel. 01349 863441  
 E-mail: janis.keast@highland.gov.uk

**West of Scotland DEC Glasgow**

www.wosdec.org  
 Tel. 0141 243 2800  
 E-mail: wosdec@btconnect.com

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 E-mail: mail@scotdec.org.uk

Learning Outcomes	Activities	Full day	Half Day	Twilight
Understand the need for 'joined-up thinking' as a vital thinking skill	Activity 1 What's in the News? Activity 2 The Issue Tree	✓	✓	✓
Be familiar with activities that demonstrate 'joined up thinking' skills in problem solving based on real world issues such as climate change, food and resource use	Activity 3 You can never only do one thing Activity 4 Towards Rounded Solutions	✓	✓	✓
Be familiar with activities that develop 'joined up thinking' skills in the classroom	Activities 1-4	✓	✓	✓
Have explored how global citizenship and sustainable development link with current education initiatives to deliver many of the Purposes of Education	Activity 5 Linkingthinking, Sustainable Development and The Curriculum for Excellence	✓	✓	
Have considered how the WWF Linkingthinking materials can be used in their own teaching/ learning situations to make connections across the curriculum	Activity 6 Systems of Concern: Linkingthinking in the Teaching Context	✓	✓	✓
Have an opportunity to link other resources to the Linkingthinking approach	Activities 1-2	✓	✓	✓

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The following suggestions for full day, half day and twilight sessions are based on successful pilot workshops organised for teachers in Highland and North Lanarkshire.

## Full Day

This assumes that working time available will be 4.75 hours, excluding breaks.

Timing	Activity	Resources Needed
15 minutes	Welcome/ Introduction / Icebreaker	None
30 minutes	What's in the News?	Flipchart paper & pens Assorted headlines Photo packs
45 minutes	Issue Tree	Flipchart paper, pens, A4 outline of issue tree
15 minutes	Break	
45 minutes	You can never only do one thing	Writing and drawing materials
45 minutes	Towards Rounded Solutions	Flipchart paper and pens
60 minutes	Lunch	
45 minutes	Linkingthinking, Sustainable Development and the Curriculum for Excellence	A3 copies of extracts or an A4 version for each participant. Post-its and flipchart /poster paper
45 minutes	Systems of Concern: Linkingthinking in the teaching context	Large sheets of paper (A3 should be sufficient) and drawing materials
15 minutes	Evaluation: 'Head, Heart, Hand and Bin'	Flipchart Sheets Summary Handout

## Half Day

This assumes that working time available will be 3.25 hours, excluding breaks.

Timing	Activity	Resources Needed
15 minutes	Introduction	None
30 minutes	What's in the News?	Flipchart paper & pens Assorted headlines Photo packs
45 minutes	Issue Tree	Flipchart paper, pens, A4 outline of issue tree
15 minutes	Evaluation: 'Head, Heart, Hand and Bin' (optional) Linking Thinking Quiz	Quiz sheet

## 'Twilight' Session

This assumes that working time available will be 1.5 hours, excluding breaks.

Notes on learning points and resources required are included after the outline programmes.

Timing	Activity	Resources Needed
15 minutes	Introduction	None
30 minutes	What's in the News?	Flipchart paper & pens Assorted headlines Photo packs
45 minutes	Issue Tree	Flipchart paper, pens, A4 outline of issue tree
15 minutes	Evaluation: 'Head, Heart, Hand and Bin' (optional) Linking Thinking Quiz	Quiz sheet

### 3. Facilitating the workshop

The role of the facilitator is to support participants in learning together, staying on task and completing the workshop activities in the time allotted.

Where possible, use a large room with seating arranged in a circle so that all participants can have eye contact. Tables can be available around the edges of the room for small group work, although working on the floor is acceptable to most groups.

The learning outcomes and agenda for the session should be prominently displayed in the working area, preferably on flipchart rather than electronically, so that they can be referred to whenever necessary. At the end of each activity the group can be asked to comment on which objectives have been addressed. This will help to ensure that participants stay focussed on the overall aim rather than the specific qualities of a single activity. Evaluation of individual activities should be integral to the debriefing at the end of the activity rather than reserved to the end of the session.

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# Activity Guides

## Introduction

The style of welcome and introduction will depend on the context. Where participants are from different establishments it is useful to include a simple activity which sets everyone at ease e.g. introduce themselves to someone they haven't met before and tell each other about their favourite hobby/place to visit/food etc. This can be repeated several times in 3 or 4 minutes so that the group members begin to familiarise themselves with names.

## Activity 1 *What's in the News?*

Where working with a group from one school or cluster group, it is helpful to ensure that group members do not work in exclusive groups, e.g. all scientists or senior management together.

### Objective

To demonstrate the need for joined-up thinking across subject areas as a vital skill, helping participants understand that issues are linked and not always straightforward.

### Materials Required

Newspaper headlines, photographs, post-it pad for each group, marker pens, and flipchart paper.

### Timing

Allow 30 minutes.

### Procedure

- Divide participants into groups of 2/3 people (dependent on number of headlines and photos available).
- Spread newspaper headlines from recent local and national papers and a range of photographs on the floor in the centre of the circle. (See Resource List and Contacts).

- Invite the groups to make links between headlines (local/ national) and pictures (global) Use 'post-its' to make the links - one on each post it - between the headline and the picture (similarities / differences / contrasts).

- What sorts of links have been identified? Group the types of link and devise a flipchart diagram. Are the links

**Historical / geographical / scientific / technical / mathematical**

**Linguistic**

**Environmental**

**Social**

**Political**

**Ethical**

**Health**

**Economic / Business**

**Spiritual**

**Human rights**

**Local or Global?**

**Others?**

- Visit other groups' flip charts and add contributions using post-its.

### Discussion and Learning Points

- Draw out the environmental, social, economic, ethical, human rights etc. links so interconnections and systems become clear.
- Learning points to highlight if not raised by participants:

- Nothing is simply, for example, an 'environmental issue', a social issue, or an 'economic issue'.

- There are many connections - this is systemic/ joined up thinking - for the complex world we live in. We try to 'box' things, in school subject areas for example, but most events and issues are interconnected.

- Always look for the bigger picture - the whole is bigger than its parts.

- There are no right or wrong answers but lots of different points of view.

- Not thinking systemically in a systemic world can cause problems (knock on effects for us, others and for the future).

## Evaluation

- Ask participants how useful the exercise was.
- Did it help meet any of the objectives for the session? (Tick these on your flipchart)
- Could they foresee situations where they could use this in the classroom? How would they adapt it?

## Activity 2

### *The Issue Tree*

## Objective

To develop joined-up thinking skills, enabling participants to explore a real-life issue, its causes and possible solutions, in a way that can highlight potential further and perhaps unintended consequences.

## Materials required

Flipchart paper, pens, A3 or A4 outline of issue tree.

## Timing

Allow 45 minutes.

## Procedure

- In small groups, brainstorm sustainability issues, for example HIV Aids, flooding, a new supermarket and ask each group to choose one as a focus for the exercise. Or groups may decide to work with the issues arising from the previous exercise.
- Draw a tree outline on the poster paper and write the focus issue on the trunk.
- Ask groups to write the possible causes of the issue into the roots of the tree. Remember to include feelings, ideas, values, priorities, emotions and decision making. What caused these causes? Write these in too, and any things that may have caused these causes.
- Then ask them to write any likely impacts (effects or consequences) into the branches. And what impacts may these impacts have? What are the ultimate consequences of the issue? Are these solutions or do they generate further problems? Do

these link back to the roots? Mention that at this stage we are not inviting a discussion of the relative merits of solutions; the aim is to highlight the complexity of most issues and their inter-linking with other issues.

- Alert the groups to the notion that they have identified political/ ethical/educational/ human rights implications of the issue as well as environmental.

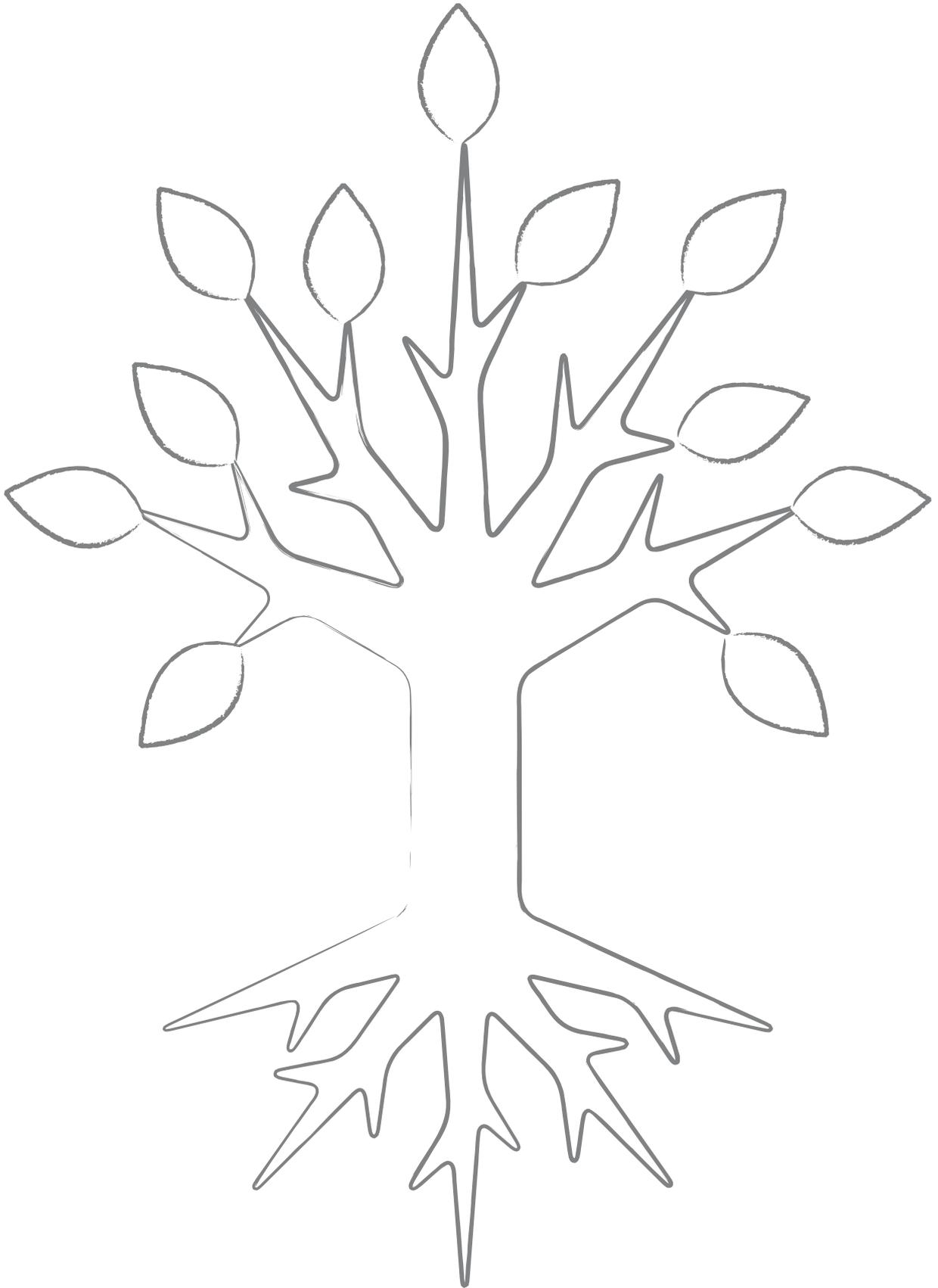
## Discussion and Learning Points:

- Ask each group for feedback to the main group about what have they learned from the process. Try to ensure that discussion is about the usefulness of the technique and where they might use it in their own work/teaching situation rather than the detailed content explored in each diagram.
- Learning points to highlight if not raised by participants:
  - Problem-solving is not linear.
  - It is important to recognise in 'problem solving' that issues rarely have one single cause or effect.
  - Any 'cause' can also be an 'effect' and vice versa and we often cannot know what long term effect our actions will have.
  - Working on relevant real world issues in a participative way is good education
  - Learn to think 'out of the box', looking at the whole story not just a part of it.
  - Learn to look at issues in context, looking at all the influences at the start and knock on effects at the finish.
  - As we cannot predict outcomes in human and most natural systems, flexibility, accepting uncertainty and change, participation and learning from change are essential for us all.

## Evaluation

- Ask participants how useful the exercise was.
- Did it help meet any of the objectives for the session? (Tick these on your flipchart)
- Could they foresee situations where they could use this in the classroom? How would they adapt it?

## Linkingthinking Activity: The Issue Tree



Write your issue on the trunk of the tree, the causes on the roots and the effects in the branches. Try to find solutions and write them on the leaves. Do your proposed solutions have other effects? Do these link to the roots? Draw in any links.

### Activity 3

## *You can never only do one thing*

#### Objective

To demonstrate the use of joined-up thinking skills in problem solving, looking at connections and the need for foresight.

'You can never only do one thing' is one of the fundamental ideas of joined-up (or systems) thinking. As events, things and actions are interconnected, we often find additional and unanticipated things happening as a result of what we first intended. We call these all manner of names: 'knock-on effects', 'ramifications', 'side effects' and so on. Such consequences might be negative or positive, or both. This activity helps participants understand that there is often a difference between what is an intended and inadvertent effect, and the need, therefore, for more 'systemic awareness' of the relationship between events and actions.

#### Resources needed

Flipchart paper, pens

#### Timing

Allow 45 minutes.

#### Procedure

- Divide participants into groups of 3/4 people and ask each group to choose a human action, machine or system that interests them, for example:

#### Human action

Making a cup of coffee; developing AIDS drugs; building a road; developing farmers' markets; riding bicycles; using slug pellets in the garden; planting a tree.

#### Machines

MP3 player, mobile phone, washing machine, computer; television

#### Systems

Your school or college, reservoir, supermarket, local transport system, power station, yourself.

- Ask each group to think 'What is this for?' If there are several answers rank as the main (intended) purpose and secondary purposes and display their comments on flipchart paper.
- Now ask the second key question: 'What does it do?' (or 'what happens in addition, what other effects does this action/machine/system have?') Show as an example the suggestions for 'Cars'.
- Ask the groups to add any further knock-on effects from the unintended effects.

#### Discussion and Learning Points

Ask if the intended purpose can be met with fewer negative consequences.

- Learning points to highlight if not raised by participants:
  - In the 'Cars' example, one's view of cars is a function of who you are (as a car driver, passenger, pedestrian, cyclist, bus driver, factory worker etc) and what is important or meaningful to you.
  - Total objectivity is impossible, it is important to recognize that different people have different perspectives.
  - Actions always have additional consequences – sometimes minor, sometimes major.
  - Better ways of doing something involve anticipating negative consequences and maximising positive ones.
  - We tend to concentrate on a single benefit to us and ignore costs to others and other parts of the system, raising environmental, social and ethical questions.

#### Evaluation

- Ask participants how useful the exercise was.
- Did it help meet any of the objectives for the session? (Tick these on your flipchart).
- Could they foresee situations where they could use this in the classroom? How would they adapt it?

## Linkingthinking Activity: You can never only do only one thing

Cars	
<b>What are they for?</b>	<p>To transport people and possessions</p> <p>To create jobs and boost the economy</p> <p>To lend status (for some people)</p>
<b>What do they do?</b>	<p>Transport people and possessions</p> <p>Create jobs and boost the economy</p> <p>Lend status (for some people)</p>
<b>And also (unintended effects)</b>	<p>Create a demand for roads</p> <p>Pollute the air and contribute to global warming</p> <p>Harm a local economy through favouring out-of-town shopping centres</p> <p>Harm people through accidents and affect health through pollution</p> <p>Contribute to congestion</p> <p>Change the landscape and townscape</p> <p>Help sustain demand for oil exploration</p>

## Activity 4

### *Towards Rounded Solutions*

#### Objective

To demonstrate the use of joined-up thinking skills in problem solving, emphasizing the ‘knock-on’ effects of solutions and the need to think more holistically about the world.

#### Timing

Allow 45 minutes

#### Resources

Flipchart and pens

#### Procedure

- Compile a list of ‘solutions’, incorporating those that are topical to what’s happening locally or relevant to the school context, for example

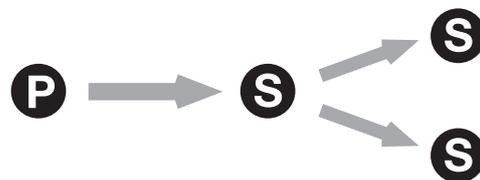
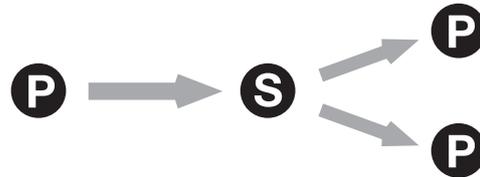
- extend the school car park
- remove chips from the school dining room menu
- shorten the school lunch hour
- reduce the number of teachers met by S1/2 pupils
- introduce school vending machines
- use pesticides
- erect wind turbines
- construct a bypass for a town or city
- start up a farmers’ market
- build a coal-fired power station
- use disposable plates
- construct a reservoir
- designate a nature reserve

- Ask groups of 3 or 4 to choose a topic. For their topic spend 5 minutes discussing

1. ‘If this is seen as the solution, what is/are the problem or problems?’
2. Who has defined the problem this way and why?

- Feedback their suggestions to the whole group.

- Using ‘P’ to denote problem and ‘S’ to denote solution introduce the group to the diagrams below:



- Now ask each group to work on their chosen topic, at both ends of the ‘Problem-Solution’ equation. Dig deeper.

- Does the S in turn generate more Ss than Ps? (Or is it likely to?) Or does it seem to generate more Ps than Ss? If the latter, go back to the perceived original problem. Maybe it’s not really a problem at all. Or maybe it can be seen in a different light; one that questions the originally proposed solution.

#### Discussion and Learning Points

- Did the exercise make participants question solutions and see them in a different way?

For example, the problem that the power station is meant to address may not be a shortage of supply, but rather the inefficient use of what supply there is. So the appropriate solution might be to work on education and energy conservation rather than increasing supply.

The problem that the pesticides are meant to address may not be that too many pests are taking the crop, but rather that there aren’t sufficient predators in the system to control the pests. So the appropriate solution path might be to cut down on pesticides while building up biodiversity on the farm.

- Learning points to highlight if not raised by participants:

- With simple problem solving (P → S) 'solutions' can lead to more problems, which are often unforeseen. This activity increases awareness of the need to think towards 'rounded solutions' that take more account of the connected nature of the world.
- Different people have different perspectives on what is a problem or solution and multiple perspectives are helpful.
- Taking a different, more holistic view of problems can lead to different solutions because the nature of the problem is questioned and seen in a larger context.
- It's helpful to look at the interaction of complex factors that may give rise to an issue.
- Decisions are usually needed to choose between the benefits and disadvantages of any 'solution'.
- Developing solutions that generate further solutions (positive synergies) is desirable.

If time allows, share the Sufi Muslim story of *The parable of 'The Blind Men and the Elephant'*.

#### **The parable of 'The Blind Men and the Elephant'.**

"Three blind men encounter an elephant for the first time. The first grasps an ear and says 'it is a large and rough thing like a rug'. 'No, no,' says his friend holding the trunk. 'It is long and hollow like a pipe.' 'You are both wrong,' says the third as he feels the leg. 'It is strong and firm – it is a pillar'."

The story shows us three things:

1. 'To see the whole elephant' we need several people's perspectives (even the three views combined do not give us the whole picture).
2. Everyone has part of the true picture and

that, therefore, all perspectives should be valued.

3. If you divide an elephant into three, it doesn't give you three elephants. If we think of the elephant as a problem, solving the ear doesn't solve the elephant.

Linkingthinking encourages us to 'see the whole elephant', to recognise as much of the big picture as possible and to see underlying patterns and links which will help them to understand complex issues and situations more fully.

#### **Evaluation**

- Ask participants how useful the exercise was.
- Did it help meet any of the objectives for the session? (Tick these on your flipchart)
- Could they foresee situations where they could use this in the classroom? How would they adapt it?

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## **Linkingthinking Activity: Towards Rounded Solutions**

Cut these solutions into strips for use by small groups

<b>Erect wind turbines</b>
<b>Pesticides</b>
<b>Construct a bypass for a town or city</b>
<b>Start up a farmers' market</b>
<b>Build a coal-fired power station</b>
<b>Use disposable plates</b>
<b>Construct a reservoir</b>
<b>Designate a nature reserve</b>
<b>Introduce vending machines</b>
<b>Extend the school car park</b>
<b>Remove chips from the school dining room menu</b>
<b>Shorten the school lunch hour</b>
<b>Reduce the number of teachers met by S1 and S2 pupils</b>

## Activity 5

### *Linking thinking, sustainable development and Curriculum for Excellence*

#### Objective

To relate 'joined-up' thinking methods to the delivery of new educational initiatives.

#### Timing

Allow 45 Minutes.

#### Resources

A3 copies of extracts from *Curriculum for Excellence at a Glance*, *Purposes of the Curriculum* from 3–18 and *Choosing our Future* or an A4 version for each participant. Post-its and flipchart/poster paper.

#### Procedure

- In groups of 3 or 4, give participants a copy of the extracts from Scottish Sustainable Development Documents and the Curriculum for Excellence. What changes are required by them, by their school to achieve what is asked for?
- Draw 3 concentric circles to fill the space on the poster paper with a large inner circle and making the space between each circle large enough to accommodate a post-it note.
- Ask each group to examine all the characteristics summarised under the headings Successful Learners, Effective Contributors, Responsible Citizens and Confident Individuals. Write each key point on an individual post-it note/piece of paper. Do the same for the other extracts from *Choosing our Future* Stick them all inside the largest (outer) circle.
- Now ask the group to sort the points they have identified.

Which of them are feasible and could be undertaken by their school/college (including

things that the school/college could do to influence others)? Move these into the second (middle) circle, leaving any that are either not feasible or out-with the power of the school/college in the outer circle.

Which of them could they, as an individual teacher, undertake (including areas where you could influence the school/college to do something)? Move these into the inner circle, leaving any that are out with their power to change in the middle circle.

- Now look at the things that have been placed in the inner circle – those things that they can do directly or can do to influence others.

Which of these things are interrelated? Are there synergies? In other words, are there things which you could do for one reason but which will achieve one of your other objectives?

Draw in the connections with annotated lines.

Are there conflicts:

- a) between your priorities and those of others? In these circumstances it may be necessary to examine your own values and motivation and those of others Might a relatively simple change in the way that you present your ideas be sufficient to convince others of the value of what you believe.
- b) between your own priorities? Which is more important to you?

Are there areas where your school/college influences higher authorities (such as your local authority) and ways in which you can influence the school/college?

#### Discussion and Learning Points

- Ask for group feedback on the process.
- Learning points to highlight if not raised by participants:
  - This activity helps recognise the connection between what is a priority for you or the group and what it is realistic to back up with action and change. Focussing time and energy on the 'inner circle of influence' while being aware of the big picture 'outer circle of concern' can be an important spur to action.

- Focussing time and energy on these areas initially leads to action in the next circle, the school/college.
- Recognising interrelationships and synergies between the areas that you have some control and influence over can help reduce the anxiety induced by initiative overload.
- This technique can be used to examine any issue, by individuals or group. The way we think influences what we see and awareness of this is important.
- It is helpful to look beyond our boundaries of concern to understand the wider effects we are having on the world and the influences on us.
- A Linkingthinking approach to issues encourages looking at and taking responsibility for the whole, recognising its complexity and considering the long term.

But

- Who defines the issue?
- What constitutes 'improvement'?
- Who says?
- At what cost?
- Have things improved or not? What criteria can be used?

### Evaluation

- How useful would this exercise be in the school context?
- Which objectives for the session does it help to meet?
- When and how could participants envisage using this exercise?
- How and when could this activity be used with pupils?

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## Linkingthinking Activity: Curriculum for Excellence

### Purposes of the Curriculum from 3–18

Our aspiration for all children and for every young person is that they should be successful learners, confident individuals, responsible citizens and effective contributors to society and at work. By providing structure, support and direction to young people's learning, the curriculum should enable them to develop these four capacities. The curriculum should complement the important contributions of families and communities.

#### Successful Learners

##### with

- Enthusiasm and motivation for learning
- determination to reach high standards of achievement
- openness to new thinking and ideas

##### and able to

- use literacy, communication and numeracy skills
- use technology for learning
- think creatively and independently
- learn independently and as part of a group
- make reasoned evaluations
- link and apply different kinds of learning in new situations

#### Confident Individuals

##### with

- self respect
- a sense of physical, mental and emotional wellbeing
- secure values and beliefs
- ambition

##### and able to

- relate to others and manage themselves
- pursue a healthy and active lifestyle
- be self aware
- develop and communicate their own beliefs and view of the world
- live as independently as they can
- assess risk and take informed decisions
- achieve success in different areas of activity

**to enable all  
young people  
to become...**

#### Responsible Citizens

##### with

- respect for others
- commitment to participate responsibly in political, economic, social and cultural life

##### and able to

- develop knowledge and understanding of the world and Scotland's place in it
- understand different beliefs and cultures
- make informed choices and decisions
- evaluate environmental, scientific and technological issues
- develop informed ethical views of complex issues

#### Effective Contributors

##### with

- an enterprising attitude
- resilience
- self-reliance

##### and able to

- communicate in different ways and in different settings
- work in partnership and in teams
- take the initiative and lead
- apply critical thinking in new contexts
- create and develop
- solve problems

## Linkingthinking Activity: Curriculum for Excellence Choosing Our Future

“We are facing major and unprecedented challenges to moderate our previously unsustainable patterns of development. Climate Change is the most urgent and pressing example of this. Scotland will not be able to meet these challenges unless people – whatever their age, status, occupation and lifestyle – have the necessary knowledge, awareness, understanding and skills to play their part.”

‘We want to see a Scotland where:

- **Learning for sustainable development is a core function of the formal education system.**
- **There are lifelong opportunities to learn.**
- **The sustainable development message is clear and easily understood.”**

“Scotland has the highest percentage of schools in Europe which are involved in the Eco Schools Programme, a whole school approach involving teaching and non-teaching staff, parents and the wider community as well as pupils in learning about sustainable development issues. At present over 70% of schools are registered Eco Schools. The target is to have 80% of all schools registered on the Eco Schools Programme by January 2008.”

“Investment in the school estate – over £2.3 billion by the end of this decade – means that school children in Scotland will be learning in buildings that embody sustainable design principles. There is a key learning point here: children up and down the country are getting involved in the designs for their new classrooms, putting sustainable development education into immediate practice.”

“The review of the curriculum presents a major opportunity to embed education for sustainable development into Scotland’s schools. The aim of the review is for young people in Scotland to be successful learners, confident individuals, effective contributors, and responsible citizens, who can develop knowledge and understanding of the world and Scotland’s place in it. The Executive will ensure that the new Curriculum for Excellence integrates education for sustainable development across subject areas.”

[p.67, *Choosing Our Future, Scotland’s Sustainable Development Strategy*, Scottish Executive, 2005, and *Learning for our Future; Scotland’s first Action plan for the UN Decade of Education for Sustainable Development*, Scottish Executive, 2006]

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## Linkingthinking Activity: Curriculum for Excellence at a Glance

### Values

**Wisdom, justice, compassion, integrity**

The curriculum must be inclusive, be a stimulus for personal achievement and, through the broadening of experience of the world, be an encouragement towards informed and responsible citizenship.

### The Curriculum

**'the totality of all that is planned for children and young people throughout their education'**

- Ethos and life of the school as a community
- Curriculum areas and subjects
- Interdisciplinary learning
- Opportunities for personal achievement

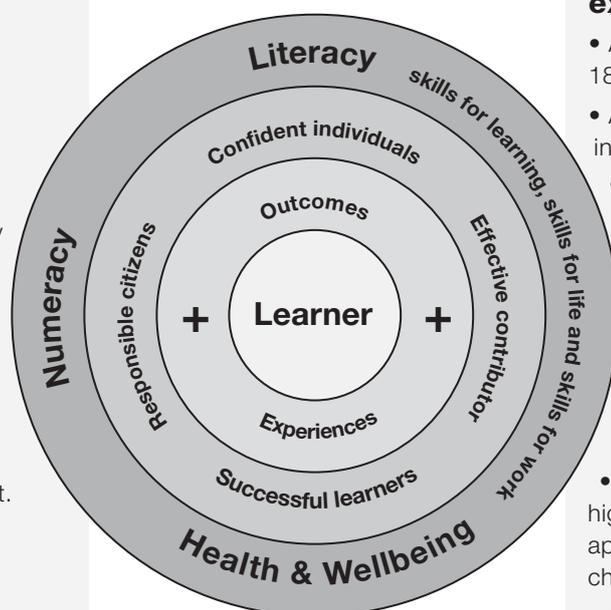
### Learning and teaching

- Engaging and active
- Setting challenging goals
- Shared expectations and standards
- Timely, accurate feedback
- Learning intentions, success criteria
- Collaborative
- Reflecting the ways different learners progress

### Experiences and outcomes set out expectations for learning and development in:

- Expressive arts
- Languages and literacy
- Health and wellbeing
- Mathematics and numeracy
- Religious and moral education
- Sciences
- Social studies
- Technologies

Curriculum levels describe progression and development.



### All children and young people are entitled to experience

- A coherent curriculum from 3 to 18
- A broad general education, including well planned experiences and outcomes across all the curriculum areas. This should include understanding of the world and Scotland's place in it and understanding of the environment
  - Opportunities for developing skills for learning, skills for life and skills for work
  - Opportunities to achieve at the highest levels they can through appropriate personal support and challenge
  - Opportunities to move into positive and sustained destinations beyond school

### Personal Support

- Review of learning and planning of next steps
- Gaining access to learning activities which will meet their needs
- Planning for opportunities for personal achievement
- Preparing for changes and choices and support through changes and choices
- Pre-school centres and schools working with partners

### Principles of curriculum design

- Challenge and enjoyment
- Breadth
- Progression
- Depth
- Personalisation and choice
- Coherence
- Relevance

### Arrangements for

- Assessment
- Qualifications
- Self-evaluation and accountability
- Professional development

### Support the purposes of learning

## Activity 6

### *Systems of Concern: Linkingthinking in the Teaching Context*

#### **Objective**

To identify what can actually be done in line with priorities in relation to introducing Linkingthinking methodology to colleagues or into their own teaching

#### **Timing**

Allow 45 minutes

#### **Resources**

Large sheets of paper (A3 should be sufficient) and drawing materials

#### **Procedure**

- Introduce the exercise by giving an example of the scale of the challenge currently confronting government, communities and individuals, not just in an educational sense. Global issues such as climate change and poverty can appear so daunting that it feels as if nothing can be done as an individual to help the situation. Thus 70% of people in UK are aware of environmental issues but our lifestyles are now more than twice as unsustainable as in the 1960's. When links with everyday life are seen, the thought of the amount of lifestyle changes needed can provoke a great deal of anxiety. This activity aims to help focus in on what can realistically be done, and how it might be possible to do more.
- If the group is all from the same school break into small groups. Otherwise start this activity individually.
- Ask them to draw two concentric circles on the sheet of paper, leaving enough space to write between them and in the centre circle. The outer circle is the boundary of their System of concern. The inner circle is the boundary of their System of influence.

- Brainstorm and write in the outer circle all those things that they feel concerned about, however big or small, in introducing this methodology to colleagues or into their own teaching. This is their System of concern.
- Ask them to distinguish between those things they feel they have no control or influence over at all and those they feel they have some degree of control or influence over, however small. Copy the latter into the inner circle, the System of influence.
- Invite them to think which of those items in their System of Influence will be their first priority area to work on after the workshop.

#### **Discussion and Learning Points**

- Did participants find they had common concerns? Did they have the same level of influence over them?
- What kind of obstacles do we find in trying to change our own behaviour or the behaviour of others?
- Ask whether they spend more time and energy focused on things within their System of concern or System of influence.
- It is more energizing to focus on our System of Influence, putting energy into what can be done while being aware of the 'big picture'.

#### **Evaluation**

- How useful would this exercise be in the school context?
- Which objectives for the session does it help to meet?
- When and how could participants envisage using this exercise?

## Conclusion and Evaluation

A summary handout is included for participants. Before distributing this ask the group to take a few minutes to evaluate the day and stress that feedback is essential and useful to the facilitator and organisers to ensure that they are addressing needs appropriately and effectively.

While most local authorities have their own evaluation process or format, it is useful to introduce others. This example is included to be used if considered appropriate.

### Resources Required

Flipchart Sheets labelled for each activity and including the words, Head, Heart, Hand and Bin. You may also wish to include separate sheets for the overall day and catering/venue. Post-its for each participant.

### Procedure

- Distribute several post-its to each participant
- Ask them to write one comment only on each post-it and then to allocate them to each activity according to the following criteria:

**Head:** something which challenged you or made you think

**Heart:** something which moved you

**Hand:** something you think you will use in your own work/teaching

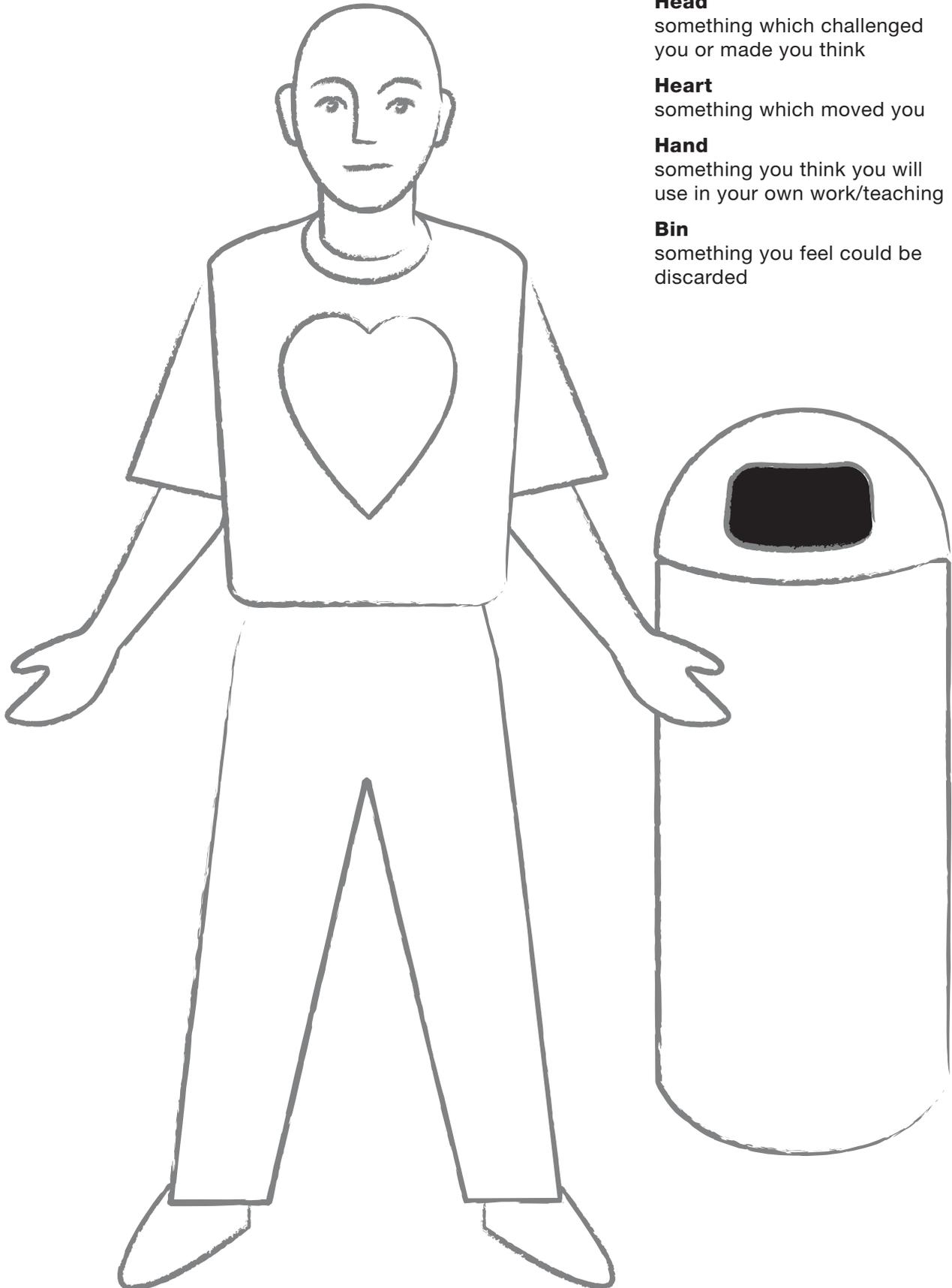
**Bin:** something you feel could be discarded

Now distribute the summary handout and remind participants of the original objectives for the day. It should also be pointed out that this session has only been an introduction to systemic thinking and that the Linkingthinking materials are available on WWF's website for teachers, [http://www.wwf.org.uk/what\\_we\\_do/working\\_with\\_schools/resources\\_whole\\_school\\_approaches/](http://www.wwf.org.uk/what_we_do/working_with_schools/resources_whole_school_approaches/), in paper form or on a free CD-ROM for individuals to take it further.

The *Linkingthinking Quiz Sheet* is another useful way of remembering the basic characteristics of 'joined-up thinking' and can be copied for participants to take with them.

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## Linkingthinking Evaluation: Head, Hand, Heart and Bin



**Head**

something which challenged you or made you think

**Heart**

something which moved you

**Hand**

something you think you will use in your own work/teaching

**Bin**

something you feel could be discarded

## Joined up Thinking for the Classroom: Summary

### Education for sustainable development is about learning to:

- Respect, value and preserve the achievements of the past
- Appreciate the wonders and the peoples of the Earth
- Live in a world where all people have sufficient food for a healthy and productive life
- Assess, care for and restore the state of our Planet
- Create and enjoy a better, safer, more just world
- Be caring citizens who exercise their rights and responsibilities locally, nationally and globally

Source: UNESCO <http://portal.unesco.org/education>

### Learning Points for Discussion

Learning to think in a more integrated (or connective) way is essential for living in a highly interdependent world.

Working on relevant, real world issues in an active, participative way is good teaching and learning.

Linkingthinking is thinking 'out of the box', a web is a useful way of looking at it.

Everything is connected (but not equally strongly). Humans are linked to nature and other living beings. Most issues are related to other issues and can be better understood in this way. There is no such thing as opposites (e.g. environment vs. economics), only things that are related to each other.

You can never do only one thing, issues have to be viewed in context and as a whole. The simplest action can have consequences far beyond the original intention, for example buying a car, building a new school.

A change in one part of a system affects the whole e.g. extending a school car park, and a change in the whole affects a part, for example a new Whole School Policy.

The whole is greater than the sum of the parts of a system. There are 'emergent properties' (for example the ethos in a 'good' and 'bad' school).

The way we think influences what we see and awareness of this is important. We need to look beyond our boundaries of concern to understand wider effects we are having on the world and the influences on us.

Most human and environmental systems are not linear. Problem solving is not a linear process. Some solutions just generate more problems, some generate more solutions.

For complex problems a Linkingthinking approach is required, going beyond simple static, linear problem solving to look at and take responsibility for the whole, recognise its complexity and consider the long term. But

- Who defines the problem?
- What constitutes 'improvement'?
- Who says?
- At what cost?
- Have things improved or not?
- What criteria can be used?

It is impossible to predict outcomes in most human and natural systems and the more complex systems are the less predictable the behaviour and outcomes will be, for example an economy, a family.

So in the 21st Century we all need flexibility, to accept change and to be able to participate in and learn from change.

*"We can't solve problems by using the same kind of thinking we used when we created them."*

Albert Einstein 1879-1955

## Linkingthinking Quiz

Do you...	Often	Some-times	Never	Don't Know
1 Examine and question your own and others' assumptions?				
2 Ask different questions about things/issues (deeper and more inclusive questions)?				
3 Look for connections and patterns between events and/or ideas?				
4 Try to have a critical perspective and synthesising outlook, bringing issues together?				
5 Value other people's views and perspectives on an issue?				
6 Look for multiple causes/consequences rather than only notice simple 'cause-effect' relationships?				
7 Look at the 'big picture', trying to place issues in a bigger context?				
8 Think long term?				
9 Examine critically narrow, simplistic, or 'obvious' explanations in a complex situation?				
10 Suspend judgement rather than rush to judgment?				
11 Try not to blame the components in a system (for example the people) if things go wrong, but ask questions about 'purpose' and 'relationships' in the system first?				
12 Recognise uncertainty and ambiguity and try to work with them?				
13 Have a concern for the overall health and wellbeing of a system?				
14 Try to be open-minded?				

## Check your score:

	Score
Often	3
Sometimes	2
Never	1
Don't know	0

### 0-14

Oh dear! Perhaps you need to do some more Linkingthinking exercises!

### 15-20

Well, you're still largely 'in the box' – but looking out!

### 21-30

Good, you are aware of complexity and try to work with it.

### 31-42

Brilliant, but can we believe you?!

This is a formidable (and somewhat ideal) list, in fact, more something to aspire to. Think about the opposites of these characteristics, then think about the questions where you scored less and why this might be the case.

# Resources and Contacts

## WWF Linkingthinking: New perspectives on thinking and learning for sustainability

The Linkingthinking materials contain seven Units and a Toolbox with complementary activities for use with pupil/student groups to introduce key perspectives, ideas and skills that are important in Linkingthinking.

- Unit 1 Linkingthinking, Education and Learning: An Introduction
- Unit 2 Developing Linkingthinking perspectives and skills in problem-solving
- Unit 3 Exploring sustainable development through Linkingthinking perspectives
- Unit 4 Linking (thinking) Everyday Life to Natural Systems and Resource Use
- Unit 5 Linkingthinking and Core Skills
- Unit 6 Bringing Environmental Issues into the Mainstream Curriculum
- Unit 7 Using Linkingthinking in a Real System

The full printed version in a ring binder is available at a cost of £30 (including postage and packing) and a disk version (PC) is available free of charge from WWF Scotland, Little Dunkeld, Dunkeld, Perthshire PH8 0AD. The materials can be downloaded from WWF's website for teachers, [http://www.wwf.org.uk/what\\_we\\_do/working\\_with\\_schools/resources\\_whole\\_school\\_approaches/](http://www.wwf.org.uk/what_we_do/working_with_schools/resources_whole_school_approaches/)

Additional sources of information	Website link
<b>Networks</b>	
IDEAS (International Development Education Association for Scotland)	<a href="http://www.ideas-forum.org.uk">www.ideas-forum.org.uk</a>
Scotland's Sustainable Development Education Network	<a href="http://www.sdenetwork.org">www.sdenetwork.org</a>
<b>Global or European Focus</b>	
United Nations Environment Programme	<a href="http://www.unep.org">www.unep.org</a>
UNESCO	<a href="http://portal.unesco.org/education/en">http://portal.unesco.org/education/en</a>
World Resources Institute	<a href="http://www.wri.org">www.wri.org</a>
<b>Government and Agencies – Sustainable Development</b>	
Scottish Government	<a href="http://www.scotland.gov.uk">www.scotland.gov.uk</a>
Scottish Natural Heritage	<a href="http://www.snh.gov.uk">www.snh.gov.uk</a>
Scottish Environment Protection Agency	<a href="http://www.sepa.org.uk">www.sepa.org.uk</a>
Energy Savings Trust	<a href="http://www.est.org.uk">www.est.org.uk</a>
Department for International Development (DFID)	<a href="http://www.dfid.gov.uk">www.dfid.gov.uk</a>
<b>Government and Agencies - Education</b>	
Scottish Government	<a href="http://www.scotland.gov.uk/Topics/Education">http://www.scotland.gov.uk/Topics/Education</a>
Learning and Teaching Scotland	<a href="http://www.ltscotland.org.uk/sustainabledevelopment">www.ltscotland.org.uk/sustainabledevelopment</a>
Scottish Qualifications Authority	<a href="http://www.sqa.org.uk">www.sqa.org.uk</a>
The Curriculum for Excellence	<a href="http://www.ltscotland.org.uk/curriculumforexcellence">www.ltscotland.org.uk/curriculumforexcellence</a>
Teachernet	<a href="http://www.teachernet.gov.uk/sustainableschools/">http://www.teachernet.gov.uk/sustainableschools/</a>
<b>Non-governmental Organisations</b>	
WWF Scotland	<a href="http://www.wwf.org.uk/scotland">www.wwf.org.uk/scotland</a>
Greenpeace	<a href="http://www.greenpeace.org">www.greenpeace.org</a>
Oxfam	<a href="http://www.oxfam.org.uk/education">www.oxfam.org.uk/education</a>
Eco-Schools Scotland	<a href="http://www.ecoschoolsscotland.org">www.ecoschoolsscotland.org</a>
RSPB	<a href="http://www.rspb.org">www.rspb.org</a>
Friends of the Earth	<a href="http://www.foe-scotland.org.uk">www.foe-scotland.org.uk</a>
Carbon Trust	<a href="http://www.carbontrust.co.uk/schools">www.carbontrust.co.uk/schools</a>
SUSTRANS	<a href="http://www.saferoutestoschools.org.uk">www.saferoutestoschools.org.uk</a>

# linking thinking

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