Level 2 Award

Thinking and Reasoning Skills

J930 version 2   January 2011

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With fun and engaging content, Thinking and Reasoning Skills provides fundamental skills for life and learning.

Suitable for KS3, KS4 and Sixth Form students, the qualification gives students the opportunity to develop thinking in its fullest sense and gain a mix of reasoning and broader problem-solving skills which can be used across all subjects, from the arts and humanities to science. It also links to OCR's A Level Critical Thinking.

Thinking and Reasoning Skills at a glance

The aim of this qualification is to develop mature, reflective, thinkers. The course:

- Is based around ten skills of thinking and reasoning
- Develops skills that can be transferred to other subjects
- Allows different kinds of students to achieve success.

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- An **e-community** – where you can share knowledge, views and ideas.

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OCR Thinking and Reasoning Skills

OCR Level 2 Award in Thinking and Reasoning Skills J930

Version 2 January 2011

Contents

Contents

This qualification became a full general qualification in January 2011. This specification has only been updated to reflect this change in status.

This booklet contains OCR's Level 2 award specification in Thinking and Reasoning Skills for teaching from September 2009.

This is the first OCR Qualification, at Level 2, which explicitly sets out to develop and assess thinking and in particular Thinking and Reasoning Skills. The term Thinking and Reasoning Skills is used to denote not only the well established critical thinking skills of analysis, evaluation and synthesis but also a far wider and more extensive range of thinking skills including problem solving, information processing and creative thinking. These thinking skills are classed together as Thinking and Reasoning Skills because together they are essential to mature, developed thinking, whether in the classroom or in the laboratory or in the public place of work. However the term higher thinking is also used to indicate that the full and explicit development of these skills will and should involve an element of meta-cognition. Higher thinking is here defined not simply by the significance and importance of the skills to which it refers but also by the fact that it requires the thinker to be a reflective thinker explicitly aware of these skills. For it is only by being explicitly aware of the skills that a thinker can monitor and regulate their use and application. Higher thinking is not developed without developing the capacity for standing back from one's own thinking with a view both to evaluating it and where necessary correcting and improving upon it. It is therefore vital that teachers and candidates keep both these elements in mind: the former defines the content or subject matter of the qualification but the latter element is what marks it out as a distinctive and unique intellectual discipline unlike any other.

With respect to the first element, identifying the full range of thinking skills which constitute the subject matter or content of the present qualification, OCR has taken cognizance not only of the views of teachers and learners but also those of universities and employers. In particular careful consideration has been given to the original National Curriculum guidelines on Thinking Skills and the current QCA guidelines on Personal, Learning and Thinking Skills. The National Curriculum identified five categories of Thinking Skills as central to higher thinking:

• Reasoning

• Evaluation

• Information Processing

• Enquiry

• Creative Thinking

All of these skills are incorporated into the content of the present qualification. Personal, Learning and Thinking Skills are broken down into six broad categories:

• Independent Enquirers

• Creative Thinkers

• Effective Participators

• Reflective Learners

• Self Managers

• Team Workers

The last two categories are primarily personal and social skills. The learner activities, as identified in the tables in Section 3.1 of this specification, will provide some opportunities for the development of these personal and social skills. However these personal and social skills are not themselves thinking skills and do not form an explicit part of the subject content of this qualification. The other four categories of Personal, Learning and Thinking Skills do overlap significantly with the Thinking and Reasoning Skills as set out in this qualification. The overlap is identified first in outline in Section 2.3 and then again in detail in Section 3.1.

So, drawing on these guidelines, higher thinking is understood very broadly as purposeful activity which involves understanding data, explaining phenomena, exploring possibilities, creating and generating new ideas and hypotheses, solving problems, answering and raising questions, coming to reasoned conclusions and reaching decisions which can be justified.

However the discipline of higher thinking involves more than thinking and thinking well. It requires developing the dispositions and skills of the reflective thinker. Thinking becomes reflective when it becomes the object of its own analysis, evaluation and judgement. A reflective thinker is explicitly aware of his or her own thinking and is able to subject it and the skills which underpin it to analysis and evaluation typically with a view to improving and developing it.

The purpose of the present qualification, therefore, is not simply to enable candidates to develop the full range of thinking skills but also to make them explicitly aware of those very thinking skills. Clearly this can be achieved only through the explicit teaching of these thinking skills so that candidates can recognise them and identify them and reflect upon them. This qualification has been designed for that express purpose in the conviction that Thinking and Reasoning Skills, both critical and wider thinking skills, can only be fully developed when explicitly taught and explicitly assessed. This is not to exclude the possibility of their being taught within the context of another subject. On the contrary, it is anticipated that these thinking skills can, and will, in some cases, be taught within the context of another subject. But it remains the case that the skills themselves must be identified, highlighted and made explicit for only so can the student consciously acquire them and reflect upon them. So whether taught and practised in the context of another subject or as a stand alone qualification the aim is the same: to develop a conscious, critical awareness of the full range of skills which together constitute higher forms of thinking.

The present qualification should enable candidates to develop and practise all those central skills recognized as underpinning all varieties of thinking and to do so in a way which is explicit so that they can not only improve as thinkers but also mature into properly reflective, higher, thinkers.

Thinking as developed by this specification is clearly central not only to theoretical enquiry but also to practical decision making both in the life of the individual and in the world of work and also within the wider community. It is a discipline which will equip candidates with a wide range of thinking skills to use in life, work and further academic study. It provides opportunities for candidates to think deeply, and in a structured way, about issues which are fundamental to participating in society eg ethical questions, cultural issues and issues of personal responsibility. It enables them to make reasoned decisions based on evidence and argument rather than assumption and prejudice.

It provides a foundation for further study of academic and vocational subjects at Level 3, as well as forming part of a general education, or an enrichment programme, at Level 2. Candidates will find Thinking and Reasoning Skills of great benefit in preparation for a wide range of careers, including the fields of law, academic research (eg in the disciplines of science, arts or humanities), social science, journalism, medicine, business, accounting and engineering.

Courses based on this specification should enable candidates to:

- process and evaluate information in the context of decision making, reasoning and problem solving;

- reason to conclusions and decisions using arguments and evidence;

- develop skills of enquiry and research exploring issues from different perspectives;

- think creatively by generating and exploring ideas and possibilities, making original connections;

- develop skills of evaluation in relation to evidence and testimony and reasoning;

- ultimately, to deploy these skills holistically and creatively in thinking through problems and questions;

1.2   Aims and learning outcomes

The aim of this qualification is to develop mature, reflective, thinkers. Firstly it aims at developing the discipline of a reflective thinker. Thinking becomes reflective when it becomes self evaluative and explicitly aware of the skills which are essential to it. It follows that a higher thinking qualification must not only develop skills of thinking but it must also make thinkers explicitly aware of those skills and enable them thereby to regulate and evaluate their own thinking. A higher thinker is by necessity a Reflective Learner. Secondly it aims at developing *thinking* in the fullest sense. Thinking is not to be limited to reasoning. Reasoning is a central and important thinking skill: thinkers need to be able to support conclusions with structured reasons and evidence, make informed, reasoned decisions and make valid inferences. Nevertheless this is only one part of thinking. The present qualification following the guidance offered both by the National Curriculum and QCA in drawing up Personal Learning and Thinking Skills recognises a range of thinking skills beyond reasoning skills. These are creative thinking skills, enquiry skills, information processing skills and problem solving skills. All these wider thinking skills find their proper place within this present specification.

Candidates for this qualification will therefore be enabled to

- develop an explicit and critical awareness of their own thinking skills so that they can evaluate and regulate their own thinking

- develop enquiry skills enabling them to generate their own questions in relation to evidence and information

- develop conceptual thinking skills in order to explore ideas and their connections

- develop problem solving skills enabling them to organise and analyse data so that conclusions can be drawn from it

- develop decision making skills so that problems can be broken down into manageable steps and different views balanced to arrive at reasoned decisions

- develop a critical and creative approach to explanations both in science, social science and the humanities

- develop the ability to question evidence for relevance and significance

- develop a critical and balanced approach to evaluating the credibility of different sources of evidence

- develop reasoning skills so that they can analyse arguments, evaluate reasoning and develop reasoned arguments of their own

- develop the flexibility and confidence to transfer and apply these skills across a range of materials and contexts

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This specification seeks to develop a full range of thinking skills: information processing skills; reasoning skills; decision making skills; evaluation skills and creative thinking skills. The Thinking and Reasoning Skills to be assessed in this qualification map directly onto those five categories of skills recognised by the National Curriculum. Further the specification clearly indicates how they also map onto both the Common Requirements of Welsh National Curriculum and the Personal, Learning and Thinking Skills highlighted by QCA. Any course which aims to deliver the OCR specification in Thinking and Reasoning Skills must provide opportunities to develop all of the skills identified by QCDA under the headings of Independent Enquirers, Creative Thinkers and Effective Participators as well as inculcating the skills and dispositions which fall under the heading of Reflective Learner. However by an appropriate choice of topics and learner activities to support the Thinking Skills, as recommended in the specification, candidates for the qualification will also have some opportunities to develop the skills set down for Team Workers and Self Managers.

The fundamental aim is to provide candidates with a developed set of skills which can be applied in a reflective and critical manner to a range of materials, situations, problems and issues. It is these thinking skills which constitute the subject content of this qualification.

For this reason the qualification can be delivered alongside another subject provided that the content of that subject is delivered in such a way as both to develop thinking skills and, crucially, to make candidates explicitly aware of those skills. Some subjects particularly lend themselves to this approach (see appendix A of suggested texts), but any subject can be developed so as to integrate the explicit teaching of the thinking skills assessed in this qualification.

Equally, however, the Thinking and Reasoning Skills qualification can be taught on its own as a discrete subject. To facilitate this, a series of topics are used throughout the specification to exemplify how the skills can be developed in the absence of any prescribed topic content. The list of suggested topics, as with the list of suggested learner activities, is offered only as a guide to teachers. It is anticipated that the suggestions will be most helpful for those teachers who aim to teach the qualification as a stand alone subject. But the suggested topics are just that, suggestions. They are not intended to be prescriptive and other topics not mentioned on this list can, of course, be used for the teaching of this qualification. Equally, other topics not mentioned on this list can be used for its assessment, for the subject content of the qualification is constituted by the thinking skills themselves. It is these which need to be explicitly taught and it is these skills which will be explicitly assessed.

2.1   Level 2 Award in Thinking and Reasoning Skills Units

Unit B901 *Thinking and Reasoning Skills*

Unit B902 *Thinking and Reasoning Skills Case Study*

2.2   Level 2 Award in Thinking and Reasoning Skills at a glance

Thinking and Reasoning Skills denotes both critical thinking skills and a wider set of thinking skills.

The critical thinking skills include skills of analysis, skills of evaluation and skills of synthesis.

The wider thinking skills include conceptual thinking skills, information processing and problem solving skills and creative thinking skills.

The diagram below illustrates how the ten thinking skills identified in the specification form a family of Thinking and Reasoning Skills.

Thinking and Reasoning Skills

Critical Thinking Skills   Wider Thinking Skills

Analysis	Evaluation	Synthesis	Conceptual Thinking	Information Processing and Problem Solving	Creative Thinking
Skill 1	Skills 2, 4, 5, 6	Skill 3	Skill 7, 8	Skill 7, 9	Skill 10
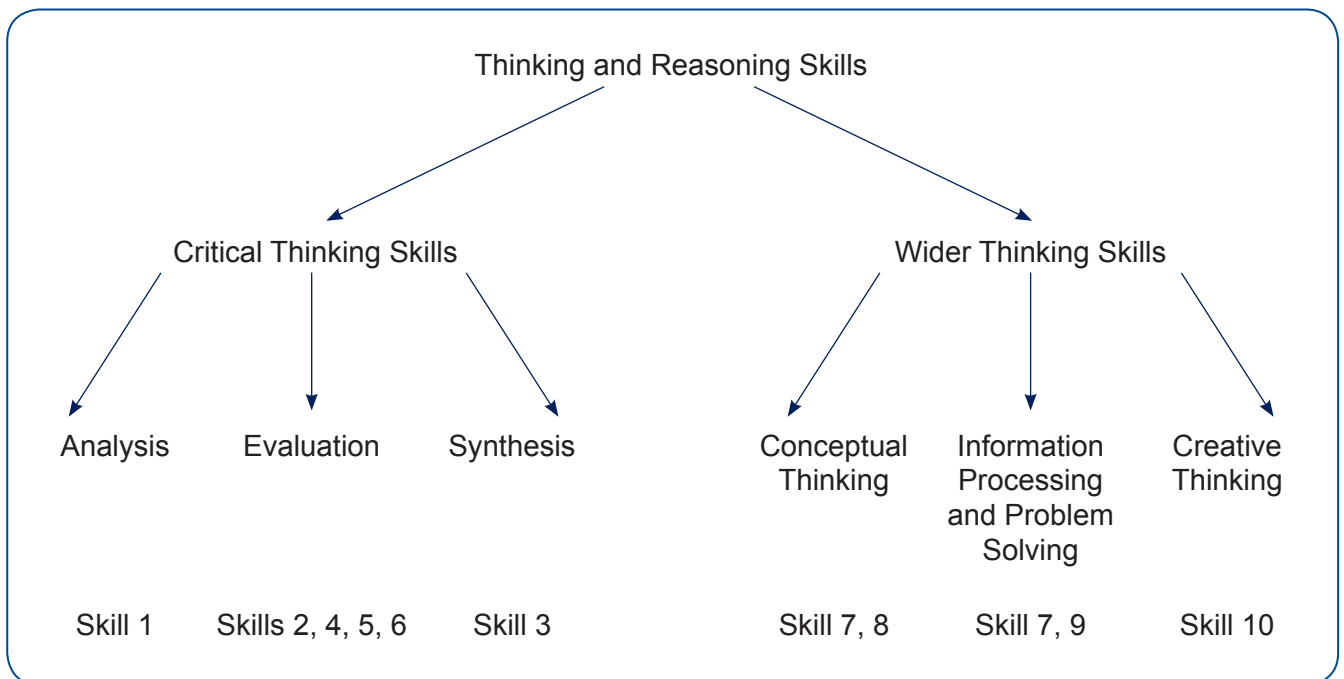
2.3 Mapping of Thinking and Reasoning Skills content to National Curriculum and PLTS terminology

The table below shows in outline the relationship between OCR Level 2 award Thinking and Reasoning Skills and other standard accounts of thinking skills.

Category of Thinking Skill	OCR Level 2 award in Thinking and Reasoning Skills	National Curriculum terminology	PLTS terminology	Common Requirements of the National Curriculum in Wales
Reasoning skills	*Skill 1* Understanding arguments *Skill 3* Presenting and developing arguments	Reasoning	Independent Enquirer	Communication Skills
Evaluation skills	*Skill 2* Evaluating arguments *Skill 4* Evaluating credibility of sources *Skill 5* Evaluating evidence	Evaluation	Independent Enquirer	Problem-Solving Skills
Decision making skills	*Skill 7* Decision making and ethical reasoning	Enquiry	Effective Participator	Problem-Solving Skills
Creative thinking skills	*Skill 6* Seeking explanations *Skill 8* Conceptual thinking and creating meaning *Skill 10* Creative Thinking	Creative Thinking	Creative Thinker	Creative Skills
Information processing skills	*Skill 9* Information processing and problem solving	Information Processing	Independent Enquirer	Problem-Solving Skills

2.4 Thinking and Reasoning Skills content summary

The skills are ten in total and they are ordered in sequence as follows: argument skills, evaluation skills, decision making skills and wider thinking skills.

It is possible to cover these skills within the recommended 60 learning hours because they are ultimately intended to be taught holistically. The thinking skills overlap and are intertwined. It is therefore anticipated and indeed desirable that lessons will be used to cover several skills at once. Thinking through a problem or question always involves a number of interrelated thinking skills and ultimately class room practice will need to reflect this.

Skill 1: Understanding arguments

- Recognising and identifying the difference between arguments and rants and lists of information and explanations

- Recognising and identifying the parts of simple arguments: reasons, intermediate conclusions and conclusions

- Recognising and identifying indicator words which signal the presence of reasons and conclusions

- Recognising and identifying gaps in an argument in the form of unstated assumptions (missing reasons)

- Using "marking up" techniques to correctly identify the parts of arguments

- Using visual argument maps to recognise and represent the structure of simple arguments (arguments with up to one intermediate conclusion and employing two reasons which are either joint or separate)

Skill 2: Evaluating arguments

- Recognising and identifying five simple and common flaws in daily arguments: ad hominem (attacking the opponent); straw man (misrepresenting the opponent); tu quoque (two wrongs don't make a right); slippery slope (jumping to unlikely or distant consequences); false dilemmas (restricting the options)

- Recognising and identifying the presence and impact of loaded language in an argument

- Recognising and identifying the presence and impact of irrelevant appeals in an argument

- Making simple judgements of the strength or weakness of an argument in terms of degree of fit between reasons and conclusion

Skill 3: Presenting and developing arguments

- Presenting simple structured arguments in support of a precise conclusion

- Recognising, identifying and developing counterarguments

- Responding to counterarguments

Skill 4: Evaluating the credibility of sources

- Evaluating the credibility of sources – individual witnesses, documents, images – using the credibility criteria of vested interest, bias, reputation, relevant expertise, and ability to see

- Recognising and identifying a range of factors – for example political, religious, cultural, regional, economic – that can influence the presentation, selection and interpretation of evidence

Skill 5: Evaluating evidence

- Recognising and identifying common weaknesses in polls: size of sample; unrepresentative sample; bias in the framing of questions

- Recognising and identifying the distinction between fact and opinion

- Recognising and identifying strengths or weaknesses in evidence in terms of relevance (the degree of fit between the evidence and the claim it supports) and selection

- Seeking and creating alternative explanations for evidence in order to question its significance

Skill 6: Seeking and evaluating explanations

- Generating alternative explanations

- Recognising and identifying the distinction between necessary and sufficient conditions in an explanation

- Recognising and identifying that one thing can follow another in time without being caused by it

- Recognising and identifying that correlations are open to many different explanations

Skill 7: Decision making and ethical reasoning

- Identifying different options

- Identifying relevant criteria for deciding between options

- Applying criteria to reach a decision in the light of relevant evidence

- Clarifying the meaning of everyday ethical concepts such as fairness, equality, freedom and happiness (link to skill 8)

Skill 8: Conceptual thinking and clarifying the meaning of concepts

- Use of Venn diagrams to explore similarities and dissimilarities

- Use of mind mapping to explore connections between ideas

- Identifying common properties in a range of examples

- Generating examples and counter examples to clarify the meaning of concepts

- Recognising and identifying the distinction between necessary and sufficient conditions in a definition

- Recognising and identifying and evaluating analogies

Skill 9: Information processing and problem solving

- Scanning and skimming sources for relevant information
- Identifying relevant data
- Recognising and identifying patterns
- Using simple matrices to organise data in order to solve a problem
- Drawing conclusions from data

Skill 10: Creative Thinking

- Generating questions – who, when, where, why, what – in response to stimulus
- Generating ideas and hypotheses for the purposes of explaining or interpreting or organising evidence
- Generalising and extrapolating from data
- Exploring and evaluating possible consequences through suppositional and counterfactual thinking

2.5 List of suggested topics to stimulate and develop the Thinking and Reasoning Skills

The following suggested topics do not constitute the content of the qualification; that is wholly provided by the ten thinking skills identified in 2.4.

Candidates who have not studied the suggested topics will not be disadvantaged.

The suggested topics are primarily intended for those teachers who choose to teach Thinking and Reasoning Skills as a separate stand-alone qualification. But even for those teachers the suggested topics remain suggested topics and there is no requirement that the teaching of the qualification be based upon them.

The suggested topics are grouped around six central and overlapping themes as follows:

Personal and social issues:

- Teenage violence and antisocial behaviour
- Crime and punishment
- Drugs and alcohol abuse
- Sex and gender eg male underachievement; teenage pregnancies

Bioethical issues:

- Genetic engineering
- Euthanasia
- Rationing and allocation of medical resources
- Animal welfare and animal experiments

Political issues of freedom and justice:

- Freedom of expression and tolerance

- Civil disobedience and the law

Global issues of poverty, conflict and environment:

- Global warming and the environment

- Third World poverty eg fair trade; consumerism

- International conflicts and their resolution

Science issues:

- Human origins: evolution and design

- Life after death: reincarnation, near death experiences and the soul

- UFOs, alien visits and alien abductions

- Astrology, alternative therapies and alleged supernatural phenomena

Mysteries and conspiracies:

- Conspiracy theories

- Murder mysteries

- Historical mysteries

The topics have been chosen because they can and will provide opportunity for the practice and development of the Thinking and Reasoning Skills. Some topics may particularly lend themselves to the teaching of some specific skills. For example research into UFO sightings should provide excellent material for developing skills in relation to seeking explanations and evaluating credibility of sources. This principle has guided the selection of suggested topics in the tables provided in Section 3.1.

However, given the holistic nature of the thinking skills, any topic of sufficient depth should provide opportunities for an extensive coverage of the skills. For this reason a selection of a small number of the suggested topics will be adequate to provide a full and comprehensive coverage of the whole range of thinking skills. The final choice of topics can be and should be influenced by the interests of teachers and their students but always with a view to providing opportunities for the explicit teaching and development of the Thinking and Reasoning Skills.

3   Unit Content

The specification content is divided into ten thinking skills.

The skills have been ordered so that clearly overlapping and related skills are located side by side.

Thus

- Skills 1 to 3 relate to argument skills: the skills of argument analysis, evaluation and development.

- Skills 4 to 6 relate to skills of evaluation: skills of evaluating sources, evidence and explanations.

- Skill 7 relates to skills of decision making and thinking through ordinary ethical concepts.

- Skills 8 to 10 relate to the wider thinking skills: those of information processing, problem solving, conceptual thinking and creative thinking.

The groupings of the ten skills *might* be used as a natural order in which to teach and develop the thinking skills. For example it can be pedagogically helpful to develop the skills relating to arguments before advancing to the skills relating to the evaluation of evidence and sources, and to develop the skills relating to evidence and sources before practicing the skills of decision making. However it is important to recognise that the skills constitutive of mature, reflective thinking are holistic in nature and application. They presuppose one another and they all interlink. Thus in thinking through a topic or problem it is inevitable that the students will exercise, and ought to exercise, many of the thinking skills together side by side and in conjunction with one another. In order to help enhance or extend and develop a particular skill, it is expected that a teacher may choose to focus upon this skill to the exclusion of others. However, it is envisaged that the overall goal of this course is for candidates to deploy these skills holistically and creatively in thinking through problems and questions.

It is necessary to emphasise this point because in the assessment for this qualification, thinkers will not only be required to transfer their thinking skills confidently to new material but also, in some tasks, to do so in a way which is holistic and creative. Higher thinking cannot be wholly reduced to the mechanical following of discrete algorithms.

It is for this reason that all content is assessed in both Unit B901 and Unit B902.

Refer to Section 4 of the specification for details about assessment of Unit B901 and Unit B902.

3.1 Thinking and Reasoning Skills content in detail

The following tables specify the key questions and focus points of the content. They also serve to provide an exemplification of how they can be approached through a range of different topics based on the suggested topics list in section 2.5. In addition to the exemplification of possible topics, guidance has also been provided as to a number of activities which can be suitably employed for the development of these skills. Finally a link has been made between the skill and the corresponding PLTS.

Skill 1: Understanding an argument

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What is an argument?	Recognising and identifying the difference between arguments and rants and lists of information and explanations	Teenage violence and antisocial behaviour	Marking up techniques using brackets, circling and underlining	IE 6 Support conclusions using reasoned arguments and evidence
	Recognising and identifying the parts of simple arguments: reasons, intermediate conclusions and conclusions	Crime and punishment	Marking up techniques using colour highlighting	
		Drugs and alcohol abuse	Sorting exercises using cards with individual argument parts on each card	
	Recognising and identifying indicator words which signal the presence of reasons and conclusions	Sex and gender	Argument mapping with boards	
		Genetic engineering	Argument mapping with Lego style parts	
		Euthanasia		
	Recognising and identifying gaps in an argument in the form of unstated assumptions (missing reasons)	Rationing of health care		
	Using "marking up" techniques to correctly identify the parts of arguments	Animal welfare and animal experiments		
	Using visual argument maps to recognise and represent the structure of simple arguments (arguments with up to one intermediate conclusion and employing two reasons which are either joint or separate)			

Skill 2: Evaluating arguments

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What is the difference between a good and a bad argument?	Recognising and identifying five simple and common flaws in daily arguments: ad hominem (attacking the opponent); straw man (misrepresenting the opponent); tu quoque (two wrongs don't make a right); slippery slope (jumping to unlikely or distant consequences); false dilemmas (restricting the options)

Recognising and identifying the presence and impact of loaded language in an argument

Recognising and identifying the presence and impact of irrelevant appeals in an argument

Making simple judgements of the strength or weakness of an argument in terms of degree of fit between reasons and conclusion | Teenage violence and antisocial behaviour

Crime and punishment

International conflicts and their resolution

Astrology, alternative therapies and alleged supernatural phenomena | Sorting exercises with cards giving examples of key fallacies

Card games with fallacy definitions and examples including snap, dominoes, forming class chains

Taboo

Venn diagrams for grouping fallacies

Concept maps for establishing links between different types of fallacy

Creative writing exercises involving advertising, star signs, and campaign manifestos to include fallacies | IE 6 Support conclusions using reasoned arguments and evidence

CT4 Question their own and others' assumptions |

Skill 3: Presenting and developing arguments

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
How do you develop an argument so as to take account of alternative points of view?	Presenting simple structured arguments in support of a precise conclusion Recognising, identifying and developing counterarguments Responding to counterarguments	Genetic engineering Euthanasia Rationing of health care Animal welfare and animal experiments Freedom of expression and tolerance Civil disobedience	Brainstorming to generate reasons and evidence for and against a conclusion Concept mapping to organise and group ideas Building up arguments using visual or kinaesthetic maps to include counterarguments Argument chess: paired development of argument map Using mind mapping to provide visual record of class discussion and debate Jigsawing activities with individual cards to reconstruct structure of complex arguments Internet guided research to find reasons for and against a conclusion	IE 3 Explore issues or events or problems from different perspectives EP 2 Present a persuasive case for action EP 5 Try to influence others negotiating and balancing diverse views to reach workable solutions EP 6 Act as an advocate for views and beliefs that may differ from their own

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Skill 4: Evaluating the credibility of sources

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
How believable/ credible is this source?	Evaluating the credibility of sources – individual witnesses, documents, images – using the credibility criteria of vested interest, bias, reputation, relevant expertise, and ability to see Recognising and identifying a range of factors – for example political, religious, cultural, regional, economic – that can influence the presentation, selection and interpretation of evidence	International conflicts and their resolution UFOs, alien visits and alien abductions Astrology, alternative therapies and alleged supernatural phenomena Conspiracy theories Murder mysteries Historical mysteries	Role play involving murder mysteries Mock trials Activities for distinguishing fact and opinion: odd one out, using Venn diagrams, classifying with card sorts	IE 4 Analyse and evaluate information judging its relevance and value IE 5 Consider the influence of circumstances, beliefs and feelings on decisions and events

Skill 5: Evaluating evidence

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
To what extent does the evidence really support this claim?	Recognising and identifying common weaknesses in polls: size of sample; unrepresentative sample; bias in the framing of questions Recognising and identifying the distinction between fact and opinion Recognising and identifying strengths or weaknesses in evidence in terms of relevance (the degree of fit between the evidence and the claim it supports) and selection Seeking and creating alternative explanations for evidence in order to question its significance	Teenage violence and antisocial behaviour Crime and punishment Drugs and alcohol abuse Sex and gender Global warming and the environment Third World poverty Human origins: evolution and design UFOs, alien visits and alien abductions	Card sort exercises matching evidence to claims Card sort exercises ranking evidence by degrees of strength	IE 4 Analyse and evaluate information judging its relevance and value IE 6 Support conclusions using reasoned arguments and evidence IE 3 Explore issues or events or problems from different perspectives

Skill 6: Seeking and evaluating explanations

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
Is this the only or even the best explanation?	Generating alternative explanations Recognising and identifying the distinction between necessary and sufficient conditions in an explanation Recognising and identifying that one thing can follow another in time without being caused by it Recognising and identifying that correlations are open to many different explanations	Global warming and the environment Third World poverty Human origins: evolution and design Life after death: reincarnation and near death experiences UFOs, alien visits and alien abductions Astrology, alternative therapies and alleged supernatural phenomena Conspiracy theories Murder mysteries Historical mysteries	Mystery activities involving card sorts which are open to many explanations Lateral thinking style puzzles Concept mapping to identify variety of explanations Sorting exercises to classify explanations into family groups	IE 3 Explore issues or events or problems from different perspectives CT 1 Generate ideas and explore possibilities CT 3 Connect their own and others' ideas and experiences in inventive ways CT 4 Question their own and others' assumptions CT 5 Try out alternatives or new solutions and follow ideas through

Skill 7: Decision making and ethical reasoning

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What is the best or right thing to do in this difficult case?	Identifying different options	Teenage violence and antisocial behaviour	Role play ethical committees	IE 2 Plan and carry out research appreciating the consequences of decisions
	Identifying relevant criteria for deciding between options	Crime and punishment	Present positioning papers for one side	IE 3 Explore issues or events or problems from different perspectives
	Applying criteria to reach a decision in the light of relevant evidence	Drugs and alcohol abuse	Formal debates	IE 4 Analyse and evaluate information judging its relevance and value
		Sex and gender	Create dialogues and interviews to explore different points of view	
	Clarifying the meaning of everyday ethical concepts such as fairness, equality, freedom and happiness (link to skill 8)	Genetic engineering		CT 5 Try out alternatives or new solutions and follow ideas through
		Euthanasia	Create videos for one side	
		Rationing of health care		EP 1 Discuss issues of concern seeking resolution where needed
		Animal welfare and animal experiments	Write letters to relevant people and organisations eg MP, local council, charities, protest groups	
		Freedom of expression and tolerance		EP 2 Present a persuasive case for action
		Civil disobedience		EP 3 Propose practical ways forward breaking these down into manageable steps
		Global warming and the environment		
		Third World poverty		EP 4 Identify improvements that would benefit others as well as themselves
		International conflicts and their resolution		EP 5 Try to influence others negotiating and balancing diverse views to reach workable solutions
				EP 6 Act as an advocate for views/ beliefs that may differ from their own

Skill 8: Conceptual Thinking and clarifying the meaning of concepts

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What do you mean or understand by this word or idea? How do these things or ideas relate to one another?	Use of Venn diagrams to explore similarities and dissimilarities Use of mind mapping to explore connections between ideas Identifying common properties in a range of examples Recognising and identifying and evaluating analogies Generating examples and counterexamples to clarify the meaning of concepts Recognising and identifying the distinction between necessary and sufficient conditions in a definition	Teenage violence and antisocial behaviour Crime and punishment Drugs and alcohol abuse Sex and gender Genetic engineering Euthanasia Rationing of health care Animal welfare and animal experiments Freedom of expression and tolerance Civil Disobedience Global warming and the environment Third World poverty Human origins: evolution and design Life after death: reincarnation, near death experiences and the soul Astrology, alternative therapies and alleged supernatural phenomena	Taboo Odd one out Venn diagrams Concept maps	CT 1 Generate ideas and explore possibilities CT 2 Ask questions to extend their own thinking CT 3 Connect their own and others' ideas and experiences in inventive ways CT 6 Adapt ideas as circumstances change

Skill 9: Information processing and problem solving

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What information do we need to extract in order to answer the question or solve the problem?	Scanning and skimming sources for relevant information Identifying relevant data Recognising and identifying patterns Using simple matrices to organise data in order to solve a problem Drawing conclusions from data	Teenage violence and antisocial behaviour Crime and punishment Drugs and alcohol abuse Sex and gender Rationing of health care Animal welfare and animal experiments Global warming and the environment Third World poverty International conflicts and their resolution	Jigsawing activities in which ill-assorted data has to be grouped together into a narrative or pattern and irrelevant data discarded Code breaking activities Using a matrix to order data and solve a problem	IE 4 Analyse and evaluate information judging its relevance and value CT 1 Generate ideas and explore possibilities CT 3 Connect their own and others' ideas and experiences in inventive ways CT 5 Try out alternatives or new solutions and follow ideas through

Skill 10: Creative Thinking

Key Question(s)	Focus Point	Suggested Topic Exemplification	Suggested Learner Activities to Support the Skill	Personal Learning Thinking Skills
What questions should we be asking about this information in order to assess it and understand it better? Could there be more than one meaning or explanation for it? What are the possible and likely consequences of this?	Generating questions – who, when, where, why, what – in response to stimulus Generating ideas and hypotheses for the purposes of explaining or interpreting or organising evidence Generalising and extrapolating from data Exploring and evaluating possible consequences through suppositional and counterfactual thinking	Global warming and the environment Third World poverty International conflicts and their resolution Human origins: evolution and design Life after death: reincarnation, near death experiences and the soul UFOs, alien visits and alien abductions Astrology, alternative therapies and alleged supernatural phenomena Conspiracy theories Murder mysteries Historical mysteries	Mysteries, especially with questions of identity and rival claimants Brainstorming, grouping and ranking questions in response to visual/documentary stimulus	IE 1 Identify questions to answer and problems to resolve CT 1 Generate ideas and explore possibilities CT 2 Ask questions to extend their own thinking CT 4 Question their own and others' assumptions CT 5 Try out alternatives or new solutions and follow ideas through

Scheme of Assessment

4.1   Scheme of Assessment

There will be two written papers each lasting one hour and each worth 60 marks.

The full range of Thinking and Reasoning Skills will be assessed in both papers.

Any question in either paper may assess discrete skills or a combination of skills.

Unit 2 will be based on pre-release materials. This may include images, data in the form of charts or graphs, video material, audio tapes, written dialogues, letters, short extracts from newspapers and books. All students will have the opportunity to think through this material in class with their teacher before the examination.

Level 2 award Thinking and Reasoning Skills

Level 2 award Thinking and Reasoning Skills Unit B901: *Thinking and Reasoning Skills*

50% of the total Level 2 award Thinking and Reasoning Skills marks	The paper will consist of two Sections.
	In **Section A**, candidates answer a series of compulsory short-answer questions.
60 mins written paper	
60 marks	In **Section B**, candidates answer compulsory, source-based, structured questions, based around sources. This section will include a longer response question.

Level 2 Thinking and Reasoning Skills Unit B902: *Thinking and Reasoning Skills Case Study*

50% of the total Level 2 award Thinking and Reasoning Skills marks	This paper will consist of structured questions based on pre-release material.
60 mins written paper	The pre-release material will contain a variety of materials in different forms. This may include images, data in the form of charts or graphs, video material, audio tapes, written dialogues, letters, short extracts from newspapers and books.
60 marks	
	The pre-release material will be made available to centres in advance of the examination date.
	There will be two Sections.
	In **Section A**, candidates will answer a series of compulsory short questions which will be based on the pre-release material.
	In **Section B**, candidates will develop and present an argument as well as considering and responding to different points of view.

4.2   Assessment objectives

AO1	*Use and apply critical thinking skills of analysis and evaluation*
AO2	*Use and apply wider thinking skills*
AO3	*Synthesise construct and develop arguments and solutions to problems employing thinking skills holistically*

AO weightings

Unit	AO1%	AO2%	AO3%	Total%
Unit B901 Thinking and Reasoning Skills	30-35	35-40	25-30	50
Unit B902 Thinking and Reasoning Skills Case Study	35-40	20-25	35-40	50
Total for course	30-40	25-35	30-40	100

4.3   Performance Descriptors

The performance descriptors for Level 2 award Thinking and Reasoning Skills indicate the level of attainment characteristic of Distinction, Merit, and Pass.

They should be interpreted in relation to the content outlined in the specification; they are not designed to define that content.

They give a general indication of the learning outcomes and levels of attainment likely to be shown by a representative candidate performing at each boundary. In practice most candidates will show uneven profiles across the attainments listed, with strengths in some areas compensating in the award process for weaknesses or omissions elsewhere.

Assessment Objectives	AO1 *Use and apply critical thinking skills of analysis and evaluation*	AO2 *Use and apply wider thinking skills*	AO3 *Synthesise construct and develop arguments and solutions to problems employing thinking skills holistically*
Distinction Performance Descriptor	**Candidates characteristically:** Use and apply critical thinking skills of analysis and evaluation in an appropriate and precise way demonstrating a secure understanding of all the skills and an ability to employ them individually to a variety of problems, situations, and materials with facility and ease even when the material is complex and subtle.	**Candidates characteristically:** Use and apply the full range of wider thinking skills in an appropriate and precise way demonstrating a secure understanding of all the skills and an ability to employ them individually to a variety of problems, situations, and materials with facility and ease even when the material is complex and subtle.	**Candidates characteristically:** Synthesise, construct and develop both arguments and solutions to complex problems by using many thinking skills together in a way which demonstrates confident holistic thinking; selecting, interpreting and evaluating information from a variety of sources; Where appropriate developing arguments with a precise conclusion with cogent and persuasive reasons with explicit structure.
Merit Performance Descriptor	**Candidates characteristically:** Use and apply critical thinking skills of analysis and evaluation in an appropriate and precise way; most skills can be employed successfully on most of the material but not always successfully when the material is most complex and challenging.	**Candidates characteristically:** Use and apply many but not all wider thinking skills in an appropriate and precise way; most skills can be employed successfully on most of the material but not always successfully when the material is most complex and challenging.	**Candidates characteristically:** Synthesise, construct and develop both arguments and solutions to complex problems but not always successfully; some skills necessary to a full and complete solution are overlooked or not always fully utilised leading to a mainly correct response or solution but with some few elements incomplete or in error; Where appropriate developing arguments with a structure which is not fully explicit and with reasons and evidence which is always relevant but not wholly free from weaknesses.

Assessment Objectives	AO1 *Use and apply critical thinking skills of analysis and evaluation*	AO2 *Use and apply wider thinking skills*	AO3 *Synthesise construct and develop arguments and solutions to problems employing thinking skills holistically*
Pass Performance Descriptor	**Candidates characteristically:** Use and apply critical thinking skills of analysis and evaluation in a mostly appropriate and sometimes precise way; demonstrating only a partial understanding of the full range of skills; skills rarely employed correctly in relation to the more challenging complex and subtle material.	**Candidates characteristically:** Use and apply some wider thinking skills in a mostly appropriate and sometimes precise way; demonstrating only a partial understanding of the full range of skills; skills rarely employed correctly in relation to the more challenging complex and subtle material.	**Candidates characteristically:** Synthesise, construct and develop both arguments and solutions to complex problems in a way which is frequently superficial and simplistic; some skills necessary to a full and complete solution are clearly absent and other skills where present are not fully and properly applied or integrated with one another; Where appropriate developing arguments with a structure which is not explicit and with reasons which are poorly developed and open to obvious objections and counter examples.

4.4   Assessment Availability

This is a unitised specification. Candidates can take units either separately or together. There are two examination series each year, in January and June. Level 2 certification is available for the first time in June 2010, and each January and June thereafter.

5.1   Making Unit Entries

Please note that centres must be registered with OCR in order to make any entries, including estimated entries. It is recommended that centres apply to OCR to become a registered centre well in advance of making their first entries. Centres must have made an entry for a unit in order for OCR to supply the appropriate forms and/or moderator details for controlled assessments.

It is essential that unit entry codes are quoted in all correspondence with OCR.

5.2   Unit and Qualification Re-sits

Candidates may re-sit each unit once before entering for certification for a Level 2 award.

Candidates may enter for the qualification an unlimited number of times.

5.3   Making Qualification Entries

Candidates must be entered for certification code J930.

Candidates must enter for qualification certification separately from unit assessment(s). If a certification entry is **not** made, no overall grade can be awarded.

A candidate who has completed all the units required for the qualification may enter for certification either in the same examination session (at the usual time or within a specified period after publication of results) or at a later session.

Level 2 award in Thinking and Reasoning Skills certification is available from June 2010.

5.4   Grading

Level 2 award in Thinking and Reasoning Skills units are awarded on the scale Distinction, Merit, Pass. Units are awarded on the same scale. Grades are awarded on certificates. However, results for candidates who fail to achieve the minimum grade ('Pass') will be recorded as *unclassified* (U or u) and this is **not** certificated.

Level 2 award Thinking and Reasoning Skills is a unitised scheme. Candidates can take units across several different series. They can also re-sit units. When working out candidates' overall grades OCR needs to be able to compare performance on the same unit in different series when different grade boundaries have been set, and between different units. OCR uses a Uniform Mark Scale to enable this to be done.

A candidate's uniform mark for each unit is calculated from the candidate's raw marks on that unit. The raw mark boundary marks are converted to the equivalent uniform mark boundary. Marks between grade boundaries are converted on a pro rata basis.

When unit results are issued, the candidate's unit grade and uniform mark are given. The uniform mark is shown out of the maximum uniform mark for the unit eg 61/100.

The specification is graded on a Uniform Mark Scale. The uniform mark thresholds for each of the assessments are shown below:

Unit	(Level 2) Unit Weighting	Maximum Unit Uniform Mark1	Distinction	Merit	Pass	U
B901	50%	60	48	36	24	0
B902	50%	60	48	36	24	0

Candidate's uniform marks for each module are aggregated and grades for the specification are generated on the following Uniform Mark Scale:

Qualification	Qualification Grade				
	Max UMS	Distinction	Merit	Pass	U
Level 2 award in Thinking and Reasoning Skills	120	96	72	48	0

5.5   Result Enquiries and Appeals

Under certain circumstances, a centre may wish to query the grade available to one or more candidates or to submit an appeal against an outcome of such an enquiry. Enquiries about unit results must be made immediately following the series in which the relevant unit was taken.

For procedures relating to enquiries on results and appeals, centres should consult the *Administrative Guide for General Qualifications* and the document *Enquiries about Results and Appeals – Information and Guidance for Centres* produced by the Joint Council. Copies of the most recent editions of these papers can be obtained from the OCR website.

5.6   Shelf-Life of Units

Individual unit results, prior to certification of the qualification, have a shelf-life limited only by that of the qualification.

5.7   Guided Learning Hours

Level 2 award Thinking and Reasoning Skills requires 60 – 70 guided learning hours in total.

5.8   Code of Practice/Common Criteria Requirements/Subject Criteria

This specification complies in all respects with the current *GCSE, GCE and AEA Code of Practice* as available on the QCA website, *The Statutory Regulation of External Qualifications 2004*. Currently there are no subject criteria for this subject.

5.9   Prohibited Qualifications and Classification Code

Candidates who enter for the OCR Level 2 award in Thinking and Reasoning Skills are not prohibited from taking any other GCSE or Level 2 examination in the same series.

5.10 Disability Discrimination Act Information Relating to this Specification

Reasonable adjustments are made for disabled candidates in order to enable them to access the assessments and to demonstrate what they know and can do. For this reason, very few candidates will have a complete barrier to the assessment. Information on reasonable adjustments is found in *Regulations and Guidance Relating to Candidates who are Eligible for Adjustments in Examinations* produced by the Joint Council www.jcq.org.uk.

Candidates who are unable to access part of the assessment, even after exploring all possibilities through reasonable adjustments, may still be able to receive an award based on the parts of the assessment they have taken. Candidates who have difficulty drawing conclusions from arguments and dealing with inference, deductions and probabilities might need to consider carefully the difficulties they may encounter in this qualification.

Candidates with a visual impairment may find this subject difficult to access fully.

	Yes/No	Competence
Readers	Y	All written examinations
Scribes	Y	All written examinations
Practical assistants	Y	Written and practical assessments
Word processors	Y	All written examinations
Transcripts	Y	All written examinations
BSL signers	Y	All written examinations
Live speaker	Y	All written examinations
MQ papers	Y	All written examinations
Extra time	Y	All written examinations

5.11 Arrangements for Candidates with Particular Requirements

Candidates who are not disabled under the terms of the DDA may be eligible for access arrangements to enable them to demonstrate what they know and can do. Candidates who have been fully prepared for the assessment but who are ill at the time of the examination, or are too ill to take part of the assessment, may be eligible for special consideration. Centres should consult the *Regulations and Guidance Relating to Candidates who are Eligible for Adjustments in Examinations* produced by the Joint Council.

6 Other Specification Issues

6.1 Overlap with other Qualifications

There is no significant overlap between the content of these specifications and those for other Level 2/ GCSE qualifications.

6.2 Progression from these Qualifications

This specification provides progression from Level 2 award Thinking and Reasoning Skills to AS/A Level in Critical Thinking.

6.3 Spiritual, Moral, Ethical, Social, Legislative, Economic and Cultural Issues

There are no spiritual issues specifically covered in this specification, though if teachers choose to deliver the course through the choice of topics mentioned, a range of spiritual, moral and ethical issues may be covered, such as Bioethical Issues, Personal and Social issues, Euthanasia, Animal welfare etc.

6.4 Sustainable Development, Health and Safety Considerations and European Developments, consistent with international agreements

There are no sustainable development issues or health and safety considerations in these specifications. However, if teachers chose to deliver the course through the topics mentioned sustainable development issues may be covered, for example through Global Warming and the Environment.

6.5 Avoidance of Bias

OCR has taken great care in preparation of these specifications and assessment materials to avoid bias of any kind.

6.6 Language

These specifications and associated assessment materials are in English only.

6.7 Key Skills

This specification provides opportunities for the development of the Key Skills of *Communication, Application of Number, Information Technology, Working with Others, Improving Own Learning and Performance* and *Problem Solving* at Levels 1 and/or 2. However, the extent to which this evidence fulfils the Key Skills criteria at these levels will be totally dependent on the style of teaching and learning adopted for each unit.

The following table indicates where opportunities may exist for at least some coverage of the various Key Skills criteria at Levels 1 and/or 2 for each unit.

Unit	C		AoN		IT		WwO		IOLP		PS	
	1	2	1	2	1	2	1	2	1	2	1	2
B901	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
B902	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

Detailed opportunities for generating Key Skills evidence through this specification are posted on the OCR website (www.ocr.org.uk). A summary document for Key Skills Coordinators showing ways in which opportunities for Key Skills arise within GCSE courses has been published.

6.8 ICT

In order to play a full part in modern society, candidates need to be confident and effective users of ICT. Where appropriate, candidates should be given opportunities to use ICT in order to further their study of Level 2 award in Thinking and Reasoning Skills.

6.9 Citizenship

Since September 2002, the National Curriculum for England at Key Stage 4 has included a mandatory programme of study for Citizenship. Parts of this Programme of Study may be delivered through an appropriate treatment of other subjects.

This section offers guidance on opportunities for developing knowledge, skills and understanding of citizenship issues during the course. These opportunities are also indicated within the suggested topic areas of:

Civil Disobedience and the Law

Freedom of Expression and Tolerance

Global Warming and the Environment

Baggini, Julian (2006) *The Pig that wants to be eaten: And 99 other thought experiments*. Granta Books. **ISBN-10**: 1862078556

Baumfield, Vivienne (2002) *Thinking Through Religious Education*, Chris Kington Publishing. **ISBN-10**: 189985746X

Black, Anthony and Varney, John (2004) *LogoVisual Thinking: A Guide to Making Sense*, Centre for Management Creativity, **ISBN-10**: 0954348818

Butterworth, Marie and O'Conner, Maryssa (2002) *Thinking Through English* Chris Kington Publishing, **ISBN-10**: 1899857605

Cohen, Martin (2007) *101 Ethical Dilemmas* Routledge. **ISBN**: 0415404002

Fisher, Peter (2000) *Thinking Through History*, Chris Kington Publishing, **ISBN-10**: 1899857443

Harbottle, Claire (2007) *Thinking Through PSHE*, Chris Kington Publishing, **ISBN-10**: 1899857516

Leat, David (2001) *Thinking Through Geography*, Chris Kington Publishing, **ISBN-10**: 1899857990

Nicols, Adam and Kinniment, David (2000) *More Thinking Through Geography*, Chris Kington Publishing, **ISBN-10**: 1899857435

McNiven, Duncan and McNiven, Savory (2004) *Thinking Skills: Through Science* Chris Kington Publishing, **ISBN-10**: 1899857559

Teare, Barry (2003) *Challenging Resources for Able and Talented Children*, Network Educational Press Ltd, **ISBN-10**: 1855391228

Teare, Barry (1997) *Effective Resources for Able and Talented Children*, Network Educational Press Ltd **ISBN-10**: 1 85539 050 7

Teare, Barry (2001) *More Effective Resources for Able and Talented Children*, Network Educational Press Ltd **ISBN-10**: 1 85539 063 9

Wood, Phil; Hymer, Barry and Michel, Deborah (2007) *Dilemma-based Learning in the Humanities: Integrating Social, Emotional and Thinking Skills* Chris Kington Publishing. **ISBN-10**: 1899857540

Your checklist

Our aim is to provide you with all the information and support you need to deliver our specification.

☑ Bookmark **www.ocr.org.uk/thinkingreasoningskills**

☑ Book your INSET training place online at **www.ocr.org.uk/eventbooker** using code **OTRR1**

☑ Join our e-community for teachers at **http://community.ocr.org.uk**

☑ View our support materials at **www.ocr.org.uk/thinkingreasoningskills**

☑ Have a look at our new web-based service **http://answers.ocr.org.uk**

Need more help?

Here's how to contact us for specialist advice

Phone: 01223 553998

Email: general.qualifications@ocr.org.uk

Online: http://answers.ocr.org.uk

Fax: 01223 552627

Post: Customer Contact Centre, OCR, Progress House, Westwood Business Park, Coventry CV4 8JQ

What to do next

Become an approved OCR centre – if your centre is completely new to OCR and has not previously used us for any examinations, visit **www.ocr.org.uk/centreapproval** to become an approved OCR centre.

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