

AS/A level Thinking Skills
Unit 1: Critical Thinking – First skills

Recommended prior knowledge

Students need to have an understanding and proficiency in the analytic techniques of either O level English or IGCSE English.

Context

The unit focuses on the skills required in analysing an argument. These generic skills are a prerequisite to identifying the strengths and weaknesses of an argument (dealt with in Unit 2 and 8). They are useful but not vital in developing the skills of constructing an argument (dealt with in Unit 4 and 8). They are independent of the problem-solving skills studied in Units 3, 6 and 7. This unit prepares students for the Critical Thinking questions, and in particular question 3, in Paper 2 of the AS exam.

Outline

The unit begins with the identification of logical arguments (as distinct from explanations or descriptions) and then concentrates on the extraction of the logic from the text. This involves identifying the conclusion and the supporting reasons, and putting aside any detail which is not integral to the argument. When the argument has been reduced to its bare logical structure, it is possible to identify implicit assumptions which the author makes. Students need to acquire a conception of what makes a good argument in order to do this. The study of implicit assumptions is continued in Unit 2, along with other tools for evaluating arguments.

Topic	Learning Outcomes	Suggested teaching activities	Learning Resources
1	Recognising reasoned argument	<ul style="list-style-type: none"> • Why do people write?. Give students a variety of pieces of text (poetry/diary/reportage/explanation/ argument) and ask them to sort them into description, explanation and argument. • As a tool for this, students can try inserting “therefore” before a possible conclusion. • There are a number of web resources available which enable students to test themselves on this skill – see right. 	<p>Butterworth and Thwaites – Chapters 1&2</p> <p>Notes and exercise at http://www.philosophy.hku.hk/think click on “Argument analysis” and then “identifying arguments”.</p> <p>www.idebate.org and click on “teaching tools” and then “debate exercises”.</p> <p>http://online.santarosa.edu/philo/tutorial/index.html click on “argument identification” on the left and then enter the username “philo” and password “sophy”.</p> <p>Changing minds.net – deals with all aspects of persuasion – not just argumentation – http://changingminds.org/disciplines/argument/argument.htm</p>

Topic	Learning Outcomes	Suggested teaching activities	Learning Resources
2	Identifying conclusions	<ul style="list-style-type: none"> • Give students three statements and ask them to arrange them in the most convincing order. Eg “<i>You should not feed the squirrels</i>”, “<i>Vermin spread disease</i>” and “<i>Squirrels are vermin</i>”. • Encourage students to create their own three sentence arguments which their classmates can then analyse: this allows them to appreciate the priority to establishing a conclusion (and then finding supporting reasons). 	<p>Butterworth and Thwaites – Chapter 7</p> <p>http://online.santarosa.edu/phil/tutorial/index.html click on “argument analysis” on the left and then enter the username “phil” and password “sophy”.</p>
3	Drawing conclusions	<ul style="list-style-type: none"> • Begin with individual claims and think about what if anything follows from them, e.g. “<i>Pete is cycling in the Tour de France this year</i>”; “<i>Lucy is a spinster</i>”. <ul style="list-style-type: none"> - NB <i>can</i> introduce terms like implication/ logical/ speculation/ inference/ assumption if it fits in naturally. • Practice drawing inferences from observations by students writing down five observations they can make from where they are sitting and then for each one make at least one further inference. Students can then give their observations to other students and compare inferences. As with the above activity, this often enables the difficult notion of assumptions to come out fairly naturally. 	<p>Butterworth and Thwaites – Chapter 8</p> <p>For an introductory exercise on what conclusions can be drawn from a piece of reasoning, choose the Powerpoint file called “Critical Thinking – Drawing Conclusions” at http://njhteam4.pbworks.com/browse/#view=ViewAllObjects&param=Pages%2520%2526%2520Files</p>

		<ul style="list-style-type: none">• Emphasising the need for a conclusion to follow from <u>the whole argument</u> – this can be done by asking for possible conclusions after each of an increasing string of statement. For example “<i>the fox is dead</i>” “<i>the chickens are dead</i>” “<i>there are no pawprints</i>” “<i>the only footprints are my own</i>” “<i>I am very tired and thirsty</i>”...<ul style="list-style-type: none">- NB this is a good activity for developing retention, summarisation and concentration: by doing it orally, students need to hold ideas in their heads; regular practice at listening to arguments in this manner, e.g. typical multiple choice-length ones, can help develop this – students can try to recall various steps of the argument; allocating different premises to each student without them seeing the whole argument so that arguments can be read in sequence by a group of students and they, or the rest of the class, try and recall the argument as a whole.• Can apply to detective fiction – give them the evidence the detective observes and compare the conclusions they make with the detective’s (chapter 2 of ‘Payback’ by Raymond Chandler excellent for this).	
--	--	--	--

Topic	Learning Outcomes	Suggested teaching activities	Learning Resources
4	Recognising the logical functions of key elements of an argument	<ul style="list-style-type: none"> • This involves an ability to identify the reasons, supporting evidence, any counter-arguments, and intermediate conclusions. • Cut and paste activities are useful here – either on computer, or physically – with cards, or scissors and glue (teachers who like to use IT should develop a bank of short electronic arguments that they can use here) – students work in groups to represent arguments visually, ideally on large paper & groups compare the way they did this – students need to learn to isolate the essential parts of an argument from e.g. background. <ul style="list-style-type: none"> - NB students can try this activity without much input. Deciding how to represent the argument is part of the learning process (e.g. should the conclusion come at the top or the bottom, or in the middle? Should the argument be mapped horizontally or vertically? Should they number the steps? Label them? How? What about using other visual signs, e.g. arrows, symbols, pictures (afterwards the traditional argument map and its merits can be considered). • Encouraging heightened awareness of the common argument connector words is another good starting point. An activity which develops this involves a set of cards with the common connector words on them – in groups students have to follow the logic of an argument driven by the random connector words picked from the pack – <i>“people should not cross the road in cities except at pedestrian crossings”</i> BECAUSE <i>“this is vital to allow traffic to flow smoothly”</i> HOWEVER <i>“the rule should ignored if there is no traffic”</i>... A 	<p>Butterworth and Thwaites – Chapters 4, 5, 6, 7&20</p> <p>A multiple choice test on connectors and argument structure can be found at http://www.sjsu.edu/depts/itl/graphics/indic/indic.html</p> <p>Irving M Copi (1986) ‘Introduction to Logic: 11th edition (New York: MacMillan Publishing ISBN 0 023 25020 8) is an excellent source of short arguments.</p>

		<p>“therefore” card signals the final statement of an argument.</p> <ul style="list-style-type: none">• Another activity which encourages awareness of the structural elements of the argument involves students considering a conclusion and producing a given number of statements which are either (a) reasoning in favour, (b) a counter-argument, (c) evidence in favour, and (d) related information which is neither for nor against the conclusion. These can be identified by other groups/the class and discussed. (To make more kinaesthetic/active, students can represent various claims and move around to stand with students whose claims theirs support.)	
--	--	--	--

Topic	Learning Outcomes	Suggested teaching activities	Learning Resources
5	Recognising implicit assumptions	<ul style="list-style-type: none"> The idea of a valid argument is best exemplified by the classical universal syllogism. <i>All mammals have lungs. Dolphins are mammals. Therefore...</i> Students should consider syllogistic arguments with missing statements – e.g. <i>glass is made of sand. [MISSING STATEMENT]. Therefore glass must be cheap.</i> Extended to more complex examples – <i>It has been the hottest summer here since records began, and even the United States Government is trying to reduce Carbon output. We must conclude that Global Warming is now happening.</i> Unit 2 allows for further practice at this key skill, and develops extends it into work on flaws. 	<p>Butterworth and Thwaites – Chapter 9</p> <p>Multiple choice test on syllogisms at http://www.sjsu.edu/depts/itl/graphics/main.html click on “universal syllogisms”</p> <p>Notes and exercise on recognising implicit assumptions at http://www.philosophy.hku.hk/think click on “Argument analysis” and then “identifying hidden assumptions”.</p> <p>A good site to be aware of early on (although may be too difficult for students at this stage) is Tim van Gelder’s Austhink: Critical Thinking on the Web – large directory of links to critical thinking material – www.austhink.com/critical/</p>