Critical thinking – Core 2: Research skills to support the critical thinker

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## Focus

In this unit, students will develop skills that support critical thinking. They will document their learning journey in a ‘critical thinking portfolio’. The portfolio will be supported with information gathered through students’ research endeavours and represents a body of work that each student develops throughout this core topic. Finally, students will apply their critical thinking skills to analyse misinformation in society.

### Outcomes

A student:

* **CT5-1** distinguishes different modes of thinking and identifies the characteristics and perspectives that are central to critical thinking.
* **CT5-2** evaluates a range of evidence to consider bias, generalisation, simplification, stereotyping and fallacies.
* **CT5-3** constructs and builds stronger arguments with evidence-based decision making by discerning fact from fiction.
* **CT5-4** undertakes research and engages in self-reflection throughout the critical thinking process.
* **CT5-5** communicates arguments logically in a range of modes.

### Content

Students:

* develop an electronic portfolio to document their learning journey in this elective. This portfolio will be used for the core and options units in the elective
* engage in research-related activities to gather information on critical thinking
* develop skills in interrogating information sources, including information on the internet and in print media
* evaluate the credibility of information and its sources. The information gathered will be used to construct bodies of knowledge on various topics
* critically analyse misinformation in an area of personal interest
* evaluate the strength of the evidence presented and the validity of the arguments drawn.

## Introduction

The lesson sequences and suggested activities presented in this resource are examples of activities that can be used to address a sample of student descriptors from the course documents. The length and timing of each activity will be dependent on your class and your professional teacher judgement. The intention is to promote deep thinking and make it visible to students. Some activities may need adjustments to cater for your students’ interests or abilities. EAL/D students who are consolidating their English language skills may still require language scaffolding and support to access the academic vocabulary from the resources provided.

The reflective questions after each sequence are intended to promote thought and discussion for students. Therefore, there is no ‘correct answer’, rather a focus on the thinking used to address it. Some students will need more thinking time to participate in class discussions. In particular, EAL/D students may benefit from discussing complex ideas in their home language or writing down their ideas before participating in discussion.

The course supports the opportunity to explore a range of areas within the scope of critical thinking. It is recommended that teachers refer to the [Controversial Issues in Schools policy](https://education.nsw.gov.au/policy-library/policies/pd-2002-0045) when selecting topics for discussion.

After completing Core 1, students should be able to recognise critical thinking and identify the characteristics and mindsets of a critical thinker. Core 2 allows them to build on their research skills and apply their critical thinking to various scenarios and situations. Differences in assumed cultural or background knowledge should be considered. Students may need more support to be introduced to questioning and self-directed tasks.

The primary focus of Core 2 is on skills associated with research and constructing arguments or ideas based on gathered evidence. The content area the research is conducted in is not defined and can be directed by student interest or teacher expertise.

Students will also construct and maintain a learning portfolio as a part of the learning in Core 2, building on the work of becoming a reflective thinker from Core 1. Students should be given regular time to reflect and record their ideas in their learning portfolio. Ideally, this should not be a formal assessment task but an opportunity for students to reflect and record their growth during the course. Teacher-directed or peer feedback could also be a part of this process.

## Learning sequence 1

### Creating and maintaining a portfolio

Students:

* develop an electronic portfolio to document their learning journey in this elective. This portfolio will be used for the core and options units in the elective.

“…the portfolio, by definition, encourages the learner to gather information about learning from multiple sources, including critical reflection and self-assessment, it engages students in intellectually challenging, creative, rigorous work. It is both process and document, stimulating reflection, collaborative mentoring, and emphasis on documentation of learning through detailed outcomes.” (Zubizarreta 2008:5–6).

**Teacher note:** The student learning descriptor suggests using an electronic portfolio. However, as this may not be possible for all students, suitable arrangements should be made to accommodate them, such as using a written template (with adjustments where necessary) that models the electronic version.

This lesson sequence is designed to develop students’ understanding of the purpose of learning portfolios, also referred to as an e-portfolio. Students should be encouraged to explore and select an appropriate method to demonstrate the progression of their thinking. [Learning portfolio](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/583#:~:text=Find%20out%20more%20resources%20%20%20%20Title,overview%20of%20e-Portfolios%20by%20George%20Lo%20...%20) templates are available from the NSW Department of Education.

A selection of student activities is provided for your consideration below.

### Student activities

* Consider the learning on critical thinking you have done so far in this course. You may have a range of products to showcase as your learning achievements. Do you think the products help convey the work, learning and time you have spent on it? For example, think about an athlete who has won a gold medal at the Olympics – does the final event indicate the work they have put in to get there? Discuss this as a class.
* Watch the following clip [Helen Chen Talks Learning Portfolios (5:37)](https://www.youtube.com/watch?v=izHEORSUKwE). As you watch the clip consider the following questions:
  + What does student 1 say is a benefit from using e-portfolios?
  + What can a portfolio showcase better than a final product?
  + At the conclusion of the video, present your ideas to the class.
  + Why do you think universities and some corporations are placing a greater focus on portfolios (learning, professional, design, and so on)?
* Research different methods and templates which can be used to keep an e-portfolio for the class. Present your findings to the class, indicating why you would recommend the platform and how it will help them best showcase their learning.
* Design a template/learning portfolio you think would help you communicate your learning progress in this course. The target audience will be your peers, teachers and parents. What elements would you include and why?

**Reflective question:** How do you think using a portfolio can give readers a better understanding of your skills and learning?

## Learning sequence2

### Research skills

Students:

* engage in research-related activities to gather information on critical thinking.

**Teacher note:** Students completed a substantial amount of work on understanding critical thinking in Core 1. This descriptor extends their ideas of what critical thinking means and how it can be applied. There are opportunities to further enhance or consolidate their ideas about critical thinking whilst developing their research skills.

A selection of student activities is provided for your consideration below.

### Student activities

* The extract below from Wikipedia is about critical thinking. Conduct research into the suitability of the extract in explaining critical thinking. Annotate over the extract and adjust as you think is necessary. Include a reason/s for any changes you make, including a link to the reference source you used and why you think it is a useful source to use. If you think the resource is good and requires no changes, explain your reasoning, and include links to sources that support your thinking.

“Critical thinking is the analysis of facts to form a judgment. The subject is complex; several different definitions exist, including the rational, skeptical, and unbiased analysis or evaluation of factual evidence. Critical thinking is self-directed, self-disciplined, self-monitored, and self-corrective thinking. It presupposes assent to rigorous standards of excellence and mindful command of their use. It entails effective communication and problem-solving abilities, as well as a commitment to overcome native egocentrism and sociocentrism” (Wikipedia contributors, 2022).

* Academics and experts have different perspectives on critical thinking. Reflect on the research and the evaluation you completed on the Wikipedia extract. How can the research you read shape your worldview?

**Extension activity:** Students evaluate why it is difficult to define critical thinking after conducting their research.

**Reflective question:** To what extent are well-developed research skills necessary for building and shaping your understanding?

## Learning sequence 3

### Media discernment

Students:

* develop skills in interrogating information sources, including information on the internet and in print media.

**Teacher note:** Careful consideration must be made when choosing internet and print media information sources. While some topics may be interesting to students, they could become controversial when used as a teaching activity. It is recommended that teachers refer to the [Controversial Issues in Schools policy](https://education.nsw.gov.au/policy-library/policies/pd-2002-0045) before choosing a topic area.

Teachers may wish to pre-teach key ideas and vocabulary in this task.

A selection of student activities is included for your consideration below.

### Student activities

* We all live in the information age, and we have access to a wide range of options on ideas, opinions and content knowledge on any topic. Complete the tasks below to analyse a media article.
  + What type of questions would you ask the source if you imagined the source to be a person?
  + Individually or in pairs, produce a minimum of 3 questions you would ask the author about their research to evaluate the validity of their claims.
  + Share your questions with the class. Are there similar questions you all would ask, or are they different?
  + List 3 questions you would ask and rank them in order of importance. Justify the ranking to the class.

**Teacher note:** Tables 1 and 2 can be used to help students think deeper about the questions they would ask and why. These could be modified as a list of considerations for students whilst planning their questions.

Table 1: Individual question planning table

|  |  |  |  |
| --- | --- | --- | --- |
| Question | Purpose of the question | Strength of question | Limitation of question |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Add more lines if necessary during your planning stage for Table 1.

Table 2: Top 3 questions for interrogating a source

|  |  |  |
| --- | --- | --- |
| Position | Question | Rationale |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |

**Extension activity:** This activity promotes deeper thinking about information sources by examining the information providers on the internet. The context is the United States House Judiciary subcommittee on antitrust.

* The leaders of 4 of the world's most powerful tech companies appeared before a United States House Judiciary subcommittee on antitrust law. The following clip contains highlights provided by The Telegraph.
* Watch the clips and address the questions below.
  + [Highlights: Mark Zuckerberg's Congress grilling (3:47)](https://www.youtube.com/watch?v=T_Jt-0b6M1w).
* What are some of the most powerful questions asked?
* What do you think was the purpose of the line of questioning used?
* Why is it important to ask these types of questions concerning providers of information and the information itself?

**Teacher note:** The following activity suggests students create a presentation for their peers. This could be modified to include pair or group work. Teachers may wish to provide examples of success criteria or what good presentations look like. Longer video clips may be reduced to the first 5-7 minutes.

* Design a presentation that is part of a [gallery walk](https://app.education.nsw.gov.au/digital-learning-selector/LearningActivity/Card/555#.Yd5Y99Ik-tI.link) for your peers who are not studying critical thinking. This presentation should demonstrate how to evaluate the information or opinions on popular social media applications. The style or medium you choose to present is up to you. Think about your audience and what clear message you want them to know. The following TED Talk may help you with ideas: [How we can protect truth in the age of misinformation (14:55)](https://www.ted.com/talks/sinan_aral_how_we_can_protect_truth_in_the_age_of_misinformation#t-735608).

**Teacher note:** You may want to show only some sections of the above TED Talk to your class given its duration.

**Extension activity:** This clip also links with content from Core 1 ‘evaluate the barriers to critical thinking, including thinking biases and cognitive fallacies.’ This linking back should help students build the importance of critical thinking and its impact on research and how to evaluate information. You may want to show only some sections of this clip to your class given its duration [What to trust in a "post-truth" world (17:39)](https://www.ted.com/talks/alex_edmans_what_to_trust_in_a_post_truth_world).

**Teacher note:** The following activities are examples designed for students to recognise the difference between perception and the reality of data and question how data and information are represented. Additional resources on the misrepresentation of data may be found on [top drawer teachers](https://topdrawer.aamt.edu.au/Statistics/Misunderstandings/Misleading-graphs) and [Use the news in the maths classroom](https://www.abc.net.au/education/media-literacy/use-the-news-in-the-maths-classroom/12717398).

* Sometimes, our perceptions of data are not authentic. In pairs, attempt the quiz on [Gapminder: You are probably wrong about](https://www.gapminder.org/).
  + Record 3 facts that you found the most surprising and explain why.
  + Recall how these facts have been portrayed in the media. What role does the media play in shaping our perceptions?
* News creators make choices in presenting and sharing their stories. Select some of the questions from the conceptual framework presented in [Use the news: In media and across the curriculum](https://www.abc.net.au/education/media-literacy/use-the-news-media-arts/11534142) website to analyse a range of news media.
* Use the table below to compare 2 news articles written about the same topic.

Table 3: Comparing information across a range of sources

|  |  |  |  |
| --- | --- | --- | --- |
| Information source and date | Credentials of the person or body presenting information or ideas | Similarities with other sources of information | Differences from other sources of information |
|  |  |  |  |
|  |  |  |  |

* Develop a plan of action you would provide to other students to assist them in researching a topic.
* Support your plan of action with clear reasoning, using examples from your research.

**Reflective question:** How does the quality of the sources you evaluate impact on your ability to form ideas and make judgements?

## References

**Links to third-party material and websites**

Please note that the provided (reading/viewing material/list/links/texts) are a suggestion only and implies no endorsement, by the New South Wales Department of Education, of any author, publisher or book title. School principals and teachers are best placed to assess the suitability of resources that would complement the curriculum and reflect the needs and interests of their students.

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