

## Helping students to learn how to critically evaluate a source: how effective are the tools we use?

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### ***Presentation abstract***

What does evaluating a source involve? What aspects of the source are being evaluated? On what basis do we determine a source's strengths and weaknesses? And how do we explain this to students who are learning the basics of critical analysis?

The Study Advice team at the University of Reading recently developed a new online guide introducing students to critical analysis. The guide includes a selection of exercises and visual and mnemonic tools that cover the basics of critical analysis, including Bloom's Taxonomy (Anderson and Krathwohl, 2001), the Seven Pillars of Information Literacy (SCONUL, 2011), C.R.A.A.P. (Blakeslee, 2004), B.E.A.M. (Bizup, 2008), and the University of Plymouth's (2006) Model to Generate Critical Thinking, along with a new resource called S.P.E.A.R. that focuses on how to analyse and evaluate an individual source. We developed the latter after noticing in one-to-one appointments that students appeared to find this aspect of critical analysis particularly difficult to understand. Moreover, we felt that existing tools like C.R.A.A.P. and the Seven Pillars did not provide enough clarification of how to identify a source's strengths and weaknesses.

In this workshop, participants will consider how well these tools work in helping students understand how to evaluate a source's analysis and, by extension, its claims. This process can differ significantly across the disciplines. As such, we will also explore how to better capture the full breadth of critical analysis at degree level, without overwhelming students who are new to the concept with its full complexities.

**Keywords:** critical thinking; evaluating a source; learning resources; generic support.

## ***Community response***

This lively workshop provided participants with the opportunity to engage with multiple models and frameworks that conceptualise and introduce critical thinking for students:


It was beneficial to see different institutional approaches to developing critical thinking resources. It could be perceived as challenging to define the concept of critical thinking (Thonney and Montgomery, 2019), and this was one of the areas which the session addressed. All participants were encouraged to discuss what they believed critical thinking is in relation to source evaluation.

I really enjoyed this session. To some extent, it was like visiting old friends. Perhaps a good demonstration of how reliant we are on a handful of models.


The first group activity gave participants the opportunity to discuss critical thinking in a disciplinary context (see Figure 1).

**Figure 1. Group discussion (presenter slide).**

## Group discussion



- On your tables, you will find a discipline
- What does critical thinking mean in this discipline?
- How much of the points we've identified apply to this discipline?
- Does critical thinking involve anything unique to this discipline?



This led to many interesting discussions around the understanding of critical thinking within the context of the provided disciplines:

Discussing the matter of source evaluation through the perspective of professionals with different academic backgrounds inspired some diversified conversations around the differences between disciplines and the way they deliver and manage source evaluation.

Particularly intriguing was the perspective raised by the history-based courses, which recognised that some of the traditional source evaluation strategies taught in learning development sessions, were not necessarily useful in their area of study. They gave the example that a single diary entry could be considered significant in a historical context, which could go against some of the principles taught by models such as CRAAP or BEAM (see Figures 2 and 3). Similar conversations were shared in relation to education and social studies courses, where small case studies were often considered as a reliable source which may not be the same in other science-based courses. The workshop allowed the opportunity to question some of the traditional methods applied when introducing source evaluation and critical thinking to students and encouraged further discussion around their validity and reliability when applied across a wide range of programmes.

I found these discussions very enlightening. As a learning developer with a scientific background, I tend to focus on supporting STEM faculties. It was interesting to hear how arts and social science Learning Developers have a very different perspective of critical evaluation. I particularly liked the detail in the (three domains of) critical reading matrix. I often use the analogy or a template of a reading matrix to help students to understand the concept of literature review. I will certainly use and adapt this matrix, to help support my students in the future.

Many participants found the discussion helpful for their own practice. This was nicely captured by one member of the community who added:

Prior to this session, I relied on Bloom's taxonomy (revised) to explain critical thinking to students. The presentation of the further models BEAM and SPEAR are

immensely valuable, and I plan to use them in future sessions. The three models link to three phases of critical thinking. CRAAP - critically selecting sources, BEAM contextualising and synthesizing resources and SPEAR as a framework for presenting sources. I plan to use the information from this session to rework sessions on working with evidence for pre-registration nurses at Levels 4-6 (inclusive). If I get anything useful or interesting, I will share the results.

There were also interesting reflections on how Learning Developers may need to engage with critical thinking in the future, especially within the context of new technologies like Artificial Intelligence (AI) which have the potential to really reframe the way in which students, academics and Learning Developers alike need to approach sources of information in a critical way.

There is, however, a need for a critical re-evaluation of most of these models, especially considering the massification of misinformation, 'fake news' and Generative AI tools. I think many of our approaches are simply not fit for purpose in the modern information era. For example, there has been some discussion around the suitability of the CRAPP test (Fielding, 2019), given the propagation of fake news. I've started to use Caulfield's SIFT approach in its place (see Butler et al., 2023).

Figure 2. S.P.E.A.R and B.E.A.M. (see University of Reading, 2023).





Library 		Library 	
<b>Analysing a source using S.P.E.A.R.</b>		<b>B.E.A.M.: How to use your sources</b>	
<b>Scope</b>	<ul style="list-style-type: none"> <li>What is the paper's scope?</li> <li>How clear is the scope?</li> <li>Does the paper stay within the scope identified in the introduction?</li> <li>Does the scope overlap with those of other papers?</li> </ul>	<b>Background</b>	<ul style="list-style-type: none"> <li>Sources that provide information that outlines the larger academic, social, historical, or professional context of you claims, or other people's claims</li> <li>Sources that provide information about your assignment's topic or primary case examples</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>What does the paper aim to achieve?</li> <li>How clearly is this purpose stated?</li> <li>Does the paper fulfil its stated purpose?</li> <li>How does this purpose relate to similar research?</li> </ul>	<b>Example Exhibit</b>	<ul style="list-style-type: none"> <li>Sources that provide you with a way of explaining or illustrating a particularly complex, abstract idea</li> <li>Sources that provide you with a ready-made example that you can use to quickly support a point</li> </ul>
<b>Evidence</b>	<ul style="list-style-type: none"> <li>What evidence does the paper provide to support its claims?</li> <li>Does the method provide enough reliable evidence to support its claims or test its hypothesis?</li> <li>Does the evidence provide a generalisable conclusion?</li> <li>Was the evidence collected, stored, and processed responsibly?</li> </ul>	<b>Argument</b>	<ul style="list-style-type: none"> <li>Sources whose claims and conclusions are particularly relevant to your work, and which you will critically analyse in order to identify whether or not you agree</li> <li>Sources that will help you develop your understanding of the topic</li> </ul>
<b>Analysis</b>	<ul style="list-style-type: none"> <li>How does the paper interpret its evidence?</li> <li>Does the paper interpret the evidence properly?</li> <li>Does the paper properly rule out alternative explanations?</li> <li>Does the paper properly analyse the work of others?</li> </ul>	<b>Method</b>	<ul style="list-style-type: none"> <li>Sources that either use or explain a method that you might use in an assignment, and which therefore help you decide which method to use</li> <li>Sources that you can cite in your assignment to help you justify your choice of method</li> </ul>
<b>Reasoning</b>	<ul style="list-style-type: none"> <li>Does each claim follow logically from the last?</li> <li>Does the paper infer causal relationships that are reasonable?</li> <li>Does the paper rely on any unjustified or questionable assumptions?</li> <li>Does the paper rely on logical fallacies?</li> </ul>	<small>Adapted from Bizup, Joseph (2008) "BEAM: A Rhetorical Vocabulary for Teaching Research-Based Writing," <i>Rhetoric Review</i> 31.3, 72-86. Available at: <a href="https://www.tandfonline.com/doi/full/10.1080/07350190701738858">https://www.tandfonline.com/doi/full/10.1080/07350190701738858</a></small>	
<small>LM 01/04/22</small>		<small>LM 01/04/22</small>	

Figure 3. C.R.A.A.P and Critical Thinking handouts (see: University of Reading, 2023; University of Plymouth, 2006).

Library 		 <b>Critical thinking</b>	
<b>Evaluating sources using C.R.A.A.P.</b>		<b>What is critical thinking?</b>	
<b>Currency</b>	<ul style="list-style-type: none"> <li>When was this source written?</li> <li>When was it published?</li> <li>When was it last updated?</li> <li>How often has it been cited?</li> </ul>	<p><b>What is critical thinking?</b></p> <p>This guide to critical thinking stresses the importance of asking and answering questions. In everyday life the term 'critical' is often seen as negative or destructive. Being critical in academic life, however, does not mean questioning things randomly, or for the sake of 'nit-picking'. Instead, academic work aims to get as near as possible to the truth. Critical thinking in any subject or discipline is the way in which this is done, along with the more specialised applications of theory, the methods and techniques, which have been developed for the subject. Critical thinking then, is the attempt to ask and answer questions systematically. This means asking the most useful questions in the most productive sequence in order to yield a coherent and credible 'story'</p> <p>So thinking critically means asking questions. Instead of accepting 'at face value' what you read or hear, critical thinkers look for evidence and for good reasons before believing something to be true. This is at the heart of what it means to be a scientist, researcher, scholar or professional in any field. Whatever you are studying, critical thinking is the key to learning and to making progress.</p> <p>The common question words: <b>what, who, where, when, how, and why</b> will help you to get started; along with the phrases: <b>what if, what next, and so what</b>. Attempting to answer these questions systematically helps fulfil three vital functions for any serious study – <b>description, analysis and evaluation</b>. These are the things you need to do:</p> <p><b>Describe</b> ... e.g. to define clearly what you are talking about, say exactly what is involved, where it takes place, or under what circumstances. Fulfilling this function helps you to introduce a topic. More complex <b>description</b> will become <b>analysis</b>.</p> <p><b>Analyse</b> ... e.g. examine and explain how parts fit into a whole; give reasons; compare and contrast different elements; show</p>	
<b>Relevance</b>	<ul style="list-style-type: none"> <li>Why are you reading this source?</li> <li>Does it deliver what it promises?</li> <li>Are the language and coverage appropriate?</li> <li>Was this source published in a relevant periodical?</li> </ul>	<b>What is critical thinking?</b>	
<b>Authority</b>	<ul style="list-style-type: none"> <li>Does the author have an academic degree in this field?</li> <li>Is the writer experienced enough?</li> <li>Is the writer regarded as an expert in this field?</li> <li>Does the writer use a systematic approach?</li> </ul>	<b>What is critical thinking?</b>	
<b>Accuracy</b>	<ul style="list-style-type: none"> <li>Has the author cited their sources?</li> <li>Are most of the sources scholarly and academic?</li> <li>Have the results of these studies been replicated?</li> </ul>	<b>What is critical thinking?</b>	
<b>Purpose</b>	<ul style="list-style-type: none"> <li>What is the purpose of this source? (e.g.: inform, sell)</li> <li>Any evidence of conflict of interest or hidden agenda?</li> <li>Is the topic controversial, attracting biased opinion?</li> </ul>	<b>What is critical thinking?</b>	
<small>Adapted from Blakeslee, Sarah (2004) "The CRAAP Test," <i>LOEX Quarterly</i>: Vol. 31: No. 3, Article 4. Available at: <a href="https://commons.emich.edu/loexquarterly/vol31/iss3/4">https://commons.emich.edu/loexquarterly/vol31/iss3/4</a></small>			
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**Figure 4. Three domains of critical thinking (see Webster, 2019)****Three Domains of Critical Reading: Questioning the Text**

	<b>Validity: On its own terms</b>	<b>Synthesis: In relation to others</b>	<b>Relevance: Usefulness to you</b>
<b>Context:</b> discipline/profession, authors, currency, bias	<ul style="list-style-type: none"> <li>When was it published?</li> <li>Where was it published?</li> <li>What profession or discipline are the authors?</li> <li>What else have they published – are they authoritative?</li> <li>Are there any vested interests which might bias research?</li> </ul>	<ul style="list-style-type: none"> <li>Have others cited or drawn on this research?</li> <li>How influential has it been?</li> <li>Is it cutting edge/controversial or mainstream?</li> <li>Is this part of a debate and where does it sit?</li> </ul>	<ul style="list-style-type: none"> <li>Are these authors coming at the issue from the same discipline perspective as you?</li> <li>What is your overall response to the article?</li> </ul>
<b>What are they doing?</b> Research Question/Aims/Hypothesis	<ul style="list-style-type: none"> <li>Are the aims clearly stated? Are they vague?</li> <li>Is the research question etc valid or rest on bias/assumptions?</li> <li>Is the question interesting/significant?</li> </ul>	<ul style="list-style-type: none"> <li>Is this a radically new area of research or a tweak or new angle on existing question or topic?</li> <li>How long have people been interested in this topic?</li> </ul>	<ul style="list-style-type: none"> <li>How similar are their aims to your own? How does that affect your use of it?</li> <li>Is it still worth me doing my research?</li> </ul>
<b>How did they do it?</b> Methods, Models and Materials	<ul style="list-style-type: none"> <li>Are any theories/models appropriate and accurately understood? Do they develop their own?</li> <li>Are the methods used for data gathering/interpretation appropriate?</li> <li>Is the data set well chosen?</li> </ul>	<ul style="list-style-type: none"> <li>Are they developing a completely new method etc?</li> <li>Are the methods etc used standard and acceptable practice?</li> <li>Are they adapting or improving on previous methods etc?</li> </ul>	<ul style="list-style-type: none"> <li>Does this help me justify my own choice of approach?</li> <li>Can I adapt or improve their method?</li> <li>Do I agree that this is an appropriate method for research like mine?</li> </ul>
<b>How do they know?</b> Argument, evidence, logic and reasoning	<ul style="list-style-type: none"> <li>Is their interpretation and analysis flawed or does it make logical sense?</li> <li>Have they missed anything?</li> <li>Do the results actually mean what they say they mean?</li> </ul>	<ul style="list-style-type: none"> <li>Do they use other literature appropriately to help interpret their findings?</li> <li>Do later scholars criticise them?</li> </ul>	<ul style="list-style-type: none"> <li>Is there anything I should be watching out for when reading my own work critically?</li> <li>Is there anything I can point to in order to save me having to explain it in full?</li> </ul>
<b>What do they say?</b> Findings and conclusions	<ul style="list-style-type: none"> <li>Are the conclusions actually related to their aims and results?</li> <li>Are the conclusions drawn proportionate to the evidence presented?</li> </ul>	<ul style="list-style-type: none"> <li>Are their findings confirmed by other literature?</li> <li>Are their findings significant and novel, compared to other literature?</li> </ul>	<ul style="list-style-type: none"> <li>Can I rely on their conclusions to build my own argument?</li> <li>Do I disagree with their conclusions to some extent? Does that help justify my research?</li> <li>Any gaps/missed opportunities to help justify my research?</li> </ul>

Helen Webster (University of Newcastle) – <https://www.learnhigher.ac.uk/the-three-domains-of-critical-reading/>

**Editorial comment**

We think the authors set out interesting questions in their abstract:

- What does evaluating a source involve?
- What aspects of the source are being evaluated?
- On what basis do we determine a source's strengths and weaknesses?
- How do we explain this to students who are learning the basics of critical analysis?

While some of these questions are fundamental parts of academic practices, the range of ways in which these practices are framed and communicated shows their complexity. The broad range of approaches is no surprise given the complicated situatedness of academic literacies (Lea and Street, 1998, 2006), and participants teased out some of the disciplinary differences in how the concept of criticality is approached. Moreover, this session afforded the community an opportunity to look at how critical thinking is framed to

students within the context of Learning Development. This session brought together many of the common frameworks and models used to introduce critical reading and thinking to students. As you can see from the community response above, it led to an interesting and productive discussion in the room.

### ***Authors' reflection***

This workshop enabled us to receive valuable feedback on our new [Critical Analysis LibGuide](#) (University of Reading, 2023). The LibGuide is available to all students at the University of Reading, and thus is designed to apply across a broad range of disciplines. As a result, the guidance and resources give an overview of the basics of critical analysis, boiling down its complexities and cross-disciplinary variances to something easy to remember: a mnemonic device like C.R.A.A.P. or B.E.A.M., or the neatness of the Three Domains of Critical Thinking. (We also included a new resource – S.P.E.A.R. – that breaks down how to critically evaluate the strengths and weaknesses of an academic source.) Accompanying these resources are several exercises prompting students to consider how these general principles apply in their disciplines.

Much of the discussion in the workshop focused on how to relate these resources to our students' subjects, and by extension how critical analysis differs between those subjects. It was interesting to hear participants sharing the ways in which they have adapted the resources to the specific practices of several disciplines. This in turn raised the debate around the value of generic support when it comes to critical thinking. We would conclude that while there is a clear need to discuss critical thinking within a disciplinary context, there is a space and requirement for generic tools to support students with this deeper thinking. And while it did appear that many of the tools we have are still relevant today, questions have been raised about whether they are sufficient for the future, particularly with the increasing use of AI.

We are glad that many participants in the workshop gained new insights into how to explain critical analysis to students. The session provided us with interesting ideas as to how to use these resources across the disciplines, and we look forward to discovering other interesting approaches to teaching this topic.

## **Acknowledgements**

Thanks are extended to all members of the community who have engaged with the conference or these proceedings in some way. Thank you to the following community members for their contributions to this particular paper: Anne-Marie Langford (University of Northampton), Ivelina Cramphorn (University of Northampton), Lee Fallin (University of Hull) and Amy May (University of Nottingham).

The authors did not use generative AI technologies in the creation of this manuscript.

## **References**

- Anderson, L. W. and Krathwohl, D. R., (eds.) (2001) *A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives*. New York: Longman.
- Butler, W. D., Sargent, A. and Smith, K. (2023) *The SIFT Method, Introduction to College Research*. Available at: <https://oer.pressbooks.pub/collegeresearch/chapter/the-sift-method/> (Accessed: 8 October 2023)
- Bizup, J. (2008) 'BEAM: A Rhetorical Vocabulary for Teaching Research-Based Writing', *Rhetoric Review*, 27(1), pp. 72-86. <https://doi.org/10.1080/07350190701738858>
- Blakeslee, S. (2004) 'The CRAAP Test', *LOEX Quarterly*, 31(3), pp. 6-7. Available at: <https://commons.emich.edu/loexquarterly/vol31/iss3/4> (Accessed: 13 January 2023)
- Fielding, J. A. (2019) 'Rethinking CRAAP: getting students thinking like fact-checkers in evaluating web sources', *College & Research Libraries News*, 80(11), p. 620-622. <https://doi.org/10.5860/crln.80.11.620>
- Lea, M. and Street, B. (1998) 'Student writing in higher education: an academic literacies approach', *Studies in Higher Education*, 23(2), pp. 157-172. <https://doi.org/10.1080/03075079812331380364>



- Lea, M. and Street, B. (2006) 'The "Academic Literacies" model: theory and applications', *Theory into Practice*, 45(4), pp. 368-377. Available at: <https://www.jstor.org/stable/40071622> (Accessed: 8 October 2023)
- SCONUL. (2011) *The SCONUL seven pillars of information literacy: core model*. Available at: <https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf> (Accessed: 13 January 2023).
- Thonney, T. and Montgomery, J. C. (2019) 'Defining critical thinking across disciplines: an analysis of community college faculty perspectives', *College Teaching*, 67(3), pp. 169–176. <https://doi.org/10.1080/87567555.2019.1579700>
- University of Plymouth (2006) *Model to generate critical thinking*. Available at: [https://www.plymouth.ac.uk/uploads/production/document/path/1/1713/Model\\_To\\_Generate\\_Critical\\_Thinking.pdf](https://www.plymouth.ac.uk/uploads/production/document/path/1/1713/Model_To_Generate_Critical_Thinking.pdf) (Accessed: 13 January 2023)
- University of Reading (2023) *Critical analysis: thinking, reading and writing*. Available at: <https://libguides.reading.ac.uk/critical-analysis/reading> (Accessed: 1 September 2023)
- Webster, H. (2019) *The Three Domains of Critical Reading*, LearnHigher. Available at: <https://aldinhe.ac.uk/product/learnhigher-resources/the-three-domains-of-critical-reading/> (Accessed: 1 September 2023)

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