ASCILITE 2024

Navigating the Terrain:

Emerging Frontiers in Learning Spaces, Pedagogies, and Technologies

A Digital Tool for Argument Standardisation: Learning and Practising Critical Analysis in Undergraduate Philosophy

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In PHIL1037: Critical Thinking, a first-year compulsory unit in the Bachelor of Arts at Macquarie University, mastering the structure and evaluation of arguments is an essential learning outcome. A key part of the process through which students learn to do this is *argument standardisation.*

While argument mapping and standardisation are common methods in critical thinking instruction, implementing them effectively remains a challenge. Dwyer et al. (2012) describe argument mapping as a visual representation of text-based arguments. Their research suggested that this approach can reduce cognitive load and facilitate both learning and cultivation of critical thinking skills. To address the challenge of user-friendly implementation, we developed a digital Argument Standardisation Tool, incorporating feedback from PHIL1037 students and teaching staff.

The tool is designed to help students identify and represent the premises and conclusions of arguments while disregarding non-essential elements. It provides a workspace for students to input statements, organise them into structured arguments, and label components such as conclusion, main premises, sub-premises, convergent, or linked. Other key features include labelling, ordering, sharing, saving, deleting, downloading, and making notes. This structured representation clarifies complex reasoning and supports critical analysis whilst ensuring an accessible and efficient process.

The theoretical foundation of our tool is supported by research on argument mapping and cognitive science. Studies by van Gelder (2005) and Dwyer et al. (2012) highlight the benefits of explicating argumentative relationships, which our tool achieves through visual and textual representation. Gelder's emphasis on systematic skill development and practical teaching strategies guided our design to incorporate structured and iterative practice sessions. Meanwhile, Dwyer et al.'s findings inspired us to integrate visual representation techniques to clarify the logical structure of arguments and promote iterative analysis.

Key stakeholders identified critical features for the tool: a workspace for initial text input, a structured area for building arguments with appropriate labels, and automatic logical ordering. The tool allows premises to be labelled as linked or convergent, ensuring accurate representation of argumentative relationships. It can be used both to analyse existing arguments and construct new ones. Its versatile design supports collaboration and proves effective across diverse teaching contexts, including individual practice, lectures, tutorials, online sessions, and discussion forums.

The tool was launched in Session 1, 2024. Initial survey feedback indicated high satisfaction, with an average user-friendliness and effectiveness rating of 8/10. Ninety-two percent of respondents reported an enhanced learning experience, 82% found it facilitated collaboration with peers and staff, and 48% anticipated using the tool in future studies.

Initial implementation results are promising, indicating strong user engagement and effectiveness in enhancing critical thinking skills. The next phase will be informed by continued feedback from students and teaching staff to refine the tool and optimise its performance.

The Argumentation Standardisation Tool is a major advancement in TEL, enhancing teaching and learning of argumentation. It supports critical thinking in PHIL1037 and offers a model for future TEL initiatives in higher education. Given the broad applicability of critical thinking skills, this tool has potential for adaptation across various academic disciplines where effective argument analysis is

essential.

Keywords: argument standardisation, digital tool, critical thinking, philosophy

References

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Tracy, J., Duke-Yonge, J., Corbin, T.A., Rampe, M., Gillett, A.J., & Reeves, P. (2024). A Digital Tool for Argument Standardisation: Learning and Practising Critical Analysis in Undergraduate Philosophy. In Cochrane, T., Narayan, V., Bone, E., Deneen, C., Saligari, M., Tregloan, K., Vanderburg, R. (Eds.), *Navigating the Terrain: Emerging frontiers in learning spaces, pedagogies, and technologies*. Proceedings ASCILITE 2024. Melbourne (pp. 77-78). https://doi.org/10.14742/apubs.2024.996