

Introduction

Supporting educators is considered one of the most effective way of improving the quality of education. One aspect of teaching that educators require support with is the orchestration [1] of learning activities in formal learning spaces. However, contemporary orchestration is:

1) Ad hoc

- Generic software tools for performing specific tasks.
- Specialised tools for managing learning activities.

2) Challenging [2]

- Heterogeneous learning activities.
- Orchestration constraints—e.g timing constraints.

We investigate streamlined technology-driven orchestration—through the use of an orchestration workbench—in order to understand the impact of organised orchestration on teaching.

Scientific Goals

- Investigate the impact of organised technology-driven orchestration on teaching.
 - Devise a generic orchestration workbench framework for achieving streamlined technology-driven orchestration.
 - Demonstrate the successful use of streamlined technology-driven orchestration.

Workbench Orchestration

Orchestration Workbench facilities scripting and centralised access to orchestration tools.

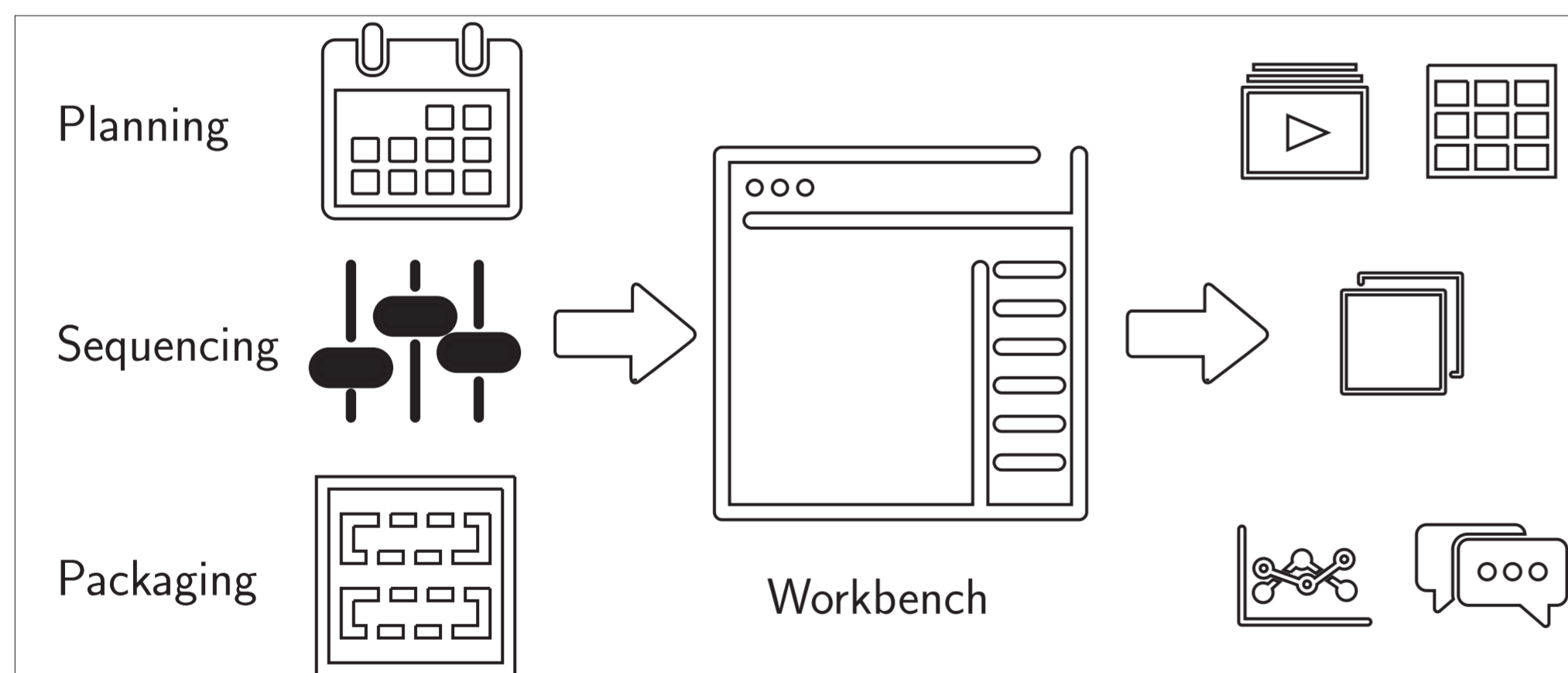


Figure 1. Organised Orchestration Using a Workbench

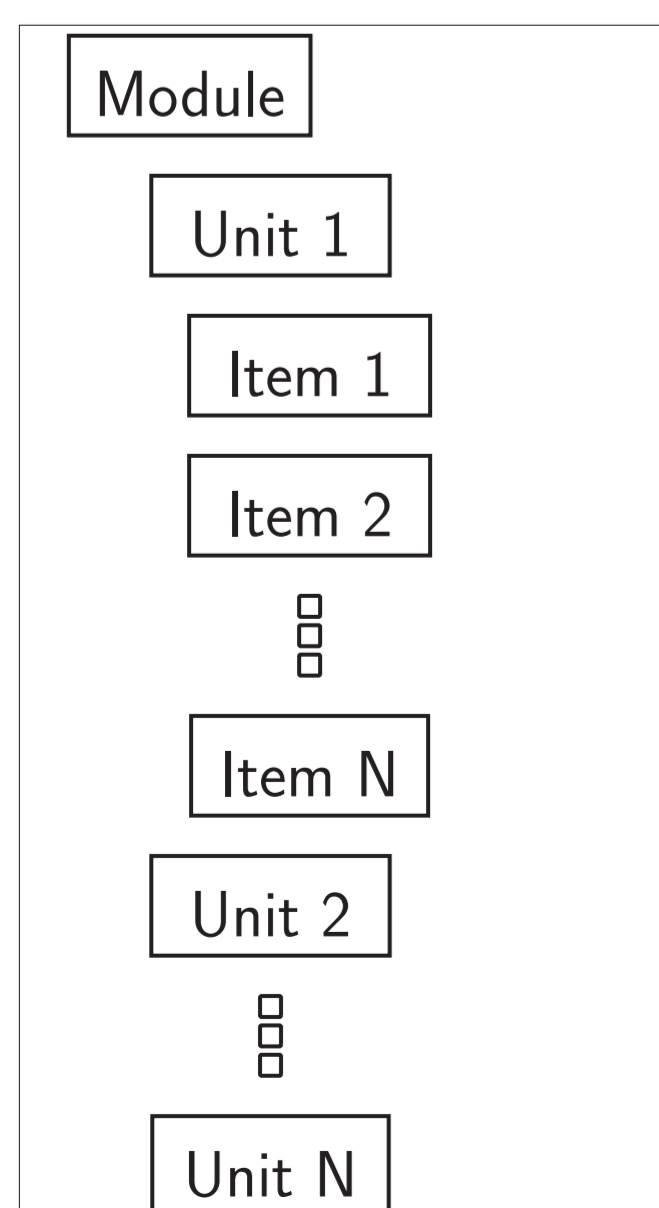


Figure 2. Sequence Tree

The overall workbench orchestration process is strongly linked to pre-session management of core scripting elements.

1) Sequencing

IMS Global Simple Sequencing standard used to dynamically sequence module unit learning activities.

2) Content Packaging

IMS Global Content Package standard used to organise content to be utilised during the orchestration of learning activities.

Experimental Results

1) Orchestrating a Flipped Class

Flipped class case study conducted in authentic educational setting [3] in order to assess feasibility of orchestration approach.

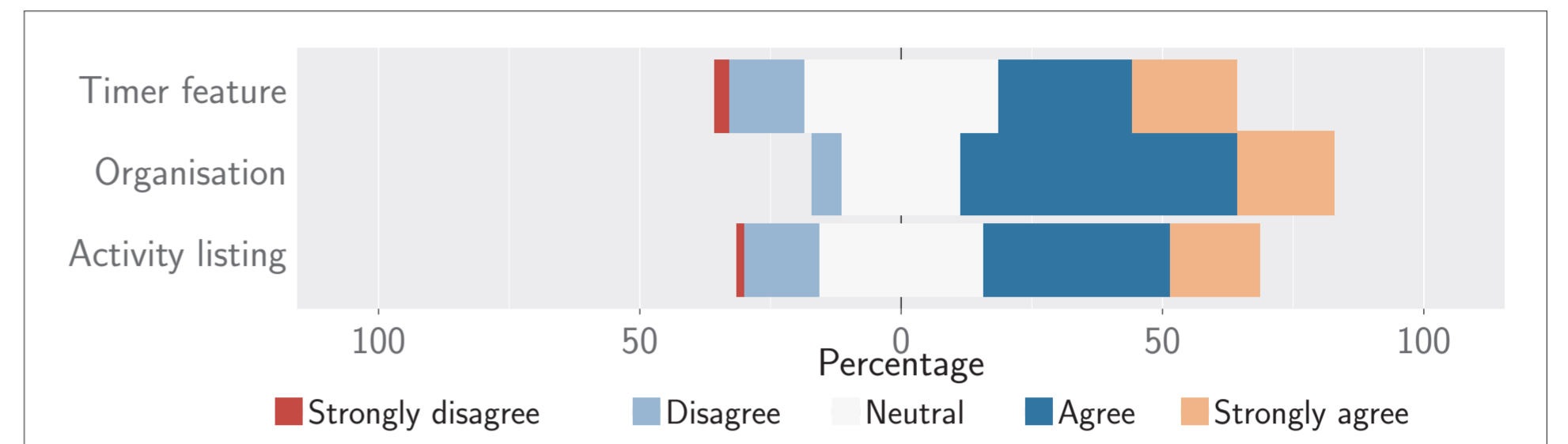


Figure 3. Learners' Experience Survey Results

- Results suggest that orchestration approach facilitated neutral flow of activities, and has potential to positively impact learners' learning experience.

2) Ad hoc vs. Organised Orchestration

Within group laboratory study conducted with 29 participants in order to compare ad hoc orchestration and organised orchestration.

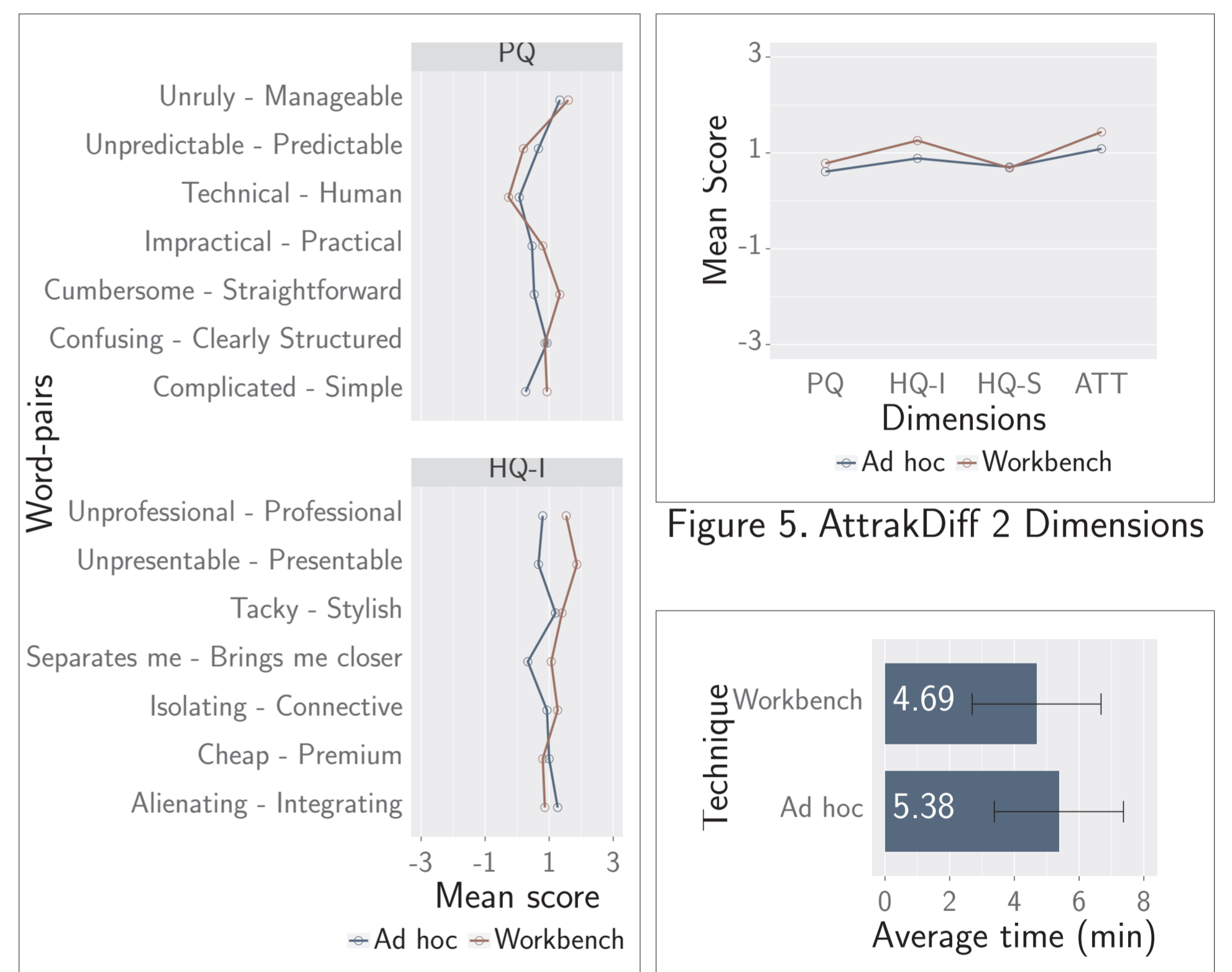
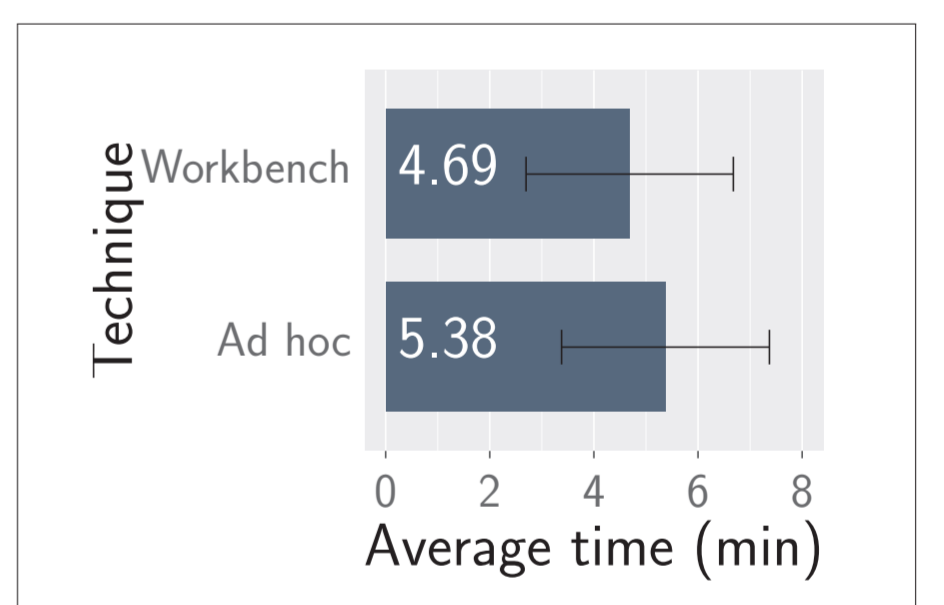


Figure 4. AttrakDiff 2 Word-pairs

Figure 5. AttrakDiff 2 Dimensions



- Learning activities orchestrated faster using workbench, and participants' success more pronounced using workbench.

Acknowledgements

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Bibliography

- [1] Jeremy Roschelle et al. Classroom Orchestration: Synthesis. *Computers & Education*, 69:523–526, 2013. DOI: [10.1016/j.compedu.2013.04.010](https://doi.org/10.1016/j.compedu.2013.04.010)
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- [3] Lighton Phiri et al. Streamlined Orchestration: An Orchestration Workbench Framework for Effective Teaching. *Computers & Education*, 95:231–238, 2016. DOI: [10.1016/j.compedu.2016.01.011](https://doi.org/10.1016/j.compedu.2016.01.011)