

Synergies Between Humans and Machines to Support the Orchestration of CSCL Scripts at Different Scales



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Introduction

1. Pyramid activities in MOOCs [1, 2]:

Problems:

- (i) Sustained student participation in multiple phases of the script.
- (ii) Adaptive scripts.

Learning Analytics (LA) Interventions:

- (i) Automatic LA-based orchestration intervention agent.
- (ii) A group formation policy based on prediction algorithms.

2. Pyramid activities in classrooms [3]:

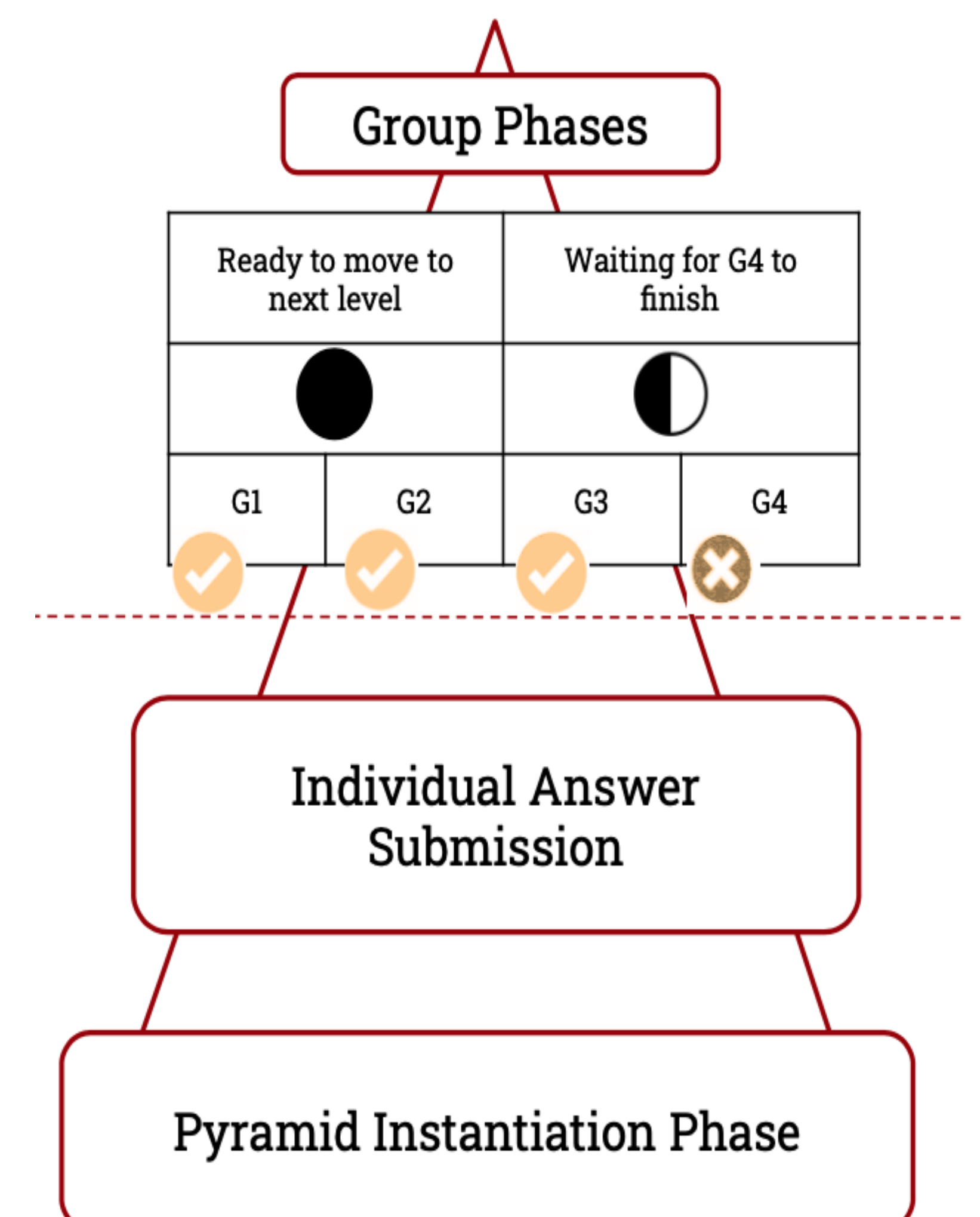
Problems:

- (i) Limited teacher interventions & actionability.

Learning Analytics (LA) Interventions:

- (i) Mirroring Dashboards & Guiding Dashboards.
- (iii) A group formation policy based on prediction algorithms.

Flow Orchestration



Framing Human and Machine Support to Orchestrate Collaboration

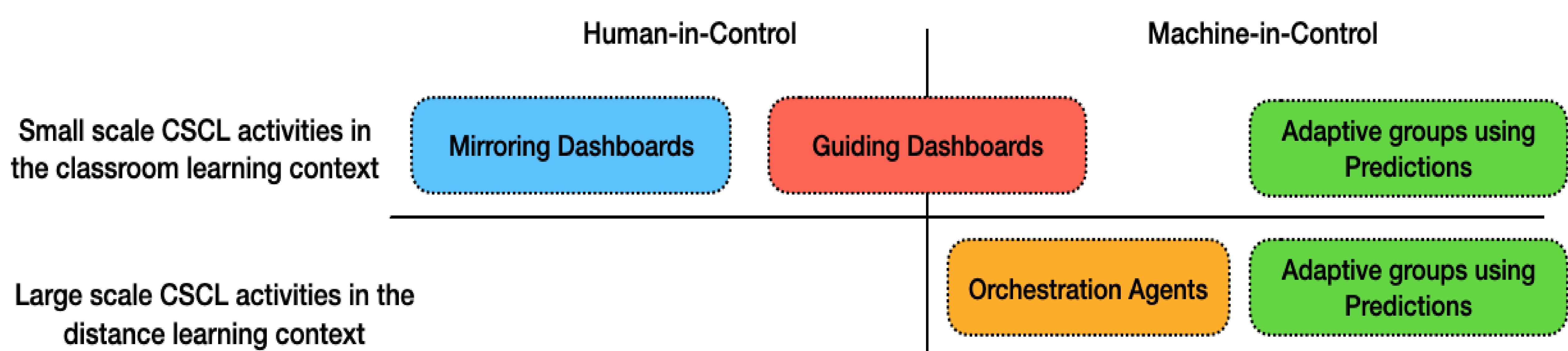


Figure 1. Positioning of different LA interventions to support orchestration at different scales.

Conclusions and Future Work

- Different orchestration challenges at different scales.
- Possibility of different agents to be in control of orchestration.
- Classroom-learning context, teachers can be supported with dashboards ('human-in-control').
- In MOOCs, intelligent agents may take over collaboration regulation ('machine-in-control').
- Human-in-control and machine-in-control can benefit the complementary strengths resulting in a hybrid approach.
- Added values of the proposed human-in-control and machine-in-control approaches requires further research.

References

- [1] Amarasinghe, I., Hernández-Leo, D., Manathunga, K., & Jonsson, A. (2018). Sustaining continuous collaborative learning flows in MOOCs: Orchestration agent approach. *Journal of Universal Computer Science*, 24(8), 1034–1051.
- [2] Amarasinghe, I., Hernández-Leo, D., Michos, K., & Vujovic, M. (2020). An Actionable Orchestration Dashboard to Enhance Collaboration in the Classroom. *IEEE Transactions on Learning Technologies*, 13(4), 662–675.
- [3] Amarasinghe, I., Hernández-Leo, D., & Jonsson, A. (2019). Data Informed design parameters for adaptive collaborative scripting in across spaces learning situations. *User Modeling and User-Adapted Interaction*, 29(4), 869–892.