

Designing a Learning Analytics Dashboard for Developing Online Teacher Productive Peer Talk

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Background

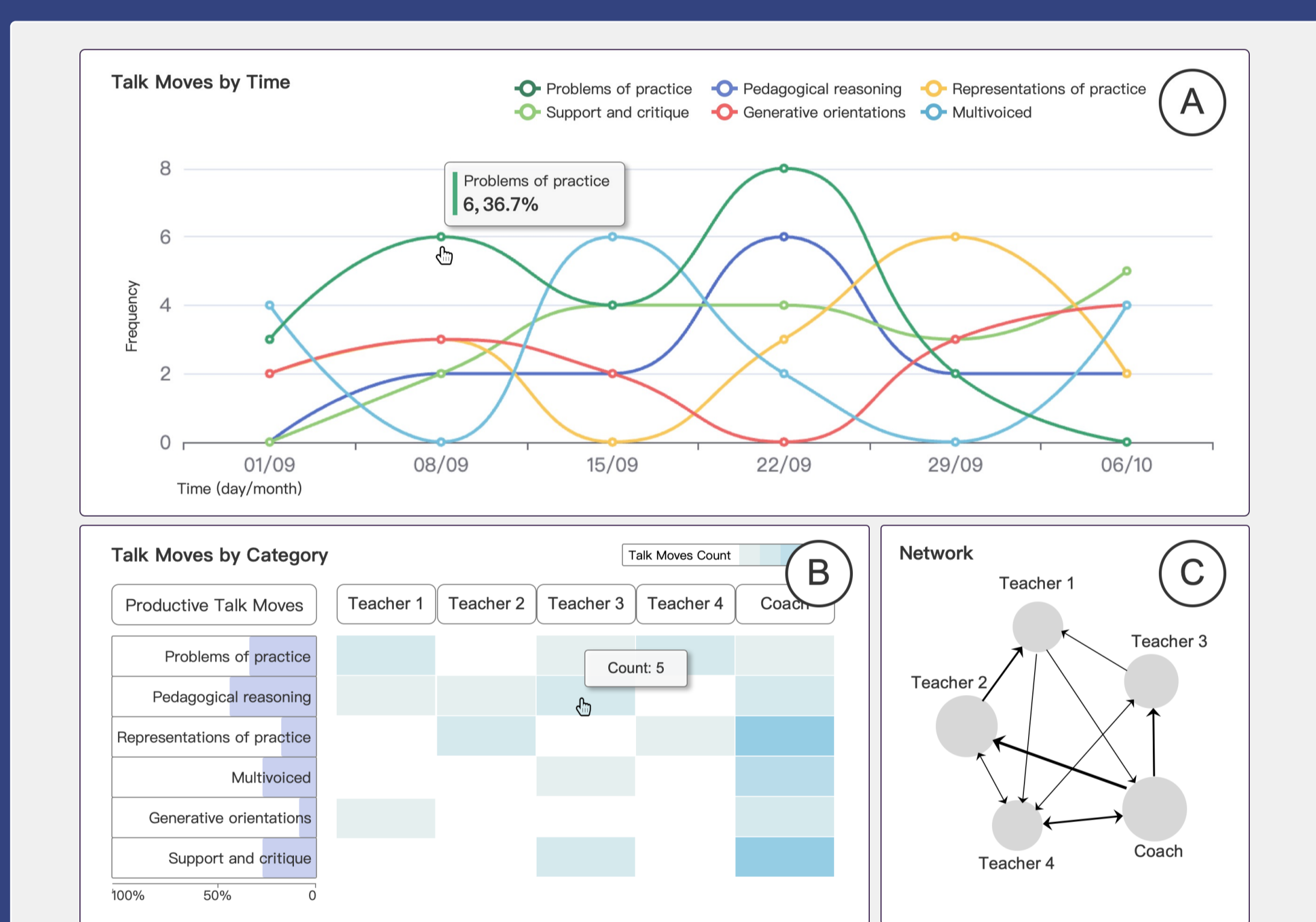
- **Productive peer talk**, which involves meaningful and constructive discussions among learners, promotes critical thinking and collaboration [1].
- Learning analytics dashboards (LADs) are **visualization tools** which utilize graphical representations that describe learners' academic and engagement levels to enhance self-reflection and encourage new insights [2].
- Researchers have identified a set of frameworks for analyzing teachers' productive peer talk, such as **pedagogically productive talk (PPT)** [3].
- While researchers have examined the use of LADs to enhance teacher learning and reflection on classroom teaching, designing LADs to facilitate teachers' collaborative peer talk in online learning environment is under-explored.

Research Gaps

- Limited research has been conducted on the teacher aspect, especially on using LADs to analyze and support teachers' productive peer talk in their online professional practices.
- Most LAD-related studies derive their data from system logs, overlooking the value of educator evaluations.

Objectives

- To design a teacher-facing LAD to support teachers' reflection on their productive peer talk.
- To offer actionable insights for teachers to make well-informed decisions on their teaching practices.



Dashboard Prototype

The LAD prototype contains three coordinated views (*time view, category view and network view*). It tracks and visualizes teachers' online peer talk to enhance dialogic reflection and use of productive peer talk strategies.

- A Time View:** Overview of teachers' productive peer talk moves by time.
- B Category View:** Distribution of productive peer talk move types from different teachers.
- C Network View:** Interaction network among different teachers in a discussion group.

Method

Design-based research (DBR): an iterative process

Step 1: Identify user needs/learning problems, define design principles, and build/modify talk-based indicators

Step 2: Create the initial visualization prototype

Step 3: Engage with target teachers and experts to get user feedback

Step 4: Upgrade the LAD design & development, and refine the theory & practice

New iterations

Lessons Learned

- **Understanding of indicators** ensures effective reflection via LAD for teachers.
- **Simple visualizations** minimize user cognitive load in LAD design.
- **Interactive control of filters** enable users to navigate the data based on different dimensions.

Future Work

- To pilot an early implementation of the designed LAD in a video-based teacher PD program.
- To conduct a usability evaluation of the designed LAD.
- To incorporate AI technologies in classifying indicators of teachers' productive peer talk.

[1] Gillies, R. M. (2019). Promoting academically productive student dialogue during collaborative learning. *International Journal of Educational Research*, 97, 200-209.

[2] Yoo, M., & Jin, S. H. (2020). Development and evaluation of learning analytics dashboards to support online discussion activities. *Educational Technology & Society*, 23(2), 1-18.

[3] Lefstein, A., Vedder-Weiss, D., & Segal, A. (2020). Relocating research on teacher learning: Toward pedagogically productive talk. *Educational Researcher*, 49(5), 360-368.