

Harnessing ChatGPT and Socio-Emotional Analysis to Unlock the Power of Lesson Study

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Lesson Study is a powerful teaching practice that has the potential to revolutionize education, but its full potential is still hard to scale. In this presentation, I'll discuss several opportunities that Artificial Intelligence (AI), Machine Learning (ML), and Large Language Models (LLM,) such as ChatGPT, can offer to the Lesson Study community.

First, AI, ML, and LLM can automate the analysis of videos, students' written responses to open-ended questions, and more, making it easier to measure the impact of Lesson Study.

Second, AI, ML, and LLM together with metrics of the performance of fourth-graders in math, as well as their socio-emotional factors such as generosity, honesty, trust, and universal ethical values, can give very powerful insights into students' learning and the development of their characters.

Third, AI, ML, and LLM together with metrics of students' personality profiles can reveal to the teacher critical information on how to engage students and adapt lessons to reach them all.

Fourth, AI, ML, and LLM together with the structure of social networks in the classroom give the teacher access to decode students' social connections, which can improve class management and learning effects.

With these new innovating tools, a new world of fascinating opportunities is opening for education researchers and teachers. These tools can unlock the full potential of Lesson Study. I'm very excited to present my project and findings, and I look forward to discussing with the audience how these new tools can help us to scale Lesson Study.

References:

- Araya, R. (2021) What Mathematical Thinking Skills will our Citizens Need in 20 More Years to Function Effectively in a Super Smart Society? In Inprasitha, M., Changsri, N., & Boonsena, N. (Eds). (2021). Proceedings of the 44th Conference of the International Group for the Psychology of Mathematics Education (Vol.1) Khon Kaen, Thailand: PME. ISBN 978-616-93830-0-0
- Araya, R.; Sossa-Rivera, J. (2021) Automatic Detection of Gaze and Body Orientation in Elementary School Classrooms. Frontiers in Robotics and AI. Vol 8 <https://doi.org/10.3389/frobt.2021.729832>
- Isoda, M.; Araya, R.; Inprasitha, M. (2021) Developing Computational Thinking on AI and Big Data Era for Digital Society - Recommendations from APEC InMside I Project <https://www.apec.org/Publications/2021/03/Developing-Computational-Thinking-on-AI-and-Big-Data-Era>
- Lehesvuori, S., Schlotterbeck, D., Jimenez, A., Caballero, D., Araya, R., & Hämäläinen, R. (Accepted for publication). Towards Automatic Analysis of Science Classroom Talk: Focus on Teacher Questions. In G. Bansal & R. Umesh, Fostering Science Teaching and Learning for the Fourth Industrial Revolution and Beyond. IGI Global.

- Schlotterbeck D., Uribe P., Jiménez A., Araya R., van der Molen Moris J., Caballero D. (2021) TARTA: Teacher Activity Recognizer from Transcriptions and Audio. In: Roll I., McNamara D., Sosnovsky S., Luckin R., Dimitrova V. (eds) Artificial Intelligence in Education
- Urrutia, F.; Araya, R. (2022) Do Written Responses to Open-Ended Questions on Fourth-Grade Online Formative Assessments in Mathematics Help Predict Scores on End-of-Year Standardized Tests? *Journal of Intelligence*. 2022, 10, 82. <https://doi.org/10.3390/jintelligence10040082>
- Urrutia, F., & Araya, R. (2023). Automatic detection of incoherent written responses to open-ended mathematics questions of fourth graders. PREPRINT (Version 1) available at Research Square <https://doi.org/10.21203/rs.3.rs-2566472/v1>