



# Analysis of teaching practice: **project outline**



## Study Team:

- **Dr Bronte McKeown, Dr Raj Chande, Shaun Dillon, Katy Micklewright, Pip Sanderson, Dr Calum Davey:** National Institute of Teaching
- **Dr Sam Sims:** University College London
- **Professor Rob Coe:** Evidence Based Education
- **David Railton, Tara Clements:** Faculty AI

## 1. What's the problem?

Observation and structured feedback are among the most powerful levers for developing early career teachers (ECTs). Yet the current model of mentoring is constrained in ways that limit its reach and consistency. Mentors must be physically present to observe; their attention is partial; and what they recall and communicate afterwards is inevitably shaped by subjective judgment and memory limitations. Even where mentors are skilled and committed, the bottleneck on their time often means that high-quality, structured feedback cannot be delivered at the frequency or scale that new teachers need.

These limitations are well-documented. Research on instructional quality consistently finds large variation in teaching practice – including within schools and individual teachers across lessons – suggesting that infrequent observation limits the reliability of subsequent feedback <sup>[1]</sup>. At the same time, lesson recordings and transcripts have been shown to contain rich, recoverable signals of teaching quality. Work applying AI methods to lesson transcripts has demonstrated that automated analysis can reliably identify pedagogically meaningful teacher

behaviours – including the uptake of student ideas, questioning strategies, and behaviour management – and that feedback derived from such analysis can improve instructional practice in randomised controlled settings <sup>[2]</sup>.

A further gap is structural. Despite growing national datasets on pupil attainment, deep expertise in the teacher development sector, and a rich academic literature on effective pedagogy, there is currently no practical mechanism for continuously and rapidly linking what teachers do in classrooms to what pupils achieve. Linking the two could help the sector better understand which classroom practices have the greatest leverage on pupil outcomes.

## 2. What are we doing about it?

This project will produce:

- **A secure video recording tool** that will allow ECTs and mentors to record their lessons from any device and share recordings with each other. This reduces the need for synchronous observation and provides a reviewable, objective record for self-reflection and coaching <sup>[3]</sup>, as well as an effective method for modelling effective practice. It also provides the data infrastructure

for the National Institute of Teaching's (NlOT) research programme.

- **A custom AI model**, trained on expert-labelled, anonymised lesson transcripts, that will identify the effective implementation of ITTECF-aligned teaching practices. Recent research has found teacher practices can be identified by such an approach<sup>[4]</sup>.
- **A mentor-facing feedback interface** that will present AI-generated feedback based on ECT lesson transcripts to support mentoring conversations (not performance management).
- **A link between teacher practices and pupil outcomes.** The NlOT's **Teacher Education Dataset (TED)** will house codified lesson transcripts, facilitating scalable and rigorous evidence on which instructional behaviours are most strongly associated with positive pupil outcomes, directly informing future programme design.
- **A randomised controlled trial** will evaluate whether the AI-powered mentor tool improves ECT classroom practice and pupil attainment, providing causal evidence of impact.

### 3. How will success be measured?

- **By end of Year 1 (August 2026):** A working, secure video recording tool, integrated into our ECT online learning platform and embedded in ECT programme guidance and materials for 2026–27. A completed pilot of human labelling approaches that establishes which teaching practices can be reliably coded, and from what input type.
- **By end of Year 2 (August 2027):** A trained AI model capable of identifying ITTECF-aligned teaching practices from lesson transcripts. A functioning mentor-facing feedback interface, tested with users. Preliminary analysis linking teaching practices to pupil attainment via TED.
- **By end of Year 3 (July 2028):** An RCT-evaluated mentor feedback tool with evidence on whether it improves ECT teaching practice and pupil outcomes. Rigorous, scalable evidence on which

classroom practices drive attainment gains.

### 4. What happens next?

The project runs across three years, with the following phases:

**Summer 2027: MVP build and testing.** The mentor-facing tool is built as an MVP (from May 2027) and tested with users in June–July, with refinements completed in August.

**2027–28: RCT evaluation.** From September 2027 to July 2028, a randomised control trial evaluates the impact of the AI-powered mentor tool on ECT classroom practice and pupil attainment.

### 5. Data protection and GDPR

Lesson recordings include personal data relating to teachers and pupils, and the NlOT will process this data in line with UK GDPR and research ethics. The project has completed a data protection review, including a Legitimate Interests Assessment (LIA) and a Data Protection Impact Assessment (DPIA). These are available upon request.

Recordings are stored securely and accessible only to the ECT or mentor who makes the recording, the ECT's mentor and authorised research and technical staff. Teachers will be asked to actively avoid capturing pupils' faces in recordings, and personal data, like names, will be removed from transcripts before research use. Use of the tool is voluntary. All participants will be informed and can opt out of recordings being used in research. Data used for model training and pupil attainment analysis is handled under NlOT's data governance and applicable ethics requirements, and no personal data is shared with third parties. Anonymised transcripts may be shared openly.

### 6. Funding

This project is a strand of the innovative five-year project **Teaching Improvement through Data and Evaluation (TIDE)** – funded by the **Nuffield Foundation**, targeting teaching preparation and development in England.

## References

- [1] Kane, T. J., & Staiger, D. O. (2012). Gathering Feedback for Teaching: Combining High-Quality Observations with Student Surveys and Achievement Gains. Research Paper. MET Project. *Bill & Melinda Gates Foundation*.
- [2] Demszky, D., Liu, J., Hill, H. C., Jurafsky, D., & Piech, C. (2024). Can automated feedback improve teachers' uptake of student ideas? Evidence from a randomized controlled trial in a large-scale online course. *Educational Evaluation and Policy Analysis*, 46(3), 483–505.
- [3] Lee, G. C., & Wu, C. C. (2006). Enhancing the teaching experience of pre-service teachers through the use of videos in web-based computer-mediated communication (CMC). *Innovations in Education and Teaching International*, 43(4), 369–380.
- [4] Demszky, D., & Hill, H. (2023, July). The NCTE transcripts: A dataset of elementary math classroom transcripts. *In Proceedings of the 18th Workshop on Innovative Use of NLP for Building Educational Applications (BEA 2023)* (pp. 528–538).