AI for School Leadership: Muyu App and the Transformation of Data-Driven Teacher Feedback and Improvement

Executive Summary

Effective school leadership requires access to continuous, contextualized, and actionable pedagogical information. This presentation analyzes the uses of Artificial Intelligence (AI) and its impact on school leadership and improvement based on the implementation of **Muyu App**, an AI-powered mobile tool that generates automated feedback from real classroom recordings. Over 10 weeks of pedagogical instruction, 402 teachers from 15 institutions in Ecuador and Chile generated 1,660 reports capturing applied pedagogical techniques, communication patterns, and talk-time distribution (Elmore, 2010; Borich, 2016).

The findings show that AI enables school leaders to exercise data-driven leadership, breaking away from the traditional logic of evaluative feedback to build institutional cultures of support. Aggregate dashboards facilitated trend monitoring, the definition of clear expectations, and the guidance of sustained improvement pathways without increasing the administrative burden on directors (Kraft & Gilmour, 2016).

At the teacher level, frequent and contextualized feedback promoted the progressive adoption of specific pedagogical techniques and an increase in student talk time—an indicator associated with higher participation and engagement (Tao & Chen, 2024). This experience contributes evidence to research on school leadership and improvement, demonstrating that AI can become an engine for continuous and contextualized professional development.

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3. Description of the Problem Addressed

Literature on school leadership maintains that administrators have a decisive impact on teaching quality and learning when they exercise active, continuous, and evidence-based instructional leadership (Kraft & Papay, 2014). However, this ideal is difficult to achieve in Latin American school systems, where structural limitations such as administrative overload, lack of time for classroom visits, and a shortage of accessible tools to analyze real pedagogical data predominate (Bill & Melinda Gates Foundation, 2014).

In this context, teacher feedback has traditionally been associated with evaluative processes that create vertical relationships and limit trust, learning, and collaboration. Furthermore, this type of feedback is not scalable: administrators do not have the time necessary to observe classes frequently, leading to sporadic visits lacking continuity. Consequently, teachers receive occasional feedback that is poorly contextualized and, in most cases, lacks specific techniques to guide professional improvement. Principal training, for its part, tends to reproduce this evaluative logic without integrating digital tools or data-driven leadership competencies (Desimone & Pak, 2017).

This produces a structural gap between what we know works—continuous feedback, reflective practice, close support (Joyce & Showers, 2002; Kraft, Blazar & Hogan, 2018)—and what is possible to implement in daily practice. Simultaneously, many EdTech solutions do not respond to the actual conditions of Latin American institutions, where time, infrastructure, and technical capacity are limited (Lustosa Rosario et al., 2022; Kim, Borowiec & Wortham, 2023).

Artificial Intelligence offers an unprecedented opportunity: automating classroom support by providing scalable feedback and specific improvement techniques contextualized to the classroom, while giving leaders access to previously unavailable data. However, the real impact depends on these tools being contextualized and aligned with the pedagogical practice of the environment. Muyu App addresses this need by combining AI with small, actionable, and contextualized pedagogical techniques, allowing leaders to map sustained improvement routes and teachers to receive continuous, relevant, and specific support—one pedagogical technique at a time.

This experience seeks to contribute to research on school leadership and improvement by showing how AI can transform the nature of teacher support and the practice of instructional leadership to make it highly pedagogical.

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4. Description of Implemented Actions

The intervention was carried out in 15 institutions in Ecuador and Chile during an academic period of approximately 10 weeks, involving 402 teachers and generating 1,660 feedback reports. All implemented actions responded to a central premise: to study and enhance how AI can transform data-driven school leadership and teacher improvement practices through weekly support and feedback.

The process began with an onboarding phase consisting of two components: technical training and methodological sensitization. This process emphasized feedback as a formative rather than evaluative mechanism, aligned with evidence regarding

professional environments that promote teacher development (Fallon et al., 2015; Kraft & Papay, 2014).

During implementation, teachers recorded their classes weekly using Muyu App. The AI automatically transcribed and analyzed the audio, identifying key elements of the pedagogical core, applied techniques, communication patterns, and talk-time distribution (Borich, 2016; Elmore, 2010). In turn, each report centers on the recommendation of a pedagogical technique that addresses a detected area of opportunity in each teacher's class in a differentiated and contextualized manner. These techniques were designed as small, clear, and measurable actions, allowing for the establishment of concrete and sustainable improvement routes. This structure provided administrators with an operational framework to communicate clear expectations and monitor real progress without disrupting classroom dynamics.

In parallel, school leaders accessed dashboards with aggregated data, allowing them to analyze institutional trends, prioritize development focuses, and sustain evidence-based pedagogical conversations. The AI automated the analytical burden of the process, allowing leaders to dedicate themselves to support rather than supervision (Bambrick-Santoyo, 2012).

This use of AI created a bridge between teaching practice and leadership: allowing for longitudinal follow-up, defining training routes based on real needs, and consolidating a culture of continuous feedback. Additionally, by offering a common language focused on specific techniques, the app strengthened teacher collaboration and the institutional professional capital.

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5. Results Obtained and Evaluation of the Experience

Findings show how AI can become an engine for pedagogical leadership and school improvement, providing empirical evidence to the field.

At the teacher level, systematic use of the app was associated with a progressive diversification of pedagogical techniques. Most began by applying basic management and communication techniques and advanced toward more complex strategies as they received frequent and contextualized feedback. This progression is consistent with studies highlighting the role of continuous feedback in skill acquisition and transfer to practice (Parpucu & Al-Mabuk, 2023; Kraft, Blazar & Hogan, 2018).

Regarding communication patterns, a sustained increase in student talk time was observed—an indicator associated with more participatory practices and higher levels of

engagement (Tao & Chen, 2024). This suggests that access to objective data on teacher-student interaction can motivate teachers to adjust their practices toward more dialogic environments (Wang & Demszky, 2023).

At the institutional level, aggregate data dashboards allowed school leaders to understand what occurs in their classrooms with clarity. This access to objective evidence strengthened data-driven leadership, replacing the traditional logic of episodic supervision with continuous and formative support. Leaders were able to identify priority focuses, monitor progress, and sustain aligned pedagogical conversations by setting clear expectations, overcoming the evaluative culture that has historically characterized teacher feedback (Kraft & Gilmour, 2016).

The use of specific pedagogical techniques and a common language strengthened collaboration among teachers and consolidated institutional professional capital. The data generated by AI were transformed into actionable inputs, enabling cycles of continuous improvement sustained by real evidence rather than subjective perceptions.

Altogether, these results contribute to research on school leadership and improvement by demonstrating that AI can:

- Reconfigure school leadership from an evaluative logic toward a logic of data-driven support.
- Provide continuous evidence that favors informed pedagogical decisions.
- Sustain cultures of feedback and continuous improvement.
- Enable clear, concrete, and contextualized teacher development routes based on specific pedagogical techniques.

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