Flipped classroom pilot in first-year chemistry

Lena Bergqvist and Omar Haddad
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Background

The first-year course General Chemistry 1 has had a pass rate of about 60% for several years. Students often reported that the lectures moved too fast and that they had no time to ask questions. In spring 2025 we replaced half of the lectures with short videos that students watched before class, and used the class time for problem solving in groups of four.

Method

We compared the 2025 cohort with the 2024 cohort, which took the same final exam format with lectures only. We also counted attendance at the class sessions and ran a short questionnaire in week 8.

Synthetic example for the course Introduction to agentic AI. Not a real report.

Results

The pass rate on the final exam rose from 61% in 2024 (142 students) to 72% in 2025 (138 students). Attendance at the class sessions fell from about 80% in the first weeks to 55% by the end of the course. In the questionnaire, 70% of the respondents said the videos helped them prepare.

Conclusions

The flipped format was followed by a higher pass rate, but attendance dropped over the term. Because the two cohorts differ in more ways than the teaching format, we cannot say that the format caused the change. We will keep the format and add short quizzes to keep attendance up.

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