Quantifying learning over time in a COMM course

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Research Questions

Are students actually learning? Do they end the course with more knowledge than when they started?

Introduction

Communication is an important durable skill, so ensuring that these are developed during a student's program is paramount, regardless of their field of study or future career.

Participants

1,285 students

Secondary data

- F2016-W2023
- Pre-test/post-tests in COMM 1715

Results

Significant difference

$t(1284) = 35.02$, $p < .01$, $d = 0.977$

- Post-test 18% higher

No difference by semester (fall vs winter)

- Pre-test $t(1283) = .53$, $p = .60$
- Post-test $t(1283) = 1.03$, $p = .31$

Table 1. Descriptive statistics of pre-test and post-test quiz

	Pre-test	Post-test
N	1285	1285
Mode	40.000	55.000
Median	40.000	60.000
Mean	40.603	58.545
Std. Deviation	12.994	19.614
Skewness	0.316	-0.009
Kurtosis	0.247	-0.485
Minimum	5.000	5.000
Maximum	85.000	100.000

Results

Pandemic (pre, during, post)

- Marginally sig. for pre-test ($F(2, 1282) = 2.998$, $p = .05$), but not pairwise ($p = .08$ to 1.0).
- Sig. for post-test ($F(2, 1282) = 19.25$, $p < .001$, $\eta^2 = .029$) and also pairwise comparisons.
  - Post-pandemic scores > both pre-pandemic ($t = 5.82$, $p < .001$) & during pandemic ($t = 5.38$, $p < .001$).
    - Post-pandemic scores 8% higher than both pre and during.

ChatGPT/AI (Dec 2022)

- Sig. for pre-test ($t(1283) = 1.97$, $p = .05$, $d = 0.086$) & post-test ($t(1283) = 5.76$, $p < .001$, $d = 0.09$)
  - Pre-GPT scores lower.
  - Up 2% pre-test, 9% post-test.
  - But not a larger proportion of students earning perfect.

Conclusions

Students are learning!

- Pandemic may have improved their online test-taking skills.
- Generative AI could be inflating performance.

Limitations

- Secondary data

Future studies

- Respondus Lockdown Browser to prevent the use of AI.

Supported by:

DC's Centre for Teaching and Learning (CTL) Scholarship of Teaching and Learning (SoTL) Project, 2023-2024