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## Improving Active Learning through Advanced Teaching Practices on an Online Course

Jin Ouk O. Choi

*University of Nevada, Las Vegas*, [jinouk.choi@unlv.edu](mailto:jinouk.choi@unlv.edu)

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# Improving Active Learning through Advanced Teaching Practices on an Online Course

Jin Ouk Choi, Civil and Environmental Engineering and Construction

# Teaching Practice & Need it Addresses

**Teaching Practice:** This semester, implemented multiple new teaching techniques and strategies in the CEM453-653 course in Fall 2021, which was delivered online. The specific teaching practices and technologies are:

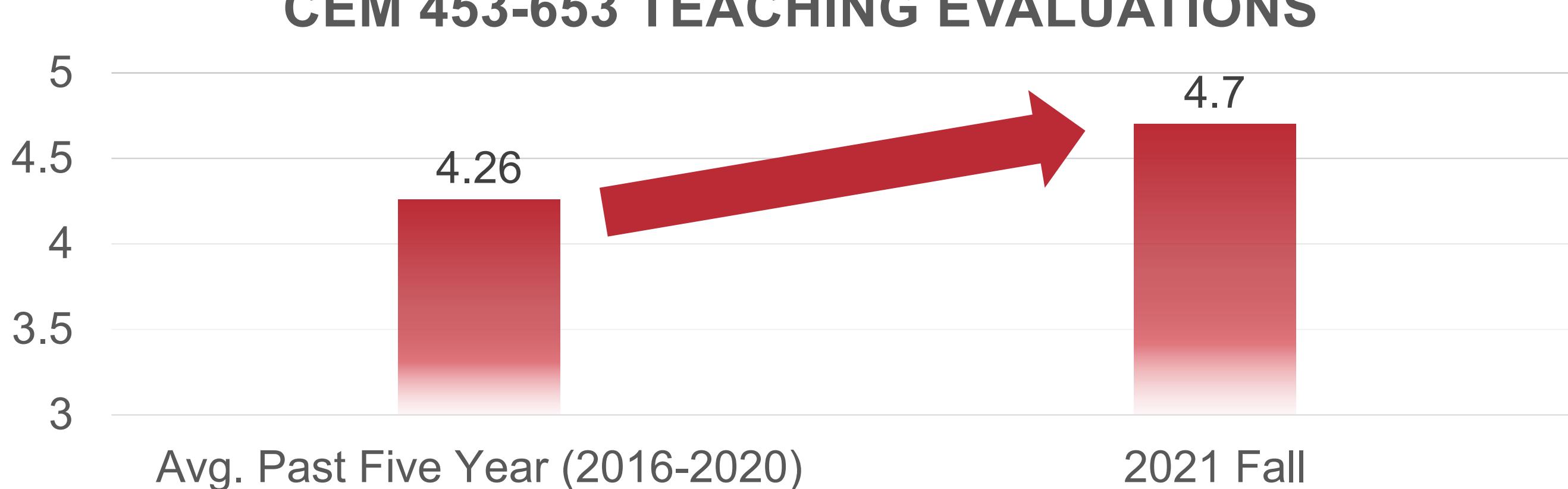
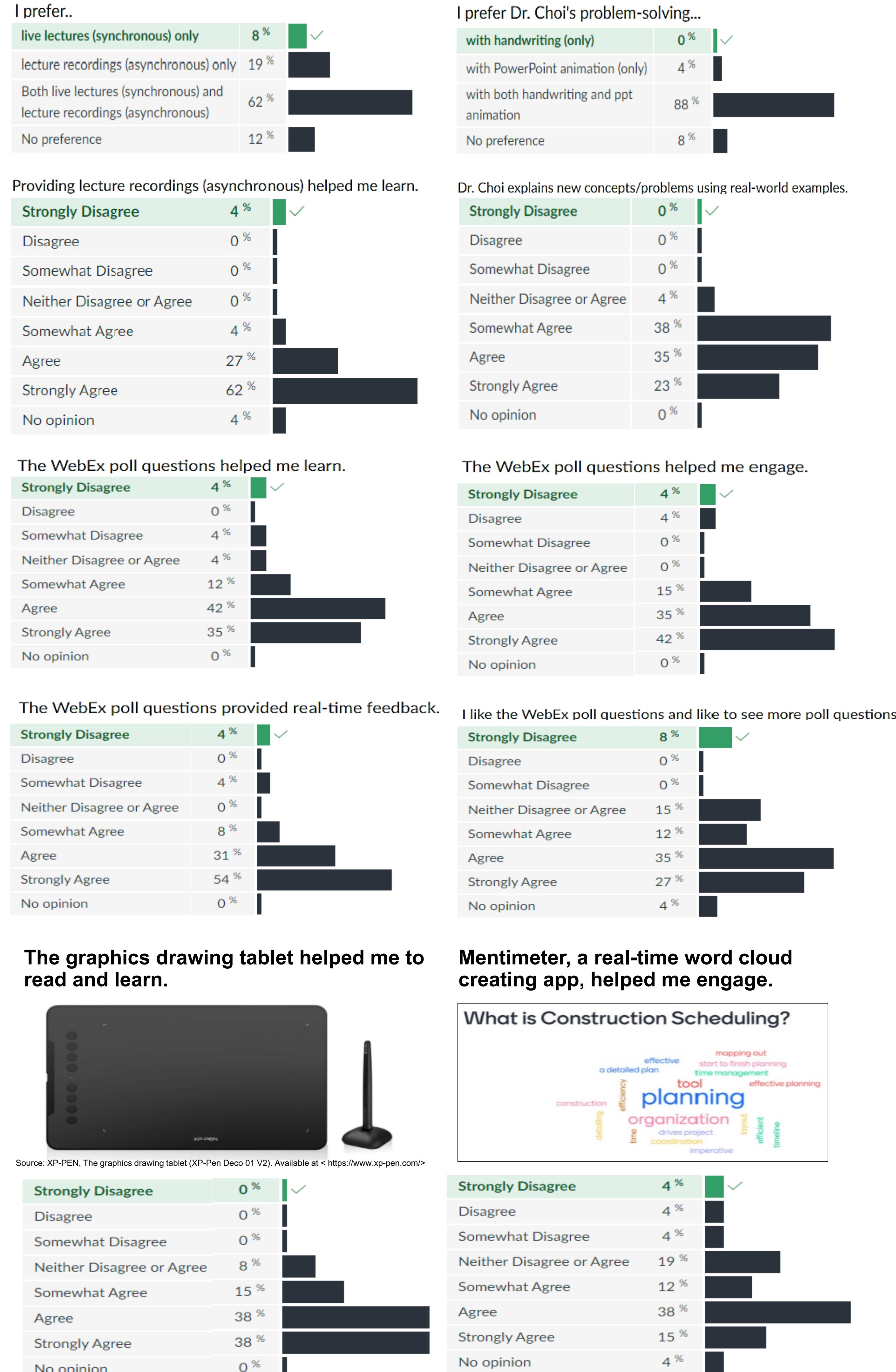
- 1) Delivering lectures both live (synchronous) and recordings (asynchronous)
- 2) Using adaptive technology (Mentimeter, WebEx Poll) with real-time feedback
- 3) Using real-world examples and problems
- 4) Using an advanced teaching gadget (graphics drawing table) for interactive teaching
- 5) Diversifying Instructional Techniques (in-class exercises, homework assignments, poll questions)

**Need:** Since the outbreak of the COVID, there has been a great need to improve and advance learning experiences and opportunities for students when the courses are taught remotely.

# Evidence it Benefits Students (1)

- After the midterm exam, the students' performance was assessed. Compared to the previous year, the average of students' scores has increased 3.6 percent (N = 27 students).
- A voluntary mid-semester survey was conducted to collect students' opinions. 26 out of 27 students completed the survey. The results showed that:
  - Students preferred
    - the lectures to be delivered both live and lecture recordings (62%)
    - the problem-solving solutions to be delivered by both handwriting and ppt animation (88%)
  - Students agreed
    - the real-time word-cloud creating app (Mentimeter) helped them engage (65 %);
    - the WebEx poll questions provided real-time feedback (92 %), and helped them learn more (89 %) and engage more (92 %);
    - the graphics drawing tablet helped them to read and learn better (92 %);
    - in-class exercise (96 %); and homework assignments helped them learn (96 %);
- This year (Fall 2021)'s CEM453-653 teaching evaluation score (4.70) outperformed past five years (2016-2020) average CEM453-653 score (4.26)

# Evidence it Benefits Students (2)



# How Others Can Adopt This Practice

- The strategies and free online sources are shared (see below).
- Other instructors will find their values from this poster and consider adopting these technologies and practices.
- Even though the new teaching gadget and strategies were implemented to the course that is delivered only remotely, these gadgets and strategies can be adapted to both in-person and online courses.

# Resources & Where to Find Them

- Use Real-World Examples
  - ([Gay, 2018](#)), p. 169. Available at <[https://unlv-primo.hosted.exlibrisgroup.com/permalink/f/ovttgp/01UNLV\\_ALMA21291316180004081](https://unlv-primo.hosted.exlibrisgroup.com/permalink/f/ovttgp/01UNLV_ALMA21291316180004081)>
  - ([Tate, 1995](#)) Available at <[https://unlv-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=TN\\_cdi\\_jstor\\_primary\\_1476636&vid=UNLV&search\\_scope=EVERYTHING&tab=default\\_tab&lang=en\\_US&context=PC](https://unlv-primo.hosted.exlibrisgroup.com/primo-explore/fulldisplay?docid=TN_cdi_jstor_primary_1476636&vid=UNLV&search_scope=EVERYTHING&tab=default_tab&lang=en_US&context=PC)>
- Use Adaptive Technology with Real-Time Feedback ([Berkeley et al., 2018](#)), p. 10 and p. 11). Available at <<https://files.eric.ed.gov/fulltext/ED585543.pdf>>
- Problem-Based Learning ([Tate, 1995](#)), p. 170. Available at <[https://unlv-primo.hosted.exlibrisgroup.com/permalink/f/6tvje6/TN\\_cdi\\_jstor\\_primary\\_1476636](https://unlv-primo.hosted.exlibrisgroup.com/permalink/f/6tvje6/TN_cdi_jstor_primary_1476636)>
- The real-time word-cloud creating app (Mentimeter). Available at <<https://www.mentimeter.com/>>
- The graphics drawing tablet (XP-Pen Deco 01 V2). Available at <<https://www.xp-pen.com/>>

# Acknowledgements

- Dr. Choi incorporated the teaching strategies learned from the Culturally Relevant & Responsive Teaching (CRRT) fellows program AY2020-2021 (<https://sites.google.com/unlv.edu/transcend/components/culture?authuser=0> ) supported by the NSF TRANSCEnD project.
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