

Using Kolb's Experiential Learning in Agile Software Development Course

Author

Dr. Soma Datta of Software Engineering

University of Houston-Clear Lake



Research Question

- How to introduce experiential learning in a lecture course?
 - To help students retain the knowledge gained
 - To mimic real-world situation

INNOVATING
FACULTY DEVELOPMENT
2025 FACULTY DEVELOPMENT WEEK

Methodology – The components in the lecture style course

The components were split on Kolb's Experiential Learning

- Games
 - Abstract Conceptualization/ Concrete Experience
- Project
 - Concrete Experience
- Writing
 - Reflective Observation
- Lecture
 - Abstract Experience

Class Activity	Mapping Kolb's cycle
Classroom lectures	Abstract conceptualization (AC)
Games – both hands-on and virtual – building calculator	Concrete experience (CE) Active experimentation (AE) Reflection observation (RO)
Writing of systematic review article	Abstract conceptualization (AC) Reflection observation (RO)
Presenting a given topic to the class – lightning talk	Formation of abstract concepts and generalizations. Experimentation and Higher-order cycle of learning
Developing and interacting with the client	Testing implications of concepts in new situations

Methodology –Mapping Kolb’s Cycle to Class Activities

Methodology –Remapping Kolb's Activities Using Mundane Words

Simple words [7]	Relating to [1]	Activity
Feeling and watching	Varying CE/RO	The games played teamwork, velocity, value-added product, user stories
Watching and thinking – AC/ RO	Integrating	The videos that were shown in class
Doing and thinking – AC/AE)	Bring together	Meeting collecting requirements, developing testing
Doing and feeling – CE/AE	Helpful	Demoing the application

Benefits

- Real-world software development.
 - Products development
- Client interaction
 - Courteousness
- Respect Deadline
 - Naturally planning
 - End of semester

Limitations

- Product had to be shelved for security reasons.
- To hunt for real-world problems for students to develop.

Word cloud of students' feedback



planning
concept
active learning
real world
clear concept
application
fun
game
methodology

Discussion and Future Work

- To continue teaching this course using gamification
- Writing
- Project-based learning.



References

1. A. Y. Kolb and D. A. Kolb, "The Learning Way: Meta-cognitive Aspects of Experiential Learning," *Simulation & Gaming*, vol. 40, no. 3, pp. 297–327, Jun. 2009, doi: 10.1177/1046878108325713.
2. *The Foundations of Contemporary Approaches to Experiential Learning*. Accessed: Dec. 16, 2021. [Online]. Available: <https://learning.oreilly.com/library/view/experiential-learning-experience/9780133892512/ch01.html>
3. *The Process of Experiential Learning*. Accessed: Dec. 16, 2021. [Online]. Available: <https://learning.oreilly.com/library/view/experiential-learning-experience/9780133892512/ch02.html>
4. L. Tomkins and E. Ulus, "'Oh, was that 'experiential learning'?!' Spaces, synergies and surprises with Kolb's learning cycle," *Management Learning*, vol. 47, no. 2, pp. 158–178, Apr. 2016, doi: 10.1177/1350507615587451.
5. C. O'Connor, K. Mullane, and D. Luethge, "The Management and Coordination of Virtual Teams in Large Classes: Facilitating Experiential Learning," *Journal of Management Education*, vol. 45, no. 5, pp. 739–759, Oct. 2021, doi: 10.1177/1052562921995550.
6. M. Abdulwahed and Z. K. Nagy, "Applying Kolb's Experiential Learning Cycle for Laboratory Education," *Journal of Engineering Education*, vol. 98, no. 3, pp. 283–294, Jul. 2009, doi: 10.1002/j.2168-9830.2009.tb01025.x.
7. S. Mcleod, "[Kolb's Learning Styles and Experiential Learning Cycle]," 2013, Accessed: Oct. 21, 2022. [Online]. Available: <https://www.simplypsychology.org/learning-kolb.html>

