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# Learning and Engagement Strategies (LESs) CUE Workshop

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# Zoom Etiquette Guidelines

- Mute your microphone when you aren't speaking
- Turn on your camera
- All comments and discussions should be respectful of the participants
- Give everyone a chance to speak
- Use the “raise hand icon” if you have a question
- Avoid multi-tasking and focus your attention on the meeting

# Agenda

1:00-1:15 Review of LESs

1:15-1:45 Collaborative Learning

1:45-1:55 Homework Assignment

1:55-2:00 Wrap Up

# Google Drive Folder

- Workshop slides
- Team Grading Sheet
- Research paper on LESs

# Review of LESs

# Outline

- Overview of LESs
- LES Integration Model (LESIM)
- Summary

# Overview of LESs

- Learning and engagement strategies (LESs) are grounded in active learning.
- Active learning is “a method of learning in which students are actively or experientially involved in the learning process and where there are different levels of active learning, depending on student involvement.” [2]

# Overview of LESs cont.

- In our context, LESs are limited to: *collaborative learning, gamification, problem-based learning, and social interaction.*
- We attempt to relate LES to Cognitive Load Theory [3].
- There are three main types of cognitive load
  - **Intrinsic** – inherent level of difficulty associated with a specific instructional topic (*manage it*)
  - **Extraneous** – generated by the way information is presented to the learner (*reduce it*)
  - **Germane** – the processing, construction, and automation of schemas (*increase it*)



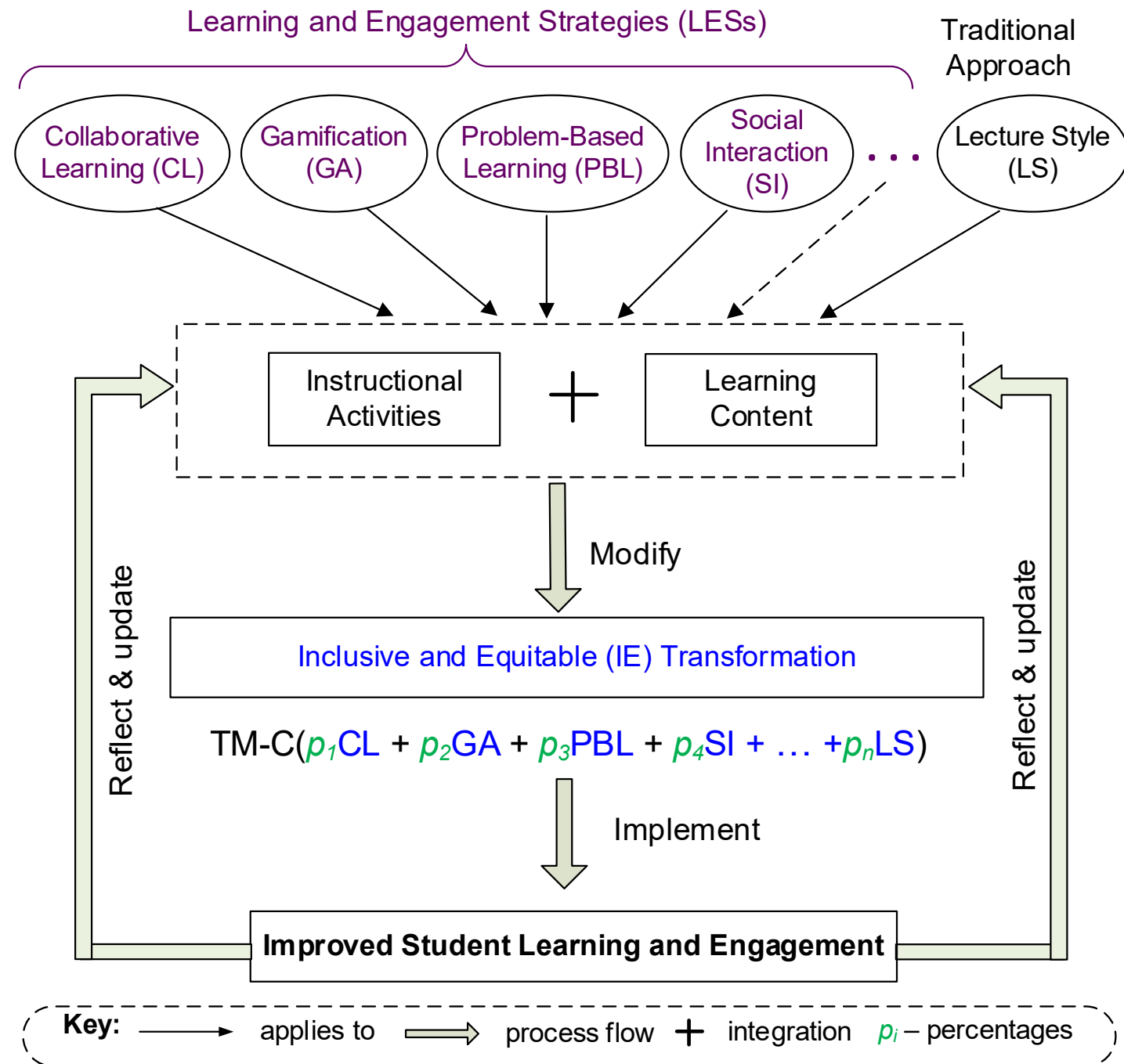
# Learning and Engagement Strategies (LESs)

- *Collaborative learning* is where two or more people work in groups mutually searching for understanding, solutions, or meanings, or creating a product [4].
- *Gamification* is the use of game design elements and game mechanics to improve user experience and engagement with a system, which may be applied to an educational context [5].

# Learning and Engagement Strategies (LEs) cont.

- *Problem-based learning (PBL)* is an approach to learning and instruction in which students tackle problems in small groups under the supervision of a tutor [6].
- *Social Interaction* is an approach that enhances knowledge acquisition through social activities, such as students establishing meaningful dialogue within student groups and with teachers [7].

# LES Integration Model (LESIM)



# Goal of Using LESIM

The main objective of the proposed model is, through research, to find the values of  $p_1, p_2, p_3, p_4, \dots, p_n$  in the equation:

$$\text{TM-C}(p_1\text{CL} + p_2\text{GA} + p_3\text{PBL} + p_4\text{SI} + \dots + p_n\text{LS})$$

that maximizes student learning and engagement. TM-C represents the teaching modality, e.g., face-to-face, fully online, hybrid, or online synchronous.

The values  $p_1, p_2, p_3, p_4, \dots, p_n$  may represent class time spent using LES.

# References

1. Lyman, F.T. (1981). The responsive classroom discussion: The inclusion of all students. In *Mainstreaming Digest*, ed. A. Anderson, 109-113. College Park: University of Maryland Press
2. Weltman D. (2007). *A Comparison of Traditional and Active Learning Methods: An Empirical Investigation Utilizing a Linear Mixed Model*, PhD Thesis, The University of Texas at Arlington, 2007
3. Chandler, P., and Sweller, J. (1991). Cognitive load theory and the format of instruction. *Cognition and Instruction*, 8(4), 293-332.
4. Smith, B. L. and MacGregor, J. T. (1992). What is Collaborative Learning? In A. Goodsell, M. Maher, and V. Tinto, editors, *Collaborative Learning: A Sourcebook for Higher Education*. National Center on Postsecondary Teaching, Learning, and Assessment, University Park, Pa., 1992

# References cont.

5. Deterding, S., Dixon, D., Khaled, R., and Nacke, L. (2011). From game design elements to gamefulness: Defining “gamification.” In Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments (MindTrek’11). Association for Computing Machinery, New York, NY, 9–15. <https://doi.org/10.1145/2181037.2181040>.
6. Schmidt H. G. (1993). Foundations of problem-based learning: some explanatory notes. *Medical Education*, 27(5):422–432.
7. Sandra Y. Okita. Social Interactions and Learning, *Encyclopedia of the Sciences of Learning*, pages 3104–3107. Springer US, Boston, MA, 2012 Weltman D. (2007).

# Collaborative Learning

# Outline

- What is Collaborative Learning?
- Properties of Collaborative Learning
- Benefits of Collaborative Learning
- Using Collaborative Learning in the classroom
- Think-Group-Share



# What is Collaborative Learning?

- Collaborative learning is where two or more people work in groups mutually searching for understanding, solutions, or meanings, or creating a product [1].
- Educational goals of Collaborative Learning :
  - *involvement* - students are more involved in the learning process by interacting significantly more with other students and teachers.
  - *cooperation and teamwork* - students working together will be confronted with different views and will therefore need to resolve these differences and build consensus in their teams.
  - *civic responsibility* - encourages students to participate in shaping their ideas and values.

# Properties of Collaborative Learning

- The instructor is usually more a facilitator than a “sage on the stage”
- Teaching and learning are shared experiences
- Students participate in small-group (3-5) activities
- Students must take responsibility for learning
- Students are stimulated to reflect on their own assumptions and thought processes, and
- Social and team skills are developed through the give-and-take of consensus-building

Kreijns et al. [2]

# Benefits of Collaborative Learning

Research shows that educational experiences that are active, social, contextual, engaging, and student-owned lead to deeper learning [2]. The benefits of collaborative learning include:

- Development of higher-level thinking, oral communication, self-management, and leadership skills
- Promotion of student-faculty interaction
- Increase in student retention, self-esteem, and responsibility
- Exposure to and an increase in understanding of diverse perspectives
- Preparation for real life social and employment situations

# Using Collaborative Learning (CL) in the Classroom

CL may occur both at the class level and at the group or project team level.

- At the class level, CL may involve
  - Students present solutions and answer questions during a class session that may benefit the entire class
- At the group or team level, CL may involve
  - Team members working on the class project. Students are required to keep a diary of all team meeting related to the class project.

# CL at the Team Level

- Each team contains 3 – 5 students
- Students are assigned administrative roles that may rotate among team members
- Each team creates a diary of their activities
- The diary is submitted with each assignment/project deliverable
- Each member of a team grades the other team members in the team using the rubric provided

# Administrative Roles

## Team Leader – Responsibilities include:

- Scheduling team meetings
- Coordinating the assignment of tasks to each team member
- Managing the progress of the project
- Contacting the instructor if there are any issues

## Minute Taker:

- Using the format for the diary entry, create a record for each meeting

## Time Keeper:

- Keep track of the time discussing an item during meetings and intervene if the time limit is exceeded

# Format of Diary

- Date:
- Modality (in-person, virtual):
- Location:
- Start time:
- End time:
- In Attendance (Full Names with Roles):
- Late:
- Agenda:
- Summary of discussion:
- Assigned tasks:

# Grading Teamwork

- See the shared folder for the teammate grading sheet
- Only the instructor has access to each student's grade
- Team grade is a percentage of the grade for the assignment/project deliverable, e.g., 20%
- Explicitly state in your syllabus that the class involves teamwork, what is expected, and how the teamwork will be graded



# Teamwork - Problems

- Scheduling Conflicts – everyone in the team is busy
- Group Conflicts – natural and necessary for teamwork
- Uneven Contributions (loafing/overachieving) – results in tension within the team
- Conflicting Expectations – when expectations are loosely defined
- Getting Stuck – unable to make progress, e.g., mental block
- Groupthink – some students may begin to feel frustrated or unheard, which results in individuals agreeing to avoid conflict
- Isolation of a Group Member – lack of diversity in the team

# Teamwork - Solutions

- Explicitly state in your syllabus that the class involves teamwork and what is expected
- Allocate time in class for teamwork – allows the instructor to observe teams
- Pre-project solutions (see Iowa State University link below)
- Mid-project solutions (see Iowa State University link below)

See the following link for additional information:

<https://www.celt.iastate.edu/instructional-strategies/effective-teaching-practices/group-work/common-group-work-challenges-and-solutions/>

Other Links:

<https://www.cmu.edu/teaching/design/teach/instructionalstrategies/groupprojects/challenges.html>

# Homework

- Think about how to use collaborative learning in your classes.
- Create text for your syllabus that addresses teamwork in your class
- Create an example of how you will use teamwork in your class.
- Select a problem you may face with teamwork in your class and identify a solution to this problem.
- Be prepared to present the above at the next workshop.

# References

1. B. L. Smith and J. T. MacGregor. *What is Collaborative Learning?* In A. Goodsell, M. Maher, and V. Tinto, editors, *Collaborative Learning: A Sourcebook for Higher Education*. National Center on Postsecondary Teaching, Learning, and Assessment, University Park, Pa., 1992
2. Kreijns, K., Kirschner, P. A., & Jochems, W. (2003). Identifying the pitfalls for social interaction in computer-supported collaborative learning environments: a review of the research. *Computers in human behavior*, 19(3), 335-353.
3. Center for Teaching Innovation. *Collaborative Learning*. Cornell University. <https://teaching.cornell.edu/teaching-resources/engaging-students/collaborative-learning> (retrieve 06/06/2019).
4. <https://www.celt.iastate.edu/instructional-strategies/effective-teaching-practices/group-work/common-group-work-challenges-and-solutions/>
5. <https://www.cmu.edu/teaching/design-teach/teach/instructional-strategies/group-projects/challenges.html>

# Wrap up

- Reviewed LESs
- Plan to use collaborative learning (teamwork) in your classes.
- Be prepared to present your ideas at the next workshop