Points to be noted when using this lecture material:

東京大学
THE UNIVERSITY OF TOKYO

UTokyo

ffdp

GLOBAL

Future Faculty Development Program

Video for DAY 2

Methods, strategies, techniques, etc.

Dr. Gabriel Hervas

gabriel@he.u-tokyo.ac.jp

Center for Research and Development of Higher Education

The University of Tokyo

Some potential definitions

- Teaching **approach**: thoughts about/philosophy/beliefs (e.g., learner-centered)
- Teaching **model**: theoretical framework related to the approach (e.g., constructivist)
- Teaching **method**: way to. Broader procedure to achieve a goal (e.g., direct instruction)
- Teaching **strategy**: conscious organization of techniques and activities (e.g., PBL)
- Teaching **technique**: organized procedure of practical nature (e.g., gallery walk)
- Teaching **activity**: specific action/task (e.g., test)

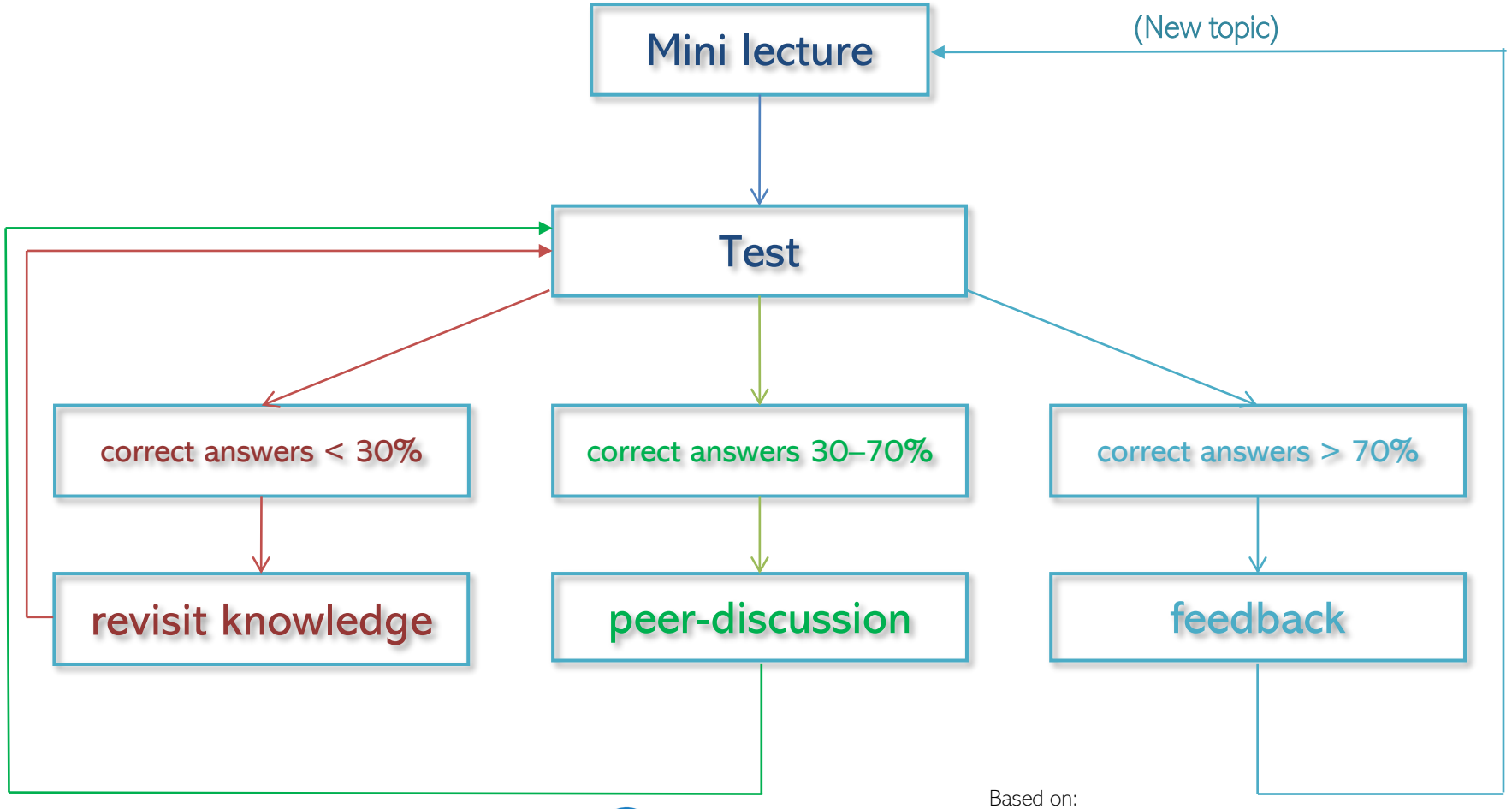
But you will find some of these terms defined (or implicitly understood) differently, mixed, referred as synonyms,, combined with others, …

SOME STRATEGIES

Peer Instruction (Mazur, 1997)

Mazur, E. (1997). Peer instruction: Getting students to think in class. In E.F. Redish & J.S. Rigden (Eds), *The changing role of physics departments in modern universities: Proceedings of the ICUPE* (pp. 981-988). American Institute of Physics.

Cycle of -> brief lecture + test + discussion + feedback



Based on:
Lasry, N., Mazur, E. & Watkins, J. (2008). Peer instruction: From Harvard to the two-year college. *American Association of Physics Teachers, 76*(11).

Peer Instruction

- **Real-time** responses and feedback (peers & teacher)

- Useful for:
  - **large** groups
  - conceptual/**factual**/deliberative knowledge acquisition

- Critical:
  - teachers' knowledge mastery (**readiness for immediate feedback**)
  - design and quality of test/**questions** (DAY 3)

Just-in-time teaching (Novak et al., 1999)

Novak, G. M., Patterson, E. T., Gavrin, A. D., & Christian, W. (1999). *Just-in-time teaching*. Prentice Hall.

1

Guided learning

Before class (asynchronous)

2

Formative assessment

Synchronous or asynchronous

3

Feedback-oriented class

Synchronous

JiTT

Guided learning + formative assessment (often a test) + feedback-oriented class

Just-in-time teaching

- Class **adjusted** to students' previous learning

- Critical:
  - **guiding** & stimulating previous learning (study guide)
  - **Gatheing information and offering feedback**, rather than grading
  - **accessibility** (resources & technology)
  - **time** to prepare feedback-oriented class (close to students' responses)
  - if diagnosing in class, knowledge mastery (**readiness for immediate feedback**)
  - allowing **students do** the talking, argue, offer feedback, etc.
  - quality of **feedback** (DAY 3), **aspects** addressed, real **examples**
  - design and quality of test/**questions** (DAY 3)

T&L strategies…

Comments, ideas, & doubts so far…

Take note of them, stop the video when needed.

Remember to take a break

Team-based learning (Michaelsen et al., 2002)

Michaelsen, L. K., Knight, A. B., & Fink, L. D. (Ed.) (2002). *Team-based learning: a transformative use of small groups*. Praeger.

Guided learning

Before class (asynchronous)

1

Readiness assurance

Individual assessment of learning

Before or in class

2

Group discussion

Synchronous

3

Group assessment of learning

Synchronous

4

Feedback

Synchronous

5

Transfer of knowledge to practice in groups

Synchronous or asynchronous

6

TBL

Guided learning + readiness assurance + transfer of knowledge to practice

Team-based learning

- Cooperative learning + practice (after acquiring some knowledge)

- Critical (in addition to the points mentioned for JiTT):
  - **Flexibility** (synchronous or not)
  - **Meaning** of practice and **connection** with previous learning
  - Teams vs groups (**stable** groups)
  - All the ideas about groupwork.

Case-, Problem-, Project-, & Challenge-Based learning

Differences

- Size & **duration**
  - **Embedment** in the course
  - **Guidance** and feedback
- Solutions vs tangible **outputs**
- External agents

Similarities:

- **Cooperative** learning.
- **Authentic**.
- **Inquiry-based**
- **Open-ended**. **Co-creation**, **selection** options (inclusiveness)

Basic idea

"-based"

1

Present it and the process

Significance
Steps
Intermediate tasks
Guidance
Rules
Election
,,,,

2

Groupwork

Group management
Inquiry
Intermediate tasks
External agents
Guidance and feedback
…

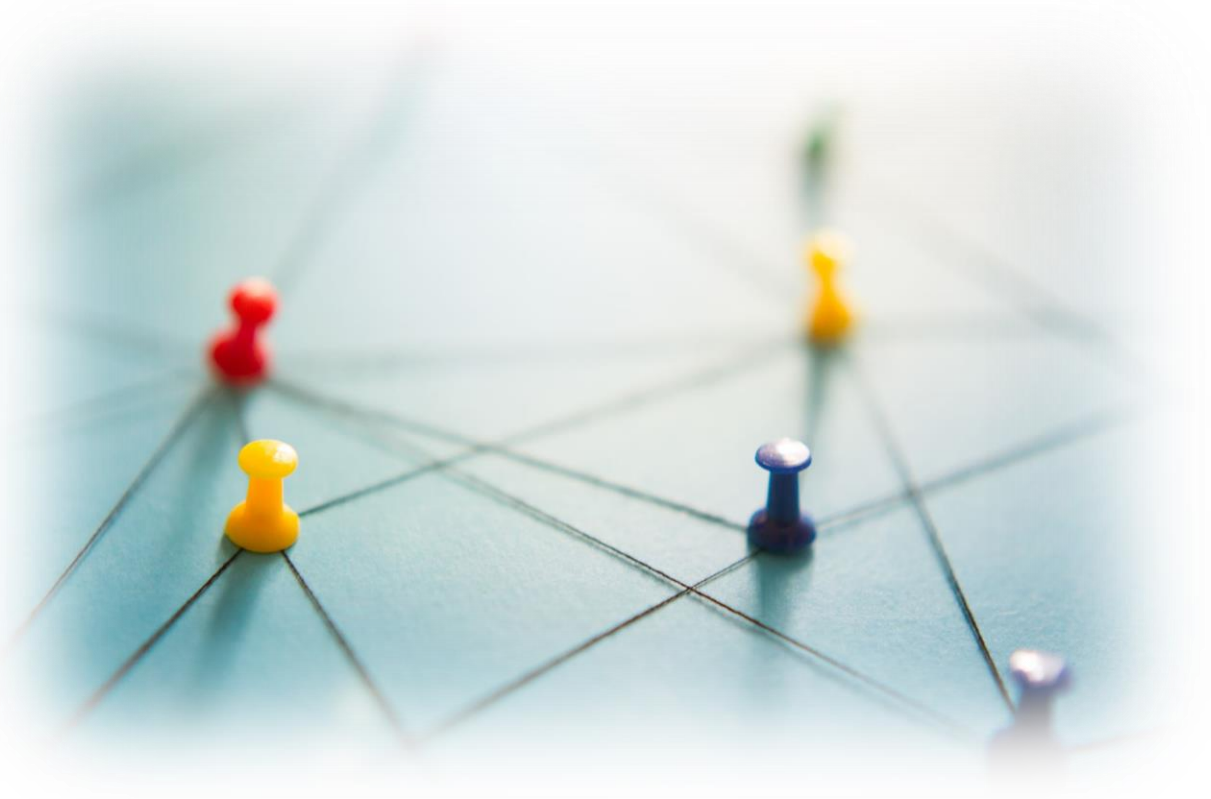
3

Sharing results

Presenting
Discussing
Reflecting on the process
…

Other strategies

- **Simulation**: Students actively face realistic professional situations immersed in realistic scenarios.
- **Service-learning**: Combination of learning in the course + community service to put knowledge into practice
- **Design thinking**: Project solving strategy that involves collaboration to empathize with future "users", ideate, create prototypes, test and offer a tangible output.
- **Orbital studies**: Independent inquiries orbiting around one aspect of the syllabus.



References

- Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education, 126*, 334–345. Baptista, G., & Oliveira, T. (2019). Gamification and serious games: A literature meta-analysis and integrative model. *Computers in Human Behavior, 92*, 306-315.
- Bergmann, J., & Sams, A. (2012). *Flip Your Classroom: Reach Every Student in Every Class Every Day*. International Society for Technology in Education.
- Betti, A., Biderbost, P., & Domonte, A. G. (2022). Developing Students'"Soft Skills" through the Flipped Classroom: Evidence from an International Studies Class. *International Studies Perspectives, 23(*1), 1-24.
- Bredow, C. A., Roehling, P. V., Knorp, A. J., & Sweet, A. M. (2021). To Flip or Not to Flip? A Meta-Analysis of the Efficacy of Flipped Learning in Higher Education. *Review of Educational Research*, *91*(6), 878-918.
- Center for Teaching and Learning. Queens University (2013). *Focus on active learning. Active learning Strategies*. Focus on Active Learning (queensu.ca)
- Cilliers, L., & Pylman, J. (2020). South African students' perceptions of the flipped classroom: A case study of higher education. *Innovations in Education and Teaching International.* https://doi.org/10.1080/14703297.2020.1853588
- Clark, D. B., Tanner-Smith, E. E., Killingsworth, S. S. (2016). Digital games, design, and learning: A systematic review and meta-análisis. *Review of Educational Research, 8(*1), 19-122. .
- Deterding, S., Khaled, R., Nacke, L. E., & Dixon, D. (2011, May). Gamification: Toward a definition. *In CHI 2011 gamification workshop proceedings* (Vol. 12, pp. 12-15). Vancouver BC, Canada.
- Huang, R., Ritzhaupt, A.D., Sommer, M., Zhu, J., Stephen, A., Valle, N., Hampton, J., & Li, J. (2020). The impact of gamification in educational settings on student learning outcomes: a meta-analysis. *Educational Technology Research and Development, 68*, 1875–1901.
- Fatmi, M., Hartling, L., Hillier, T., Campbell, S., & Oswald, A. E. (2013). The effectiveness of team-based learning on learning outcomes in health professions education: BEME Guide No. 30. *Medical Teacher, 35*(12), 608–624.
- Gast, I., Schildkamp, K., & van der Veen, J. T. (2017). Team-Based Professional Development Interventions in Higher Education: A Systematic Review. *Review of Educational Research, 87*(4), 736–767.
- Kafai, Y. B., & Burke, Q. (2015). Constructionist Gaming: Understanding the Benefits of Making Games for Learning, *Educational Psychologist, 50*(4), 313-334.
- Kennedy, F. A., & Nilson, L. B. (n.a.). Successful strategies for teams. https://facultyinnovate.utexas.edu/sites/default/files/TeamworkHandbook-KennedyandNilson.pdf

References

- Lasry, N., Mazur, E. & Watkins, J. (2008). Peer instruction: From Harvard to the two-year college. *American Association of Physics Teachers, 76*(11).
- Mazur, E. (1997). Peer instruction: Getting students to think in class. In E.F. Redish & J.S. Rigden (Eds), *The changing role of physics departments in modern universities: Proceedings of the ICUPE* (pp. 981-988). American Institute of Physics.
- Michaelsen, L. K., Knight, A. B., & Fink, L. D. (Ed.) (2002). *Team-based learning: a transformative use of small groups*. Praeger.
- Michaelsen, L. K., & Sweet, M. (2008). The essential elements of team - based learning. *New directions for teaching and learning, 116*, 7-27.
- Michaelsen, L. K., & Sweet, M. (2011). Team-based learning. *New directions for teaching and learning, 128*, 41-51.
- Novak, G. M., Patterson, E. T., Gavrin, A. D., & Christian, W. (1999). *Just-in-time teaching*. Prentice Hall.
- Novak, G. M. (2011). Just-in-time teaching. *New Directions for Teaching & Learning, 128*, 63-73.
- Oakley, B., Rogowsky, B., & Sejnowski, T. J. (2021). *Uncommon sense teaching.* TarcherPerigee.
- O'Flaherty, J., & Phillips, C. (2015). The use of flipped classrooms in higher education: A scoping review. *Internet and Higher Education, 25,* 85-95.
- Parmelee, D., Michaelsen, L. K., Cook, S., y Hudes, P. D. (2012). Team-based learning: A practical guide: AMEE Guide No. 65. *Medical Teacher, 34*(5), 275-287.
- Paschal, M. J., Pacho, T. O., & Adewoyin, O. (2022). Teaching methods applied in higher education during COVID-19 pandemic in Africa. *International Journal of Educational Policy Research and Review, 9(*1), 27-40.
- Prince, Michael (2004). *Does Active Learning Work? A Review of the Research. Journal of Engineering Education, 93(3), 223–231.*
- Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgennant, I. (2020). A Systematic Review of Immersive Virtual Reality Applications for Higher Education: Design Elements, Lessons Learned, and Research Agenda. *Computers & Education, 147*. https://doi.org/10.1016/j.compedu.2019.103778
- Sailer, M., & Homner, L. (2020) The Gamification of Learning: a Meta-analysis. *Educational Psychology Review, 32*, 77–112.

References

- Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus, 134*(3), 52-59.
- Shulman, L. S. (2015). PCK. Its genesis and exodus. In Berry A. et al. (Eds.), *Re-examining pedagogical content knowledge in Science Education* (pp. 3-13). Routledge.
- Simkins, S. & Maier, M. H. (Ed.) (2010). *Just-in-time teaching. Across the disciplines, across the academy*. Stylus.
- Strelan, P., Osborn, A., & Palmer, E. (2020). *The flipped classroom: A meta-analysis of effects on student performance across disciplines and education levels. Educational Research Review, 30.* https://doi.org/10.1016/j.edurev.2020.100314
- Sweet, M., y Michaelsen, L. K. (2012). Critical thinking and engagement. Creating cognitive apprenticeships with team-based learning. In M. Sweet & L. K. Michaelsen (Eds.), *Team-based learning in the Social Sciences and Humanities* (pp. 5-32). Sterling, Virginia: Stylus.
- Thai, N. T. T., De Wever, B., & Valcke, M. (2017). The impact of a flipped classroom design on learning performance in higher education: Looking for the best "blend" of lectures and guiding questions with feedback. *Computers & Education, 107*, 113–126.
- van Alten, D.C.D., Phielix, C., Janssen, J., & Kester, L. (2019). *Effects of Flipping the Classroom on Learning Outcomes and Satisfaction: a Meta-Analysis. Educational Research Review, 28.* https://doi.org/10.1016/j.edurev.2019.05.003
- Wu, L., Wang, D., & Evans, J. A. (2019). Large teams develop and small teams disrupt science and technology. Nature, 566, 378-382,
- Yıldırım, I., & Şen, S. (2021) The effects of gamification on students' academic achievement: a meta-analysis study, *Interactive Learning Environments, 29*(8), 1301-1318.

Thank you

Dr. Gabriel Hervas
gabriel@he.u-tokyo.ac.jp
Center for Research and Development of Higher Education
The University of Tokyo