PEER LEARNING: WHAT THE RESEARCH SAYS

Peer learning" can refer to any number of situations in which students interact with each other to learn, including one-on-one tutoring, classroom groups, writing workshops, semester-long project teams, and more. Many instructors develop peer learning activities organically, through trial and error. There are also many named methods with more formalized structures and principles. Some of the best known in higher education include Jigsaw, Peer Instruction, Problem Based Learning, and Project Based Learning.

Why peer learning?

- Often correlates with **improved learning outcomes**

- Provides opportunities for **authentic practice**: teamwork and collaborative argumentation are often good models for the modern workplace, as well as for the discourse practices of many academic disciplines

- Groups can tackle **complex, information-dense problems** that would be too much for any one individual (principle of "distributed cognition")

Where it gets tricky

- **Assessment**: it is important to acknowledge a group's shared accomplishment without being unfair to individual students, but there is no settled method for doing this.

- **Social dynamics**: social status can have a big impact on group dynamics and be challenging to manage

- **Collaboration skills**: students often need extra training on how to work with each other effectively (even as they are increasingly likely to have peer learning experiences during their K-12 years)

What you can do: factors that correlate with improved outcomes

- **Interdependence**: group work is not particularly effective unless the task is structured in a way that students really need each other to complete it.

- **The act of explaining**: students learn more when their peer learning activities require them to formulate explanations.

- **Scaffolding**: scripting and other forms of scaffolding are important tools for improving the depth and quality of group members' contributions. Keep in mind that college students may resent scaffolding that is perceived as too controlling or not respecting their abilities.

- **Team rapport**: students need time and assistance to learn how to work with each other, develop their group-level cognition skills, and build trust.

- **Framing**: it is crucial to select the peer learning method most conducive to your overall learning goal and to help students see how the collaborative work will contribute to their own improvement and understanding. Fostering a cooperative mindset, where all students are seen as contributing to understanding, can help promote more productive learning attitudes and offset negative perceptions about ability differences.

SOME CAVEATS

Peer learning is complicated to observe and analyze

- In group situations, many variables become non-independent, making it difficult to apply standard inferential statistics

- Instructors usually adapt named methods to their own needs, making comparative analysis difficult

- Many instructors use online classrooms and other forms of computer support to create collaborative learning environments, which are also attractive to researchers: the rapid evolution of these technologies destabilizes previous findings

- Much of the easily available research focuses on younger learners. In higher education, the research can appear less abundant because it often takes place within individual disciplines (studying their own instruction practices) and/or is more recent (since the late 1990s)

The theoretical and disciplinary foundations are shifting

- The research on peer learning is happening across many different areas and disciplines, which are only just beginning to be in conversation with each other (including sociology, anthropology, communication, medicine, multiple branches of psychology, instructional design, and the learning sciences)

- No one theory of cognition or development prevails; some researchers argue that no one theory is adequate. Theories that understand learning as intersubjective and socially negotiated are gaining traction, e.g. constructivism and group cognition.

Phases of educational innovation

Schallert & Svinicki, Fig. 10.1, (p. 515)

Phase 1
"It worked."
The innovators find that the new process works in their setting.

Phase 2
"It worked here, too."
Early adopters try the innovation and find that it was successful in their setting

Phase 3
"It didn't work here."
Skeptics try the innovation (usually modified to fit their needs) and can't get the same results.

Phase 4
"Under what conditions did it work or not work?"
Meta-analyzers try to catalog the conditions that affected the phases 1-2 vs. phase 3 results

Phase 5
"What makes it work?"
Theorists try to go deeper to identify the underlying processes that explain the results

SOURCES AND RECOMMENDED READINGS

An approachable recipe-book of classroom techniques, each of which includes references to the research it's grounded in: Barkley, Elizabeth F. 2014. *Collaborative Learning Techniques: A Handbook for College Faculty*. 2nd ed. Jossey-Bass.

A recent literature review specific to the college level, which includes a high-level summary of the field plus the specific findings on nine popular collaborative learning methods, organized around four instructional goals (knowledge acquisition, knowledge application, knowledge creation, development of discipline-specific discourse): Schallert, Diane L. and Marilla D. Svinicki. 2016. "Learning Through Group Work in the College Classroom: Evaluating the Evidence from an Instructional Goal Perspective." In *Higher Education: Handbook of Theory and Research. Volume 31*. Springer.

A soon-to-be published handbook on student-centered learning, with several chapters on peer learning topics. Hoidn, Sabine, and Manja Klemenčič, eds. 2020. *Routledge Handbook on Student-Centred Learning and Instruction in Higher Education*. Routledge.
- Ch 6 "Promoting Engagement, Understanding and Critical Awareness: Tapping the Potential of Peer-to-Peer Student-Centered Learning Experiences in the Humanities and Beyond" - *Elizabeth A. Dawes Duraisingh, Harvard University*
- Ch 10 "Transforming a Large University Physics Course to Student-Centered Learning, Without Sacrificing Content: A Case Study" - *Logan S. McCarty and Louis Deslauriers, Harvard University*
- Ch 21 "Promoting Learning Goals in an Advanced Physics Laboratory via Student-Centered Learning: A Case Study Using the MITx Residential Platform" - *Aaron Kessler and Sean Robinson, MIT*

A handbook entirely devoted to collaborative learning (though not specifically to higher education)—an excellent resource for specific theoretical approaches, research methodologies, and instructional issues: Hmelo-Silver, Cindy E. 2013. *The International Handbook of Collaborative Learning*. Routledge.

Two articles assessing the evolution and widespread adoption of Harvard professor Eric Mazur's methods for replacing lecture with Peer Instruction via conceptual multiple-choice questions to ensure students' mastery of physics concepts:
- Crouch, Catherine H. and Eric Mazur. 2001. "Peer Instruction: Ten years of experience and results," *Journal of American Physics* 69, 970–977.
- Fagen, Adam P., Catherine H. Crouch, and Eric Mazur. 2002. "Peer Instruction: Results from a Range of Classrooms." *The Physics Teacher* 40 (4): 206–9.

A handbook from the interdisciplinary field of the learning sciences, with an entire section (Part IV) devoted to "Learning Together." Each chapter begins with a helpful overview of general learning concepts before diving into specific examples around computer-based facilitation of collaborative learning: Sawyer, R. Keith. 2014. *The Cambridge Handbook of the Learning Sciences*. 2nd edition. Cambridge University Press.

How to find more: search tips

"Peer learning" OR "peer instruction" OR "peer-to-peer learning" OR "cooperative learning" OR "collaborative learning" — these terms are used somewhat interchangeably in titles and abstracts.

Facilitat* — some sources will describe the instructor's role in a peer learning classroom as facilitation

Team — workplace research and the professional development literature tend to use the term "team" instead of "peer" or "group"

"Peer teaching" is the relevant subject term in ERIC, one of the primary library databases for education scholarship

"Group work in education" is a Library of Congress Subject Heading that can be useful when searching HOLLIS and other indexes that use Library of Congress subjects

Handbook in the work's title — major developments and syntheses in education research are often published in edited collections presented as handbooks

Postsecondary OR "higher education" OR college* OR universit* — these terms are used somewhat interchangeably

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