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Small-Group Learning in Higher Education—Cooperative, Collaborative, Problem-Based, and Team-Based Learning: An Introduction by the Guest Editors

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In the past few decades, those of us working in institutions of higher education have seen an instructional paradigm shift. Given the growth in research on learning, our views of how people learn best have developed over the last few decades; from behaviorist perspectives of learning, we have also come to understand learning from cognitive and social perspectives. (For a more in-depth discussion of these issues, see Barkley, Major, and Cross, 2014, as well as articles in this special issue). This development has caused higher education instructors to modify their instructional practices as a result. Many instructors have moved away from a sole diet of traditional lecture, with the occasional short-answer question to the class in which students listen, repeat, and occasionally apply, toward a modified menu of pedagogical platforms in which, much of the time, students are active participants in the learning process. Higher education faculty, then, have gone about this task of engaging students actively in learning in a number of important ways by adopting a range of instructional approaches.

Among the most-often-used approaches to get students engaged in the classroom is small-group work. Indeed, from early efforts at group-based,

active learning have sprung more defined pedagogies of cooperative and collaborative learning and, more recently, variations of problem-based learning (PBL) and team-based learning (TBL). Each of these pedagogical platforms has had its champions over time. These instructional approaches have enjoyed attention from researchers, and at least three of the four are now deemed "evidence-based instructional practices" (that is, causal research has shown that cooperative, PBL, and TBL do indeed have a positive influence on student learning, as many of the articles in this special issue of the *Journal* document). One approach, collaborative learning, may be deemed research-based (there is research to support the method, but the research does not yet indicate a direct causal relationship between the instructional method and a statically significant increase in learning outcomes). As a result, these four approaches have gained in popularity, and they are now occupying increasingly prominent positions in the higher education classroom.

Unfortunately, as these approaches have grown in popularity, and as their champions have grown in prominence, and as their evidence has grown in reputation, so too has confusion grown about what each of these methods really is. That is, many educators use the terms cooperative and collaborative learning interchangeably, when in fact these methods differ widely in philosophy and approach. Many educators also believe that PBL and TBL are simply variations of either collaborative or cooperative learning, when in fact they have different underpinning ideologies and pragmatic distinctions as well. The problem with such confusion is that we think we are talking about, doing, and researching the same thing, when in many cases, we are not (Weimer, 2014). Such confusion not only has implications for research and the development of the field of teaching and learning in higher education, but also for the day-to-day practices of higher education instructors. Indeed "clarity" and "appropriate methods" are features of excellence in scholarship, whether it be the scholarship of discovery (empirical research), the scholarship of application, the scholarship of integration, or the scholarship of teaching (Boyer, 1990; Glassick, Huber, & Maeroff, 1997).

Thus, in this special issue focusing on small-group pedagogical approaches, we attempt to outline key characteristics and important similarities and differences among these instructional methods. We accomplish these goals through two synthesis articles, three articles on cooperative learning, three on collaborative learning, three on problem-based learning, and three on team-based learning. This is the first time that all four of these approaches have been brought together for in-depth comparison and contrast in a book-length publication.

Syntheses

In the first synthesis article, "Boundary Crossings: Cooperative Learning, Collaborative Learning, and Problem-Based Learning," **Neil Davidson** and **Claire Major** highlight the similarities and differences among the three approaches. They provide basic definitions of each method, describe essential features and elements of each, and provide comparison tables. They also examine four different subforms of these methods that deal with problem solving and show key commonalities and differences.

In a second synthesis article, "Team-Based Learning Practices and Principles in Comparison With Cooperative Learning and Problem-Based Learning," **Larry Michaelsen**, **Neil Davidson**, and **Claire Major** describe key characteristics of TBL and highlight how the other methods, cooperative learning and PBL, differ from it.

Cooperative Learning

David Johnson, **Roger Johnson**, and **Karl Smith** describe cooperative learning and its theoretical underpinnings in social interdependence theory in "Cooperative Learning: Improving University Instruction by Basing Practice on Validated Theory." They describe how to implement formal cooperative learning, informal cooperative learning, and cooperative base groups. They present a new meta-analysis of the research findings, significantly updating the extant research in the field.

In his article entitled "Kagan Structures, Processing, and Excellence In College Teaching," **Spencer Kagan** gives an overview of research on mind-wandering and lecture retention. He presents six principles derived from neuroscience research for increasing the frequency and amount of information processing. He reviews the literature on cooperative learning and provides concrete examples of structures that may be employed in the college classroom to increase processing of information.

In her article entitled "Using Cooperative Structures to Promote Deep Learning," **Barbara Millis** examines the biological basis of learning. The article shows the relationship between cooperative learning, deep learning, and the research on how people learn. It provides three examples of cooperative approaches that foster deep learning and enjoyment by students.

Collaborative Learning

In "Using Classroom Assessment and Cognitive Scaffolding to Enhance the Power of Small-Group Learning," **James Cooper** and **Pamela**

Robinson approach the topic from their own experiences. They advocate moving beyond prescriptive definitions and conceptions of cooperative and collaborative learning toward small-group work that can span disciplinary and procedural boundaries. They present two techniques that may be used with a variety of small-group procedures: quick-thinks and cognitive scaffolding.

In her article entitled "Examining the Impact of Structured Collaborative Learning Experiences for Graduate Students," **Elizabeth Jones** considers the potential of collaborative learning in graduate-level courses and suggests how this approach can be of benefit to graduate students. She next reviews relevant research on collaborative learning in graduate education and discusses the influence of collaborative learning on a range of outcomes, thus demonstrating and documenting its effectiveness.

In "Integrating Collaborative Learning In and Out of the Classroom," **Anne Goodsell Love**, **Alexa Dietrich**, **Jason Fitzgerald**, and **David Gordon** come to terms with the notion of collaborative learning by considering the work of early advocates of the approach. They next turn to a description of the different uses of collaborative learning at their institution. In particular, they note how faculty pair collaborative learning with other instructional approaches to create unique and dynamic learning environments.

Problem-Based Learning

Boldly suggesting that teachers scrap their traditional teaching and try problem-based learning instead, in "Using Problem-Based Learning: New Constellations for the 21st Century" **Maggi Savin-Baden** identifies different approaches to problem-based learning, which she terms constellations. These constellations, she argues, transcend the notion of a teaching "method" and instead inform pedagogical theory, arguing for a kind of "reasoned pedagogy."

In their article entitled "Why Problem-Based Learning Works: Theoretical Foundations," **Rose Marra**, **David Jonassen**, **Betsy Palmer**, and **Steve Luft** provide a separate line of reasoning that leads to a conclusion similar to Savin-Baden's. That is, PBL is simply good pedagogical practice. They use a range of learning theories and paradigms to support their case. And they provide insights into theoretically driven solutions to practical problems that can arise, despite best-laid plans, in PBL classrooms.

Mark Albanese and **Laura Dast** provide hard evidence that PBL does, in fact, work in their article entitled "Problem-Based Learning: Outcomes

Evidence From the Health Professions." They describe more than 25 years of empirical evidence documenting its effectiveness as pedagogical practice, noting the strengths and weaknesses of such evidence, and identifying what kinds of variations in PBL practice can lead to differences in outcomes.

Team-Based Learning

The focus of most of the "flipped classroom" literature is on how to expose students to material before they come to class. The article by **Michael Wallace, Joshua Walker, Anne Braseby,** and **Michael Sweet**, "'Now, What Happens During Class?' Using Team-Based Learning to Optimize the Role of Expertise Within the Flipped Classroom," describes how and why the basic practices and principles of TBL provide answers to two equally important questions: (1) How can we assess whether or not students are actually prepared? and (2) What kinds of activities are most effective for both rewarding students' pre-class study efforts and extending and deepening their understanding?

TBL practitioners believe the single most important factor that determines whether or not small-group work of any kind will produce positive outcomes is the nature of the tasks that the groups are assigned to complete. Correctly designing tasks is particularly critical in TBL, because the tasks must promote both learning and team development. The article by **Bill Roberson** and **Billie Franchini**, "Effective Task Design for the TBL Classroom," addresses this issue head-on by outlining a set principles that support effective task-design for TBL and, in addition, provide excellent advice for designing effective tasks for any kind of small-group work.

Although the literature has long maintained that using TBL produces a wide variety of positive outcomes, to date, much of the support for these claims has been primarily anecdotal in nature. The article by **Paul Haidet**, **Karla Kubitz**, and **Wayne McCormack**, "Analysis of the Team-Based Learning Literature: TBL Comes of Age," is a much-needed, systematic review of the empirical literature with respect to TBL. Overall, these authors conclude that the early evidence provides substantial empirical support for the previous positive educational outcomes from TBL. These include increases in knowledge acquisition, participation and engagement, team performance, and even some early evidence of transfer of knowledge and skills resulting in improved workplace performance.

References

Barkley, E., Major, C. H., & Cross, K. P. (2014). *Collaborative learning techniques: A handbook for college faculty*. San Francisco, CA: Jossey-Bass.

Boyer, E. L. (1990). *Scholarship reconsidered: Priorities of the professoriate.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Glassick, C. E., Huber, M. T., & Maeroff, G. I. (1997). *Scholarship assessed: Evaluation of the professoriate.* San Francisco, CA: Jossey-Bass.

Weimer, M. (2014). Does it matter what we call it? *The Teaching Professor, 28*(3), 4.

Cooperative learning follows this idea as groups work together to learn or solve a problem, with each individual responsible for understanding all aspects. The small groups are essential to this process because students are able to both be heard and to hear their peers, while in a traditional classroom setting students may spend more time listening to what the instructor says.Â Collaborative learning: Its impact on college studentsâ€™ development and diversity. Journal of College Student Development, 43(1), 20-34. Davidson, N., & Major, C. H. (2014).Â Cooperative learning: Improving university instruction by basing practice on validated theory. Journl on Excellence in College Teaching 25, 85-118. Jones, D. J., & Brickner, D. (1996). Small-group learning in higher education--cooperative, collaborative, problem-based and team-based learning: An introduction by the guest editors. Journal on Excellence in College Teaching, 25(3&4), 1â€“6.Google Scholar. Delaney, M. (2015, February 11).Â The wiki way of learning: Creating learning experiences using collaborative web pages. Chicago: American Library Association.Google Scholar. Oliver, K. M. (2016a). KEYWORDS Collaborative Project-based Learning, Problem-based Learning, Facilitation. Introduction The aim of this chapter is twofold. Firstly to support academic staff from a variety of subject disciplines in higher education in the clarification between two different learner focused strategies, namely collaborative project-based (CPBL) and problem-based learning (PBL). Secondly, to provide practical advice to them to assist in the making of informed decisions as to when which strategy is most appropriate to use to support learning. These decisions will be based on a sound understanding of eac