Active Learning Spaces: New Directions for Teaching and Learning

(Book review)

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Active learning spaces are redesigned spaces in which the development of the students' creative and critical thinking can be improved through appropriately designed teaching and learning activities. Traditionally designed rooms cannot satisfy the teaching needs because the seating arrangement is inflexible and the spaces lack the necessary conditions to carry out pedagogical practices that aim to increase the students' capacity of problem solving, communication, and collaboration. Therefore, colleges and universities are actively restructuring learning spaces on the basis of twenty-first century pedagogies and technologies and exploring the effects of these environments on teaching practices and student learning through scientific researches in recent years.

This book is the 137th volume of *New Directions for Teaching and Learning*. It provides us with detailed experiences of instructors and the latest findings of educational researchers about active learning spaces, aiming to encourage researchers to continue exploring the value of these rooms and define the future research directions in higher education.

This volume covers 10 chapters besides EDITORS' NOTES, each of which is an independent paper and written by different scholars. The editors think these chapters can be divided into the following three categories: historical perspectives on learning spaces, practical reflection, and empirical research. Historical perspectives are mainly about the origins of classrooms and major improvements in history. Practical reflection focuses on the obstacles arising for instructors and the adaption of technology-enhanced classrooms by faculty members. The empirical research introduces a series of systematic researches of active learning spaces to illustrate the educational implications of high-tech classrooms.

EDITORS' NOTES present a literature review of learning spaces research. North Carolina State University first initiated the Student-Centered Activities for Large Enrollment Undergraduate Programs (SCALE-UP) project in the 1900s. Then, MIT began the Technology Enabled Active Learning (TEAL) project partly and carried out teaching practices concerning physics. Both the universities found that the newly designed spaces improved students' levels of conceptual understanding and reduced failure rates than traditional lecture-based rooms though their research design lacked strict controls. Therefore, the University of Minnesota conceived a quasi-experimental design, which afforded us rigorous controls with the results that students indeed performed better in newly designed rooms.

Chapter 1 entitled "History and Evolution of Active Learning Spaces", belongs to the first category—historical perspectives on learning spaces. The reason why learning spaces should change is that the world is different, and so are the students. The professor is no longer the only source of knowledge because information is accessible

everywhere now with the advent of smartphones, tablets, and other digital devices. When teachers gradually realize that their students were not learning as much as they expected from the lecture approach, some new collaborative learning techniques, such as problem-based learning (PBL) and interactive lecture demo (ILD), are incorporated into their classes. Studios that combine lecture classes and lab experiences have recently been used in science, technology, math, and engineering (STEM) classes successfully. More and more institutions have begun new construction activities and the refitting of learning spaces where students can learn actively and collaboratively on carefully designed tasks to facilitate the interactions between students and teachers.

Practical reflection consists of the following two chapters: Chapter 6 entitled "Strategies to Address Common Challenges when Teaching in an Active Learning Classroom" and Chapter 8 entitled "TILE at Iowa: Adoption and Adaption". Chapter 6 provides practical strategies for instructors in active learning classrooms (ALC). The instructors face many challenges because of the physical layout of the room, which lacks a focal point and has overwhelming technologies and multiple distractions such as noisy small group conversations. There are also some challenges imposed by changes in teaching roles. This chapter provides three recommendations separately, including some for before class, some for the first day of class, and others during class sessions for teachers in ALCs with the ultimate goal being to improve student learning. Chapter 8 describes the professional development of faculty members to encourage them to incorporate active learning pedagogies and inquiry-guided learning (IGL) in their classes to facilitate the students' positive engagement. Then, it analyzes the reasons and the impact of culture shifts that have resulted from pedagogical change in three departments at the University of Iowa.

Six chapters in this volume deal with empirical research, which take up most part of the book. Chapter 2 entitled "Using Qualitative Research to Assess Teaching and Learning in Technology-Infused TILE Classrooms," by conducting semi-structured interviews with every instructor who taught in the TILE classrooms at the beginning and end of the semester, indicates that the setting of the TILE classrooms enabled facilitating collaborative learning by adopting some new pedagogies that could not be used in traditional classrooms before, which improved the students' engagement. Chapter 3 entitled "Active Learning Classrooms and Educational Alliances: Changing Relationship to Improve Learning," concludes that the "educational alliance" among students themselves and between students and instructors is fostered in the ALCs by changing the social context of classes, which is also a framework that is conducive to bringing about positive educational results. Chapter 4 entitled "Coffeehouse as Classroom: Examination of a New Style of Active Learning Environment," explores whether the "Collaboration café"—the newest experimental classroom in Indiana University featured like a café—can offer an active and collaborative learning environment. Also, results showed that students appreciated the natural light available in the room. Chapter 5 entitled "Pedagogy Matters, Too: The Impact of Adapting Teaching Approaches to Formal Learning Environments on Student Learning," demonstrates that changes in one's approach to teaching, based on the physical environment of a learning space, can significantly and positively improve student learning in every respect. Chapter 7 entitled "Conducting an Introductory Biology Course in an Active Learning Classroom: A Case Study of an Experienced Faculty Member," with the purpose of examining the experiences and practices of an experienced university faculty member teaching an introductory biology course in an ALC, describes his perspectives into the pedagogical practices and insights in teaching strategies that drive his success in an ALC. Chapter 9 entitled "Active Learning Environments in Nursing Education: The Experience of the University of Wisconsin-Madison School of Nursing," demonstrates the efforts of faculty at the University of Wisconsin-Madison School of Nursing by transitioning traditional learning environments and incorporating new teaching pedagogies in order to offer students better preparation for their future career.

Chapter 10 entitled "Conclusion: Advancing Active Learning Spaces," is a concluding chapter showing us three approaches to advance active learning spaces: (1) read and lead, (2) keep searching, and (3) update administrators. Future essential research should be continued to make active learning spaces enter the mainstream, so that they transform the traditional teacher-centered teaching mode.

One of the major advantages of this volume is that it contains many research-based explorations of active learning spaces, which clearly demonstrate that active learning spaces enhance learning experience and outcomes. However, the examples provided in this book are almost all universities from the United States of America. Some other countries are also exploring the relationship between new classrooms and learning effects. Queen's University in Canada launched three new active classrooms and showed that these new classrooms can improve the students' level of cognitive dispositions, such as actively open-minded thinking (AOT) by empirical research (Chen, 2014). The University of Tokyo in Japan built the Komaba Active Learning Studio (KALS), a new future classroom, to integrate

active learning with Information Communication Technology (Xie & Chiang, 2013). Also, the lack of rigorous controls on some of these researches makes their findings less persuasive. It will be better if some strictly controlled researches from other countries are added in this volume.

Learning spaces should keep pace with the rapid development of advanced technology, especially the accessibility of digital devices, which enable the students to acquire more learning content and resources in a more convenient way (Brown & Long, 2006). The traditional classrooms should be replaced by new active learning spaces designed to be more flexible, comfortable, and full of sensory stimulation in order to meet the needs of the students and implement new learning theory (Chism, 2006). From this volume, the characteristics of active learning spaces can be concluded as the following:

- Advanced technical equipment
- Movable and flexible furniture
- Effective communication and feedback
- Comfortable teaching environment

In active learning classrooms, teachers can use some new pedagogies such as group discussions, which improve students' participation and enhance their cooperating spirit with the development of connections between themselves. The student-centered design for classrooms will gradually replace the traditional teacher-centered instruction, which will be renovated by a human-centered design—a catalyst for enriching learning—in the next step (Chiang & Sun, 2014). It is up to educational researchers to direct their future research on the basis of the existing examples provided in this volume. Teachers who teach or will teach in active learning classrooms are also recommended to make use of this volume in order to carry out better teaching activities by learning from the experiences and lessons of this book.

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