Chapter 1
Introduction

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Active Learning Boom in Japanese Education

The attention to active learning ideas and methods in Japan's higher education began with the onset of the universal phase (Trow 1974) at the beginning of the 2000s. However, this interest in active learning was initially limited to a narrow circle of specialists.

The impetus for its dissemination among faculty members nationwide was a report titled *Towards a Qualitative Transformation of University Education for Building a New Future* released in August 2012 by the Central Council for Education, the advisory body of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), which deliberates Japan's educational policies.

The report defined *active learning* as "the general term for a teaching and learning method that incorporates the learners' active participation in learning, unlike education based on one-sided lectures by the instructor." The active learning method was characterized by topics such as "heuristic learning, problem-based learning, experiential learning, and investigative learning" as well as "group discussion, debate, and group work."

Starting in late 2014, the term *active learning* was adopted into the elementary and secondary education policies, and since then it has become one of the keywords of Japanese education reform, spurring a big boom.

Searching "active learning" in Japan's university library book database CiNii Books produces 244 hits starting in 2010. However, out of this number, 228 were published after 2015 (as of March 2017).

As stated in the Preface, our book does not merely focus on the formats for learning, as is typical for the boom surrounding active learning, but also explores the quality and content of learning through the concept of *deep learning*, and

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proposes a new concept of *deep active learning* by combining the two above-mentioned concepts.

The theory and practice of deep active learning is discussed in detail in Part I and Part II, whereas this Introduction describes the state of higher education in Japan as the background for understanding our book.

The State of Higher Education in Japan

Changing University Entry Rate

Figure 1.1 depicts the change in Japan's university entry rate in 5-year intervals.

For a short period after World War II the university entry rate stayed below 10%, but with the high economic growth in the 1960s it rose quickly to go above 25% by the mid-1970s. Subsequently, with the establishment of specialized training colleges offering an alternative path upon graduation from high school, the university entry rate stagnated for about 15 years. Nevertheless, after the early 1990s it again began to rise until it reached more than 50% in the latter half of the 2000s. This is how Japan's higher education entered the universal phase.

In recent years, many countries have experienced an increase in the level of academic qualification, resulting in rising university entry rates (OECD 2014, p. 340). Hence Japan might be regarded as just another such case. Yet it is important to note that the increase in university entry rate is accompanied by a population decline in 18-year-olds (the denominator). Another significant factor is the long-lasting economic recession that has negatively impacted the employment opportunities of high school graduates, spurring them to seek university education.

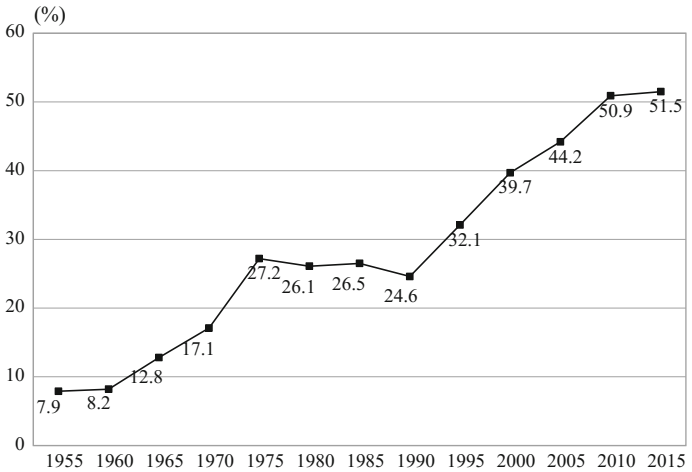


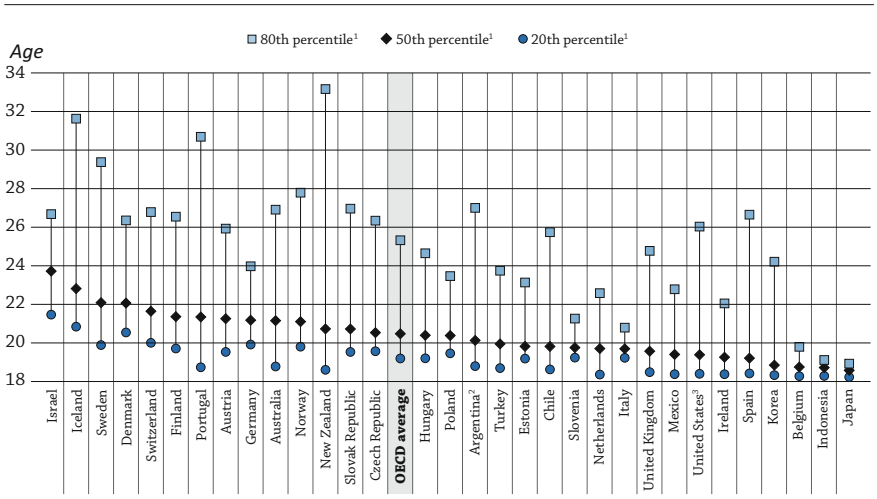
Fig. 1.1 Trends in university entry rates. *Data source* MEXT School Basic Survey

Narrow Age Distribution of New Entrants

Another characteristic of Japanese universities is the low ratio of adult students accompanied by a strikingly narrow age distribution of new entrants. Figure 1.2 shows the age distribution of new entrants using 20th, 50th, and 80th percentiles (OECD 2011). In the case of Japan, almost all entrants are between 18 and 19 years of age, entering either right after high school graduation or 1 year later. Whereas the OECD average for entrants above 25 years is 18%, in Japan they represent a mere 2% (cf. OECD 2014, p. 339). In other words, we can say that Japanese university students are a homogenous group with regard to their age and their lack of life experience. Although Japan's university entry rate has been rising in recent years, it is still below the OECD average (59%, as of 2009). One cause is the small window of university entry.

Originally, Trow (2000)'s universal model meant a *universal access* model (i.e., a system that can grant anyone at any point in their life who wishes to do so the opportunity to receive higher education).

On the other hand, Japan's universalization functions as a *universal attendance* model (i.e., a system where everyone is virtually forced to enroll in some institute of higher education). In other words, universities do not fulfill the role of providing



1. 20%, 50% and 80% of new entrants , respectively, are below this age.
2. Year of reference 2008.
3. The entry rates for tertiary-type A programmes include the entry rates for tertiary-type B programmes.
Countries are ranked in descending order of entry rates for tertiary-type A education in 2009 (50th percentile).
Source: OECD. Argentina, Indonesia: UNESCO Institute for Statistics (World Education Indicators Programme). Table C2.1. See Annex 3 for notes (*www.oecd.org/edu/eag2011*).

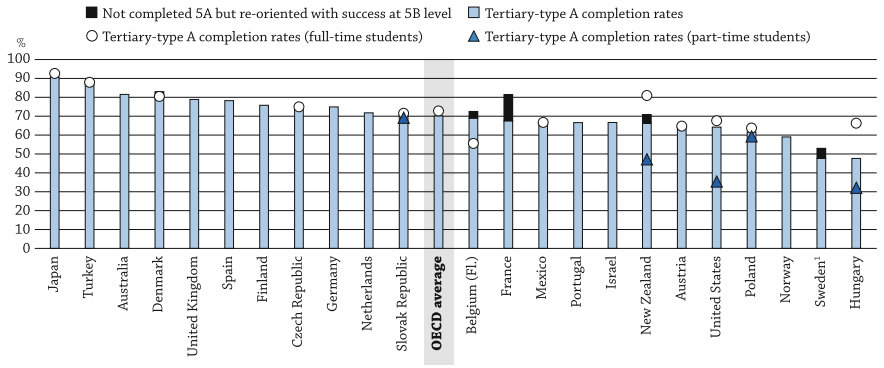
Fig. 1.2 Age distribution of new entrants into tertiary-type A programs (2009). *Source* OECD (2011, p. 311, Chart C2.2). *Note* Since the symbols for the 80th and 20th percentiles were converse in the original figure, the author repositioned them based on the data source

opportunities for lifelong learning, but rather they represent nothing more than an extension of institutionalized school education. Therein lies the distinguishing feature of Japanese universalization.

High Completion Rate

Japan's university education is distinctive not only at the point of entry, as described above, but also at the point of exit. Figure 1.3 shows the proportion of students who enter tertiary education and receive a degree, that is, the completion rate (OECD 2013). Whereas the OECD average is 68.4%, Japan scores 89.6%, the highest among economically advanced countries.

However, such a high completion rate does not necessarily imply a high-quality level of Japanese university education. Conversely, low completion rates can reflect a multitude of factors, such as that the standards set by university have not been met; that part-time students found it difficult to continue their studies; that students transferred to another university; that they found a lucrative job opportunity before graduation; that part of the working students were interested only in some specific subjects, not a degree. Japan's high completion rate can also have its downsides. Namely, universities set their standards vaguely or not high enough; it is relatively easy to earn college credits; the majority of students are full-time students; it is difficult to change schools; it is difficult for drop-outs to find job opportunities; the ratio of working students is extremely low. These are characteristic features of Japanese universities.



Note: Some of the students who have not graduated may be still enrolled, or may have finished their education at a different institution than the one they originally attended, as occurs frequently in the United States. Please refer to Table A4.1 for details concerning methods used to calculate the completion rates.

1. Includes students entering single courses who may never intend to study all courses needed for a degree.

Countries are ranked in descending order of the proportion of students who graduate from tertiary-type A education with at least a first degree.

Source: OECD. Tables A4.1 and A4.2. See Annex 3 for notes (*www.oecd.org/edu/eag.htm*).

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Fig. 1.3 Proportion of students who enter tertiary-type A education and graduate with at least a first degree at this level, by status of enrollment (2011). *Source* OECD (2013, p. 66, Chart A4.2)

Expectations from University Graduates

Why hasn't there been more concern over the fact that Japanese universities lack clear standards and are so easy to graduate from? The reason is that employers have been interested only in the name of the university and the department that their employees have come from, and have had a disregard for what they actually had learned and what skills they possessed. Such a tendency was especially pronounced toward humanities and social sciences students.

Hamaguchi (2013), Japan's leading expert on labor policy, described Western countries as "job-oriented societies," whereas Japan was a "membership-oriented society." In a job-oriented society people are sought based on the job they are to perform; in a membership-oriented society people are sought based on their potential for contributing to a specific community (e.g., company or government office), flexibly allocating various tasks once employed. In fact, the Japanese terms for "finding employment" and "entering a company" are used nearly interchangeably.

In this membership-oriented society, new graduates going through the regular recruitment process did not need to show off their job-specific skills, but what was valued was their potential ability for carrying out future tasks. Also, since on-the-job training (OJT) and job rotation formed a basic part of company training, university education or job training before entering the company was not usually given much thought.

Nevertheless, Hamaguchi (2013) points out that such a membership-oriented society is quite unique in the global context, and even in Japan this arrangement worked smoothly for only about 40 years starting in the 1960s. The question of how to transition from a membership-oriented society, which is becoming less and less effective, to a job-oriented society is increasingly attracting attention in Japan.

The Context of Active Learning Dissemination

What Kind of Abilities Should Be Fostered at Universities?

The context for dissemination of active learning in Japan was, as mentioned above, the onset of the universal phase, which was accompanied by a lower level and a wider variation of academic abilities and learning motivation on the part of new entrants. Consequently, it was becoming more difficult to teach academic subjects in the traditional lecture format of 90-min-long classes. At the same time, the direct cause of the rapid dissemination of active learning, on a par with what could be considered a boom, was the aforementioned strong promotion by government education policy.

So how did active learning end up being promoted as a policy? The reason is that active learning became seen as an effective method for achieving competences or learning outcomes. Within Japanese education policy, outcome-based education

was first clearly put forward in 2008 by the Central Council for Education's report titled *Towards Building an Undergraduate Education*. This report proposed the concept of "graduate capabilities" (*gakushiryoku*) as "learning outcomes that our country's undergraduate education strives to achieve across all universities." The substance of graduate capabilities is highly similar to the essential learning outcomes (AAC&U 2007) by the Association of American Colleges & Universities (AAC&U), which are most likely the source of inspiration. See Table 1.1.

Moreover, in this 2008 report, in order to ensure the acquisition of learning outcomes, all universities were expected to develop a systematic undergraduate program by formulating their policies regarding admissions, curricula, and diplomas. Starting from fiscal 2017, the law stipulates that all universities formulate and announce these three policies. In this way, the introduction of outcome-based education was a kind of reply to the challenge of transition from a membership-oriented society to a job-oriented society by giving more emphasis to what students learn at universities and what they can do.

At the same time, MEXT required that the subject-specific committees within the Science Council of Japan, which is the representative organization of Japanese

Table 1.1 AAC&U's essential learning outcomes and the MEXT's *gakushiryoku*

Essential learning outcomes	**Graduate capabilities *(gakushiryoku)***
Knowledge of human cultures and the physical and natural world	*Knowledge and understanding*
• Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts	• Knowledge and understanding of diverse cultures • Knowledge and understanding of human cultures and societies, and of nature
Intellectual and practical skills	*Generic skills*
• Inquiry and analysis • Critical and creative thinking • Written and oral communication • Quantitative literacy • Information literacy • Teamwork and problem solving	• Communication skills • Quantitative skills • Information literacy • Logical thinking • Problem solving
Personal and social responsibility	*Attitudes and dispositions*
• Civic knowledge and engagement—local and global • Intercultural knowledge and competence • Ethical reasoning and action • Foundations and skills for lifelong learning	• Self-control • Teamwork • Leadership • Sense of ethics • Social responsibilities as a citizen • Lifelong learning
Integrative learning	*Integrative learning experience and creative thinking*
• Synthesis and advanced accomplishment across general and specialized studies	• Capabilities to utilize acquired knowledge, skills, and attitudes in an integrative manner, to apply them to newly formulated issues and to solve them

Sources AAC&U (2007, p. 12) and CCE (2008, pp. 12–13)

scientist community, create their benchmark statements for building each subject's degree program. As of March 2017, 25 subjects had announced their benchmark statements.

In What Way Should Students Learn?

Building on the 2008 report, the 2012 report by the Central Council for Education titled *Towards a Qualitative Transformation of University Education for Building a New Future* proposed active learning as one of the key concepts for a qualitative reform, as discussed above. Active learning became endorsed policy-wise as a method for acquiring the various skills and attitudes depicted in Table 1.1. Active learning formats—"heuristic learning, problem-based learning, experiential learning, and investigative learning" as well as "group discussion, debate, and group work"—offer an easy-to-grasp layout for fostering *generic skills*, such as communication skills and problem-solving, and *attitudes and dispositions*, such as teamwork and leadership.

However, when generic skills, attitudes and dispositions are detached from knowledge and understanding, and only the formats for learning are emphasized, then there is an increasing risk that the learning quality and its content get overlooked.

Our Book's Conception and Its Influence in Japan

We drew up a plan for the Japanese edition of our book in March 2013. Even though the 2012 report already had been released, the term *active learning* was still known only to university education experts, and its boom involving elementary to higher education was yet to come.

Deep active learning is a phrase I coined. As active learning began being adopted as a key term of governmental policies and its practice started to spread, I felt a sense of caution that, if things progressed in the way they were going, active learning might end up as just another variation of class formats that include activities such as group work, discussions, and presentations. Before coming to the current institute, primary and secondary education was my field of study. The active learning class format was already widely used in elementary schools, where "many activities and little learning" was becoming a problem.

It was therefore easy to imagine a similar outcome in a university environment. Although active learning is valuable in terms of providing a chance to reexamine the existing lecture-dominant class format, if it stayed as just that, temporary liveliness might be the only benefit it provided for classes. Besides, the term for high-quality learning should not be limited to active learning in the first place. The depth of the content and quality of learning should be equally important.

In light of this idea, I focused on the concept of *deep learning* in order to relativize active learning. Deep learning may be mostly recognized as the idea behind the artificial intelligence such as the AlphaGo program, which defeated top human Go players in recent matches. However, the concept of deep learning has been present in the field of learning theory since the 1970s. The main issue was how to cross active learning, which focuses on the formats for learning, with deep learning, which focuses mainly on the quality and content of learning. Our book provides both theoretical and practical proposals in a total of 11 chapters.

After being first published in January 2015, our book went through nine reprints (as of May 2017), with 516 copies being archived in university libraries across Japan (according to CiNii Books).

The revision of the National Course of Study (aiming to regulate the goals and content of elementary and secondary education) by MEXT has lasted for the past 2 years. In that process, this book has been used as one of reference materials, and consequently, active learning is explained as "independent, dialogical, and deep learning."

Introduction to the Chapters

This book is broadly divided into two parts. Part I, "The Theoretical Foundation of Deep Active Learning," is a collection of chapters that theoretically discuss establishment of the foundation for deep active learning. In Chap. 2, "An Invitation to Deep Active Learning," I pose the following questions: Why should learning be deep as well as active?; What does "deep" mean here?; If we add "deep," how is that different from mere active learning? I first point out that active learning tends to generate problems, such as discrepancies between knowledge (content) and activities. To grasp and tackle them, I introduce the theories of the *activity system* and the *learning cycle* (Engeström 1994), which help delineate the structure and the processes of learning activities. Based on these theoretical frameworks, higher-order thinking and externalization of cognitive processes are considered basic characteristics of active learning, while the essential prerequisites for that are acquisition and understanding of knowledge (internalization). Furthermore, I classify and examine the lineages of learning theories focusing on depth into *deep learning*, *deep understanding*, and *deep engagement*. The following two chapters are related to deep engagement and deep learning respectively.

In Chap. 3, "Terms of Engagement: Understanding and Promoting Student Engagement in Today's College Classroom," Elizabeth F. Barkley carries out mainly theoretical investigations into student engagement in classes, based on knowledge from fields such as neuroscience and cognitive psychology. She states three conditions for promoting deep engagement on the part of the students: (1) design tasks that are appropriately challenging, (2) help each student feel like a valued member of a learning community, and (3) teach for holistic learning by integrating multiple domains (cognitive, affective, and kinetic/psychomotor).

Here, I would like to add that these ideas have been validated through her extensive practice of interacting with students of diverse ethnicities and backgrounds at Foothill College, a 2-year college in Silicon Valley known for its high educational standards.

Ference Marton, the contributor of Chap. 4, titled "Towards a Pedagogical Theory of Learning," is a psychologist who ventured into current deep learning theory as early as the 1970s. While deep versus surface approaches to learning described and analyzed variations among learners, the variation theory set forth in Chap. 4 asserts the importance of having the students experience variation and invariance in the object of learning. The discussion might appear to be reverting to the starting point of concept formation, but it can be read as a warning that an over-emphasis on the indirect object of learning (capability) in contemporary university education is weakening interest in the direct object of learning; namely, the content.

Chapter 5, "Deep Active Learning from the Perspective of Active Learning Theory," by Shinichi Mizokami, summarizes current trends in the theoretical and practical aspects of active learning, and lists six perspectives to enhance the quality of the instruction based on active learning: (1) assessing learning hours outside the class, (2) backward design, (3) curriculum development, (4) multiple classes per week, (5) building an environment for active learning, and (6) the flipped classroom. From these perspectives, he argues that learning should necessarily become both deep and active, rather than just deep. He moves from active learning, which goes beyond conventional teaching paradigms (Positioning A), to describe a shift to active learning that proactively seeks to encourage students' learning and development (Positioning B), thus providing a framework for understanding the current state of active learning.

Part II, "Attempts in Various Fields," is a collection of practical experiences in various academic fields that have the characteristics of deep active learning. Those fields include natural science (hydrology, information science), language skills, philosophy, teacher training, dentistry, and business (leadership theory), whereas the foci of the practical applications also vary. One of the trends in active learning that has spread most rapidly in the last several years in Japan is the flipped classroom. Chapter 6, "The Flipped Classroom: An Instructional Framework for Promotion of Active Learning," by Tomoko Mori, divides current practice in the flipped classroom into two categories, the investigative model and the knowledge acquisition model, and illustrates how these models are put into practice in hydrology and information science classes. Building on those classifications, Mori points out that the flipped classroom is becoming a proposition for a universal learning model that refocuses on the importance of knowledge in active learning and reconstructs a tentative understanding of the individual student into a real understanding through interaction with other people. The assertions about active learning coordinated with understanding of knowledge overlap perfectly with deep active learning as described in this book.

As I mentioned above, Barkley, in Chap. 3, states three conditions for promoting deep engagement: task design, learning community, and holistic learning. Of these

conditions, Satoru Yasunaga, in Chap. 7, "Class Design Based on High Student Engagement Through Cooperation: Toward Classes that Bring About Profound Development," focuses on the second condition. He presents cooperative learning methods that go beyond group learning techniques and lead to the building of a learning community while also describing an example of a logical language skills course. (The author is the chief translator of Barkley's *Collaborative Learning Techniques: A Handbook for College Faculty*.)

Chapter 8, "Deep Learning Using Concept Maps: Experiment in an Introductory Philosophy Course," by Mana Taguchi and me, describes an experimental application of so-called active learning to an introductory philosophy course, which has been thought to be difficult to make compatible with this technique. Furthermore, the concept maps used during the final class session showed that these could be not only a learning tool but also an assessment tool for deep active learning. Rubrics were used to assess student learning demonstrated in the concept maps drawn by the students, and the chapter also explains the procedures for creating rubrics based on the students' work.

Chapter 9, "Course Design Fostering Significant Learning: Inducing Students to Engage in Coursework as Meaningful Practice for Becoming a Capable Teacher," by Kazuhiko Sekita and Masakazu Mitsumura, is divided into two parts: a report on practical implementation by Sekita and a verification section by Mitsumura. The end result is a combination of a report about practical application and qualitative research about practical application. In this chapter, the authors propose the concept of significant learning as one form of deep active learning. This is the kind of learning in which (1) what students are learning at the moment is related (meaningful) to themselves, (2) they want to apply and try what they have learned, and (3) what they have learned is contributing to their own growth (they are becoming capable by learning). The authors present several means of stimulating significant learning.

While Chaps. 8 and 9 deal with only one course each, Chap. 10, "PBL Tutorial Linking Classroom to Practice: Focusing on Assessment as Learning," by Kazuhiro Ono and me, looks at the entire undergraduate curriculum for a faculty of dentistry and reports on implementation of problem-based learning (PBL) courses as the core of the curriculum. Issues with PBL have been (1) how to give proper weight to both knowledge acquisition and problem solving, and (2) how to conduct assessments. We adopted the approach of having the students acquire the knowledge necessary for problem solving through individual learning outside of class or through lectures that ran in parallel to the PBL course, while that knowledge was deepened through group problem-solving exercises in class. For assessment, they developed and implemented the Modified Triple Jump method and analyzed its effectiveness. This can be viewed as a good example of constructive alignment (Biggs and Tang 2011) linking goals, curriculum, instruction, and assessment.

The final chapter is Chap. 11, "New Leadership Education and Deep Active Learning," by Mikinari Higano. It describes a theory of leadership training supported by the results of the Business Leadership Program (BLP) in the College of Business at Rikkyo University, which is highly evaluated by Kawaijuku Educational Institution's (2014) survey. The author defines leadership as "an act of

sharing a vision or a goal by getting others involved" regardless of power or rank. According to this understanding, active learning can be redefined as "learning through students' leadership." Furthermore, his indicator for deep learning is that students can organize learning outside the classroom or university, and after graduation, without any "training wheels" (support) from their instructors. The curriculum of the College of Business of Rikkyo University is like the two wheels of a bicycle, with studies of leadership through the BLP and specialized knowledge acquired through electives working together as the "training wheels" are gradually removed, a structure in which the students can claim leadership for themselves. Even though dentistry and business are fields far removed from each other, PBL and BLP—schemes that allow both acquisition of knowledge and problem solving—can be seen as similar. They are curriculum practices for deep active learning.

If I were to define deep active learning on the basis of the content of the chapters described above, my definition would be that it is "learning that engages students with the world as an object of learning while interacting with others, and helps the students connect what they are learning with their previous knowledge and experiences as well as their future lives." The chapters in this book take a variety of approaches to active learning. Yet, with active learning rapidly spreading throughout academia, one approach that is common to all of these chapters is to add the characteristic of depth to active learning, whether overtly or tacitly.

I hope that you, the reader, will be able to acquire some understanding of deep active learning through the many and varied theoretical and practical endeavors described in this book.

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