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A survey of the awareness, offering, and adoption of OERs and MOOCs in Japan

Katsusuke Shigeta & Mitsuyo Koizumi
Hokkaido University (Japan)
shige@iic.hokudai.ac.jp & tukitonekotobuta@gmail.com

Hiroyuki Sakai
Kyoto University (Japan)
sakai.hiroyuki.2v@kyoto-u.ac.jp

Yasuhiro Tsuji
The Open University of Japan
tsuji@ouj.ac.jp

Rieko Inaba
Tsuda College (Japan)
inaba@tsuda.ac.jp

Naoshi Hiraoka
Kumamoto University (Japan)
naoshi@kumamoto-u.ac.jp

Abstract

Awareness about Open Educational Resources (OERs) and the purposes for offering and adopting OERs and Massive Open Online Courses (MOOCs) were analyzed using a detailed survey of higher education across Japan, which was conducted in 2015. A comparison with a similar study conducted in 2013 revealed that awareness of OERs has increased slightly and the number of MOOCs offered has increased significantly in the intervening two years. The increase of offerings and adoption was low for OERs but high for MOOCs. OERs are used to improve the learning environment for students, while MOOCs aim to promote lifelong learning. Only one-fifth of the institutions surveyed in 2013 offered MOOCs or advanced their plans to offer them in 2015, and institutions that did offer MOOCs or advance such plans to offer them after the previous survey tended to provide MOOCs for society and for promotional purposes, not only for themselves because Japanese institutions are self-sustainable in terms of open education activities, operating without the support of the government or foundations.

Keywords: Open Educational Resources; MOOCs; Awareness of OER; National Surveys; Online courses; Japan; Higher Education

Introduction

The spread of OERs and MOOCs around the world

Open Educational Resources (OERs) and Massive Open Online Courses (MOOCs) are being developed and utilized in higher education institutions around the globe. OER activity is conducted through initiatives by institutions and engaged individuals throughout Africa, Asia and Pacific, and Europe. OER activity in tertiary institutions (22.4%) is higher than that in primary or secondary institutions (UNESCO, 2012). A survey of higher education in the United States found that one-third of the faculty surveyed

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were aware of OERs, wished to take advantage of them, and recognized them as equal in quality to traditional educational resources (Allen & Seaman, 2014). A survey of faculty of higher education in India revealed that 41.7% of them have heard of OERs and 25% have created and used OERs (Kumar & Singh, 2017). In general, OERs have come to be seen as an invaluable educational resource for institutions and faculty in every region. There were more than 6850 MOOCs available in the world at the end of 2016 (Class Central, 2016), and 81 of the top 100 universities ranked in Times Higher Education in 2015 offered MOOCs (Open Education Laboratory, 2015).

The Allen and Seaman study (2014) found that approximately half the institutions of higher education in the USA were involved in OER activities, and that the most significant barrier to wider adoption of OERs is faculty perception of the time and effort required to find and evaluate it. In Canada, a survey of OERs in college education conducted jointly by BC campus and OER Hub in the province of British Columbia found that two-thirds of the organizations surveyed believe that students can learn without spending money by using OERs. In addition, when comparing research consolidation schools, education intensive schools, and colleges, it was found that research-intensive schools did not perceive barriers to using OERs. Comments from faculty also show that no institution has sufficient administrative staff and departments to support the use of OERs. In fact, two-thirds of the institutions did not have a policy on the use and encouragement of OERs, especially not for education-intensive schools and colleges. This survey also investigates the reasons that faculty use OERs. Further, it has been shown that, for all institution types, the main reasons for faculty use of OERs are to prepare for classes, to gain ideas and inspiration, and to find material to complement existing classes (Jhangiani, Pitt, Hendricks, Key, & Lalonde, 2016). The Allen and Seaman study (2016) found that the most cited barriers to OER adoption for faculty are lack of resources and difficulty to find. In Asia, the regional survey showed that the use and re-use of OERs are slow because of the various disconnected and disparate repositories (Abeywardena, Gajaraj & Chan, 2012).

Efforts to offer credit and college collaboration through MOOCs are increasing internationally. The UK's University of Leeds has started a credit-conferring program using FutureLearn (THE News, 2016a). Six universities across Australia, Europe, Canada, and the US are seeking to establish a new alliance in which each organization's MOOCs are formally accredited by partner institutions (THE News, 2016b). In Asia, some countries have made national efforts to disseminate MOOCs in the region. Thailand and Korea have established national platforms (ThaiMOOC and KMOOC). Chinese universities have established a MOOC platform to collaborate with IT companies (XuetangX and CNMOOC). The Taiwan government offers funding support for universities to develop MOOCs and offer them on the national platform (Taiwan MOOC). Similar to the US and Europe, international collaboration emerges in Asia, too. The Japanese, Korean and Thai MOOC platforms include a memorandum for mutual cooperation (JMOOC, 2017a). A survey of geographic data shows that the mean rate of certificate attainment in Asia countries is relatively higher than the other regions (Nesterko et al., 2013). In many regions, the development and offering of MOOCs mediate educational cooperation in the regions. In addition, the use of MOOCs has expanded in connection with lifelong education programs, such as employment placement based on a certificate as proof of ability.

The development and utilization of OERs and MOOCs in Japan

In Japan, the main means for institutions to participate in OERs are through OpenCourseWare (OCW) initiatives. Sixteen universities and colleges in Japan opened their own OCW sites and published learning materials on them in 2017 (JOCW, 2017). Several universities promote the creation and use of OERs to improve education on campus (Center for OpenEd HU 2017), but, overall, OER

creation and use is still not popular in Japan. On the other hand, there is active use and development of MOOCs in the country. Six universities participate in edX or Coursera and have opened their courses. Several universities, colleges, and companies established a council called JMOOC to promote MOOCs regionally. Forty universities and colleges participate in JMOOC and open MOOC in Japanese (JMOOC, 2017b). Some universities use MOOCs for pre-university improvement education (Docomo Gacco & Osaka Sangyo University, 2016). Lifelong learning is widely considered to be an important opportunity for broadening the horizons of every generation, and MOOCs are seen as stimuli for the promotion of lifelong learning through online education.

Characteristics of the university system and lifelong learning, and its influence on open education

Compared to other regions, Japan's open education activity is not overwhelming. One of the reasons for this is a lack of support from governments and foundations. The Japanese government has no OER policy and the funding for open education activities is limited. Foundational support for higher education institutions is limited, except for that of university-owned foundations, which focus on support for their host universities. Most open education activities in Japan are self-funded. This makes it difficult for higher education institutions to robustly and sustainably accelerate the open education movement.

The university system in Japan consists of four-year institutions, two-year institutions, and technical colleges. Two- and four-year institutions established by the national government are well funded compared to private institutions and public institutions established by local governments. Most technical colleges are funded by the national or local governments. For the past decade, however, national and local government funding has decreased due to the government's financial difficulties. In addition, the government's fiscal policy, which promotes competition among institutions, based on their achievement of prescribed goals, de-incentivizes institutions from using their budget to invest in open education activities, because open education is not among the goals for almost all the institutions. Another reason is that, compared to those in other regions, Japanese institutions have not had to be as sensitive to students' financial difficulties, particularly with regard to learning materials. Textbook costs, for example, are relatively moderate compared to those in the US. This contributes to the low levels of awareness and introduction of OERs in Japan.

In terms of lifelong learning, a survey shows that strong demand exists in Japan. Nevertheless, compared to other countries, Japan has considerably fewer admissions to university than 25 years ago. In addition, the difficulty of securing the time, the lack of curriculums that cater to mature students, and tuition fees exist as barriers to lifelong learning (MEXT, 2016). In Japan, opportunities for lifelong learning through online education such as MOOCs are effective; indeed, Japanese universities sense the possibility of MOOCs as a means of expanding opportunities for lifelong learning.

Current open education research in Japan

The research group the Japan Society for Educational Technology (JSET) promotes domestic and international research on open education and publishes an annual report on OERs and MOOCs. This report aims to not only to publicize the significance and appeal of open education to researchers and educational practitioners in Japan, but also to act as a forum for the research community to share practical experience and findings from practices of open education in Japan (JSET, 2016). However, JSET has not conducted an extensive survey of the use of OERs and MOOCs. In the past, such a survey was planned by the Ministry of Education and was conducted in 2013 by Kyoto University

(Kyoto University, 2014). It found that the degree of recognition and assignment of future value was relatively high in national universities and technical colleges, but relatively low in public universities and two-year institutions. In 2013, only one university offered MOOCs, and only 15 organizations were planning or considering offering them within the next three years. Approximately 80% of four-year institutions and technical colleges and 90% of two-year institutions answered "not offering" or "unknown" regarding MOOC use. The main reasons that institutions provided MOOCs were to increase the number of educational choices, to expand options for providing diverse education, to improve the learning environment for students, to contribute to society, and to distribute educational information and public information for high school students.

Hypothesis

Overall, it can be said that the spread of OERs and MOOCs in Japanese higher education institutions has been delayed compared with other countries. However, given the above-mentioned reasons and characteristics of these institutions, it is believed that the growth of open education globally will stimulate regional activities, and there may be further development and usage of OERs and MOOCs. Each institution's objectives in offering and adopting OERs and MOOCs will affect how they go about doing so. Considering the characteristics of the university system in Japan, higher education institutions may establish strategies to promote MOOCs for lifelong learning rather than OERs for educational improvement.

Until now, no research has focused on these issues. It is important to grasp the conditions of the recognition and utilization of OERs and MOOCs in Japan in order to form suitable responses.

Herein we report the levels of awareness, offerings, and adoption of OERs and MOOCs in Japan. For this, in 2015, we conducted a survey that was a continuation of the one conducted in 2013, in order to investigate to what degree the situation has changed and what has caused these changes.

Methodology

The latest survey was conducted by AXIES (Academic eXchange for Information Environment and Strategy) from November 2015 to February 2016. Responses are collected via the Internet, through a password-protected form, asking about awareness, offerings, and adoption of OERs and MOOCs and the reasons for doing so in the institutions where they were established. Survey invitations were sent to the administrative offices of the respective institutions of higher education by mail, and the administrators answered the questions with input from faculty and staff familiar with OER and MOOC development and use in each institution. In the questionnaire, we defined OER as "educational resources including lecture materials (OCW, lecture videos, electronic textbooks, learning contents, etc.), educational software, etc. that are available free of charge through the Internet and others" and an MOOC as "a free or affordable lecture that anyone can take through the Internet. For courses with large enrollments (thousands to tens of thousands of people), students will learn using lecture videos and online tests. Typically, it runs over a period of several weeks to several months; grades are presented after the course period; and certificates of completion may be issued to successful participants. There are platforms and service providers such as edX, Coursera, JMOOC, etc." Regarding the definitions of "awareness," "offerings," and "adoption," we use those proposed by Allen and Seaman (2016). "Awareness" means how aware the respondent is of the existence of OERs or MOOCs. "Offerings" refers to whether the institution develops OERs or opens MOOCs. "Adoption" refers to whether the institution uses OERs or MOOCs.

The survey covered 1215 universities and colleges in Japan (including 798 four-year institutions, 360 two-year institutions, and 57 technical colleges). The overall response rate was 65.2% (including 516 four-year institutions, 222 two-year institutions, and 54 technical colleges). The survey also requested via the administration of each institution that departments investigate the actual circumstances of usage and adoption. Analysis was conducted to understand the tendencies of use of each type of institution (four-year institutions, two-year institutions, and technical colleges) and founding bodies or sources of funding (public institutions supported by the national government, public institutions supported by local governments, and private institutions).

Results

Awareness of OERs

The responses concerning the degree of awareness of OER are shown in Figure 1. By type of institution: The affirmative responses to "very aware" and "aware" were 57.2% for four-year institutions, 46.9% for two-year institutions, and 59.3% for technical colleges. This was a five- to 10-percent increase from the previous survey, depending on the type of institution. The highest level of the negative responses ("not aware") was from two-year institutions (12.6%); however, this number still represented a decrease from the previous survey. Regarding source of funding, the affirmative responses to "well aware" and "aware" were 68.1% for public institutions supported by the national government, 51.8% for public institutions supported by local governments, and 56% for private institutions. All affirmative responses exceeded 50 percent. Affirmative responses by department were 53.1% for national public institutions, 44.2% for local public institutions, and 52.1% for private institutions. These numbers showed a slight increase from the previous survey. The difference between the affirmative responses by university administrations and by departments decreased slightly from the previous survey.

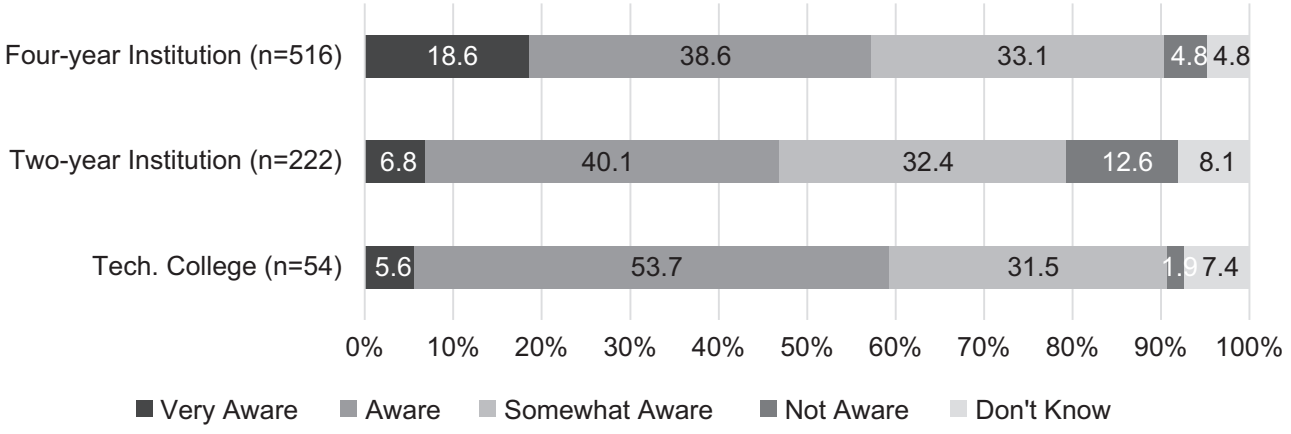

Figure 1: Awareness of OER in higher education institution

Offering and adopting OERs

Responses by institutions concerning offering and adopting OERs and MOOCs are shown in Figure 2. The rates of OER offerings and adoption were low for all organizations. Four-year institutions registered highest for offering OER (13.6%), while technical colleges were highest in planning to offer

OERs (14.8%). By source of funding, those established by the national government offered the most OERs (27.5%, 19 institutions). In terms of departments, those supported by the national government offered the most OERs (18.6%), while private institutions most planned to offer OERs in the future (33.3%).

By type of institution, colleges had the highest levels of OER adoption (14.8%), followed by four-year institutions (13.4%). Technical colleges were most planning to adopt OERs in the future (59.2%). By source of funding, national public universities led in adopting OERs (24.6%) as well as planning to adopt OER in the future (46.4%). Institutions supported by the national government had the highest levels of adopting OER (16.1%), while departments of private institutions were most planning to adopt OER in the future (38.5%).

Offering and adopting MOOCs

Regarding institutions currently offering MOOCs, four-year institutions accounted for 5.6% (29 schools, 5 of which are supported by the national government), and two-year institutions 1.4% (3 schools). This represents an increase over the previous survey (one university supported by the national government). Regarding planned offerings, 20.1% of four-year institutions (104 schools), 10.3% of two-year institutions (23 schools), and 14.8% of technical colleges (8 schools) were planning to offer MOOCs in the future. These figures represent a large increase over the previous survey. The number of courses available was one (17 schools) or two (7 schools) among four-year institutions, with one course available at some two-year institutions (3 schools). The same trend held for source of funding: only a single course was available at most universities.

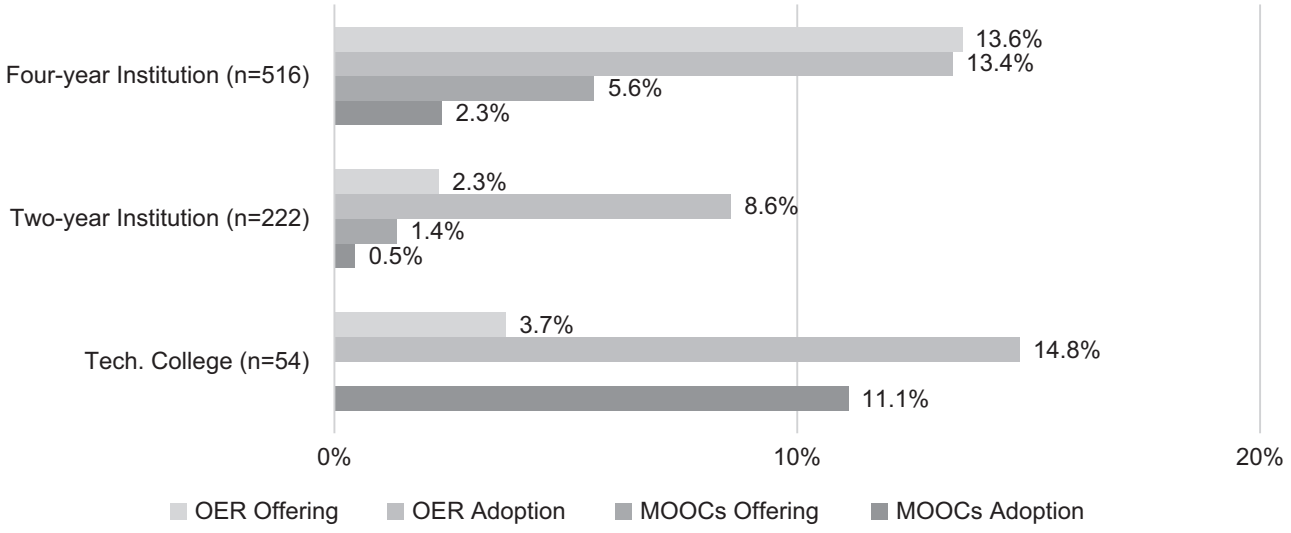

Figure 2: Offering and Adoption of OERs and MOOCs

Purpose of offering OERs and MOOCs

Responses by institutions concerning the purposes for offering and adopting these programs are shown in Figure 3. Regarding the purpose of offering OERs, high responses included “Improve learning environment for students,” “Promote educational information,” “Social contribution as a

higher education institution," and "Recruitment for high school students." By type of institution, items pertaining to attracting students and "Improving learning environment for students" (64.3%) were highest among four-year institutions; "Improve learning environment for own students" (81.8%) and "Educational collaboration among universities" (50.0%) were cited by technical colleges.

Regarding the reasons for offering MOOCs, popular responses included "Social contribution as a higher education institution," "Recruitment of high school students," and "Support lifelong learning." Items concerning recruitment of students were higher for public institutions supported by the national government.

For both OERs and MOOCs, the overall tendency by source of funding is similar to that by type of institution, and by departments; the levels were generally low for private institutions.

Figure 3 shows a comparison of the reasons for offering OERs and MOOCs. While most of them are similar, there are some differences. Statistical analysis of the reasons for offering OERs and MOOCs revealed a significant difference between the two on "Improve learning environments for students" ($\chi^2 = 7.714$, $p < 0.05$). OER is provided in the form of educational materials adjusted to the level of each student according to the content of the course.

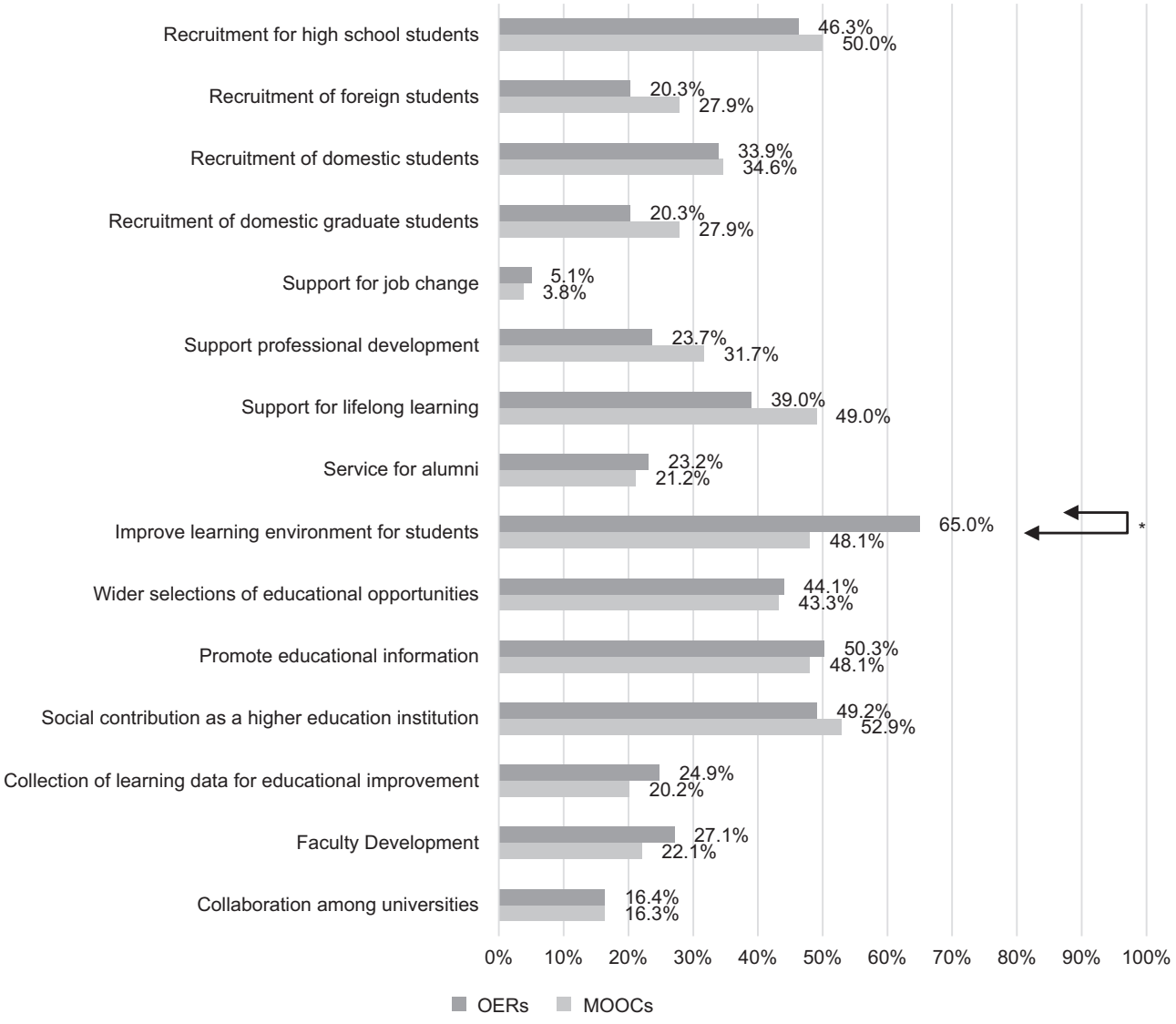

Figure 3: Purposes for offering OERs and MOOCs
*** :** $p<0.05$

Changes from the previous survey about offering MOOCs

We conducted follow-up surveys of 108 institutions of higher education that had indicated plans to offer MOOCs in the previous survey to determine how their efforts on MOOCs changed during the intervening two years and their causes. The results of the follow-up survey are shown in Table 1. Results for the institutions of higher education as a whole show that, since the previous survey, 17.6% actually provided MOOCs. Conversely, 25.9% decided not to offer MOOCs in the past two years, and many institutions stopped offering them.

By type of institution, 13.6% of national universities offered MOOCs, and less than 10% stopped offering them. Among other institutions, there were more that stopped offering MOOCs than started offering them. Public universities established by local governments have not provided MOOCs. At private universities, 24.6% offer MOOCs, which is the highest proportion by funding type, although 27.9% of these decided not to offer MOOCs, exceeding the level of the institutions that offer them. Similar tendencies were found for two-year institutions and technical colleges as for public universities established by local governments, and the number of institutions that decided not to offer them was the highest.

In addition, we separated these institutions into an "active group," those that provided MOOCs or advanced planning, and an "inactive group," those that did not. These two groups were compared to determine whether there are differences in their reasons for providing MOOCs according to their responses in this survey.

The results of the comparison are shown in Figure 4. The "active group" was found to have higher scores for "support for lifelong education" ($\chi^2 = 11.800$, $p < 0.01$), "social contribution as a higher education institution" ($\chi^2 = 10.982$, $p < 0.01$), and "wider selections of educational opportunities" ($\chi^2 = 4.630$, $p < 0.05$), while the "inactive group" tended toward "improvement of learning environment of self-student students" ($\chi^2 = 4.630$, $p < 0.05$).

Table 1: Results of the follow-up survey on offering MOOCs

MOOCs offering	Four-year institution				Two-year institution	Technical College	Overall Average
	National	Local government	Private	Total			
Offered	13.6%	0.0%	24.6%	20.7%	8.3%	0.0%	17.6%
Advanced	9.1%	0.0%	1.6%	3.4%	0.0%	0.0%	2.8%
Same	40.9%	0.0%	18.0%	23.0%	0.0%	11.1%	19.4%
Delayed	13.6%	25.0%	0.0%	4.6%	0.0%	11.1%	4.6%
Not offered	9.1%	50.0%	27.9%	24.1%	25.0%	44.4%	25.9%
Unknown	13.6%	25.0%	27.9%	24.1%	66.7%	33.3%	29.6%

Offered: Planned in 2013 and succeeded in offering in 2015
Advanced: Advances in planning of offerings compared to the results of the previous survey
Same: No change between 2013 and 2015
Delayed: Delayed in planning of offering compared to the results of the previous survey
Not offered: Planned in 2013 and failed to offer in 2015
Unknown: Planned in 2013 and answered "not known" in 2015

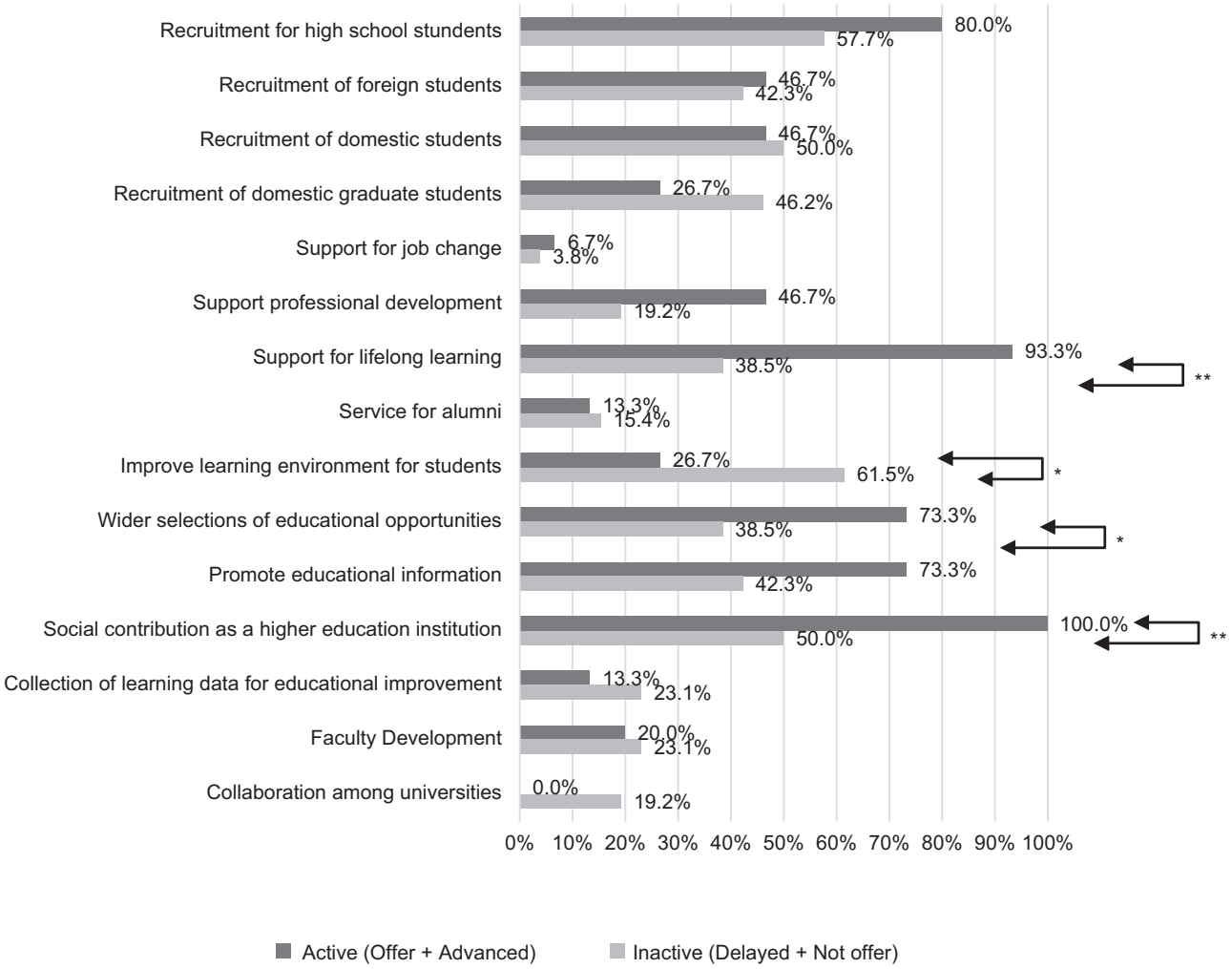

Figure 4: Comparison of purposes for offering OERs and MOOCs
*** :** $p<0.05$ ** : $p<0.01$

Discussion

Awareness of OERs slightly increased from 2013 to 2015. We believe that the awareness of open education rose with the spread of the concept of MOOCs during this period in Japan. The definition of "OER" in the survey may affect this result. In the questionnaire, we define OERs as freely available materials, not openly licensed materials. Some respondents may have considered openly licensed materials to be OERs and therefore incorrectly reported OER use. However, this definition was used in the previous survey, too, and even so, the percentages of awareness of OERs showed a slight increase compared to the previous survey.

Rates of offering and adoption of OERs were quite low in both surveys, perhaps because Japanese universities and colleges have not found it necessary to introduce open textbooks since they are already affordable. The number MOOCs offered has increased rapidly over the past two years, indicating that many universities and colleges have found uses for MOOCs in educational improvement and "innovation" in the learning environment on campus and beyond.

We found four-year institutions to be more advanced in offering and adopting these programs than two-year ones. Presumably, their larger scales and financial margins are the main reason for this. It is possible for them to reorganize their budgets to allow for OER and MOOC development,

considering the self-sustaining nature of Japan's open education activities. The higher proportion of national universities pursuing open education is attributed to the same reasons. We also found higher rates of technical colleges adopting OERs and MOOCs. All technical colleges in Japan share a common core curriculum, and this standardization makes it imperative that they adopt OERs and MOOCs. Private institutions were less likely to offer or adopt OERs or MOOCs than public ones. We believe this is because the fiscal management of private schools is more self-sustaining than that of public ones supported by governmental budgets. Arguably, this situation allows for a strict and fair evaluation of the effects of investment on open education. Survey respondents revealed that they can find incentives to apply OERs through assorted educational materials available according to students' circumstances. MOOCs appear to facilitate lifelong learning and public relations more than OERs. Overall, these results reflect the self-funded nature of open education activities and not official government policy in Japan.

Only about one-fifth of the higher education institutions that planned to offer MOOCs or were in the advanced planning stages of doing so in the previous survey had actually offered them. This indicates the difficulty of providing MOOCs. The year of the previous survey, 2013, saw an MOOC boom and, indeed, was called "The Year of the MOOC," since many universities in Japan began to consider offering such programs. Over the next two years, concerns about the practical effects of MOOCs and the high cost of providing them were discussed, which may explain why the number of universities offering MOOCs has remained limited.

In addition, compared with other organizations, national universities and private universities are large-scale and have the financial margins and capability to offer MOOCs. These institutions can have more offerings than other types of institutions. However, 27.9% of private universities stopped offering them. Private universities in Japan represent a range of sizes, from small student bodies to ones with hundreds of thousands of students. Many of the institutions that stopped offering MOOCs were relatively small private universities.

Also, if we consider the differences in reasoning provided by the "active" and "inactive" groups, the "active group" aims to provide MOOCs for lifelong learning in society, not just for themselves. It might be said that they are oriented towards providing MOOCs for students at all schools. The provision of MOOCs also benefits universities in terms of public relations, making it possible to provide university lectures as a "showcase" outside the university, adding to the social contributions of the university, and therefore attracting more students. Offering MOOCs is considered more expensive and time-consuming than OERs, because MOOCs are generally video-based, so their manufacturing costs tend to be higher. Nevertheless, MOOCs often gain approval from administrative offices in institutions because they are included in strategic plans for promoting the university and help to expand opportunities for lifelong learning, rather than merely supporting students with freely available learning materials.

Limitations

Among the institutions that planned or considered offering MOOCs in the previous survey, the current status of about 30% of them is unknown. These institutions answered, "not known" in this survey, or did not respond at all. Therefore, the overall situation of all Japanese universities is not definitively indicated by this survey. This is a limitation of this study, and further research is needed to establish the situation of each institution in more detail.

For greater understanding of their actual usage, further studies are required to analyze the status of the adoption of OERs and MOOCs by faculty members. As was mentioned above, the wider definition of OER may have influenced the results. More accurate definitions are needed for future surveys. In addition, to clarify the differences in the reasons for offering MOOCs between

"global MOOCs" and "regional MOOCs," we must distinguish these on the submission form for respondents. A better understanding institutions' reasons for offering MOOCs may aid in comparing them in future surveys.

Conclusion

Results shows that, while Japan is gradually becoming more aware of OERs, still only a limited number of institutions have adopted or offer them, and, although MOOCs are gradually being offered by more universities, their general availability remains limited. The survey also revealed a difference in institutions' reasons for offering OERs and MOOCs. While OERs are recognized as enhancing the learning environment, MOOCs still seem to be regarded more as outreach activities, akin to the dissemination of educational information and making social contributions. Comparison of the reasons for "active" and "inactive" groups of institutions offering MOOCs reveals that active institutions provide MOOCs for society and for promotion, not only for themselves, probably because institutions in Japan are self-sustaining in terms of open education activities.

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