

Transformation of academic libraries through higher education reform in Japan: becoming realized what Dr. S. R. Ranganathan would want to see

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1. Introduction

In this paper, I first describe the impact of higher education reform on the education of undergraduate students in Japanese universities, especially regarding the promotion of active learning. Next, I explain about the increase in the installation of active learning space in academic libraries, which encourages and corresponds with student's vital learning. Lastly, I attempt to hypothesize that

the transformation of academic libraries in Japan is the realization of the educational perspective shown by the phrase "Education is not memory training, mass lecturing and a passive process. It is training for use externalised memory, individual instruction and an active process for requiring library work at school." as advocated by Dr. S. R. Ranganathan (1892-1972).

2. Higher education reform in Japan

2.1 General educational history from the aspect of educational curriculum reform

In 1945, Empire of Japan surrendered to the Allies. After the WWII Japan was under occupation and new regime was constructed by them. The educational system was transformed into pragmatic, democratic and active style, as it were of the New Education Style of United States, under the GHQ.

In 1950s, the policy of education was turned toward the promotion of science and technology by lobbying activities from the side of industry. In those times, Japan was going through high-growth period. After this reform, the amount of education contents kept increasing year by year in proportion to developing of science and technology. However the education problems emerged in this period as a result of need for memorizing excessive knowledge.

Later in 1970s, the policy of education was altered into

reduction the classroom hours again. It was time for the end of high-growth and the start of low-growth period. The policy was gradually shifted from cramming education to self-study style. The aim was that every child could think and decide by themselves against obscure future.

In 1996, this trend was at its zenith, the "Yutori Kyoiku (education free from pressure)" was ushered in. The school hours were set at the minimum. Even so, this policy had a negative reputation.

In 2006, Prime Minister Shinzo Abe started reforming Yutori-Style to curb a decline in academic ability. The reform is still on the way. Its policy seems to give importance both the amount of knowledge and self-research skills by promoting the active learning.

There are two streams in the history of education in Japan after the WWII. One is the traditional style emphasizing the

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amount of knowledge, the other is the style of New Education emphasizing the motivation of children. The former was the reform in 1950s and 2006, the latter was in 1945, 1970s, 1996. It's like the pendulum (Fig.1).

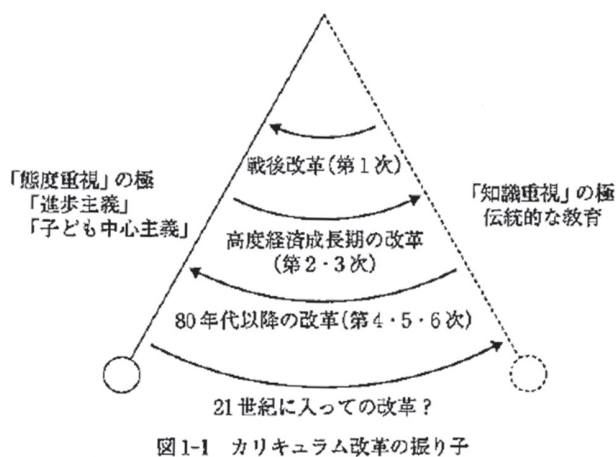


図1-1 カリキュラム改革の振り子

Fig.1 The pendulum of educational curriculum reform²

Shimizu (2005) explained the pendulum that its right side is as “Cramming and Passive Education”, the traditional style emphasizing the amount of memorized knowledge and its left side is as “Education without cramming”, the style of New Education emphasizing the motivation of children. He also advocated the education policy of Japan often comes and goes from right to left.

2.2 Enhancing undergraduate education³

In Dec. 2008, the Central Council for Education replied a report titled “Towards the enhancement of undergraduate education”. This report claimed as follows aiming to restructure global competitive undergraduate education;

(1) Policy for awarding academic degrees

-To clarify the policy for awarding academic degrees and education and research purposes

(2) Policy for curriculum

-To work out systematic educational content and instruction

-To secure students' learning activity and appropriately evaluate their performances

(3) Policy for acceptance of admitted students

-To clarify the criteria for selecting students

-To conduct admission process properly, especially in the case of recommendation

Through above policies, the reform intended to make the undergraduate students understand as follows;

-Both systematic basic and specific knowledge

-Skills required for intellectual activities as well as professional and social life

-Realization of how to utilize the knowledge, skills, behaviors and experiences for solving new problems

In 2012, the Central Council for Education replied a report titled “Towards a Qualitative Transformation of University Education for Building a New Future - Universities Fostering Lifelong Learning and the Ability to Think Independently and Proactively”⁴. This report made out as follows;

(1) Undergraduate education must enhance subjective learning. The cultivation of “gakushiryoku (学士力: the competencies of bachelor)” requires active learning through discussions and debates, and experiential education programs through internships.

(2) Students can acquire abilities for lifelong learning and to think independently only through gathering experiences in active learning. In order to do so, securing quality study time is needed.

The policies rapidly brought in the educational style of active learning in the universities. Consequently, the influence of conversion to the active learning was transmitted among academic libraries in Japan.

2 Kokichi Shimizu, *Gakuryoku wo Sodateru*, Iwanami, 2005, p.30. (In Japanese: 志水宏吉. 学力を育てる, (岩波新書 978). 岩波書店, 2005, p.30.)

3 Higher Education Bureau, Ministry of Education, Culture, Sports, Science and Technology, “4.Enhancement of university education function” *Higher Education in Japan*, p.14. http://www.mext.go.jp/en/policy/education/highered/title03/detail03/_icsFiles/afieldfile/2012/06/19/1302653_1.pdf (accessed 2017-10-05).

4 MEXT, *Summary of Report: “Towards a Qualitative Transformation of University Education for Building a New Future - Universities Fostering Lifelong Learning and the Ability to Think Independently and Proactively”*. http://www.mext.go.jp/en/publication/report/title01/detail01/_icsFiles/afieldfile/2016/12/06/1380275_001.pdf. (accessed 2017-10-05).

2.3 Importance of active learning which promotes student's vital learning

The modern knowledge and information society requires own initiatives and activity of the learner. Hence the citizen is needed to acquire how to study individually for lifelong learning. This skill is exactly necessary in the knowledge based society. The most traditional style of education is lecturing to the passive students by directly. Though in this way, the students are not motivated eagerly to absorb knowledge actively. So we need the active learning style derived from New Education which was started by John Dewey (1859-1952) and so on. The definition of active learning is as follows;

active learning an educational approach in which students are encouraged to engage with the material to be studied through activities, such as experimentation, group discussion, and role-play.⁵

MEXT (Ministry of Education, Culture, Sports, Science and Technology) is planning the new course of study which will promulgate from 2018. It tries to unite between the traditional style emphasizing the amount of knowledge and the style of New Education by installing the active learning. The aim is to finish the dichotomy between the two styles and to empower the student vital learning.

3. Transformation of academic libraries

3.1 Establishment of active learning spaces in academic libraries

3.1.1 Background / context

In Japan, there are two causes for establishment of active learning spaces in academic libraries.

Firstly, it is the earthquake retrofit for the decrepit buildings. In 2000s middle large class earth quakes occurred several times. Our government made the buildings for education enforce against it. Then the academic libraries got the chance of renewal or new construction.

Secondly, it is the necessity for reconsideration about the

library floor plan by the expansion of the internet. The computerized cataloguing brought about the extinction of the bibliotheca card boxes. The expanding of e-journals made the extinction of the bounded journals. As a result, much empty space emerged in the academic libraries. Due to filling it, the active learning space is now increasing rapidly inner academic libraries of Japan (Fig.2 to Fig.5). In 2016, 453 universities (58.2%) already have set it. The number of academic libraries which create the space is 2.5 times compared with 5 years ago.

3.1.2 Learning commons in academic libraries: a few examples



Fig.2 Chiba University Library, Academic Link Center (renewal)



5 "active learning" *OED: Oxford English Dictionary*. <http://www.oed.com/view/Entry/1953?redirectedFrom=Active+learning#eid194718026>. (accessed 2017-10-10).



Fig.3 Kyoto University Library, Learning Commons (renewal)



Fig.4 Meiji University Izumi Library (New construction)



Fig.5 Seinan Gakuin University Library (New construction)



3.1.3 Common components⁶ of these examples:

- computer workstations clusters;
- a service desk;
- collaborative learning spaces;
- presentation support centres;
- instructional technology centres for faculty development;
- electronic classrooms;
- writing centres and other academic support units;
- spaces for meetings, seminars, receptions, programs and cultural events;
- cafés and lounge areas

3.2 A case study: Tohoku University Main Library

Tohoku University Main Library is one of the largest academic libraries in Japan. When it was renewed in 2014, the active learning spaces were established and a lot of PCs and other newest information equipment were installed.

3.2.1 Outline of Tohoku University

Tohoku University was founded in 1907 as the 3rd Imperial University of Japan. Tohoku(東北) means North-East, actually our University is in North-East Japan. (Fig.6). The University Logo (Fig.7) represents that “The logo shows Sendai’s native bush clover, known as Hagi in Japanese, which grows naturally in the wild. The bush clover represents Tohoku University’s international aspirations and globalization”.⁷ Tohoku University has 10 faculties, 15 graduate schools, 3 professional graduate schools and 6 research institutes. The famous inventions of Tohoku University are Yagi-Uda antenna, KS Steel, split-anode magnetron, Perpendicular recording and so on. Dr. Koichi Tanaka (田中 耕一) who won Nobel Prize in Chemistry is the alumni of Tohoku University.

-General statistical data

The number of students: about 18,000

The number of faculties and staffs: about 6,400

QS World University Rankings: 76 (2018)⁸



Fig.6 Location of Tohoku University



Fig.7 University Logo

6 S. McMullen, “US Academic Libraries: Today’s Learning Commons Model” *PEB Exchange*, 2008, p.2. <http://www.oecd.org/dataoecd/24/56/40051347.pdf>. (accessed 2017-10-02).

7 Tohoku University, *Tohoku University Official Symbol, Logo, School Colors and Songs*. http://www.bureau.tohoku.ac.jp/koho/pub/gaiyou/gaiyou2015/eng/pdf/gaiyo2015_04.pdf (accessed 2018-01-09).

8 “Tohoku University” *QS World University Rankings*. <https://www.topuniversities.com/university-rankings/world-university-rankings/2018>. (accessed 2017-10-09).

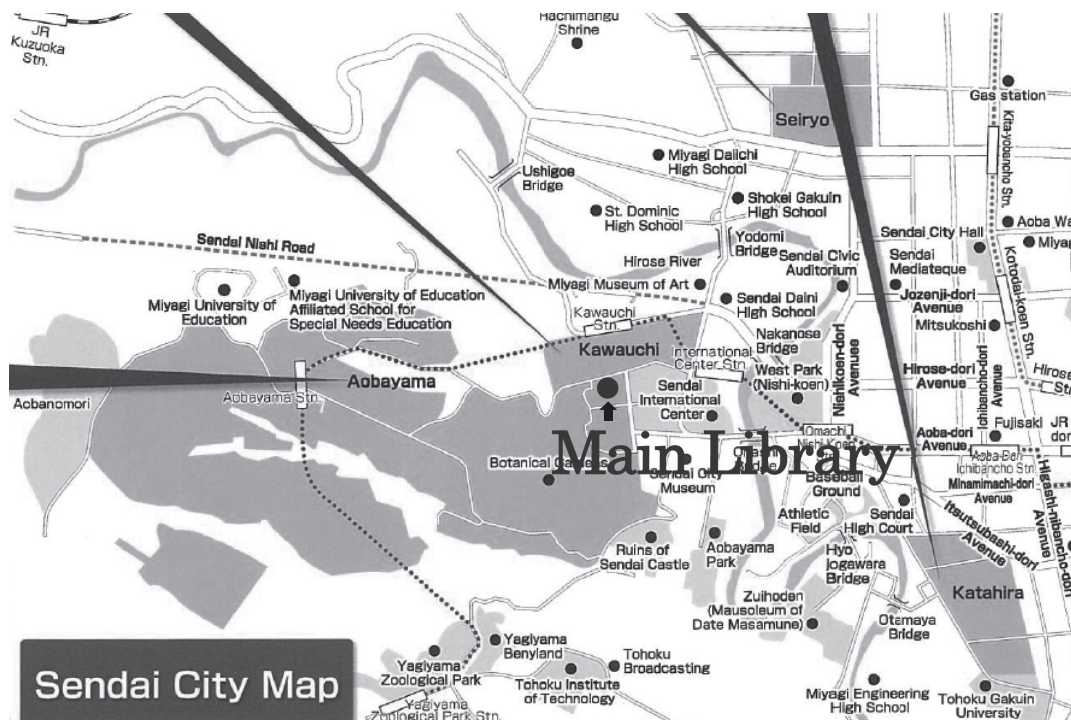


Fig.8 Location of Tohoku University Main Library

3.2.2 Outline of Tohoku University Main Library

Tohoku University Main Library (Fig.8 and Fig.9) was opened as the centre of Tohoku University Campuses in Nov. 1973 (Former Library was established in 1911) and finished full renovation in Oct. 2014. Azusa Kito (鬼頭 梓, 1926-2008) who was one of the famous library architects in Japan and designed over 30 libraries set out Tohoku University Main Library Building. He was a disciple of Kunio Maekawa (前川 國男, 1905-1986) who was one of disciples of Le Corbusier (1887-1965).

When it was renewed in 2014, Huge PC Area (Fig.10), 2 Active Learning Spaces (Fig.11), 4 Group Study Rooms, 4 Private Research Rooms and a number of Powered mobile storage systems (underground stack) are installed. The features of Main Library are exposed concrete, natural lighting and bright inner spaces thorough various windows, multi-purpose vast space, sophisticated top-notch technology services for the students and faculties like: self-check-out machines, automatic PC locker and so on.

-General statistical data

Total number of volumes: 2.8 million (whole collections are 4.1 million in our University)

Journals: 827,874 (2016.3), subscribed e-journals: 13,954 (2016.3)

Opening hours: 8:00-22:00 (weekdays), 10:00-22:00 (weekends/holiday)

Number of visitors: 692,785 (2016.3)

Total area: 18,215 square meter

The number of librarians and staffs: 56

Available PCs: 115 (Desktop 75, Laptop 40)

Number of seats: over about 1,200



Fig.9 Main Entrance of Tohoku Univ. Main Lib

The card boxes are exchanged 75 desktop PCs (Fig.12 and Fig.13) and the reference books collection corner is turned to collaborative learning area “Flexible working area and Box

seats” (Fig.14 and Fig.15). Because of inherently highly versatile, the basic structure of Main Library was scarcely altered at the renewal in 2014.



Fig.10 Main Area: PC Area



Fig.11 Active Learning Space: Global Learning Room



Fig.12 Main Area (New Construction)



Fig.13 Same place of Fig.12 (After renovation)



Fig.14 Reference Books Corner (2010)



Fig.15 Same place of Fig.14 (After renovation)

Azusa Kito designed 1st Building of our Main Library having high general-purpose properties in 1972. As shown on the following maps, the centre of 1st floor was wide flat floor and no steps for public space by setting the card boxes and the reference corner in the days of new construction. This area was

common area for every readers: undergraduate students, graduated students, faculties and researchers (Fig.17). The right side was for only undergraduate students (mainly 1st-2nd grade) by basic books and carrels. On the other hand, the left side was for graduated students, faculties and researchers (Fig.18).

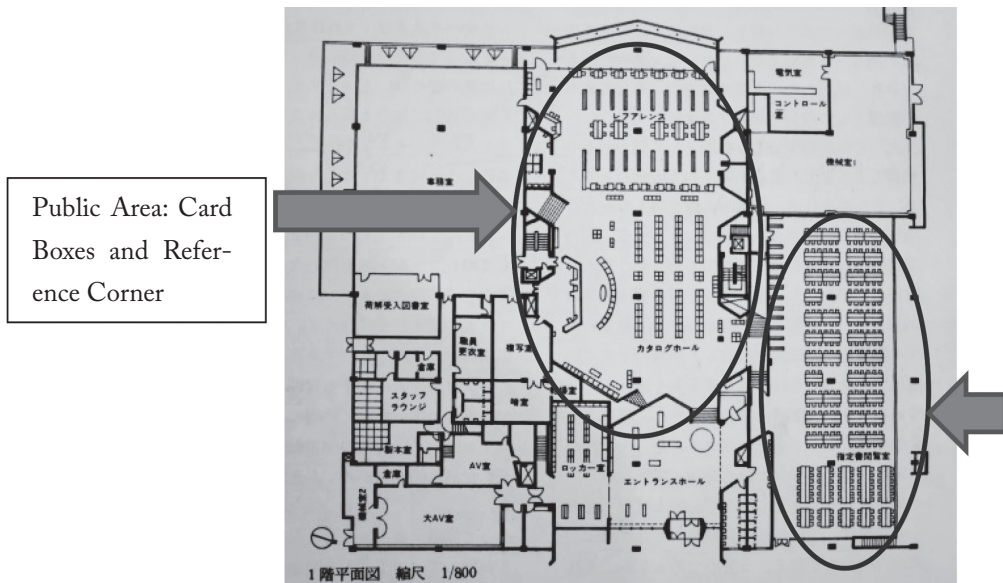


Fig.17 1F of Tohoku Univ. Main Lib. 1st Building (New Construction)⁹

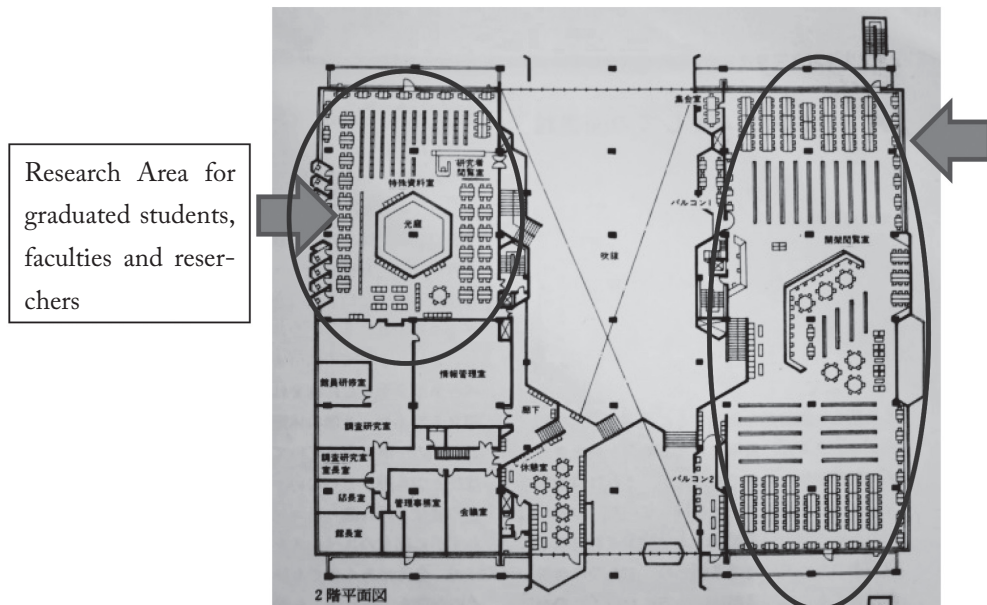


Fig.18 2F of Tohoku Univ. Main Lib. 1st Building (New Construction)¹⁰

9 “Tohoku Daigaku Fuzoku Toshokan (Sekkei, Kito Azusa Kenchiku Sekkei Jimusho)” *Shin Kenchiku*, 51(8), 1976, p.245. (In Japanese: 東北大学附属図書館 (設計・鬼頭梓建築設計事務所). 新建築 51(8), 1976, p.245).

10 Ibid.

After the renovation of 2014, the zoning plan is almost same. On comparison with past and present, the centre of 1F: Main Floor is still public space. Though the transformation to a lot of PCs, Box Seats and Flexible Working Area, the role of

this floor is the common space by every users (Fig.19). It is only different and merely change of the media.

Although the left side of 2nd floor is shifted from Research Area to Global Area (Fig.20).

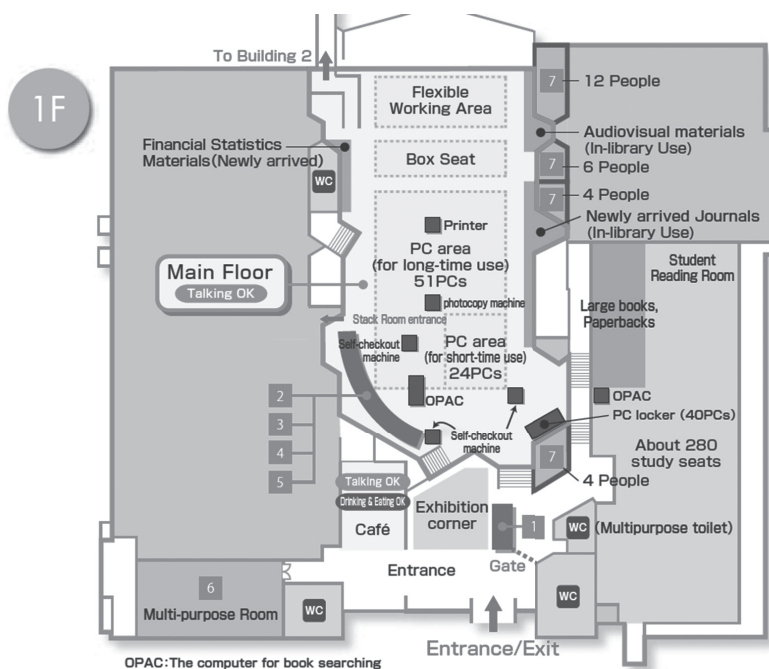


Fig.19 1F of Tohoku Univ. Main Lib. 1st Building (After renovation)¹¹

*Besides a conversation, using of PC or calculator is also not allowed in the Global Reference Room (Quiet Area).

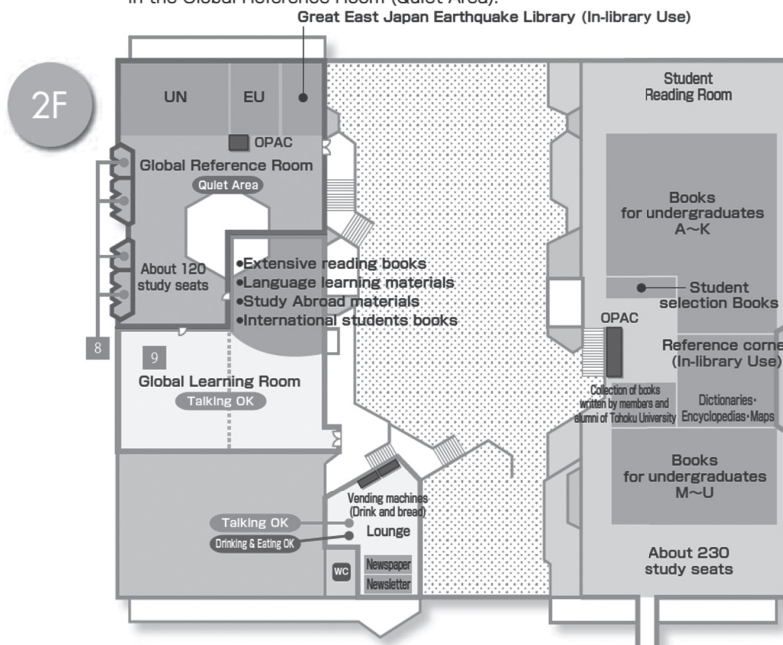


Fig.20 2F of Tohoku Univ. Main Lib. 1st Building (After renovation)¹²

11 Tohoku University Main Library Library Guide.

http://www.library.tohoku.ac.jp/en/mainlibrary/assets/mainlibrary_guide.pdf (accessed 2017-12-10).

12 Ibid.

3.3 Another stream: Active learning spaces other than in academic libraries – other examples

Another trend of setting up active learning spaces are found in Japanese university. It is that the buildings for active learning are created other than in academic libraries (Fig.20 to Fig.22). The university is satisfied with the library, and it seems that it

has no intention of making change. Or their academic library is too small to add the active learning spaces and has any problems to be not able to create it. Furthermore, some universities don't expect their academic libraries as the role of active learning space at all.



Fig.20 Doshisha University-Learning Commons "Ryoshinkan"



Fig.21 Tohoku Gakuin University-Learning Commons "Colatelier"



Fig.22 Hiroshima University of Economics-Academic Commons "Meitokukan"



4. Realizing what Dr. S. R. Ranganathan would want to see

4.1 Dr. Ranganathan's works about education

Dr. Ranganathan was not merely one of the great librarians in the world, but also one of the great educators. Before working at University of Madras Library, as everybody knows, he was a mathematical teacher. Hence he had a lot of experience by facing on teaching reality.

His writings on library and information science are inherited as our heritage. Especially, *The Five Laws of Library Science*¹³, *Colon Classification*¹⁴ and *Prolegomena to Library Classification*¹⁵ are very well-known to the librarians and library staffs all over the world. But following two works are not so much;

- *New Education and School Library*, 2nd ed., (Sarada Ranganathan Endowment for Library Science series, 4). Ess Ess Publications for Sarada Ranganathan Endowment for Library Science, 2006, c1973.
- *Education for Leisure*, 4th ed., (Ranganathan series in library science; 8). Asia Publishing House, 1961.

Those are sources of Dr. Ranganathan's pedagogical thought, which include valuable words for solution to current issues of academic and school libraries.

4.2 Comparison of Dr. Ranganathan's quotations with phenomena of the modern academic libraries in Japan

In this section, I attempt to quote from the above-mentioned Dr. Ranganathan's works and compare with phenomena in Japanese modern academic libraries. At first, he defined the education as following contents¹⁶;

1. Education ≠ Memory training; but
= Training for use externalised memory;
requiring library work at school.

2. Education ≠ Mass lecturing; absorbing the same facts, ideas and information; and learning by all at uniform speed; but

= Individual instruction; varying the field of study with the individual; and learning by each at his own speed; requiring library work at school.

3. Education ≠ A passive, partial, transmissive, inhibiting, anti-socialising process; but

= An active, global, experiential, creative, and socialising process; requiring library work at school.

4.2.1 Education = training how to search, read and use books and information

Firstly, Ranganathan alleged "The capacity of our memory to retain facts, ideas, and information is very limited and the capacity of the brain to supplement rote memory by rational memory is even more limited in most people"¹⁷. His solution against the dilemma was to teach the way of how to use externalised memory, which is information media, like as books, journals and so on. The information media of modern knowledge society is diverse like electronic resources expanded by the internet.

From a decade ago, information literacy education is gradually ushered in academic libraries in Japan. Especially, we emphasize education and training of method of information searching in relation with academic library. Recently we hold the lecture and practice it at active learning space in the academic library.

Tohoku University Main Library has started the introductory coursework teaching how to write academic paper and search scholarly information since 2004. Especially the practical work of searching academic materials is held at the PC Area of the Main Area (Fig 23).

13 S.R. Ranganathan, *The Five Laws of Library Science*, 2nd ed., Asia Publishing House, c1963, [1957], 449 p.

14 S.R. Ranganathan. *Colon classification*, ed.7, Sarada Ranganathan Endowment for Library Science, 1987, (various pages).

15 S.R. Ranganathan ; assisted by M.A. Gopinath, *Prolegomena to library classification*, 3rd ed. Sarada Ranganathan Endowment for Library Science, [1989], (various pages).

16 S.R. Ranganathan. *New Education and School Library*, 2nd ed., (Sarada Ranganathan Endowment for Library Science series, 4). Ess Ess Publications for Sarada Ranganathan Endowment for Library Science, 2006, c1973, p.108.

17 Ibid. p.41.

And we offer a lot of training sessions about information retrieval. After full renovation, we always hold these lectures in the active learning spaces (Fig.24).

4.2.2 Education = Individual instruction

Secondly, Ranganathan also argued “The process of education is the process of such a becoming. In this process, the student seeks to become himself.”¹⁸ He suggested the students should study how to learn from books individually in the library. This is because when they are adult, they can learn only by themselves.

Adult education cannot presume full-time adult students. It will have to bank only on the leisure hours of adults. Again adult education cannot depend upon formal teaching. It



Fig.23 A coursework teaching information retrieval at the PC Area



Fig.24 A training session at the active learning space

must be largely self-education with the aid of a network of public libraries.¹⁹

While I was in the profession of education, I had learnt from practical experience that,

- 1 Education should, in the last resort, be self-education;
- 2 Curiosity is the stimulus to self-education;
- 3 The essential function of the teacher should be to rouse the curiosity of the students; but
- 4 The stimulus for curiosity differs from student to student;
- 5 It is possible to rouse the necessary curiosity for self-education even in the so-called “Un-educable” of “Dull” students

It is this experience that made me appreciate the significance of the term ‘Divine Curiosity’ used by the great physicist Albert Einstein. I felt that the Hub²⁰ should be one that can satisfy the Divine Curiosity.²¹

If it is true that the education should be self-education, in according with this thought, we should provide following two solutions. Firstly, in the facility, we should put the space of self-study in the library. The libraries have always offered the



Fig.25 Individual learning in the active learning space of library

18 Ibid. p.88.

19 S.R.Ranganathan. *Education for Leisure*, 4th ed., (Ranganathan series in library science; 8). Asia Publishing House, 1961, p.11.

20 Hub = Documentation Service = Reference Service

21 S.R.Ranganathan, *Documentation: Genesis and Development*. (Sarada Ranganathan Endowment for Library Science series, 3). Vikas Pub. House, 1973, p.75.

implements and the spaces for self-education for a very long time. Although, we should provide not merely collections and carrels but also technologies and comfortable workspaces.

For example of our library, there are a lot of PCs with wide desk for multi-purpose and long time work (Fig.25). The users always utilize it with spread their many belongings, bringing their own device: laptop pc or smartphone, books, journals, other library materials and notebooks. Of course, they can charge up BYOD and connect to Wi-Fi: Internet Service. Due to it, they are available to continue self-study for a prolonged time.

Self-education also often needs to take counsel with experts for individual instruction. Ranganathan issued the Reference Librarian (or any library staffs) should satisfy the user's Divine Curiosity. We should set the human support desk in the active learning space of the library.



Fig.26 Individual instruction in the active learning space of library

Tohoku University Main Library gives the staff's human support at Reference Desk and International Concierge Desk (Fig.26) for various purpose. One of the tasks is to satisfy the users' inquiry for their self-education.

4.2.3 Education = Active Collaborative Learning

Finally he recommended the style of active collaborative learning or group study, especially PBL (Project-Based Learning) method in library.²² He quoted following passage of Rig Veda for emphasizing the active study group.

Meet together, talk together, understand aright. Pray in common, achieve in common, let there be unity and understanding. Alike be your intensions, harmonious your feelings. And concerted yours thoughts so that there may be complete union among you.²³

Since the new type of academic library has been ushered in Japan, we very often see the students' small study group and their discussion together at the active learning space of the academic library until late in the evening. Tohoku University Main Library also set two types of places dedicated to the group study for active collaborative learning. One is the 5 Box Seats, like as the dinner's seats (Fig.27). The other is the 4 Group Study Rooms for insulating the crowded public spaces (Fig.28).

I'm definitely sure that the student's learning are deeper than former type of library and more effectively in the library.



Fig.27 One of the Box Seat with the monitor in Tohoku University Main Library



Fig.28 One of the Group Study Room in Tohoku University Main Library

²² Ibid. pp.127-128.

²³ Ranganathan. *New Education and School Library*, 2nd ed., 1973, p.107.

5. Conclusion

Now, more than a half of Japanese Universities established active learning spaces. Transformation of these spaces is very rapid and drastic. Accordingly the number of visitors of the spaces are also growing (Tab.1).

Tab.1 In the case of Tohoku University Main Library Users

2009 (Before Renovation)	2016(After Renovation)
389,952	642,672

Academic libraries have a re-recognized educational function and are assumed as the center or heart of university by promoting active learning. Tohoku University Main Library is a typically case.

On the other hand, I would argue that all cases of such new type academic libraries in Japan are the realization of Ranganathan's dream. His educational thought on the base of library is gradually coming true at our country. From the aspect of it, we should investigate Ranganathan's work about not only information management but also education much further.

Of course, it has not yet completed to realize the zenith of Ranganathan's ultimate hope. We should improve development of human resources of the library and also should co-operate together to achieve what Ranganathan's would want to see.

Genesis of this paper

This paper was written for the proceedings and the presentation abstract of "International Conference on Knowledge Organization, Library and Information Management: Revisiting Ranganathan (SRR@125), October 23-25, 2017,

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