IIAI Open Conference Publication Series
IIAI Letters on Institutional Research
Vol.004, LIR295
DOI: https://doi.org/10.52731/lir.v004.295

Learning Objectives from the Syllabus and Model Core Curriculum for Medical Education in Japan: A Case Report of Mapping

Yoshikazu Asada *

Abstract

The Model Core Curriculum for Medical Education (MCC) demonstrates the "core" parts of the curriculum for Japanese medical education. Given that MCC is defined as the model curriculum and medical education should be based on the MCC, the current status of the connection between MCC and the university curricula is surveyed. The research consisted of two brief studies: (1) calculating the total number of medical universities that show a connection between their curriculum and MCC, and (2) mapping the results of the curriculum at the author's university and MCC. About 40% of universities show connections between their courses and MCC in syllabi. Although all of the MCC learning objectives in the third tier are covered in the curriculum of the author's university, some of the learning objectives have few related courses.

Keywords: Learning Objectives, Medical Education, Model Core Curriculum

1 Introduction

The Model Core Curriculum for Medical Education (MCC) is "a systematically organized model that is formed by extracting the core parts of the curriculum that should be commonly addressed by all Japanese universities when formulating their own medical education curricula" [1]. Additionally, the MCC states that "approximately two-thirds of the hours of study in the medical education program at each university should be based on the Model Core Curriculum." From this standpoint, each university develops their own curriculum and syllabus.

The MCC was revised in 2022, and its structure changed substantially from the previous version (2016 revision). One of the important differences is the structure of learning objectives. In the previous version, there were seven sections of learning objectives, which were based on the knowledge domains:

- A: Basic Qualities and Abilities Required of a Physician
- B: Society and Medicine / Medical Practice
- C: General Issues in Medicine
- D: Normal Structure and Function, Pathophysiology, Diagnosis, and Treatment of Each Organ System of the Human Body

* Jichi Medical University, Tochigi, Japan

- E: Systemic Physiological Change, Pathophysiology, Diagnosis, and Treatment
- F: Basis of Medical Practice
- G: Clinical Clerkship

In the 2022 revision, the learning objectives are divided into four tiers, based on the 10 basic qualities/abilities required of physicians:

- PR: Professionalism
- GE: Generalism
- LL: Lifelong Learning
- RE: Research
- PS: Problem-Solving
- IT: Information Technology
- CS: Clinical Skills
- CM: Communication
- IP: Interprofessional Collaboration
- SO: Medicine in Society

The first tier refers to these qualities/abilities, such as PR. The second tier shows the individual components, the third shows the specific competencies, and the fourth shows the learning objectives. Some learning objectives such as lists of major diseases in PS are organized in a table format. These changes in the structure of learning objectives are for the development of outcome-based education.

Each university develops its curriculum based on the MCC. Considering the MCC shows the "core" curriculum components, it is important to connect their courses/subjects and the MCC learning objectives. By making a curriculum map, it is possible to determine whether the curriculum is fully adapted to the MCC. In addition, it is useful to identify the similarity or the continuity of courses. However, sometimes difficulties exist in gathering the learning objectives of each course and organizing them into a curriculum map.

To solve this problem, the website titled "Japanese Core Curriculum" for organizing the learning objectives of MCC was developed by the Model Core Curriculum Expert Research Committee [2]. This website has a feature that creates a list of learning objectives related to classes and subjects. The data of lists are sharable using uniform record locators (URLs). Users can create the mapped learning objectives not only for a single course but also for multiple courses while creating the curriculum map.

2 Methods

2.1 The case in medical universities generally

Some medical universities publish their syllabus on their website. Given that many of the published syllabi exist in PDFs or webpages, difficulty exists in organizing and summarizing the data. In this study, the number of universities (1) publishing syllabi that (2) have information about the learning objectives based on MCC are counted. The search was done using Google, with the three keywords of the name of the university, the faculty name (such as "department of medicine"), and "syllabus." When the syllabus was not found immediately in the search results, the author combed the universities' websites to find the syllabus information. The survey was performed in December 2023; therefore, the syllabus data was based on the previous MCC (2016).

2.2 The case in the author's university

The author created the curriculum map of his university based on the 2022 MCC revision. As the author's university used the MCC website to generate the learning objective URLs for each course when the syllabus was revised, it was possible to map the learning objectives and courses. Only the mandatory courses were studied.

3 Results

3.1 Medical universities generally

Among the 82 Japanese medical universities, 79 publish their syllabi using the PDF or e-syllabus format. Thirty-three universities described the connection between their learning objectives and MCC for each course. Moreover, 13 of the 33 universities publish the MCC and learning objectives for each class.

3.2 The author's university

A total of 229 URL data existed. Some courses, such as bed side learning in each medical ward, have several curricula, and therefore the total number of courses did not equal 229. Tables 1 through 10 show the number of courses connected to MCC learning objectives. As there are various learning objectives in the fourth tier, the figures were generated using the third tier.

Table 1 shows the result for PR. Each number shows the totals of the third and fourth tiers. For example. PR-01-01 indicates 34, which is the sum of PR-01-01-01 and PR-01-01-02. The number of courses connected to PR-02-03 is slightly larger than in other learning objectives.

Table 1: PR (Professionalism); total number: 270

Third Tier	Total Number	Total Number (%)
PR-01-01	34	12.6
PR-01-02	35	13.0
PR-02-01	39	14.4

PR-02-02	28	10.4
PR-02-03	53	20.0
PR-03-01	37	13.7
PR-04-01	44	16.3

Table 2 shows the result for GE, which is the new quality/ability factor from the MCC 2022 revision. It has a large number of learning objectives. Especially the item GE-01-01 and GE-01-04, which are about "Transdisciplinary care" and "Evidence-based medicine (EBM,)" are connected to several courses.

Table 2: GE (Generalism), total number: 599

Third Tier	Total Number	Total Number (%)	Third Tier	Total Number	Total Number (%)
GE-01-01	106	17.7	GE-02-04	14	2.3
GE-01-02	27	4.5	GE-03-01	12	2.0
GE-01-03	46	7.7	GE-03-02	25	4.2
GE-01-04	88	14.7	GE-03-03	11	1.8
GE-01-05	26	4.3	GE-03-04	29	4.8
GE-01-06	34	5.7	GE-03-05	45	7.5
GE-02-01	14	2.3	GE-03-06	15	2.5
GE-02-02	36	6.0	GE-04-01	39	6.5
GE-02-03	17	2.8	GE-04-02	15	2.5

Table 3 shows the result for LL. It has just three items in the third tier. In fact, there are only seven items in the fourth tier. However, because the lifelong learning skills are one of the basic academic skills, this quality/ability is connected to several courses.

Table 3: LL (Lifelong Learning), total number: 171

Third Tier	Total Number	Total Number (%)
LL-01-01	69	40.3
LL-01-02	34	20.0
LL-02-01	68	39.8

Table 4 shows the result for RE. Note that some of the items have low scores, such as RE-03-02. This item is the "Research Plan." Given that some Japanese medical universities have no graduate research system, including the author's university, this quality/ability would only be taught in specific courses such as epidemiology practice.

Table 4: RE (Research), total number:159

Third Tier	Total Number	Total Number (%)
RE-01-01	33	20.8
RE-01-02	27	17.0
RE-02-01	6	3.4
RE-02-02	11	6.9
RE-03-01	11	6.9
RE-03-02	1	0.6
RE-03-03	20	12.6
RE-03-04	9	5.7
RE-04-01	20	12.6
RE-05-01	4	2.5
RE-05-02	17	10.7

Table 5 shows the result for PS. This is more than 1000. In fact, PS consists of several tables that organize major diseases and medical procedures not included in this result. The definition of PS is, "Acquire knowledge and expertise in medicine and related disciplines, and use evidence-based medicine and professional experience to solve problems faced by patients." As this quality/ability includes diverse medical knowledge, numerous related courses exist.

Table 5: PS (Problem-Solving), total number:1324

Third Tier	Total Number	Total Number (%)	Third Tier	Total Number	Total Number (%)
PS-01-01	17	1.3	PS-02-11	45	3.4
PS-01-02	150	11.3	PS-02-12	17	1.3
PS-01-03	71	5.4	PS-02-13	26	2.0
PS-01-04	106	8.0	PS-02-14	43	3.2
PS-02-01	35	2.6	PS-02-15	10	0.8
PS-02-02	12	0.9	PS-02-16	29	2.2
PS-02-03	94	7.1	PS-02-17	24	1.8
PS-02-04	31	2.3	PS-03-01	33	2.5
PS-02-05	14	1.1	PS-03-02	43	3.2
PS-02-06	37	2.8	PS-03-03	88	6.6
PS-02-07	74	5.6	PS-03-04	124	9.4
PS-02-08	40	3.0	PS-03-05	91	6.9
PS-02-09	29	2.2	PS-03-06	1	0.08

Table 6 shows the result for IT, which is one of the new qualities/abilities in the latest MCC. This consists of knowledge and skills but also the learning objectives regarding ethics, such as in IT-01-02. As this area does not consist purely of medical knowledge/skills, the number of related courses is not large.

Table 6: IT (Information Technology), total number: 79

Third Tier	Total Number	Total Number (%)
IT-01-01	19	24.1
IT-01-02	7	8.9
IT-02-01	17	21.5
IT-02-02	12	15.2
IT-03-01	8	10.1
IT-03-02	16	20.3

Table 7 shows the result of CS, which is defined as: "Practice medical care with an emphasis on quality and patient safety by giving full consideration to patients' pain and anxiety, and by developing reliable and dependable clinical skills." Thus, CS is related to numerous courses and practicums. While PS reflects the area of physician knowledge, CS reflects skills and attitudes.

CS-03-04 is related to one course only. CS-03-04 relates to "Documentation," such as drafting medical certificates and patient referral documents. This indicates few chances exist to study this skill in the undergraduate medical curriculum.

Table 7: CS (Clinical Skills), total number: 919

Third Tier	Total Number	Total Number (%)	Third Tier	Total Number	Total Number (%)
CS-01-01	46	5.0	CS-03-04	1	0.1
CS-01-02	62	6.7	CS-03-05	14	1.5
CS-02-01	38	4.1	CS-03-06	22	2.4
CS-02-02	96	10.4	CS-04-01	10	1.1
CS-02-03	199	21.7	CS-05-01	3	0.3
CS-02-04	212	23.1	CS-05-02	15	1.6
CS-02-05	8	0.9	CS-05-03	14	1.5
CS-03-01	32	3.5	CS-05-04	26	2.8
CS-03-02	20	2.2	CS-05-05	13	1.4
CS-03-03	62	6.7	CS-05-06	26	2.8

Table 8 shows the result for CM. CM-01-01 is "Appropriate communication skills with patients and their family members," which may be taught during clinical clerkships. It has a slightly higher number than other areas.

Table 8: CM (Communication), total number: 211

Third Tier	Total Number	Total Number (%)
CM-01-01	61	28.9
CM-01-02	29	13.7
CM-02-01	21	10.0
CM-02-02	11	5.2
CM-02-03	34	16.1
CM-03-01	29	13.7
CM-03-02	26	12.3

Table 9 shows the result for IP. Compared to other qualities/abilities, the total number is not high. Particularly, only three courses were connected to IP-01-01, which is "Patient-centered health and welfare." Considering that this is a basic component of IP, there should be additional courses related to it.

Table 9: IP (Professionalism), total number: 87

Third Tier	Total Number	Total Number (%)
IP-01-01	3	3.4
IP-01-02	12	13.8
IP-01-03	14	16.1
IP-02-01	23	26.4
IP-02-02	10	11.5
IP-02-03	12	13.8
IP-02-04	13	14.9

Table 10 shows the result for SO. Although there are not many courses related to SO, this quality/ability has numerous learning objectives. This includes social security, epidemiology, forensic medicine, and medical care from a social sciences perspective.

Table 10: SO (Medicine in Society), total number: 234

Third Tier	Total Number	Total Number (%)	Third Tier	Total Number	Total Number (%)
SO-01-01	12	5.1	SO-04-01	10	4.3
SO-01-02	12	5.1	SO-04-02	7	3.0
SO-01-03	23	9.8	SO-04-03	4	1.7
SO-01-04	7	3.0	SO-04-04	2	0.9
SO-01-05	14	6.0	SO-04-05	11	4.7

SO-02-01	8	3.4	SO-04-06	5	2.1
SO-02-02	25	10.7	SO-04-07	3	1.3
SO-02-03	18	7.7	SO-05-01	24	10.3
SO-03-01	13	5.6	SO-05-02	19	8.1
			SO-06-01	17	7.3

4 Discussion

The results show that the curriculum of the author's university covers MCC's entire third tier. However, some elements—such as RE-03-02, PS-03-06, and CS-03-04—have few connections to the courses. A single subject is insufficient to fulfill the relevant learning objectives. The mapping of learning objectives and all course contents should be further investigated. This would improve the effectiveness and efficiency of the curriculum.

This study has some limitations. The survey results from 82 universities were based on the previous (2016) MCC. Considering that adopting the new MCC began in 2024, the newest syllabus data will be altered based on this. Thus, further surveys are required.

Summaries of the author's university data were calculated by counting MCC items. The results from two cases show that: (1) one course links to PR while other courses have no connection to PR; (2) each course links to one PR: for example, course A links to PR-01-01-01 while course B links to PR-01-01-02. Further analysis is required.

5 Conclusion

A brief analysis of the medical education curriculum based on MCC was conducted. Approximately 40% of universities publish their syllabus showing connections between their courses and MCC. The case study of the author's university investigated the number of courses connected to MCC. Although all of the MCC learning objectives in the third tier are covered by the curriculum at the author's university, some learning objectives have few courses connected to them.

References

[1] Ministry of Education, Culture, Sports, Science and Technology, "Model Core Curriculum for Medical Education in Japan – 2022 Revision," https://www.mext.go.jp/content/20230323-mxt_igaku-000028108_00003.pdf.

[2] Japanese Core Curriculum; https://core-curriculum.jp/en