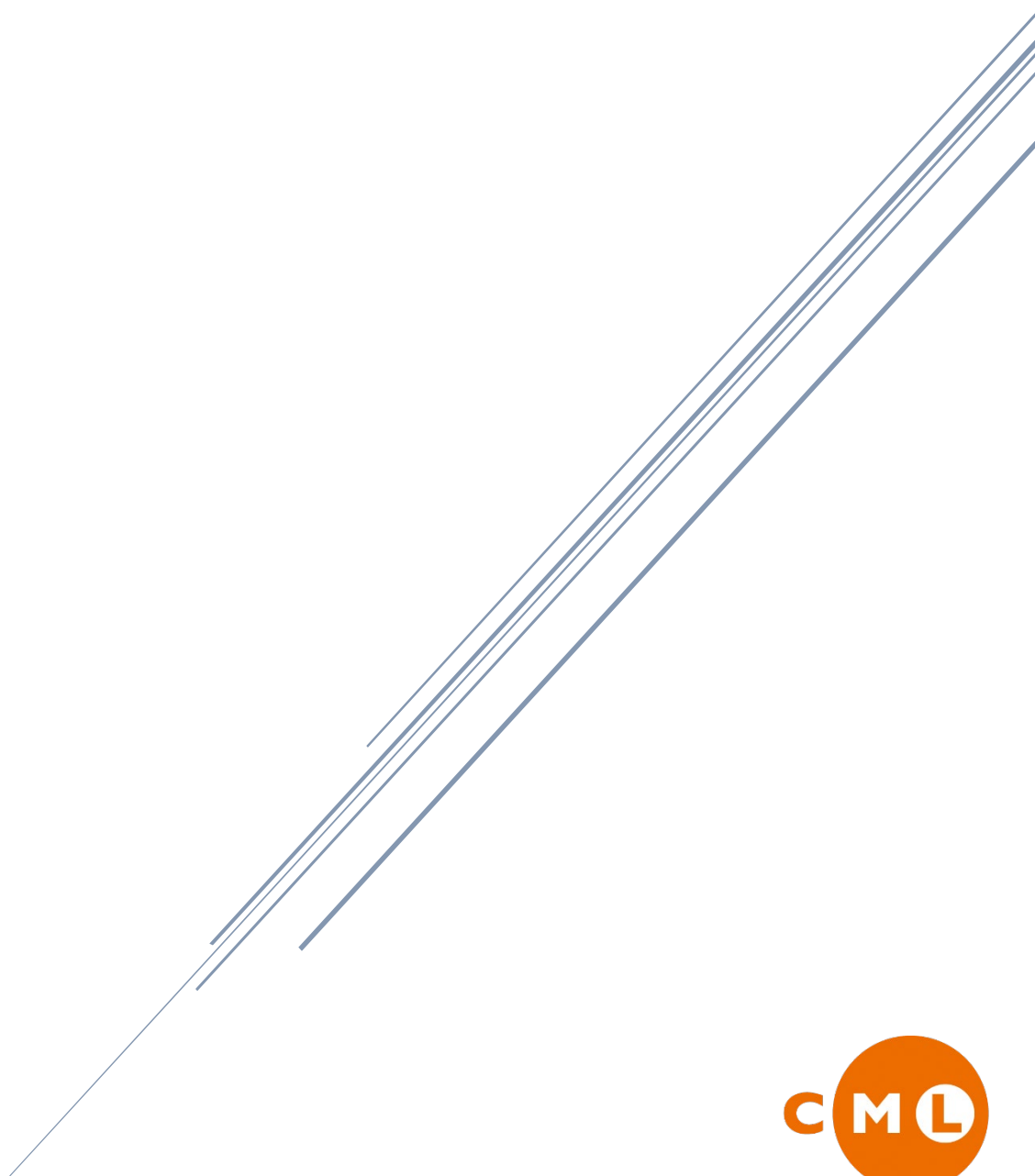


2023年度公立はこだて未来大学 メタ学習センター活動報告

Future University Hakodate Center for Meta-Learning
Report 2023 - 2024



メタ学習センター
Center for Meta-Learning

Think reflectively. Act collaboratively. Design the future.

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1. メタ学習センターについて
Basic Information of the Center for Meta-Learning

1-1. 設置目的/Aims of CML

※平成 20 年公立大学法人公立はこだて未来大学規程第 30 号「メタ学習センター規程」より

* Regulations of the Center for Meta-Learning at Future University Hakodate/Act No.30 of 2008

「目的(第 2 条)」/Aims of CML is to advance (Article 2)

センターは、情報技術分野の専門教育の基礎として、大学における学習方法の教育を主たる目的とし、特に総合的なコミュニケーションの能力および幅広い教養と多角的な視点から物事を判断する能力の養成を中心として、将来にわたり持続的に発展していく社会に資する人材を輩出するための活動を実施する。

Future University's strategic education and learning within the professional and academic disciplines of Information Technology. Through educational programs, CML will foster students' communication ability and thinking through a wide range of Liberal Arts subjects offering multilateral points of view. Our goal is to develop human resources who will continually contribute to developing society in the future.

「業務(第 3 条)」/Initial Roles of CML (Article 3)

(1) リベラル・アーツ教育のカリキュラム開発および実施の企画

Supervising curriculum of Liberal Arts and Communication and feedback to Faculty who teach the class

(2) 新入生の導入教育の企画

Planning introductory education

(3) FD(教育・研究・運営に関する人材育成および組織改革)の企画

Planning faculty development

(4) 教育研究、学習研究に関わること

Matters relating to research of teaching and learning

(5) 大学の教育活動を中心とした建学理念の教員や職員との共有化に関わること

Matters relating to sharing FUN educational philosophy with faculty and staff

(6) その他、未来大学における教育、学習活動に関わること

Miscellaneous matters relating to activities of teaching and learning at FUN

1-2. 沿革 /History

2007 年 CML 準備委員会発足/Preparatory committee for organizing CML started

2008 年 CML 設置(センター長 美馬のゆり教授)/CML started (Chair of CML Prof. Noyuri Mima)

2011 年 CML 専任教員の雇用開始/Employment of full-time faculty for CML started

2012 年度～2013 年度 センター長 片桐恭弘教授/Chair of CML Prof. Yasuhiro Katagiri

2014 年度～2015 年度 センター長 マイケル・ヴァランス教授/Chair of CML Prof. Michael Vallance

2016 年度～2017 年度 センター長 平田圭二教授/Chair of CML Prof. Keiji Hirata

2018 年度～2021 年度 センター長 富永敦子教授/Chair of CML Prof. Atsuko Tominaga

2022 年度～センター長 宮本エジソン正教授/Chair of CML Prof. Edson T. Miyamoto

1-3. 2023 年度委員会メンバー/2023-2024 Committee Members

所属(コース) Department (Course)	氏名 Name
センター長 Chair of CML 2022-24	宮本 エジソン 正教授 Edson T. Miyamoto (Professor)
メタ学習センター Center for Meta-Learning	富永 敦子教授 Atsuko Tominaga (Professor)
	スミス アダム准教授 Adam Smith (Associate professor)
	辻 義人准教授 Yoshihito Tsuji (Associate professor)
	工藤 充准教授 Mitsuru Kudo (Associate professor)
コミュニケーショングループ Communication group	ジョンソン アンドリュー准教授 Andrew Johnson (Associate professor)
	バゲンダ ドミニク准教授 Dominic Bagenda (Associate professor)
	ルースベン・スチュアート ピーター准教授 Peter Ruthven-Stuart (Associate professor)
情報システムコース Information Systems	寺沢 憲吾准教授 Kengo Terasawa (Associate professor)
	石田 繁巳准教授 Shigemi Ishida (Associate professor)
情報デザインコース Information Design	竹川 佳成教授 Yoshinari Takegawa (Professor)
複雑系コース Complex Systems	田中 吉太郎准教授 Yoshitaro Tanaka (Associate professor)
	加藤 譲准教授 Yuzuru Kato (Associate professor)
CML 委員会庶務 CML Committee Admin	事務局教務課 Department of Education Affairs
CML コーディネーター CML Coordinator	木下 葉月 Hazuki Kinoshita

2. 2023 年度 CML 活動報告
CML Activity Report on AY2023

2-1. Foundation for Meta-Learning

2-1-1. Meta-Learning Lab

1. Program description

The Meta Learning Lab (MLL, hereon) is a learning support system outside of core courses that aims to improve the basic academic skills of the university's students, and their knowledge and behavior regarding study habits and learning strategies. In AY2023, the MLL had 15 peer tutors (6 of which were newly hired), including both undergraduate and graduate students, who supported independent learning, mainly in the core courses for first and second year students.

Since 2015 MLL has been accredited as an "International Tutor Training Program, Level 1" by CRLA (College Reading & Learning Association) certifying the quality of tutoring and encouraging tutors' self-development. MLL certifies tutors who meet the requirements for Level 1 of the CRLA/ITTPC. CML has certified 21 tutors at Level 1 according to the CRLA/ITTPC criteria, including four tutors in AY2023. Furthermore, from the end of AY2023, MLL has initiated efforts to ensure tutor quality by replacing the CRLA/ITTPC with Open Badges. Open Badges is a service based on blockchain technology that allows users to, for example, issue certificates for knowledge and skills acquired. One of the reasons for introducing Open Badges is that the existing international tutor training program is mostly tailored for large-scale universities, making it increasingly difficult for MLL to operate flexibly. In AY2023, Open Badges were issued to three tutors. Going forward, the university plans to utilize Open Badges to ensure the quality of our tutors and enhance their motivation.

2. Overview of AY2023 activity and Outcomes

(1) Implementation period and number of tutoring sessions

In AY2023, there were 229 tutoring sessions. By discipline, programming was the most frequent at 76% (174 sessions), followed by math at 19% (44 sessions). The number of tutoring sessions per academic term and number of peer tutors are shown in Table 1.

Table 1 Number of tutoring sessions per academic term and number of peer tutors

	Implementation period	No. of possible sessions per week	Total no. of sessions	Number of peer tutors
First semester	17 April 2023-27 July 2023	29 sessions/week	178	14 (M2: 1, M1: 5, B4: 2, B3: 2, B2: 4)
Second semester	2 October 2023-22 January 2024	24 sessions/week	51	15 (M2: 1, M1: 5, B4: 2, B3: 2, B2: 5)

(2) User satisfaction levels

Survey responses were collected for 229 sessions and results are summarized in Table 2. The ratio of "Strongly agree" and "Agree" was more than 95% for all questions, pointing to a high level of user satisfaction.

Table 2 Results for 229 survey responses

	Strongly agree	Agree	Disagree	Strongly disagree
1. The tutor listened to what I said and understood my problems.	201 (88%)	28 (12%)	0 (0%)	0 (0%)
2. The tutor was approachable and easy to talk to.	200 (87%)	26 (11%)	2 (1%)	1 (0%)
3. The tutor’s explanations were easy to understand and useful to me.	195 (85%)	31 (14%)	3 (1%)	0 (0%)
4. The issue I sought to address through this consultation was resolved through tutoring.	169 (74%)	48 (21%)	8 (3%)	4 (2%)
5. I received tips and advice related to independent study.	193 (84%)	32 (14%)	4 (2%)	0 (0%)
6. Through tutoring, I found out about resources and teaching materials that I will be able to use on my own.	176 (77%)	45 (20%)	7 (3%)	1 (0%)
7. Overall, I was able to obtain the learning support that I required.	191 (83%)	35 (15%)	2 (1%)	1 (0%)

(3) Implementation of in-person tutoring

In AY2023, in-person tutoring was resumed in full while ensuring efficient and effective operations. Following the implementation in AY2022, only afternoon sessions (3rd to 5th periods) were offered with tutors stationed during all open hours.

In the first semester, 178 sessions were conducted (compared 131 sessions in AY2022). The average utilization rate (number of sessions conducted divided by the number of sessions available) was 57% (AY2022: 45.7%), with 11 out of 14 slots having a rate of 50% or more (AY2022: 9 out of 15), 2 slots with a rate of 20% to 50% (AY2022: 5 slots), and 1 slot with a rate of less than 20% (AY2022: 1 slot).

In the second semester, 51 sessions were conducted for an average utilization of 19.6% (AY2022: 23.7%), with 1 out of 15 slots having a rate of 50% or more (AY2022: 1 out of 15 slots), 7 slots with a rate of 20% to 50% (AY2022: 5), and 7 slots with a rate of less than 20% (AY2022: 9 slots). There were no incoming international students, lowering the utilization rate compared to the second semester of AY2022 (without the supporting sessions for international students, the utilization rate for the second semester of AY2022 was 17.6%). See Table 3 for a summary for the last three years.

Table 3 Utilization rate for AY2021 to AY2023

	Utilization rate (number of sessions conducted)		
	First semester	Second semester	Year
AY2021	27.8% (107)	2.8% (10)	15.5% (117)
AY2022	45.7% (131)	23.7% (59)	34.2% (190)
AY2023	57.0% (178)	19.6% (51)	39.8% (229)

(4) Tutor-led activities

Tutors took the initiative by proposing and implementing various activities under the guidance of the MLL staff.

Firstly, tutor-led training sessions, which were started in AY2020, were also implemented in AY2023. The purpose of these sessions is for tutors to gain a deeper understanding of the training topics, and acquire teaching skills and methods by teaching in a variety of situations. Four tutor-led sessions were held, two in the first semester and two in the second semester. The sessions followed the CRLA standards, so that based on the CRLA training objectives, the tutors acquired the skills to design a two-part course on “understanding the theoretical concepts and

applications of tutoring.” Improvements were observed regarding the quality of the activities used to translate the learned concepts into tutoring skills. As a result, the quality of training deliverables and discussions improved, as well as the acquisition of meta-perspectives and verbalization skills in tutoring. The sessions were particularly effective for the newly hired tutors.

Secondly, tutors proposed and started two research projects to be continued in the next academic year. The first compares in-person to on-line tutoring. The second investigates ways of improving tutoring evaluations and new rubrics have been created for tutors and tutees.

Thirdly, tutors also proposed and implemented five workshops providing support to first-year students as well as on topics such as C programming and web site creation with a total of 44 attendees.

Staff: Atsuko Tominaga, Edson T. Miyamoto, Yoshihito Tsuji, Hazuki Kinoshita

2-2. Preparatory Education

Preparatory Education for Students Selected through the Comprehensive and Recommendation Exams

2-2-1. Preparatory Education in English

1. Program description

The Preparatory Education program is offered to students who have successfully taken early entrance exams such as the Comprehensive Entrance Exam and the School Recommendation Entrance Exam. The primary aim of the English section is to help participants practice their English language skills in the three months preceding the start of the academic year.

This year's English section used the same timed-reading program (TRP, hereon; see Chang, 2010; Tran & Nation, 2014; and references therein for discussion and previous evaluations of such programs) as last year's with some modifications explained later in this report. TRPs use short texts to improve reading fluency by emphasizing reading speed rather than perfect comprehension. The goal is to practice physiological (*e.g.*, eye movements) and psycholinguistic (*e.g.*, lexical access) processes that can improve the overall reading experience in the target language (Nation, 2005, for discussion).

A secondary goal of the program was to encourage participants toward a more self-regulated style of learning. Participants controlled how often they wished to spend time in each activity setting priorities according to their personal needs. Frequent short sessions rather than sporadic long ones were recommended. To counterbalance the free format of the mathematics section, in which participants could access activities in any order, the TRP was structured sequentially with feedback at the end of each activity.

2. Overview and AY2022 activity

Of the 93 students accepted to the university through early entrance exams, 92 requested and were registered in the Preparatory Education program on December 20, 2023. The activities for the English section were made available in a Moodle course on the HOPE website and were accessible until April 2, 2024. The activities for the mathematics section were provided in a separate HOPE course.

A practice text with an accompanying quiz was followed by the six blocks of the TRP. Each block had 20 texts (117 from Millett, 2017; 3 from Spargo, 1998). Texts in a block had about the same number of words (300 to 550) from controlled vocabulary lists, as it is commonly recommended that the texts be easy to promote rapid reading. The blocks were shown in increasing level of difficulty according to their vocabulary lists. The texts in each block were also ordered in increasing level of difficulty based on the mean ratings collected during the 2023 program.

Each text was followed by a quiz (from the same sources as the texts). Instead of using all of the 8 to 10 questions available for each text as was the case in 2023, six questions were randomly selected for each attempt. This was done to decrease the burden of the quizzes, thus reinforcing the focus on the overall comprehension of the texts rather than memorizing specific points to answer the questions. Moreover, random selection allowed for a slightly different set of questions to be shown if the participant chose to resubmit an attempt by re-reading the text and answering its quiz again. Feedback for each quiz included the participant's score and a suggestion on how to read the next text as follows (see Nation, 2005, for a related proposal): to read faster if the score was 80% or higher, to keep the current speed if the score was around 60 to 80%, and to read more slowly if the score was below 60%.

Weekly individual graphs were provided to emphasize the gamified nature of the feedback (see Figure 1 for an example) with the logarithm-transformed reading time to each text. The reading times were log-transformed (as opposed to the untransformed raw reading times in 2023) to decrease the impact of large data points.

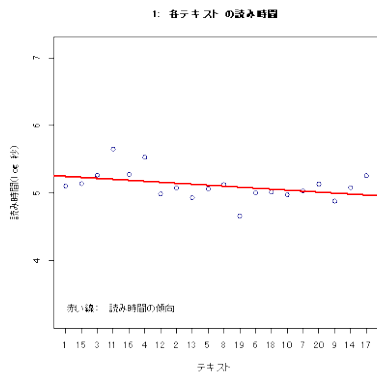


Figure 1. Feedback provided to a participant showing their log-transformed RTs for the 20 texts in Block 1 (the red line is the trendline).

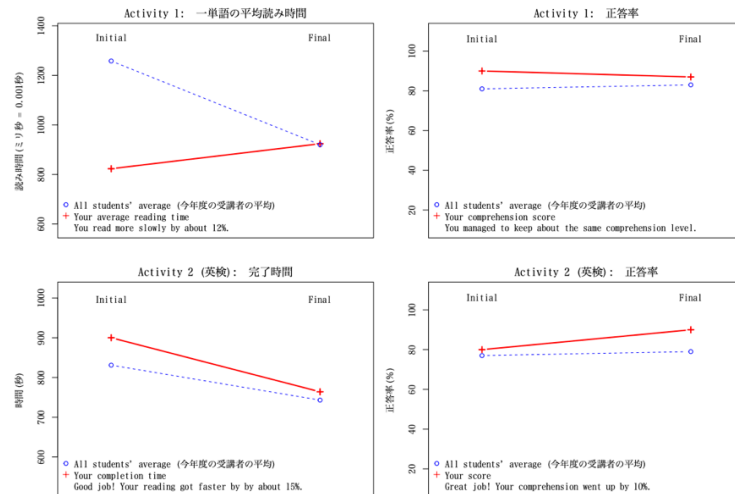


Figure 2. Feedback for the pre- and post-tests. (Top graphs: Task 1; bottom: Task 2. Left: reading time; right: comprehension. Blue dashed lines: overall trends for all submissions; red solid lines: trends for one participant.)

3. Outcomes

Measuring the effectiveness of the TRP on reading fluency

Two tasks were used as pre- and post-tests to measure the effects of the TRP (see Figure 2 for an example of individual feedback provided to participants at the end of the program). In Task 1, a non-cumulative moving-window self-paced reading study conducted on PCIBex (Zehr & Schwarz, 2018) presented 40 sentences one word at a time as the participant pressed the spacebar of the computer keyboard. Each sentence was followed by a true/false comprehension question. In Task 2, participants had 15 minutes to answer 41 questions from the four lowest levels of a standardized English test (Eiken test; <https://www.eiken.or.jp>). Each participant saw a different set of materials in each test session, with the order of the sets counter-balanced across participants.

Results for Task 1 were comparable to those for the 2023 participants. Seven participants indicated that they could not submit this task because they did not have access to an internet-connected computer. For the 41 participants who submitted both sessions, there was no difference in the comprehension scores (pre 82.56%, post 83.35%; $\beta = -.072$, $p = .482$; mixed-effects logistic models, function *glmer* in the package *lme4*, Bates et al. 2015). Of those, scores decreased for 19 participants (average decrease: 5 percentage points), increased for 15 participants (average increase: 8.5 percentage points), and was unchanged for 7 participants. Reading times per word in the post-test were 440 milliseconds faster than in the pre-test (pre 1330 ms, post 890 ms; mixed models: $\beta = -262$, $p < .001$); moreover, according to an interaction, the more TRP texts participants read, the faster they got in the post-test ($\beta = -38$, $p = .005$; functions *lmer* and *step* in the package *lmerTest*, Kuznetsova et al., 2017, in R, R Core Team, 2022). The interaction is promising as it indicates that the training had the intended effects; but it should be interpreted with caution as it was not replicated in analyses with log reading times, leaving the possibility that extreme values in the raw data drove the effect.

For Task 2 (the questions from Eiken tests), 41 participants had data for both sessions. Their mean time to complete the task was 88 seconds faster in the post-test (743 seconds) than in the pre-test (831 seconds; $\beta = -87.83$, $p < .0001$) while maintaining comparable scores (pre: 80.69%, post: 80.54%; $\beta = -.003$, $p = .976$). In 2023, no effects on completion times or scores were observed in the results for 38 participants.

Measuring engagement in the online course

Figure 3 summarizes participants' activities in the course. Access increased in March as the approaching end of the course was announced, and persisted into April as participants checked the final feedback comparing their performance in the pre- and post-tests (Figure 2 on the previous page, for a sample).

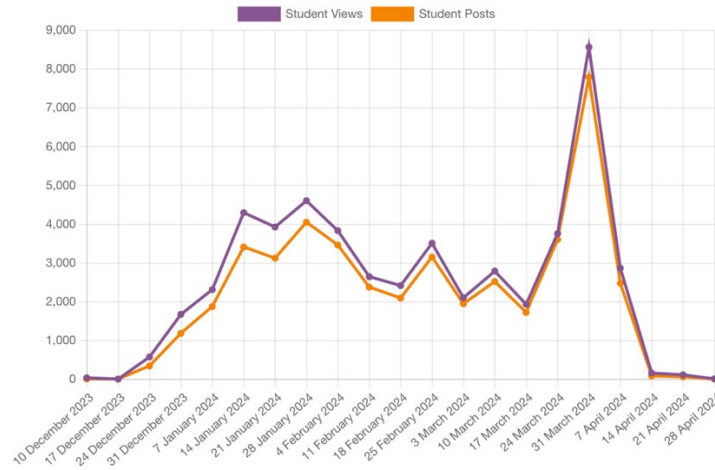


Figure 3. Activities in the HOPE course.

Of the 92 participants registered, three never accessed the course. From mid-December 2023 until April 2024, the remaining 89 participants viewed the course 51,999 times, a decrease of 11% compared to the equivalent period for the 2023 program (58,653), perhaps because the 2023 HOPE course also included the math section. But participants posted 45,194 times (which mostly included submitting activities such as reading texts and answering quizzes), an increase of 32% from 2023 (34,289).

Because these numbers are likely to be inflated by the inclusion of multiple actions for a single activity (e.g., starting, reviewing, submitting, updating responses to a quiz), Figure 4 restricts the counts to the submissions in the TRP, of which there was a total of 7,504 with 13,415 views. Apart from the participants who never accessed the course, 8 never submitted any of the activities (6 in 2023), and 22 (24%) submitted all 120 English quizzes compared to 13 participants (14%) in 2023.

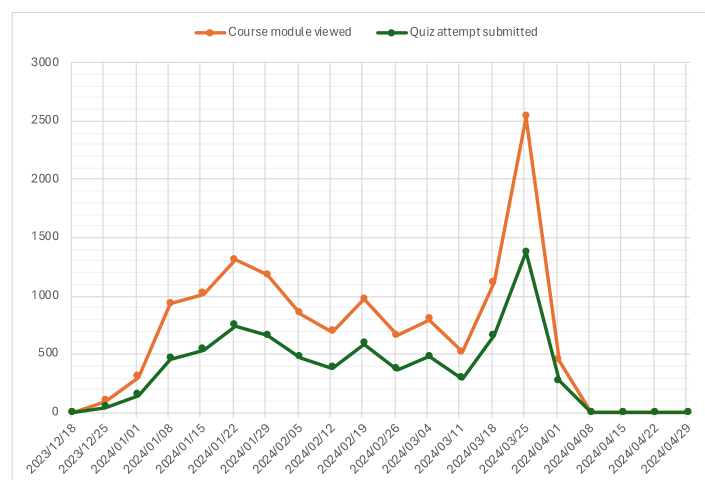


Figure 4. Activities related to the Timed-Reading Program.

Survey

A survey was conducted in Japanese to collect participants' reflections at the end of the program. Participants provided ratings for the English section of the program (questions Q1 to Q8), for their attitude toward English after attending the program (Q9 to Q12), and for their activities in English outside the program (Q13 to Q18). See Table 1 for the results for 46 respondents (up from 33 in 2023). The translations of the questions were partly based on <https://www.deepl.com/translator>.

Table 1 Preparatory Education Program (English) survey results

Questions	Median	Mean	SD	N
Q1. In this program, it was important to do the tasks regularly, rather than doing them all at once in one session. I was able to complete the tasks regularly every day.	2	2.50	1.28	46
Q2. It felt like a burden to do the tasks every day.	4	3.60	1.19	45
Q3. The texts became more difficult along the blocks. Was the difficulty level of each block appropriate?	3	3.43	0.75	46
Q4. The teaching materials were well-designed, and their explanations were easy to understand.	5	4.85	0.82	46
Q5. The program's methods were appropriate to help participants achieve learning objective 1 of the course. Objective 1: Practicing autonomy and independence to study.	5	4.78	1.01	46
Q6. The program's methods were appropriate to help participants achieve learning objective 2 of the course. Objective 2: Practice English reading.	5	5.00	0.73	46
Q7. After entering university, I would like to continue to practice English reading using a program like this one.	4	4.37	1.06	46
Q8. I would recommend this program to future university freshmen.	5	4.85	0.97	46
Q9. It has increased my motivation to read English.	4	4.13	1.02	46
Q10. It has increased my interest in reading English.	4	4.11	1.04	46
Q11. It has increased my confidence in reading English.	3.5	3.48	1.15	46
Q12. I enjoy reading English more.	4	4.11	1.14	46
Q13. I studied English outside of this program.	1	0.98	1.13	46
Q14. I watched films, dramas, and so on in English.	1	2.37	1.69	46
Q15. I read books, magazines, articles, and so on in English (including those on the internet).	2	2.17	1.37	46
Q16. I chatted in English using an app.	1	1.98	1.41	46
Q17. I had conversations in English (including phone calls, video chats, etc.)	1	1.48	0.86	46

※ Q3: 5-point scale (1: very easy ~ 5: very difficult)

Q1-Q2, Q4-Q17: 6-point scale (1: Not at all ~ 6: Very much)

Questions Q1 and Q2 indicate that participants have difficulty organizing their studies and completing tasks on a regular basis. The program may have helped draw their attention to the issue (see comments for Q19 later).

Q3 suggests that the difficulty of the texts was close to ideal, not too difficult, not too easy. Questions Q4 to Q8 indicate that participants felt the program was appropriate. Questions Q9 to Q12 suggest that the program had a modest contribution to participants' motivation and interest in reading in English. Questions Q13 to Q17 reiterate the importance of offering this type of program as participants seem to do little study on their own. For Questions 18 and 19, participants were free to type further comments (the following are translations based on <https://www.deepl.com/translator>).

Q18. Describe other activities using English, if any.

- *I listened to Western music.*
- *I dealt with customers.*
- *I traveled.*
- *I can now understand a few English subtitles of foreign youtubers.*
- *English music appreciation.*
- *I listened a little to western music while looking at the lyrics.*

Q19. Other comments or suggestions regarding this program

- *I thought it was a good program because I could get more familiar with English and get the hang of reading quickly by having more opportunities to come into contact with English.*
- *I think it was very good training for English reading.*
- *Through this program, I realized that I didn't know many English words and that I didn't have reading comprehension skills. However, I also felt a sense of accomplishment as my reading speed gradually improved and I was able to understand some of the content.*
- *Thanks to this program, I was able to spend meaningful time.*
- *I am glad that I was able to read various genres of topics such as fairy tales and world history, which helped me deepen my education.*
- *I was able to learn about history and other things I did not know before.*
- *Although I sometimes found it difficult, I was able to enjoy learning English. I also learned the importance of making steady efforts.*
- *I increased my knowledge as all English texts were interesting, but there were also many sentences that I couldn't understand because I didn't know too many words, and I felt that I would like to practice vocabulary as well.*
- *I would like it to be made available without a computer.*
- *I really enjoyed the stories in Block 4!*
- *It was good.*
- *Through this program, I realized that my ability to keep going is still lacking. I would like to devise ways to continue by setting more detailed goals and make use of them in my future activities.*
- *I didn't check the paper thoroughly and didn't get started until the end of March. I apologize for not being able to finish the program properly even though you prepared it for us. From now on, I will make sure to check it carefully and work hard on my English study.*
- *I know it's selfish of me, but I wish you had included a full description of the program (especially the part about there being 120 texts in total) in the initial description. (My memory is a bit fuzzy, but if this was indicated from the beginning, I apologize.) And first, the issue of the different pages opening was very quickly addressed, thank you for your help. Thank you.*
- *I felt that the program was a great way to get people interested in English.*

- *The content was good, but due to lack of self-discipline, I forgot my assignments and could not work on them every day. It was a good opportunity to look up words I didn't know and I learned a lot.*
- *It was difficult.*
- *Because I was attending a driving school at the same time, I did not have time to open my computer and read English. It is a little frustrating, I wish I had more time. It is hard to refuse when the printout introducing the pre-enrollment study program says that all newly-accepted students are enrolled in the program, so I think it would be good not to have such an introduction for those who want to attend driving school or study on their own as well.*
- *I would like to be able to log in on both my phone and computer because I was only able to log in on one device, so when I bought a new computer, the transition did not work.*

Conclusion

The results of a timed reading program suggest that it can help improve participants' reading fluency. Compared to 2023, there was an increase in participation with 32% more submissions (i.e., posts) overall, and more participants completing all the tasks that were made available. The changes implemented this year (e.g., fewer questions per quiz; texts within each block ordered according to their difficulty) may have contributed to facilitate participants' participation and further changes will be considered for the next iteration of the program.

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2-2-2. Preparatory Education in Math¹

1. Program description

One of the fundamental abilities demanded of students enrolling in this university is a basic competence in mathematics. Students are expected to understand high-school mathematics such as Mathematics III, (differentiation/integration), which is directly related to the mathematics studied at the university. There is a tendency for students enrolling via the Comprehensive or the Recommendation exams (*early exams*, hereon) to have a lower level of competence in mathematics when compared to students enrolling via the General entrance exams. Although some students who enroll via the General First exam do not sufficiently understand the content of Mathematics III, among those selected via the early exams there are students without sufficient understanding of the even more basic contents in Mathematics II and Mathematics B, as well as Mathematics III. This tendency is especially pronounced for students enrolling through the Comprehensive exam. To address this concern, the university provides pre-enrollment education for those selected via the early exams, with the following purposes:

- To re-emphasize the importance of high-school mathematics, solidify the basics, and provide a review of Mathematics II, B, and III.
- To return to a stance toward studying in which elements that are not understood are not simply ignored, and that understood content is written in appropriate language.
- To steel oneself through engagement with university mathematics and get into the habit of studying continuously and independently.

2. Overview of AY2023 activity

(1) The distribution schedule and aims of the assignments

a. Assignment 1

- Schedule: Instructions were mailed out around December 18th, 2021. The deadline was January 12th, and feedback was returned together with the instructions for Assignment 2.
- Content: Review of high-school mathematics (Mathematics II, Mathematics B)
- The online distribution of lecture videos and materials for the special course in Mathematics II and B: For students who have not acquired the basics of Mathematics II and B, and for those who find it difficult to study on their own, recorded lecture videos and materials for the special lectures in Mathematics II and B were uploaded to the learning management system HOPE. In addition, students could only view the answers to the assignments after uploading a photo of their own answer.
- Aims: To review content that will be particularly needed immediately after enrollment from among the basic content of high-school mathematics (complex numbers and equations, trigonometric functions, exponential and logarithmic functions, differentiation, integration, and sequences). In doing so, areas where understanding is ambiguous or insufficient will be identified prior to enrollment, solidifying the fundamentals.

b. Assignment 2

- Schedule: Instructions were sent out on January 31st; the deadline was February 26th, and feedback was returned with the instructions for Assignment 3.
- Content: Review of high-school mathematics (Mathematics II, Mathematics B, and Mathematics III)
- The online distribution of lecture videos and materials for the special lectures in Mathematics III: For students who have not acquired the basics of Mathematics III, and for those who find it difficult to study on their own, recorded lecture videos and materials for the special lectures in Mathematics III were made available on HOPE. Students could only view the answers to the assignments after uploading a photo of their own answer.

¹ This is a translation from the Japanese report partly based on output from DeepL.

- Aims: To engage with content of high-school mathematics (Mathematics III) centered on calculations (limits, sequences, differentiation, integration) highly linked to Analysis I and Analysis II, which are compulsory courses in the first academic year. In doing so, students who have not covered this coursework in high school will become accustomed to the content of Mathematics III, which will assist them in understanding Analysis I and II.
- c. Assignment 3
- Schedule: Instructions were sent out on March 11th. There was no required submission. Answers were distributed after enrollment in early April.
 - Content: Preparation for Analysis 1
 - Aims: By studying university-level materials in advance, students should understand how the content of high-school mathematics is deeply linked to university mathematics and realize how important it is to solidify the basics of high-school mathematics. Another aim is enabling students to steel themselves by engaging with the university-level mathematics and getting into the habit of studying continuously and independently, so that they will not fall behind in math classes after enrollment.

(2) Leveraging HOPE in interactive dialogues, feedback, and the construction of an environment for taking special classes in Mathematics II, B, and III.

We built an environment for pre-enrollment education using HOPE.

- Distributing comments (explanations of each question, advice, the rate of correct answers) from faculty members according to the status of the assignment
- Setting up a forum for dialogue between students, and also between faculty members and students
- Carrying out a “Questionnaire regarding Pre-enrollment Education” targeted at students
- Accumulation of detailed data on the responses to each question
- Distributing lecture videos recorded in 2020 and materials for the special courses for Mathematics IIB and Mathematics III.

3. Outcomes

The schedule for the three assignments was similar to that of the previous academic year. Of the 93 students who enrolled for AY2023 through the **early exams**, 90 registered. All 90 submitted Assignment 1, and 89 submitted Assignment 2. Fifteen students in Assignment 1 and seven students in Assignment 2 scored less than 60 % correct (see Figure 1), suggesting that more assistance should be provided once they enter the university.

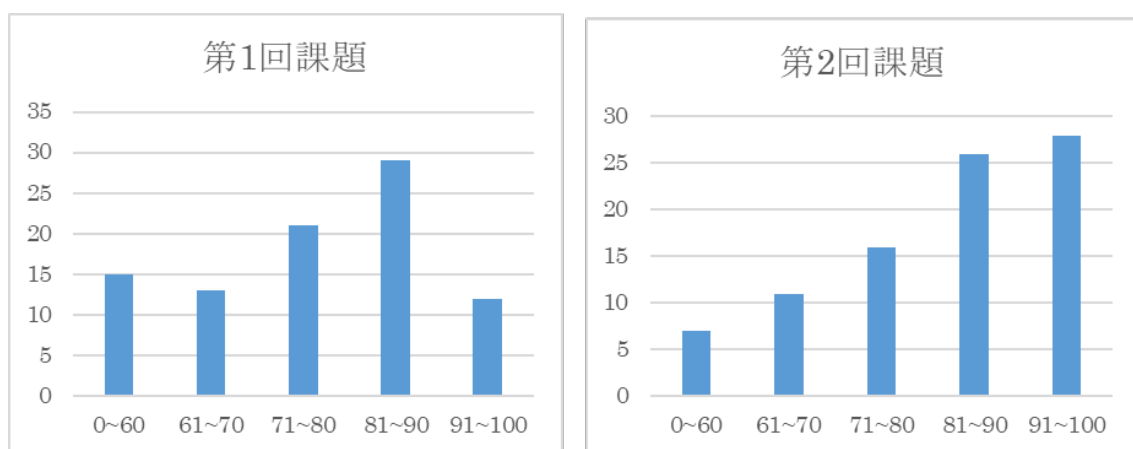


Figure 1. Distribution of the percentage of respondents scoring on Task 1 and Task 2 (vertical axis: number of respondents (persons), horizontal axis: percentage of respondents scoring (%))

This year, assignments were made available online on HOPE and were also mailed in paper format to promote the revision of assignments and to make it more convenient to do so. The HOPE online system allowed the creation of an environment in which feedback is received from faculty members, and interactive dialogue is engaged between faculty members and students, and between groups of students. But there was no spontaneous leveraging of this interactive dialogue. Consideration of the use of the dialogue function is required.

According to a survey answered by all 81 students, 28% were accepted to the university through the Comprehensive exam and the remaining 72% through the Recommendation exam. The percentage of students who took high-school math courses was as follows: 100% for Math 1, 97% for Math A, 99% for Math II, 92% for Math B, and 69% for Math 3. Ratings for high-school math aptitude on a 5-point scale (1: extremely inept; 5: extremely skillful) had a mean of 3.3 (SE 0.09). Ratings for whether they had a good understanding of high school math for their college studies on a 5-point scale (1: not at all; 5: very much so) had a mean of 3.1 (SE 0.08).

In addition, materials and lecture videos recorded for the special lectures for Mathematics IIB, and Mathematics III were uploaded to HOPE. The aim was to provide learning support to those students who have not grasped the basics of Mathematics II, Mathematics B, and Mathematics III as well as those who find independent learning difficult. And we also added a setting that requires the user to upload his or her own answers in order to view the answers to the exercise printouts. Regarding the viewing of videos, we believe that we were able to provide learning support to some students. Detailed answer data for each question of each assignment has been compiled (see the Pre-Enrollment English Field Report for a tentative summary), but how to analyze and utilize this data in the future is an issue to be considered.

4. Implementation and results of a survey

Led by associate professor Tsuji, a survey was administered to students after the end of the program. Of the 102 registered participants, 20 answered the survey, which was collected between March 12 (Tuesday) and April 2 (Tuesday). There were 19 questions about the Mathematics section of the program. See Table 1 for the results.

Table 1 Preparatory Education Program (Mathematics) Survey Results

Question	Mean	Median	SD
Q1: Aptitude with high school mathematics	3.00	3	1.00
Q2: Your comprehension of high school mathematics courses	3.30	3	0.84
Q3: Confidence in learning mathematics at the university	2.30	2	0.71
Q4: You made steady efforts in the program	4.05	4	0.92
Q5: It was difficult for you to maintain a steady effort in the program	2.95	3	1.16
Q6: The difficulty level of the assignments was appropriate	4.85	5	0.65
Q7: The explanations for the assignments were well thought out and easy to understand	4.85	5	0.73
Q8: The program provided training for autonomous and independent learning	4.65	5	0.85
Q9: The program provided training to deepen your understanding of mathematics	5.00	5	0.55
Q10: You would like to use the materials in the program after entering the university.	5.00	5	0.77
Q11: You would recommend the program to future university entrants	5.30	5	0.64
Q12: The program has increased your motivation to study mathematics at the university	4.70	5	1.00
Q13: The program has increased your interest in studying mathematics at the university	4.90	5	0.83
Q14: The program made you feel more confident in your ability to study mathematics at the university	3.60	4	1.02
Q15: The program has increased your enjoyment in learning mathematics	4.65	5	1.06
Q16: Apart from this program, you studied mathematics on your own	3.90	4	1.34
Q17: The program has deepened your understanding of high school mathematics	4.70	5	0.64
Q18: You are satisfied with the program	5.00	5	0.63
Q19: Comments			

n=20

Staff: Yuzuru Kato, Kengo Terasawa, Yoshitaro Tanaka, Yoshihito Tsuji

2-3. Supplementary Education

2-3-1. Supplementary Math Lectures (Math II B, Math III)¹

1. Program description

The Supplementary Math Lectures have been made available to students taking “Analysis I” and “Analysis II”, which are compulsory subjects for 1st year students. The exercise-style special lectures cover high-school level topics from Mathematics III and Mathematics IIB (Math III and Math IIB, hereafter). These lectures continue to be conducted every year.

2. Overview of AY2023 activity

The Supplementary Math Lectures from AY2020 to AY2021 were conducted online, however from FY2022 onward, the previous face-to-face method was reinstated.

(1) Math IIB supplementary lecture

Target: In “Analysis I”, a basic scholastic exam is administered immediately after the first semester begins. Based on the results of it, faculty in charge of each class required students who were judged to have not reached a certain level of understanding of high school mathematics to take the supplementary lectures in Math IIB. For the second semester “Analysis II”, the attendees were determined based on the grades in the first semester and the score of the basic scholastic exam.

Period: 8 times from May to July, 7 times from October to November (one and a half hour per lecture)

Place: Room791

Number of participants: 37 in the first semester and 37 in the second semester.

Lecturer: Mr. Junichi Tanifuji (teacher at Hakodate Shirayuri High School)

(2) Math III supplementary lecture

Target: open to all interested students attending “Analysis I” and “Analysis II”

Period: 8 times from May to July, 7 times from October to November (one and a half hour per lecture)

Place: Lecture Hall

Number of participants: First semester average 85, Second semester average 59

Lecturer: Mr. Takayuki Hatazawa (teacher at Hakodate High School)

<Activities>

- The lecturer and the faculty in charge (AP Kato and AP Terasawa) coordinated the contents of each session, adjusting to the students’ progress in Analysis I & II.
- The exercises of the Math IIB supplementary course were marked by the students (self-assessment), and the teacher did a final check.
- Students were informed that the attendance in the Math III supplementary course would affect their grades in Analysis I & II.
- At the beginning of the year, we purchased Math III textbooks for Math III supplementary course.
- The exercises of the Math III supplementary course were marked by the students (self-assessment). Model answers were explained in the course, and PDF files were made available using HOPE, the learning management system (LMS) at FUN. In the second semester, attendance management was done by a TA.
- We shared the attendance status and graded results of each class for the Math IIB course, and the attendance status for the Math III course with the faculty in charge of Analysis I and II.

¹ This is a translation from the Japanese report partly based on output from DeepL.

3. Outcomes

(1) The effect of supplementary lecture (Math IIB)

Data collection for special math courses (Math IIB courses) has been ongoing since FY 2018 to verify learning effectiveness.

- The format of the special course in mathematics (Math IIB course) is as follows.
 - 2018 Face-to-Face Format
 - 2019 Face-to-face format
 - 2020 Online format
 - 2021 Online format
 - 2022 Face-to-face
 - 2023 Face-to-face

- Students enrolled in the special course in mathematics (Math IIB courses) are those who were instructed to take the course by their respective class instructors in the university's required course "Analysis I and II" In the case of the academic year 2023, there were 37 students in the first semester and 36 students in the second semester.

- The "grade point average" for each class in each year was used as a measure of learning effectiveness. The grade point values were converted to standardized scores based on each year and class. For ease of reading the obtained indicators, the standardized scores were converted into academic deviation scores (mean = 50 points, standard deviation = 10).

- A three-factor analysis of variance was used to examine the effectiveness of a special course in mathematics (Math IIB courses). The year factor (2018-2023), the start of the course factor (first or second semester), and the course subject factor (participants or non-participants) were then established. Both were between-subjects factors.

- The results of the three-factor analysis of variance are presented below. (Table.1, Fig.1)
 - No main effect was found for the year factor (n.s.).
 - A main effect was observed for the semester factor (first semester > second semester, $p < .01$).
 - A main effect was observed for the subject factor (non-participants > participants, $p < .01$).
 - There was no interaction between the year factor and the semester factor (n.s.).
 - There was no interaction between the year factor and the subject factor (n.s.).
 - Interaction was observed between the timing of the course and the subject factor. ($p < .01$) Simple main effect test results indicated that in both years, only students who received course instructions showed a decrease in academic deviation ($p < .05$). However, no change in academic deviation was observed for students who did not receive course instructions.
 - There was no quadratic interaction between the year factor, the semester factor, and the subject factor.

Table.1 Academic deviations in each semester (2018-2023)

数IIB講習	指標	2018前	2018後	2019前	2019後	2020前	2020後	2021前	2021後	2022前	2022後	2023前	2023後
対象者	平均値	43.50	41.00	41.69	38.82	44.14	37.39	43.01	37.20	39.89	37.72	45.44	39.61
	標準偏差	7.76	8.32	9.68	12.26	11.77	11.21	10.48	12.24	9.80	8.68	10.99	9.49
	データ数	42	35	43	40	45	33	39	26	32	40	37	36
非対象者	平均値	51.39	51.54	51.90	52.34	51.39	52.70	51.34	51.57	51.55	52.48	51.09	51.80
	標準偏差	9.92	9.48	9.11	7.67	9.05	8.15	9.35	8.54	9.13	8.28	9.58	8.98
	データ数	197	204	188	191	189	201	202	213	209	198	210	208

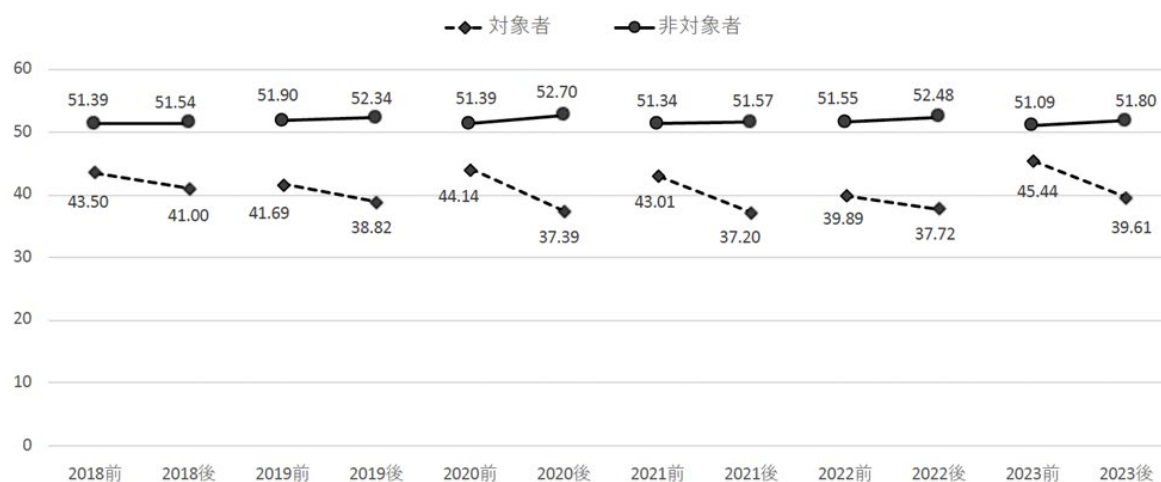


Fig.1 Academic deviations in each semester (2018-2023)

- The results of the analysis showed that the difference in academic deviation between the subjects and non-subjects in the first semester became larger in the second semester. This result is similar to the trend in previous years. This result indicates the need for continued research and consideration of how to provide learning support throughout the year.

(2) The effect of supplementary lecture (Math III)

- Special courses in mathematics (Math III supplementary lecture) are offered only to those who apply for them; in FY2023, the courses were offered in a face-to-face format.
- The following figure shows the participation (%) in special mathematics courses (Math III supplementary lecture) in FY2023. For comparison, attendance data for FY2022 (face-to-face format) is shown with a dotted line (Fig.2); participation for FY2023 is boxed.
- Attention to attendance in the first half of FY2023 indicated that attendance remained relatively high compared to FY2022; for the second half of FY2023, the results showed no significant changes in attendance between FY2022 and FY2023, although some fluctuations were observed.

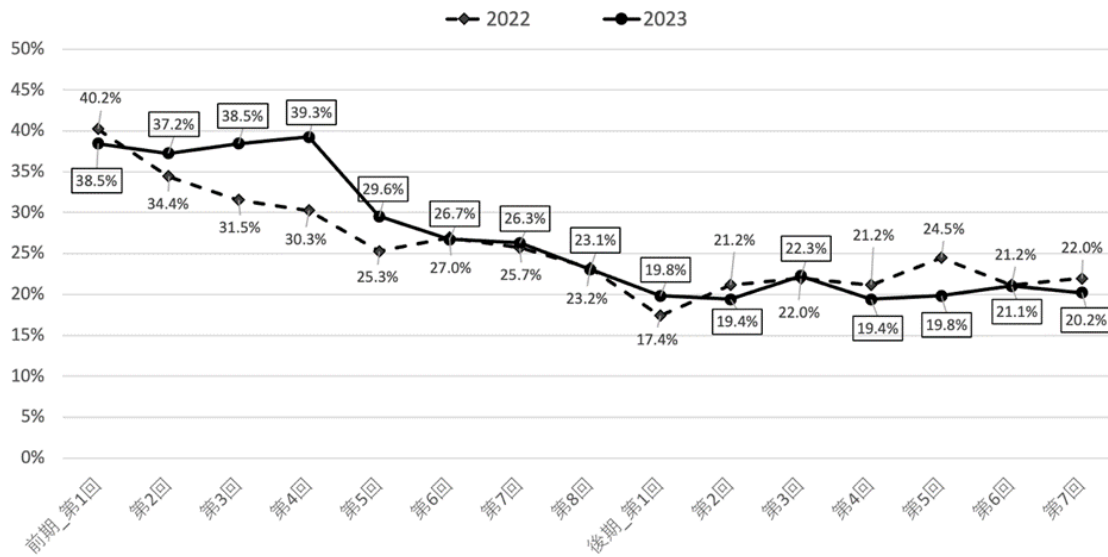


Fig.2 The attendance rate in the supplementary lecture (Math III)

Staff: Yuzuru Kato, Kengo Terasawa, Yoshihito Tsuji

2-3-2. Connections Café

1. Program description

Connections Café offers students opportunities to practice speaking and listening to English. The aims of Connections Café are to:

1. create a positive environment where students are able to speak in English without fear of making mistakes;
2. help students see the value of learning English as a communication tool, and
3. offer students new perspectives of the world.

The main activity conducted is called “small-group sessions.” These sessions are led by a part-time English-speaking facilitator and held 3 or 4 times most days during the semester (up to 17 times per week). Each face-to-face session lasts 40 minutes with a maximum of eight students. Supplemental activities are also conducted by FUN faculty to provide additional support and communication opportunities.

2. Overview of AY2023 activity

Table 1 gives an overview of the 2023 sessions. In addition to small-group sessions, the following summarizes the activities done:

Preparatory

Preparatory

- The Connections Café course page (<https://hope.fun.ac.jp/course/view.php?id=1286>) was updated for AY2023. Students could use the course to access Connections Café information and attendance records.
- The online resources section of the course page was updated.
- The facilitator documentation for managing small-group sessions was updated.
- The annual facilitator orientation was held.

Special Session (Spring)

- 5 lunchtime presentation sessions (3 by A/P Johnson, 1 by Prof Frank, and 1 by students)
- 2 study abroad sessions (A/P Johnson)
- 7 ‘Skills and Resources’ sessions (A/P Johnson)
- 6 ‘Speaking Training’ sessions (A/P Johnson)
- 9 TOEIC sessions (A/P Ruthven-Stuart)

Special Session (Autumn)

- 2 lunchtime presentation sessions (1 by A/P Johnson, and 1 by students)
- 10 ‘Speaking Training’ sessions (A/P Johnson)
- 2 ‘Skills and Resources’ sessions (A/P Johnson)
- 10 TOEIC sessions (A/P Ruthven-Stuart)
- End-of-year party (A/P Johnson; A/P Smith)

Information Sharing

- Introduced Connections Cafe during VEP Orientation
- Emails at beginning of semesters and before special sessions to the “allstudents” mailing list
- Messages on the weekly 1st and 2nd year VEP course announcement forums

- LINE group used to communicate with students who joined (approximated 45 members as of February 2024)

Table 1. Overview of Connections Café sessions

	Spring 2023	Autumn 2023
Open	Weeks 2-15	Weeks 1-15
# of small-group sessions	257 (~17x / week)	265 (~17x / week)
# of special sessions	29	25
Small-group session capacity	8 students	8 students

3. Outcomes

Table 2 shows the 2023 spring and autumn attendance data for Connections Café. For small-group sessions, a total of 1098 session seats were filled for 468 sessions, for an average of 2.3 students per session. With special session attendance included, a total of 1300 session seats were filled, resulting in an increase in total attendance of 14% over AY2022. Table 3 shows a breakdown of attendance by special session type. An average of 5.0 and 2.3 students attended each special session in the spring and autumn semesters,

Table 2. 2023 Attendance data

	Spring	Autumn
Attendance (All Small-Group Sessions Special)	817 673 144	483 425 58
# Unique Students Attended (All Small-Group Sessions Special)	110 94 47	66 61 26
Avg. # Sessions Attended / Student (All Small-Group Sessions Special)	7.4 7.2 3.1	7.3 7.0 2.2
Avg. # Students per Session (All Small-Group Sessions Special)	3.2 3.0 5.0	1.8 1.8 2.3
Max # Sessions Attended by a Student (All Small-Group Sessions)	45 37	42 40
# Students Attending [5+ 15+ 25+] Sessions (All)	48 18 8	29 10 5

Table 3. 2023 Special sessions breakdown

	Spring	Autumn
Special Session Attendance Total	144	58
• # sessions average # students per session	29 5.0	25 2.3
Lunchtime Presentation Attendance	36	20
• # sessions average # students per session	5 7.2	3 6.7
Resources & Skills Sessions Attendance	42	8
• # sessions average # students per session	7 6.0	2 4.0
Speaking Training Session Attendance	32	16
• # sessions average # students per session	6 5.3	10 1.6
Study Abroad Session Attendance	14	n/a
• # sessions average # students per session	2 7.0	0 n/a
TOEIC Preparation Attendance	20	15
• # sessions average # students per session	9 2.2	10 1.5

Staff: Dominic Bagenda, Andrew Johnson, Peter Ruthven-Stuart

2-3-3. International Study Support

1. Program description

The goal is to encourage FUN students to sign up for study abroad programs (SAPs). SAPs are known to develop intercultural competencies (ICs)¹. Development of ICs is a desirable outcome of transformative learning experiences² and one of the goals highlighted in the FUN Diploma Policy (<https://www.fun.ac.jp/en/diploma-policy>). To help students achieve this goal, considerable effort is being invested in improving English language (L2) proficiency of first-year students at FUN. Data showing that ICs are associated with L2 proficiency at FUN has not been collected. Alternative learning experiences that could help improve ICs have not been identified. In 2023 - 2024, the International Study Support Group (ISSG)

- promoted awareness about ICs by giving students assessment opportunities and feedback using the Beliefs, Events and Values Inventory (<https://thebevi.com/>)
- confirmed the association between ICs and L2 proficiency
- collected data on the impact of an on-campus cross-cultural learning experience

2. Overview of AY2023 activity

Assessments of ICs were done for 221 first-year students in April and December 2023, enabling longitudinal comparison. All students received instant feedback. The association between ICs and L2 proficiency was confirmed. The impact of Connections Cafe as a cross-cultural learning experience was confirmed.

3. Outcomes

Students who consented to having their ICs assessed received instant feedback that included a detailed report and radar charts showing changes in their ICs (if the assessment was done more than once). Students could use the feedback in self-reflection assignments. Assessments were also used to check for an association between IC and language proficiency (TOEIC Bridge scores for July 2023). Assessment scores were converted into four Hoggan domain scores². Comparisons of ICs of students who scored highest (assessed as 100% in the associated VEP unit) and those who scored lowest (assessed as <60% in the associated VEP unit) on the TOEIC Bridge test were done (Table 1a). The impact of Connections Cafe on ICs of regulars (students scoring 100% in VEP units for their Connections Cafe attendance) was demonstrated (Table 1b).

Table 1a: Changes in Intercultural Competencies among Year 1 Students at FUN in 2023

	All 1st Years (n=221)		Top TOEIC scorers (n=18)		Bottom TOEIC scorers (n=24)	
	April	Dec	Apr	Dec	Apr	Dec
Overall Score	46	45	50 ^a	48	44 ^b	44
Worldview	24	24	28	27	24	22
Epistemology	16	16	17	16	15	16
Self	17	17	17	16	15	17
Ontology	26	26	25	24	26	28

Table 1b: Changes in Intercultural Competencies among first-year students and first-year students who regularly attended Connections Cafe in 2023

	First-year students (n=221)		First-year Connections Cafe regulars (n=9)	
	April	Dec	Apr	Dec
Overall Score	46	45 ^a	49	53 ^b
Worldview	24	24	27	27
Epistemology	16	16	16	18
Self	17	17	18	18
Ontology	26	26	24	27

Note. Overall score is the measure of IC based on the BEVI; Worldview shows how much one understands the world and its workings; Epistemology shows how much one understands how to construct and evaluate knowledge; Self shows self-efficacy, empowerment, and understanding of one's identity; Ontology shows how much one values the expression of affect. Letters a,b indicate meaningful differences between assessments done during the same period.

The number of first-year students who had their ICs assessed at least twice increased from 103 (approximately 43%) in 2022 to 221 (approximately 92%) in 2023. Since students volunteer to take the BEVI, this change reflects an increase in awareness about the importance of ICs. Comparisons of scores of the two cohorts are not meaningful as data for more than half of the 2022 cohort was missing.

Overall, ICs of first-year students in 2023 remained constant between April and December (differences of at least 5 points on BEVI scales are considered meaningful³). The data also shows that in April, students with the highest L2 proficiency (n=18) as measured by the TOEIC Bridge had higher ICs than students (n=24) with the lowest L2 proficiency. This alludes to a positive association between ICs and L2 proficiency, justifying the current emphasis on L2 proficiency to improve ICs. However, by the end of the year, the difference in ICs between the two groups was not meaningful (less than 5 points) as ICs of the top scoring group declined. Although the decline was not meaningful (less than 5 points) there is a need for cross-cultural learning experiences that boost ICs.

Assessment of the impact of Connections Cafe revealed that ICs of regular attendees were meaningfully higher than those of all the first-year students at the end of the year. Considering that meaningful differences were observed at the beginning of the year, this result indicates that Connections Cafe is effective as a cross-cultural learning experience.

The ISSG will continue assessing ICs at FUN and promoting the need for FUN students to improve their ICs. Efforts will be made to identify other on-campus learning experiences that improve ICs.

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Staff: Dominic K. Bagenda, Andrew Johnson

2-4. First-Year Education (English)

1. Program description

The primary goal is to help students improve their English language ability: specifically their speaking, listening, reading, and writing skills, as well as their grammar skills and vocabulary knowledge. This group's efforts are chiefly focused on the first-year Communication courses (Communication 1 and 2) and the two-year Virtual English Program (VEP1 - VEP4).

(1) Communication 1 and 2

In AY2022, the first-year Communication courses focused on improving students' listening and speaking skills in the first semester, then on reading and writing skills in the second semester. The releases of AI text generation technologies such as ChatGPT prompted the instructors to decide that for the time being a focus on speaking and listening skills would better serve students' needs.

For the AY2023 academic year, both courses focused on listening and speaking skills. This enabled students to use a single textbook for the whole year: one from Oxford University Press' Q: Skills for Success series which targeted the CEFR A2 level. In the courses, textbook activities were supplemented with participation in an online international exchange as well as goal setting and reflection activities.

The four instructors used a single Moodle course for presenting information, giving assignments and online tests, and collating grades. The same set of assessment items was required of all students, and each assignment was graded using a single rubric.

(2) VEP1 - VEP4

The Virtual English Program is a set of four online courses taken by first- and second-year students. The program is supervised by A/P Ruthven-Stuart, A/P Johnson and A/P Smith. In addition to some required units and activities, students are able to choose from a selection of topics and activity types. This freedom to forge their own path of study means that students need to take responsibility for when, where, what and how they study.

2. Overview of AY2022 activity

(1) Communication 1 and 2

In order to identify changes in their English communication skills, students were asked to complete a skills assessment at the start and at the end of each course.

For Communication 1, the skills assessment consisted of three parts: Part A, B and C. Part A was a 15-minute online listening test taken during the second lesson (pretest) and again during the final lesson (posttest). Part B was a 30-minute out-of-class test taken at the start and end of the first semester. The tests were created by Oxford University Press (OUP) and combined with Part A, covered the eight textbook units taught during the course: listening, vocabulary, note-taking skills, listening skills, pronunciation skills, vocabulary skills, speaking skills and grammar. All questions were multiple-choice and submissions were automatically graded. The listening posttest was worth 2.5% of the Communication 1 grade.

Part C was a speaking test. To complete it, students recorded a 60-second response to a question that was related to one of the topics in the textbook. Students were instructed to complete it in their own time between lessons 2

and 4 and again between lessons 25 and 27 (out of 28). After the posttest deadline, the Communication 1 instructors assessed all submissions using a grading rubric that was based on the grading rubrics used for the course's speaking assignments. The voice recordings were downloaded, then anonymised and randomised. Each instructor was randomly allocated an equal number of students, and they assessed both submissions for each student. They were not informed whether a submission was a pretest recording or a posttest recording. The posttest was worth 2.5% of the final Communication 1 grade.

The skills assessment was altered for Communication 2. Parts A and B (as described above) were combined and taken by students as a single test (renamed Part A) during Lesson 2 (pretest) and again during the final lesson (posttest). The posttest result was worth 2.5% of the final Communication 2 grade. The speaking test was unchanged, however renamed Part B.

(2) VEP1

The VEP courses do not include skills assessments similar to those described above, however the TOEIC Bridge test is a required assessment item of VEP1. This online test was taken under supervised conditions in a classroom during the afternoon of Monday 24 July, 2023.

3. Outcomes

(1) Communication 1

For both the listening and speaking parts the mean posttest scores were higher than the mean pretest scores. A paired samples t-test was performed to compare the pretest and posttest results for each part. There was a significant difference in mean grade between the listening pretest ($M = 65.9$, $SD = 19.1$) and posttest ($M = 70.5$, $SD = 18.8$); $t(148) = 3.05$, $p = 0.003$, and between the speaking pretest ($M = 46.4$, $SD = 21.6$) and posttest ($M = 60.0$, $SD = 17.9$); $t(178) = 7.73$, $p < 0.001$.

(2) Communication 2

In the second semester, for both listening and speaking parts the mean posttest scores exceeded the mean pretest scores. A paired samples t-test compared the pretest and posttest results. There was a significant difference in mean grade between the listening pretest ($M = 61.4$, $SD = 18.4$) and posttest ($M = 69.6$, $SD = 18.1$); $t(222) = 6.14$, $p < 0.001$, and between the speaking pretest ($M = 57.2$, $SD = 18.5$) and posttest ($M = 63.0$, $SD = 17.9$); $t(131) = 3.6$, $p < 0.001$.

The above analyses indicate that AY2023 first-year students' English skills improved during the Communication 1 and 2 courses, and provide evidence of the success of Future University's first-year English program.

(3) VEP

First-year FUN students have taken the TOEIC Bridge test since 2006; since 2011 as part of the VEP1 course. From 2020, however, the TOEIC Bridge test was fundamentally changed, and it is difficult to reliably compare the results of the two versions. For this reason, only the results from the previous four years are shown below in Table 1.

Table 1 Results of the TOEIC Bridge test for first-year FUN students 2020 – 2023

Year	n	Listening ¹	Reading ¹	Total ²
2020	204	31.7	40.9	72.6
2021	221	33.3	41.0	74.3
2022	200	32.5	41.1	73.6
2023	232	31.4	38.9	70.3

Notes: ¹ min = 15, max = 50. ² min = 30, max = 100

Although there is some variation in the results, they consistently indicate that the students' listening and reading levels are within the A2 level of the Common European Framework of Reference for Language (CEFR). This suggests that the level of the Communication 1 and 2 textbook is appropriate.

(4) Changes to the VEP courses

The VEP supervisors (A/Ps Ruthven-Stuart, Johnson and Smith) are undertaking a complete review of the four VEP courses. The new courses, to be fully implemented in AY2025, will use Reading and Writing versions of the textbooks currently used in the Communication 1 and 2 courses, and include integrated pretests and posttests and additional measures to support struggling students.

Staff: Adam Smith, Dominic Bagenda, Andrew Johnson, Peter Ruthven-Stuart

2-5. Professional Development Activity¹

1. Program description

In FY2023, the PD/Hokkaido FD/SD/CCH Group (hereafter referred to as the PD Group) held a workshop on the current status of first-year education at the university, with the aim of promoting PD (Professional Development) activities at the university. In this workshop, faculty members in charge of introductory education for first-year students (especially in the areas of English and mathematics) presented reports on their efforts, which prompted discussion among the faculty members of the University.

This report also describes the Hokkaido FD/SD efforts in this group and the efforts of the Campus Consortium Hakodate (CCH).

2. Overview of AY2023 activity

The activities of each section in FY2023 are described below.

- Professional Development (PD) Activities

The PD workshop was held as an initiative to promote the improvement of faculty members' qualifications at the university. This year's PD workshop was held to share the current state of extra-curricular education at the university and to discuss the future of such education among faculty members. The workshop was open to all faculty and staff at the university. On the occasion of the event, unlike FY2022, the meeting was held in a face-to-face format.

- Hokkaido FD/SD Council

In AY2022, Future University Hakodate served as the secretariat committee member of the Hokkaido FD/SD Council. At the end of term of the secretariat, On Tuesday, May 30, 2023, an online meeting was held with the purpose of summarizing the Executive Committee's efforts in FY2022.

In addition, those in charge participated in the Hokkaido FD/SD Council General Meeting (June 8, 2023). This general meeting was attended by representatives from 55 higher education organizations in Hokkaido to review annual activity policies and budgets. This meeting was held online (Zoom).

Moreover, the Hokkaido FD/SD Council usually holds the Hokkaido FD/SD Forum on the first weekend of September. This year, A/P Johnson gave a presentation on the activities of the Connections Café at the university.

- CCH (Campus Consortium Hakodate)

CCH faculty members attended the Campus Consortium Hakodate management meeting. The same faculty member was in charge of the summer intensive course "Introduction to Science and Technology Communication" as a CCH-related course. In addition, the faculty member reported to the CCH office on the survey of participants.

3. Outcomes

- PD Activities (Professional Development Activities)

● PD Activities (Professional Development Activities)

Two PD workshops were conducted in FY2023. A summary of each workshop and the instructors are listed below.

(1) "PD/FD Workshop on Science and Technology Communication Education

Date: Tuesday, September 5, 2023, 14:50-16:20 (4th period)

¹ This is a translation from the Japanese report partly based on output from DeepL.

Location: Classroom 495 (face-to-face)

Lecturers and Topic Presenters:

- Masahiro Kawakami (Associate Professor, Department of Industrial Life Science, Faculty of Life Science, Kyoto Sangyo University)
- Eri Mizumachi (Associate Professor, Center for Co-creation of Social Technology, Osaka University)
- Yoshihito Tsuji (Associate Professor, Meta Learning Center, Faculty of Systems and Information Sciences, Future University)
- (Moderator) Mitsuru Kudo (Associate Professor, Meta Learning Center, Faculty of Systems and Information Sciences, Future University)

(2) “PD/FD Workshop on Education of Ethics for Engineers

Date: Thursday, February 22, 2024, 10:40-12:10 (2nd period)

Place: Room 495 (face-to-face)

Lecturers and Topic Presenters: Emiko Tayanagi

- (Professor, Center for university-society Relations and Collaboration, Future University Hakodate)
- (Moderator) Mitsuru Kudo (Associate Professor, Meta Learning Center, Faculty of Systems and Information Sciences, Future University)

● Hokkaido FD/SD Council

Faculty members in charge attended the Hokkaido FD/SD Council Executive Committee Meeting (May 30) and the General Meeting (June 8).

At the Hokkaido FD/SD Forum 2023 (Friday, September 1, 2023), organized by the Hokkaido FD/SD Council, a faculty member of the university (A/P Johnson) gave an individual presentation on the activities of the Connections Café. The title of the presentation was “Student perception of an English conversation space”. The URLs of the materials related to the individual presentations are shown in the addendum.

● CCH (Campus Consortium Hakodate)

The faculty member in charge attended the meetings held by the CCH office. In addition, they were in charge of “Introduction to Science and Technology Communication (Summer Intensive Course),” a course related to CCH at the University. Twenty-three students took this course. The participants consisted of 19 students from member universities of the Hakodate Area University Consortium (all Future University students) and 4 students from member universities of the Minami Osaka Area University Consortium (2 from Haboromo International University, 1 from Kinki University, and 1 from Tezukayamagakuin University). The lectures were held on August 5, 2023 and August 7-8, 2023 (Monday and Tuesday). On the last day, a survey was conducted by the CCH Secretariat. The responses were reported to the secretariat.

Addendum

For individual presentations at the Hokkaido FDS Forum, the official URL for this forum is as follows. (accessed. 2024/05/13, <https://ctl.high.hokudai.ac.jp/seminar/fdsforum2023/>)

Staff: Yoshihito Tsuji, Adam Smith

2-6. Self-Evaluation for Learning Achievement

1. Program description

Future University Hakodate launched its “Self-evaluation for learning achievement” surveys from the latter half of academic year (AY) 2019. This system was adopted at the behest of the National Institution for Academic Degrees and Quality Enhancement of Higher Education in its University Institution Certification Evaluation report for AY 2018. Students evaluate their progress toward achieving the learning goals presented in the University’s Diploma Policy and Curriculum Policy. The purpose of the self-evaluation is to assist students in setting goals and creating plans for full achievement. By making continuous and successive plans from their first year through to graduation, students can get a sense of their own growth and continue their learning based on concrete goals.

There are seven assessment survey items, listed below, which were created on the basis of the Diploma Policy. Detailed explanations, based on the Curriculum Policy, are provided for each item. Students are to read the detailed items and then respond using the provided seven-point scale, which ranges from “**1. Not achieved at all**” to “**7. Well achieved.**” Then, considering the results of their responses, each student may respond freely, writing about their goals and plans for the current academic term.

1. Superior professional ability regarding Systems Information Science (Common to all courses)
Superior professional ability regarding Systems Information Science (Courses Expertise): for over second-year students
Superior professional ability regarding Systems Information Science (Graduation Study): for only fourth-year students
2. Inquisitiveness and Imagination to support healthy research attitudes
3. Expressiveness to support collaborative creativity and teamwork
4. Meta-learning ability to foster autonomous and continuous learning
5. Humane professionalism

Survey responses are collected from all students twice a year, at the beginning of each school term that a student is registered. Students take an additional survey just before they graduate to enable reflection on their learning achievements during their university years.

2. Overview of AY2023 activity

During AY2022, the “Self-evaluation for learning achievement” survey was performed using the learning management system HOPE. Respondents were as follows: in the first semester, 395 students (221 first-year students, 89 second-year students, 53 third-year students, and 32 fourth-year students); in the second semester, 239 students (118 first-year students, 50 second-year students, 43 third-year students, and 28 fourth-year students). Furthermore, the survey was filled in by 197 graduates at the time of their graduation.

In addition, by using the “Automatic generation system of self-evaluation graphs for learning achievement” developed by the Kei Ito laboratory, each graduate’s “Self-evaluation for learning achievement transition graph” was created and fed back to each student. This allowed each student to visually grasp the transition of learning achievement across the academic years.

3. Outcomes

Table 1 shows the mean values of each question item for each grade. Values in parentheses are mean values for

AY2022. The trend is generally the same as in AY2022.

Table 1a. Aggregate results

	1. Superior professional ability (Common to all courses)			1. Superior professional ability (Courses Expertise)			1. Superior professional ability (Graduation Study)		
	First half	Second half	At graduation	First half	Second half	At graduation	First half	Second half	At graduation
1 st -year students	1.70(2.17)	4.31(4.07)	—	—	—	—	—	—	—
2 nd -year students	4.26(4.09)	4.64(4.41)	—	3.72 (3.36)	4.44 (4.32)	—	—	—	—
3 rd -year students	4.51(4.41)	5.19(5.12)	—	4.47 (4.45)	5.19 (5.05)	—	—	—	—
4 th -year students	5.41 (5.38)	5.29(5.88)	5.64 (5.64)	4.94 (5.13)	5.07 (5.13)	5.48 (5.49)	5.41 (5.26)	5.18 (5.00)	5.58 (5.51)

Table 1b. Aggregate results

	2. Inquisitiveness and Imagination to support healthy research attitudes			3. Expressiveness to support collaborative creativity and teamwork			4. Meta-learning ability to foster autonomous and continuous learning			5. Humane professionalism		
	First half	Second half	At graduation	First half	Second half	At graduation	First half	Second half	At graduation	First half	Second half	At graduation
1 st -year students	3.00 (2.40)	4.17 (3.81)	—	3.10 (2.45)	4.26 (3.92)	—	3.19 (2.56)	4.25 (3.90)	—	3.36 (2.74)	4.32 (4.01)	—
2 nd -year students	3.99 (3.72)	4.16 (3.91)	—	3.97 (3.72)	4.48 (4.14)	—	4.21 (3.87)	4.16 (4.43)	—	4.19 (4.02)	4.36 (4.30)	—
3 rd -year students	4.23 (4.04)	4.88 (4.88)	—	4.23 (4.21)	5.16 (5.10)	—	4.43 (4.49)	5.07 (4.80)	—	4.75 (4.51)	5.40 (5.02)	—
4 th -year students	4.81 (4.90)	5.00 (5.25)	5.58 (5.46)	5.28 (4.97)	5.25 (5.25)	5.52 (5.48)	4.84 (4.85)	5.07 (5.50)	5.38 (5.45)	4.81 (4.90)	5.32 (5.63)	5.49 (5.52)

Figure 1 shows the mean values of each question item from the second semester of the first year to the time of graduation for students who enrolled in AY2020 and graduated in AY2023. In the first year, the mean values for all items were about 3.6 to 4.1, however they improved to about 5.4 to 5.6 at the time of graduation.

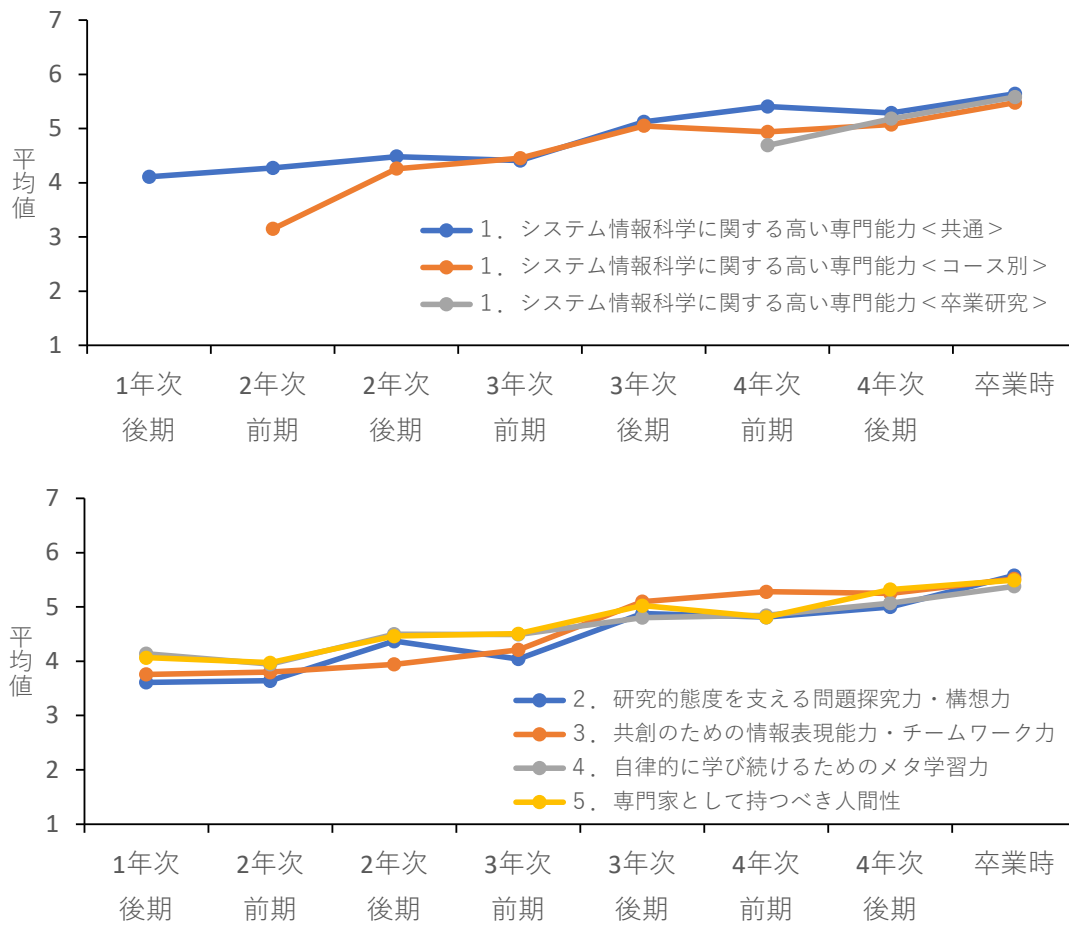


Figure 1. “Self-evaluation for learning achievement transition graph” of students enrolled in AY2020

Staff: Atsuko Tominaga, Kei Ito

付録
Appendices

公立はこだて未来大学メタ学習センター規程

(平成20年公立大学法人公立はこだて未来大学規程第30号)

(趣旨)

第1条 この規程は、公立はこだて未来大学学則（平成20年公立大学法人公立はこだて未来大学規程第1号）第7条第2項の規定に基づき、公立はこだて未来大学メタ学習センター（以下「センター」という。）について必要な事項を定めるものとする。

(目的)

第2条 センターは、情報技術分野の専門教育の基礎として、大学における学習方法の教育を主たる目的とし、特に、総合的なコミュニケーションの能力および幅広い教養と多角的な視点から物事を判断する能力の養成を中心として、将来にわたり持続的に発展していく社会に資する人材を輩出するための活動を実施する。

(業務)

第3条 センターは、次に掲げる業務を行う。

- (1) 専門教育を受け入れる素地をつくる基礎教育のカリキュラム開発および実施の企画に関すること。
- (2) 新入生の導入教育の企画に関すること。
- (3) ファカルティ・ディベロプメント（教育・研究・運営に関する人材育成および組織改革）の企画に関すること。
- (4) 教育研究および学習研究に関すること。
- (5) 大学の教育活動を中心とした建学理念の共有化に関すること。
- (6) その他公立はこだて未来大学における教育および学習活動に関すること。

(事務職員)

第4条 センターに事務職員を置く。

- 2 事務職員については、公立大学法人公立はこだて未来大学の事務組織に関する規程（平成20年公立大学法人公立はこだて未来大学規程第23号）の定めるところによる。

(審議)

第5条 センターの運営方針に関する事項について審議するため、メタ学習センター運営委員会（以下「委員会」という。）を置く。

2 委員会に関し必要な事項については、別に定める。

(補則)

第6条 この規程によるもののほか、必要な事項は、メタ学習センター長が別に定める。

附 則

この規程は、平成20年4月1日から施行する。

附 則（平成22年3月15日規程第28号）

この規程は、平成22年4月1日から施行する。

公立ほこだて未来大学メタ学習センター運営委員会規程
(平成20年公立大学法人公立ほこだて未来大学規程第31号)

(趣旨)

第1条 この規程は、公立ほこだて未来大学メタ学習センター規程（平成20年公立大学法人公立ほこだて未来大学規程30号）第5条第2項の規定に基づき、公立ほこだて未来大学メタ学習センター運営委員会（以下「委員会」という。）について必要な事項を定めるものとする。

(所掌事項)

第2条 委員会は、次に掲げる事項を審議する。

- (1) 公立ほこだて未来大学メタ学習センター（以下「センター」という。）の運営方針に関すること。
- (2) センターが実施する事業の企画、立案等に関すること。
- (3) その他センターの運営に関すること。

(組織)

第3条 委員会は、次に掲げる者を委員として組織する。

- (1) メタ学習センター長
- (2) 公立ほこだて未来大学の専任の教授，准教授，講師および助教のうちから学長が指名する者

(委員の任期)

第4条 委員の任期は、2年とし、再任を妨げない。ただし、欠員により新たに委員となった者の任期は、前任者の残任期間とする。

(委員長)

第5条 委員会に委員長を置き、メタ学習センター長をもってこれに充てる。

(会議)

第6条 委員長は、委員会の会議を招集し、その議長となる。

- 2 委員長に事故があるときは、あらかじめ委員長が指名した委員がその職務を代理する。

3 委員会の会議は、委員の過半数の出席がなければ開くことができない。

4 委員会の会議の議事は、出席委員の過半数によって決定し、可否同数のときは、議長の決するところによる。

(委員以外の者の出席)

第7条 委員会が必要と認める場合は、委員会の会議に委員以外の者の出席を求め、その意見を聴くことができる。

(庶務)

第8条 委員会の庶務は、事務局教務課において処理する。

(補則)

第9条 この規程に定めるもののほか、必要な事項は、委員長が別に定める。

附 則

この規程は、平成20年4月1日から施行する。

附 則 (平成22年4月1日規程第61号)

この規程は、平成22年4月1日から施行する。



メタ学習センター
Center for Meta-Learning

CML ロゴマーク: 二重の円は、「Learning) Meta-Learning」の関係を表現。顔あるいはカップの見立ては、人が集まる場をイメージしたもの。
Meaning of CML logo: Double circles represent the relation of “Learning) Meta-Learning”. Shape of a face or a cup is the images of an open plaza.

作成: 公立ほこだて未来大学メタ学習センター
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(March 2024)