International Symposium on Higher Education

Learner-centred Education and Higher Education Quality Assurance Amid Covid

Wednesday, February 23, 2022, 9:00～18:30 (JST)

Zoom Webinar

Organized by:

- Japan Society for the Promotion of Science (JSPS) Grant-in-Aid for Scientific Research (B) (Project No. 18H01033) (Principal Investigator: Satoko Fukahori)
- Japan Association for College and University Education (JACUE) Research Project (Principal Investigator: Satoko Fukahori)

Co-organized by:

- Japan Society for the Promotion of Science (JSPS) Grant-in-Aid for Scientific Research (B) (Project No. 18H00975) (Principal Investigator: Kayo Matsushita)
- Japan Society for the Promotion of Science (JSPS) Grant-in-Aid for Scientific Research (A) (Project No. JP19H00622) (Principal Investigator: Keiichi Yoshimoto)

Supported by:

- Japan Association for College and University Education (JACUE)
- The Japan Federation of Engineering Societies

Statement of the Purpose of the Symposium:

Throughout the 2000s, higher education institutions, both in Japan and abroad, have aimed at moving toward learner-centered education and quality assurance of education based on learning outcomes. Tuning, which supports the development of disciplinary reference points and the development and promotion of methodologies for designing degree programs based on learning outcomes, is one of the representative initiatives. Since its inception in 2000, Tuning has been accepted by higher education institutions not only in Europe but also in other parts of the world including the United States, and has also had impact on higher education policy in Japan. During the 2010s, the Learning Outcomes Initiative achieved a certain level of success, and simultaneous efforts to substantiate the Initiative were being made by higher education institutions around the world.

The outbreak of COVID-19 has made it difficult to continue education face-to-face, pushing higher education institutions to deliver education online. While we have witnessed positive impacts of online education such as the dramatic progress in the visualization of student learning processes, we must also admit that during this time, the Learning Outcomes Initiative stagnated, and educational practice suffered to certain extents.

As most of us have successfully acquired the basic skills necessary to conduct education and research online, it is time that we look ahead to the future of higher education in coexistence with the coronavirus. What do the ideas and methodologies of learner-centered education that we have developed throughout the 2000s mean, and how do they contribute to the advancement of higher education in the context of new normal?

In this symposium, we invite speakers who have played central roles in promoting learner-centered education and quality assurance of education based on learning outcomes to share their recent experiences as well as their visions of higher education in coexistence with the coronavirus.

By bringing together panelists and symposium participants from around the globe that share their passion for learner-centered education and quality assurance of education based on learning outcomes, we hope to create solidarity that will support each of us in taking new bold steps towards advancing higher education in coexistence with the coronavirus.

Satoko Fukahori, Principal Investigator of the Sponsoring Research Group

Kayo Matsushita, Principal Investigator of the Co-organizing Research Group

Keiichi Yoshimoto, , Principal Investigator of the Co-organizing Research Group

Outline of the three sessions:

The first session will begin with speakers who have played central roles in promoting the European Tuning initiative in the United States. James Grossman, Executive Director of the American Historical Association (AHA) has been leading the Tuning Initiative at AHA since 2012. Daniel McInerney, Professor Emeritus at Utah State University serves on the Tuning initiative led by the Lumina Foundation as a member of the Tuning USA Advisory Board and has been instrumental in promoting and implementing the initiative in universities across multiple states, including his own. The next speakers will be Natasha Jankowski and Keston Fulcher, who have acted as leaders in developing and implementing methodologies for assessing learning outcomes and improving educational practice. From Japan, Atsushi Hamana, who has played an important role in the formation of Japanese policies for learner-centered higher education, will talk about how the initiative has been implemented at Kansai University of International Studies where he serves as President and Chairman of the Board. Then, the two research groups sponsoring and co-organising this symposium will report on the theoretical framework and findings of their practical research. The studies share the idea that connecting program-level and course-level learning outcomes is key to realizing learner-centered education. The PEPA method developed by Matsushita's team has been verified through practice at Niigata University and is attracting attention nationwide. Fukahori's team highlights the importance of faculty expert judgment and organizational change based on practical research at Tokyo City University and Kyushu University.

After discussing implications drawn from an international study conducted as part of Fukahori team's research, the second session will introduce initiatives that are being implemented in Japanese universities as part of their institutional management of teaching and learning efforts. Shinji Tateishi will talk about monitoring and program review at Tsukuba University, Takahiro Masuda will talk about the assessment policy and internal quality assurance at Hokkaido University of Science, Nobuhisa Sakakibara will talk about the various tools supporting student centered learning at Shibaura Institute of Technology, and Izumi Sekizawa will introduce the syllabus system based on the ICE model adopted at Higashi-Nippon International University. We hope that showcasing these leading initiatives will provide a rich opportunity for us to discuss, at a concrete level, the direction of institutional management of teaching and learning for higher education in coexistence with the coronavirus.

In the third session, we will begin with a panel of leaders who have promoted the European Tuning Initiative. First, Robert Wagenaar, who has led the European higher education reform as a member of the Bologna Team of Experts and co-invented the Tuning initiative will talk about recent developments and next steps regarding European higher education reform. Next, Maria Yarosh will introduce the new phase of Tuning 2.0 that aims to substantiate learner-centered education, followed by Alfredo Soeiro who will introduce the Tuning CALOHEE's effort in engineering, which aims to develop a framework and battery of learning outcomes assessment . Then, Kikuo Kishimoto and his team will talk about the project led by the National Institute for Educational Policy Research, the Tuning National Center for Japan, that focuses on developing a test item bank for assessing engineering learning outcomes, including a recent effort in translating the IEA Graduate Attributes and Professional Competencies version 4. This will be followed by Kazuo Kitahara and his team, who will talk about the efforts of the Science Council of Japan in developing the disciplinary reference points for 33 subject areas. Finally, Keiichi Yoshimoto and Chisako Eto, co-organizers of this symposium, will wrap up by introducing their research on the academic and vocational nexus in relation to learning outcomes and competencies.

PROGRMME

International Symposium on Higher Education

Learner-centred Education and Higher Education Quality Assurance Amid Covid

■ **Opening** 9:00～9:10

・Opening remarks: Kayo Matsushita

・Statement of the purpose of the symposium: Satoko Fukahori

■ **Session 1: Curriculum and Assessment**

9:10～12:00 Moderator: Satoko Fukahori

1. Tuning the History Discipline in the United States - Implications for post-Covid Higher Education, James Grossman
2. The US Higher Education Experience and Future Directions: Tuning's Habits of Mind and Practice, Daniel McInerney
3. Assessment - Implications for post-Covid Higher Education, Natasha Jankowski
4. Connecting Assessment to Improvement: Progress and Obstacles, Keston Fulcher
5. Education and Learning Management, and Visualization of Learning Outcomes in Japan: A Case Study of Kansai University of International Studies, Atsushi Hamana
6. Curriculum and Assessment Linking Courses and a Program: The Theory of PEPA and a Case Study of Niigata University, Kayo Matsushita, Kazuhiro Ono, Ugo Saito.
7. Promoting Faculty's Expert Judgment and Institutional Change by Facilitating the Use of Learning Outcomes Assessment Tools
   - 7-1. The Research Framework and the Expert Judgement Scale, Satoko Fukahori, Kai Hatano, Shotaro Naganuma
   - 7-2. Practical Research at a Science and Engineering University with a Focus on PEPA and PBL, Michiko Ito, Kayo Matsushita, Ugo Saito.
   - 7-3. Utilization of the Tuning Test Item Bank for the Improvement of Teaching and Learning: The Kyushu University Trial, Hidehiro Nakajima, Satoko Fukahori.
8. Discussion

■ **Session 2: The Management of Teaching and Learning and Quality Assurance in Japan**

13:30～15:00 Moderator: Ikko Tanaka

9. Interplay of Individual・Group・ Organization and Organizational Transformation Implications from the international case study, Machi Sato
10. Management for Teaching and Learning in University of Tsukuba, Shinji Tateishi

11. Management of teaching and learning at Hokkaido University of Science Educational quality assurance system with assessment policy, Takahiro Masuda
12. The Japanese Higher Education Experience and Future Directions (Shibaura Institute of Technology), Nobuhisa Sakakibara
13. Using ICE model: where is our room for improvement? From an experiment at the Higashi-Nippon International University, Izumi Sekizawa
14. Discussion

■ **Session 3: Tuning and Reference Points**

16:00～18:30 Moderator: Kayo Matsushita

15. The European Higher Education Area Anno 2022: Looking for enhanced cohesion. From most recent developments to next steps, Robert Wagenaar
16. Tuning 2.0: Promoting implementation of learner-centred higher education at micro and meso levels, Maria Yarosh
17. Creation of Civil Engineering Competence Framework in Project CALOHEE, Alfredo Soeiro
18. IEA International Agreements on the Graduate Attributes and Professional Competencies of Engineers, Kikuo Kishimoto, Satoko Fukahori, Makoto Yamamoto, Shinnosuke Obi
19. NIER Tuning Test Item Bank- Assessment of Higher Education Learning Outcomes in Engineering, Satoko Fukahori, Kikuo Kishimoto, Jeffrey Cross, Shinnosuke Obi, Makoto Yamamoto, Yugo Saito
20. NIER Tuning Test Item Bank - The Development of Engineering Ethics Test Items, Ikko Tanaka, Kentaro Sakai
21. On the Reference Points of Science Council of Japan for the Quality Assurance of University Education, Kazuo Kitahara, Hideki Hirota, Yuji Shirakawa
22. Learning outcomes in tertiary education and the NQF approaches – the academic-vocational nexus -, Keiichi Yoshimoto, Chisako Eto
23. Discussion

■ Closing

・Closing remarks: Keiichi Yoshimoto 18:25～18:30

Speaker Introduction

James Grossman, Executive Director of the American Historical Association

Field Specialties: US history, 19th-20th centuries; African American history; urban history; current issues in higher education and the humanities

alma mater ：PhD, 1982, University of California, Berkeley

Research/ responsibilities：James Grossman is Executive Director of the American Historical Association, the largest organization of professional historians in the world,. His books include *Land of Hope: Chicago, Black Southerners, and the Great Migration* and his editing projects include the *Encyclopedia of Chicago* and the series "Historical Studies of Urban America." His articles and short essays have focused on urban history, African American history, ethnicity, higher education, and the place of history in public culture. Grossman serves on a wide variety of governing boards relating to higher education, the humanities, and history, and has been a consultant to a wide variety of history-related projects generated by BBC, Smithsonian, and various theater companies, films, museums, libraries, and foundations

Daniel McInerney, Professor Emeritus, Utah State University

Field Specialties: U.S. History, 19th century, social reform

alma mater : PhD, 1984, Purdue University

Research/ responsibilities：Dan's research centers on nineteenth-century U.S. history, focusing on social reform. He is the author of two books: The Fortunate Heirs of Freedom: Abolition and Republican Thought (1994) and The Travellers' History of the United States (2000). Translations of the latter work appeared in 2009 in both Russian (Midgard Press) and Chinese (Shanghai Jiao Tong University Press).

Natasha Jankowski, Lecturer of New England College; Senior Fellow, Community Colleges, Strada Education Network

Field Specialties: Higher education & assessment

alma mater ：PhD, University of Illinois Urbana-Champaign

Research/ responsibilities：Natasha's research centers on implementation of assessment, assignment design, transparency, equity, and student involvement in assessment. She is co-author, along with her NILOA colleagues, *Degrees That Matter: Moving Higher Education to a Learning Systems Paradigm* and the book *Using Evidence of Student Learning to Improve Higher Education*. A forthcoming book focuses upon equity and assessment.

Keston Fulcher, Executive Director of the Center for Assessment & Research Studies, Professor of Graduate Psychology of the James Madison University

Field Specialties: Psychology

alma mater ：James Madison University, Harrisonburg, VA: 2000 - 2004 Ph.D. in Assessment and Measurement

Research/ responsibilities：He is co-author of Learning Improvement at Scale: A How-To Guide for Higher Education. Research interests concentrate around integrating assessment with learning improvement, meta-assessment, and assessing ethical reasoning.

Robert Wagenaar, Professor of History and Politics of Higher Education, Director of the International Tuning Academy, University of Groningen (NL)

Field Specialties: History, Education & Educational Research, Public Administration.

alma mater ：University of Groningen

Research/ responsibilities：The International Tuning Academy is an education and research centre with focus on the reform of higher education programmes. It runs a bi-annual SCOPUS, ERIC and Web of Science indexed *Tuning Journal for Higher Education*. Since 2005 Dr. Robert Wagenaar is the president of the interdisciplinary and international Erasmus Mundus Joint Master Degree programme *Euroculture*. From 2003 until mid 2014 he was director of Undergraduate and Postgraduate Studies at the Faculty of Arts of the same University, involving 5.500 students per academic year. His research interest is in higher education innovation and policy making.He has been involved in the development of many international initiatives such as the development of ECTS since 1989 and two overarching European qualifications frameworks. His most recent projects are *Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe (CALOHEE) (2016-)*, and *Integrating Entrepreneurship and Work Experience into Higher Education (WEXHE)* (2017-2019), both co-financed by the European Union. He also coordinates three Erasmus+ Capacity Building projects.One of his most recent publications is: Wagenaar, Robert, *Reform! TUNING the Modernisation Process of Higher Education in Europe. A Blueprint for Student-Centred Learning.* Bilbao and Groningen, 2019, 506 pp. ISBN: 978-84-1325-032-8

Maria Yarosh, Researcher at the International Tuning Academy, University of Groningen

Field Specialties: Education & Education Research

alma mater ：PhD University of Deusto, Spain (2009-2013)

Research/ responsibilities：Designing and implementing competence-based student-centred higher education programmes and courses, assessment for and of learning, intercultural competence development, faculty development (teaching and assessment as supporting and fostering learning), international projects on higher education (Erasmus+)

Alfredo Soeiro, Professor of Engineering of the University of Porto

Field Specialties: Civil Engineering

alma mater ：Ph.D. University of Florida

Research/ responsibilities：He was pro-rector of the University of Porto for Continuing Education between 1998 and 2003. Dr. Soeiro was a founding member of EUCEN (European University CE Network); RECLA (Latin American CE Network), and AUPEC (Portuguese University CE Association) His positions held were the vice presidency of EUCEN, vice-presidency of SEFI, president of IACEE, president of AUPEC and president of SEFI. His main interests are engineering education, continuing education and online learning, focusing on networking, international cooperation and student evaluation. He has also been an evaluator for the professional engineering association, was invited in several projects as external evaluator and has participated and coordinated some European projects on quality assurance of education, on online learning, assessment of learning, qualification frameworks and construction safety.He is vice-president of ISHCCO, secretary general of AECEF and Board member of EDEN.

Satoko Fukahori, Vice President, Kyushu University; Professor, University Education Innovation Initiative.

深堀 聰子, 九州大学副理事・教育改革推進本部教授

Field Specialties: Comparative Education, Sociology of Education, Higher Education Studies.

alma mater ：Ph.D. (Columbia University in the City of New York, Graduate School of Arts and Sciences/Teachers College)

Research：Quality assurance of university education based on learning outcomes. Development of methodologies for generating common understandings of learning outcomes, including learning outcomes assessment and feedback. Analysis of the structure of disciplinary thinking.

専門：比較教育学、教育社会学、高等教育論

学位：Ph.D. (Columbia University in the City of New York, Graduate School of Arts and Sciences/Teachers College)

研究／職務：学修成果に基づく大学教育の質保証−学修成果アセスメントの共同開発・共有を通した学修成果に関する共通理解形成と教育改善に資するフィードバックの方法論開発。学問分野固有の考え方の構造分析。

Kayo Matsushita, Professor, Center for the Promotion of Excellence in Higher Education, Kyoto University

松下 佳代, 京都大学高等教育研究開発推進センター教授

Field Specialties: Study of Educational Methods, Higher Education Studies

alma mater: Ph.D.in Education (Kyoto University)

Research: She specializes in educational methods (curriculum, teaching & learning, and assessment & evaluation). She is interested in how competences are formed and assessed, and is conducting critical and practical research, focusing on the similarities and differences between secondary education and higher education. As a member of the Science Council of Japan, she led the development of disciplinary reference points for education studies. She is the editor of *Deep Active Learning* (Springer, 2017).

専門：教育方法学、大学教育学

学位：京都大学博士（教育学）

研究／職務：専門は教育方法学（特に、カリキュラム、教授・学習、評価）。能力はどう形成され評価されるのかに関心をもち、中等教育と高等教育の共通性と差異に着目しながら、批判的・実践的研究を進めている。日本学術会議の一員として、教育学分野の参照基準の作成に携わった。『ディープ・アクティブラーニング』（勁草書房, 2015）の編者。

Keiichi Yoshimoto, Professor of the Jikei University of Health Care Sciences, Professor Emeritus of the Kyushu University

吉本 圭一, 滋慶医療科学大学教授, 九州大学名誉教授

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Field Specialties: Sociology of Education, Higher Education Studies.

alma mater ：Ph.D.in Education (Kyushu University)

Research：Empirical research on the theory of Tertiary Education, particularly through academic and vocational approaches. He is President of the Japan Society for the Study of Technical and Vocational Education and training, and President of the Japan Society of Internship and Work Integrated Learning.

専門：教育社会学、高等教育論

学位：博士（教育学）（九州大学）

研究／職務：第三段階教育論、とりわけ学術的アプローチと職業的アプローチによる実証的研究。日本職業教育学会会長、日本インターンシップ学会会長。

Atsushi Hamana, Chairman, Hamana Yamate Gakuin Incorporated Educational Institution, President of the Kansai University of International Studies

濱名 篤, 学校法人濱名山手学院 理事長, 関西国際大学長

Field Specialties: Higher Education Studies, Sociology of Education

alma mater ：Doctor(Sociology) Sophia University

Research/ responsibilities: Rebuilding of the role of university in the population decline society and developmental study of the education program fostering human resources contribute to the community.

専門： 高等教育論、教育社会学

学位：博士（社会学）上智大学

研究／職務：人口減少社会における大学の役割の再構築と地域創成人材育成プログラムの開発的研究

Kazuhiro Ono, Professor, Graduate School of Medical and Dental Sciences, Niigata University

小野 和宏, 新潟大学大学院医歯学総合研究科教授

Field Specialties: Dental Education, Oral and Maxillofacial Surgery

alma mater ：D.D.S., Ph.D. (Niigata University)

Research/ responsibilities：Vice Dean for Education, Faculty of Dentistry, Niigata University

専門：歯学教育学、口腔外科学

学位：新潟大学博士（歯学）

研究／職務：新潟大学歯学部副学部長（教育担当）

Yugo Saito, Associate Professor, Business Strategy Headquarters, Niigata University

斎藤 有吾, 新潟大学経営戦略本部准教授

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Field Specialties：Educational Assessment, Educational Measurement, Higher Education Studies
alma mater ：Ph.D.in Education (Kyoto University)
Research：He has a research interest in how to develop and assess deep learning as a learning process and higher-order integrative competencies as learning outcomes. He is also involved in degree program evaluation, FD/SD, and teaching and learning IR.

専門：教育評価論、教育測定論、高等教育論

学位：京都大学博士（教育学）

研究／職務：学習プロセスとしての深い学習や、学習成果としての高次の統合的な能力をどのように育成し、評価するのかに研究関心を持っている。また、学位プログラム評価、FD・SD、教学IRなどの業務に携わっている。

Kai Hatano, Associate Professor, Osaka Prefecture University

畑野 快, 大阪府立大学 准教授

Field Specialties: Educational / Developmental Psychology

alma mater ：Ph.D.in Education (Kyoto University)

Research：My research focuses on personality development and identity formation and their linkages to adjustment in adolescence and young adutlhood. In my research, I apply advanced quantitative developmental methods.

専門：教育／発達心理学

学位：博士（教育学：京都大学）

研究／職務：パーソナリティの発達とアイデンティティの形成、およびそれらが思春期と青年期の適応とどのように関連するかについて研究している。研究においては、主に数量的手法を用いている。

Shotaro Naganuma, Lecturer, University Education Innovation Initiative, Kyushu University

長沼 祥太郎, 九州大学教育改革推進本部 講師

Field Specialties: Science Education, Educational Assessment, Higher Education

alma mater ：Ph.D. (Kyoto University)

Research：Student Interst in Science, Preparing Future Faculty Program, TA system management

専門：科学教育、教育評価、大学教育学

学位：博士（総合学術：京都大学）

研究／職務：科学への興味・関心の向上に関する研究、大学院生のためのプレFD（PFFP）、 TA制度運営

Michiko Ito, Vice Director of the Organization for Educational Excellence/ Professor of the Faculty Development Center, Tokyo City University

伊藤 通子, 東京都市大学 教育開発機構 FD推進センター副機構長/センター長 教授

Field Specialties: Engineering Education, Educational Methods (Problem/Project-based learning), ESD(Education for Sustainable Development)

Research：Design and implementation of courses and educational programs based on PBL with embedded ESD to realize student-centered learning and teaching in higher education. Faculty development.

専門：工学教育、PBL、ESD(持続可能な開発のための教育)

研究／職務：高等教育における学生主体の学びと教えを実現するための、ESDを組み込んだPBLを軸とする科目や教育プログラムの設計・実施。FDの企画と実施。

Hidehiro Nakajima, Professor, Institute for Teacing and Learning, Ritsumeikan University

中島 英博, 立命館大学 教育開発推進機構教授

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Field Specialties: Higher education studies

alma mater ：Ph.D. in Economics (Nagoya University)

Research：Organizational learning and organizational inertia

専門：高等教育論

学位：博士（経済学：名古屋大学）

研究／職務：高等教育機関の組織学習や組織変容に関心を持っている

Machi Sato, Associate Professor, Center for the Promotion of Excellence in Higher Education, Kyoto University

佐藤 万知, 京都大学高等教育研究開発推進センター准教授

photo

Field Specialties: Higher Education Studies, Malaysian Studies

alma mater : DPhil. (OXON)

Research：Academic identities, graduate student development, Malaysian higher education policies

専門：高等教育学，東南アジア研究

学位：博士（教育学，オックスフォード大学）

研究／職務：アカデミックアイデンティティ，大学院生の専門性開発，マレーシアの高等教育政策

Shinji Tateishi, Assistant Professor of the Office of Management for Teaching and Learning, University of Tsukuba

立石 慎治, 筑波大学 教学マネジメント室助教

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Field Specialties: Higher education Studies, Sociology of Education, Career Education Studies

Alma Mater: Ph.D.in Education (Mar. 2011, Hiroshima University)

Research/Job: His research interests relate to Career Development of Academic Profession, Career Education in Primary, Secondary and Higher Education Settings and Student Transfer in Japan. Fellow of National Institute for Educational Policy Research of Japan.

専門：高等教育論，教育社会学，キャリア教育論

学位：博士（教育学）（広島大学, 2011年）

研究／職務：関心がある研究領域は，大学教員のキャリア形成，初等中等教育及び高等教育におけるキャリア教育，日本における編入学制度．国立教育政策研究所フェロー.

Masuda Takahiro, Professor, Hokkaido University of Science

増田 貴宏, 北海道科学大学教授

photo

Field Specialties : Theoretical Physics, Particle Physics

alma mater ：Ph.D. in Science (1997, Hokkaido University)

Job：Institutional Research, Faculty Development

Interest：Internal Quality Assurance, Institutional Effectiveness

Research Interest：Superstring theory, Supersymmetric gauge theory

専門：理論物理、素粒子理論

学位：博士（理学）（北海道大学,1997年）

職務：IR, FD

興味：内部質保証、IE、非営利組織の運営

研究上の興味：超弦理論、超対称ゲージ理論

Nobuhisa Sakakibara, Shibaura Institute of Technology, Professor, Center for Promotion of Educational Innovation

榊原 暢久, 芝浦工業大学教育イノベーション推進センター 教授

photo

Field Specialties: Educational Development in Higher Education

alma mater ：Ph.D. in Sci. (Hokkaido University)

Research：Teacher training program development, Mathematical education for science and engineering

専門：高等教育開発

学位：博士（理学）（北海道大学,1995年)

研究／職務：FDプログラム開発、理工系数学教育

Izumi Sekizawa,Higashi-Nippon International University, Professor, Centre for Research and Development in Higher Education

関沢 和泉, 東日本史国際大学 高等教育研究開発センター教授

photo

Field Specialties: History of liberal arts traditions

alma mater ：PhD (*Sciences du langage - linguistique. Linguistique théorique descriptive et automatique*), (ex) University of Paris 7, FRANCE

Research/Job： Implementation of quality enhancement process (as professional developer / institutional researcher – at a small university), History of Lingustics, History of Ideas

専門：自由学芸史

学位：博士（言語諸科学）、パリ第七大学（当時）、フランス

研究／職務：内部質保証／改善プロセスの実装（FDer/IRerとして）、言語学史、思想史

Kikuo Kishimoto, Tokyo Institute of Technology, Professor Emeritus

岸本 喜久雄, 東京工業大学, 名誉教授

photo

Field Specialties: Mechanical Engineering, Mechanics of Materials, Computational Mechanics

alma mater ：Doctor of Engineering (Tokyo Institute of Technology, 1982)

Research/Job：Fellow of National Institute for Education Policy Research, and Executive Director for Technology Strategy Center of New Energy and Industrial Technology Development Organization (NEDO TSC). He also serves as the President of the Japan Federation of Engineering Societies, Vice-president of Japan Accreditation Board for Engineering Education, and Bureau member of International Union of Theoretical and Applied Mechanics.

専門：機械工学，材料力学，計算力学

学位：工学博士（東京工業大学, 1982年）

研究／職務：国立教育政策研究所フェロー、国立研究開発法人新エネルギー・産業技術開発機構技術戦略研究センター長，日本工学会会長、日本技術者教育認定機構副会長、国際理論応用連合ビューローメンバーなどを務めている。

Makoto Yamamoto, Professor, Tokyo University of Science

山本 誠, 東京理科大学教授

photo

Field Specialties: Mechanical Engineering, Computational Fluid Dynamics

alma mater ：Doctor of Engineering (University of Tokyo, 1988)

Research：Multi-physics computation of sand erosion, icing, and deposition phenomena in a jet engine. Proposal of diagnostic criteria and numerical prediction of surgical effect for cerebral aneurysms. Fellow of Japan Society of Mechanical Engineers. President of Japan Society of Fluid Mechanics

専門：機械工学，数値流体工学

学位：工学博士（東京大学，1988）

研究／職務：ジェットエンジンにおけるサンドエロージョン、着氷、デポジション現象のマルチフィジックス・シミュレーション．脳動脈瘤の診断基準の提案と手術効果の数値予測．日本機械学会フェロー．日本流体力学会会長

Shinnosuke Obi, Professor, Keio University

小尾 晋之介, 慶應義塾大学教授

photo

Field Specialties: Mechanical Engineering, Fluids Engineering

alma mater ：Dr.-Ing. (University of Erlangen-Nuremberg, 1991)

Research：Turbulence modeling, computational fluid mechanics, fluid flow measurement technique. Fellow of the Japan Society of Mechanical Engineers and Japan Society of Fluid Mechanics. Involved in the development and operation of various programs for international engineering education. Formerly of Keio University's Vice-President for International Collaboration.

専門：機械工学，流体工学

学位：Dr.-Ing.（エアランゲン大学，1991）

研究／職務：乱流のモデリングと数値シミュレーション，流れの計測技術の開発．日本機械学会，日本流体力学会フェロー．種々の国際工学教育プログラムの開発・運営に携わる．前慶應義塾常任理事（国際連携担当）

Jeffrey Cross, Professor and General Manager of Online Education Development Office, Center of Innovative Teaching and Learning, Tokyo Institute of

クロス　ジェフリー　S., 東京工業大学教授

Field Specialties: Educational Technology, Chemical Engineering

alma mater : Ph.D. Chemical Engineering from Iowa State University of Science and Technology (Ames, Iowa, USA), 1992

Research：Educational Technology (learning analytics, VR, online education), Waste to Energy, Biofuels, Machine learning, AI, Energy Policy

専門：教育工学、化学工学

学位：Ph.D.（イオワ州立大学, USA 1992）

研究／職務：教育工学（学習分析、VR、オンライン教育）、廃棄物からエネルギー、バイオ燃料、機械学習、AI、エネルギー政策

Ikko Tanaka, Associate Professor, College of Arts and Sciences, J. F. Oberlin University

田中 一孝, 桜美林大学 リベラルアーツ学群 准教授

Field Specialties: Ancient Philosophy, Philosophy Education

alma mater: Ph.D. (Graduate School of Letters, Kyoto University)

Research: Ancient Cosmology, Ancient Aesthetics, Critical Thinking Education, Ethical Reasoning, Assessment of Learning Outcomes.

専門：西洋古代哲学、哲学教育

学位：京都大学博士（文学）

研究／職務：古代宇宙論、古代芸術思想、クリティカルシンキング・倫理的推論教育、学修成果測定

Kentaro Sakai, Lecturer, International Pacific University

酒井 健太朗, 環太平洋大学 講師

photo

Field Specialties: Ancient Greek Philosophy, Ethics, Philosophy of Education

alma mater ：Ph.D. (Graduate School of Letters, Kyushu University)

Research：Epistemology, Methodology, Luck, Moral Development, Culture

専門：哲学：古代ギリシア哲学、倫理学、教育哲学

学位：九州大学博士（文学）

研究／職務：認識論、方法論、偶然、道徳的発達、教養

Kazuo Kitahara, Professor Emeritus, International Christian University and Tokyo Institute of Technology

北原 和夫, 国際基督教大学・東京工業大学 名誉教授

Field Specialties: Physics

alma mater Université Libre de Bruxelles (Dr. Science, 1974)

Research：Nonequilibrium statistical physics, Science education. 2002-03 President of Physical Society of Japan, 2003-05 Member of Science Council of Japan, 2008-11 Chair of Review Committee for Subject-specific Quality Assurance of University Education

専門：物理学

学位：ブリュッセル自由大学（理学博士　1974）

研究／職務：非平衡系の統計物理学、科学教育、2002-03 日本物理学会会長、2003-05 日本学術会議会員、2008-11 同大学教育の分野別質保証の在り方検討委員会委員長

Hideki Hirota, Senior Researcher, National Institute for Educational Policy Research

廣田 英樹, 文部科学省国立教育政策研究所,生涯学習政策研究部 総括研究官

photo

Field Specialties: Policy Research for Education and Science

alma mater ：Bachelor of Law (Tokyo Metropolitan University)

Research：Statistical Analysis using the microdata of Programm for the International Assessment of Adult Competencies (OECD PIAAC)

専門：教育政策、科学技術政策

学位：法学士（東京都立大学）

研究／職務：OECD国際成人力調査のミクロデータを活用した国際比較分析

Yuji Shirakawa, Associate Professor, Chiba University

白川 優治, 千葉大学大学院国際学術研究院, 准教授

photo

Field Specialties: Sociology of Education, Higher Education Studies

Research：Research on financial support systems and policies for students、Analysis of the policy process of higher education policy

専門：教育社会学、高等教育論

研究／職務：学生への経済的支援に関する制度・政策の研究、高等教育政策の政策過程の分析

Chisako Eto, Professor, Kurume University

江藤 智佐子, 久留米大学教授

photo

Field Specialties: Sociology of Education

alma mater ：Ph.D.in Education (Kyushu University)

Research：Study of professional competences in the field of business.Development of educational programmes in Work Integrated Lerarning.Director of the Japan Society of Internship and Work Integrated Learning,and the Japan Society of Applied Business Studies.

専門：教育社会学

学位：博士（教育学）（九州大学）

研究／職務：ビジネス分野における職業コンピテンシーに関する研究。職業統合的学習(Work Integrated Lerarning)のプログラム開発。日本インターンシップ学会理事、日本ビジネス実務学会理事。

Presentations

1

Session 1: Curriculum and Assessment

Tuning the History Discipline in the United States - Implications for post-Covid Higher Education

James Grossman
Executive Director, American Historical Association

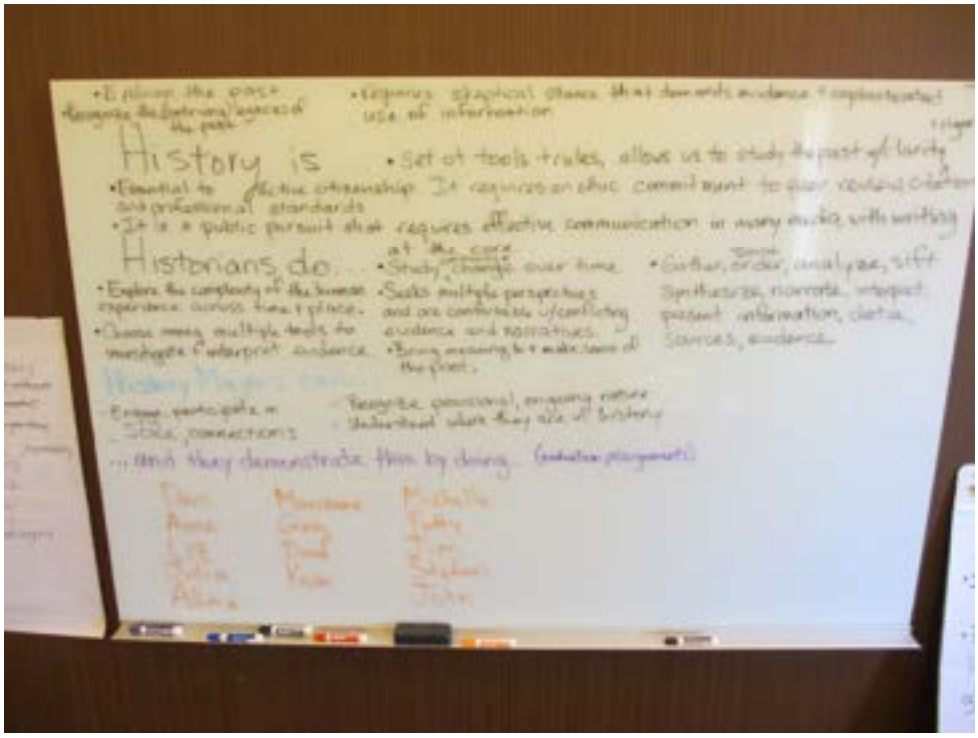
https://www.historians.org/teaching-and-learning/tuning-the-history-discipline

Initial Goals for AHA Tuning

- Mobilize a national group of history faculty to generate a framework that would enable a wide array of stakeholders to understand the core competencies of college graduating college with a degree in history.
- Enable history faculty and students to articulate what a history graduate knows and can do, which would:
- Enhance public appreciation for the value of history education.
- Identify common goals and reference points as a foundation for development of assessment programs for individual student and institutional performance.

Where AHA Tuning Began

Where AHA Tuning Began



The History Discipline Core
Discipline Profile and Core Concepts

- History is the study of the human past as it is constructed and interpreted with human artifacts, written evidence, and oral traditions. It requires empathy for historical actors, respect for interpretive debate, and the skillful use of an evolving set of practices and tools.
- *As an inquiry into human experience*, history demands that we consider the diversity of human experience across time and place.
- *As a public pursuit*, history requires effective communication to make the past accessible; it informs and preserves collective memory; it is essential to active citizenship.
- *As a discipline*, history requires a deliberative stance towards the past; the sophisticated use of information, evidence, and argumentation; and the ability to identify and explain continuity and change over time. Its professional ethics and standards demand peer review, citation, and acceptance of the provisional nature of knowledge.
- https://www.historians.org/teaching-and-learning/tuning-the-history-discipline/2016-history-discipline-core

AHA's Tuning Landscape

ACTIVITIES:

- Designing outcomes for courses and major
- Mapping curricula
- Redesigning majors
- Surveying alums
- Working with local businesspeople
- Talking to their administrations about outcomes and who should design them

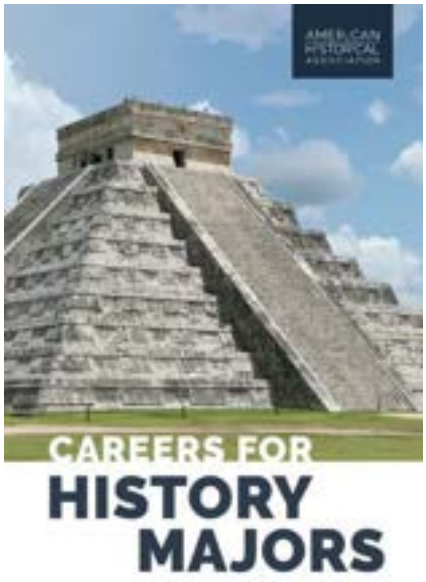
CHALLENGES:

1) HUGE range of institutions with very different needs

2) Teaching not a high priority at many institutions

3) Creating a culture of valuing teaching as an aspect of professional identity: "To be a historian is to be a teacher"

4) The role of the scholarly society: What authority does/should the AHA have?



Institutional Impacts

- Collaborations
- Leadership
- Approaches to other initiatives
    - -making the invisible visible
    - -emphasis on purpose

International Symposium on Higher Education:
Learner-centred Education and Higher Education Quality Assurance Amid Covid

The US Higher Education Experience and Future Directions:

Tuning's Habits of Mind and Practice

Daniel McInerney
Utah State University
daniel.mcinerney@usu.edu

TWO U.S. TUNING PROJECTS:

Lumina FOUNDATION

AMERICAN HISTORICAL ASSOCIATION

2009: STATE LEVEL

6 subject areas
25 colleges/universities
Indiana, Utah, Minnesota

2012: NATIONAL LEVEL

-subject area of History
-led by the field's leading disciplinary society

"OUTCOMES" OF TUNING

less apparent in terms of structures and systems of higher education

more evident in terms of the behavior, values, practices, expectations of instructors and departments

"OUTCOMES" OF TUNING

1. CHANGES IN THE CULTURE OF TEACHING IN POST-SECONDARY EDUCATION

2. FOUNDATION FOR CONTINUING REFORMS IN HIGHER EDUCATION

1. CHANGES IN THE CULTURE OF TEACHING IN POST-SECONDARY EDUCATION

lack of pedagogical training

private, individualized, unarticulated, faculty-focused approaches to teaching and learning

CRITICAL SELF-REFLECTION

CONVERSATIONS WITH COLLEAGUES

STUDENT FOCUS

make the implicit explicit

demystify the discipline

shift attention from “MY course” to “OUR curriculum”

clarify disciplinary goals and skills

revise courses and curriculum

experiment with teaching techniques

share assignment designs

assess student learning

"We begin not with what we want to teach

but rather with what we want our students to learn."

James Grossman and Emily Swafford, "Graduate Education Reconsidered," *Perspectives on History* 54, no. 4 (April 2016), https://www.historians.org/publications-and-directories/perspectives-on-history/april-2016/graduate-education-reconsidered.

"OUTCOMES" OF TUNING

1. CHANGES IN THE CULTURE OF TEACHING IN POST-SECONDARY EDUCATION

2. FOUNDATION FOR CONTINUING REFORMS IN HIGHER EDUCATION

questions, conversations, and experiments we apply to our courses / curricula

↓

help us identify related concerns and problems in higher education

↓

a vocabulary, methodology, and mutual trust for informed, thoughtful reforms

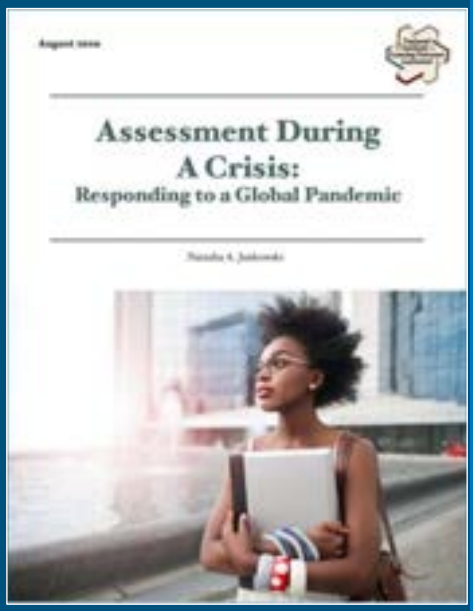
REFORM PROJECTS IN THE AMERICAN HISTORICAL ASSOCIATION

Academic training	→ "Malleable PhD" / Career Diversity
Accountability	→ Assessing student learning
Global perspective	→ "Bridging Cultures"
Course formats	→ Remote & Digital teaching resources
Questions of equity	→ our students, their circumstances; introductory courses that block their path to retention and completion

https://www.historians.org/historygateways

Assessment: Implications for Post-Covid Higher Education

Natasha Jankowski, PhD



2020 COVID SURVEY

1. Holistic awareness of student needs
2. Equity concern & technology access
3. Wide-scale professional development
4. Return to assessment basics
5. Fatigue

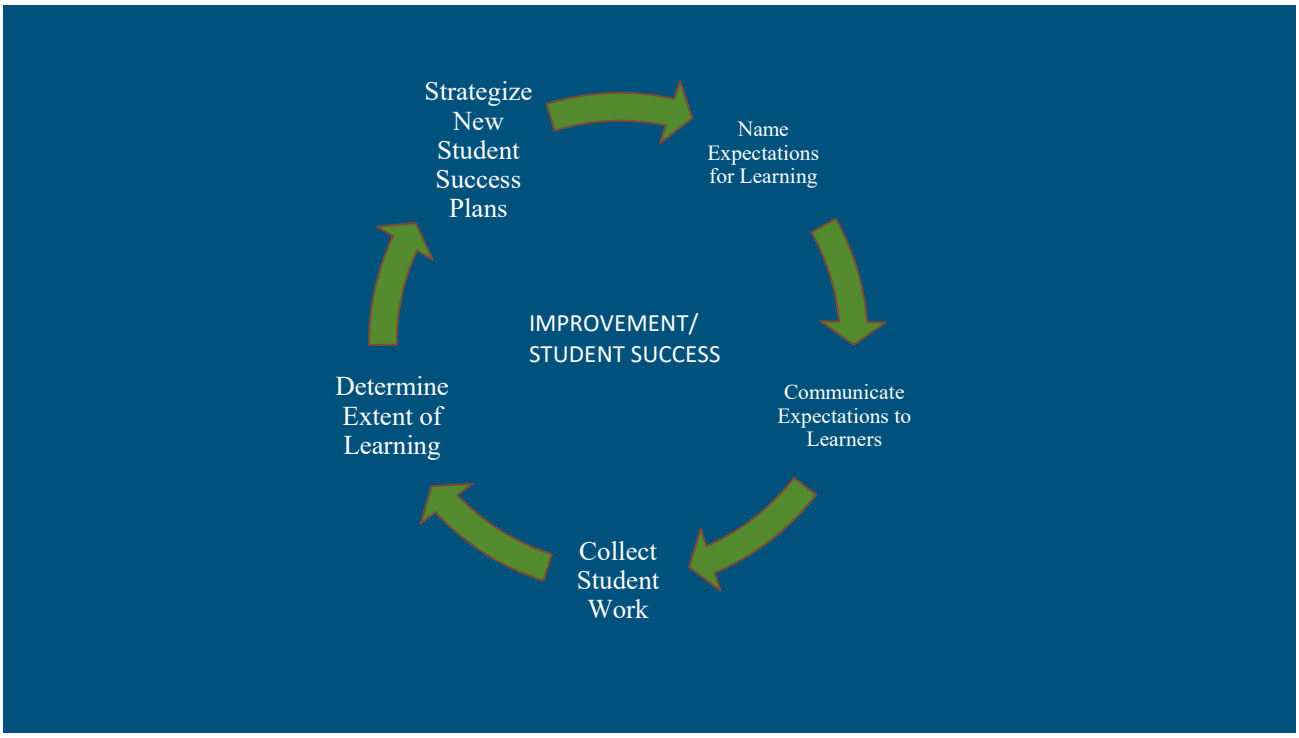
The Need for Community and Connection

- 65% Feeling unmotivated
- 58% difficulty concentrating
- 50% mental health concerns
- 48% feeling behind academically

Student-Centered

Focused on the student and their individual learning, self-reflection, and transference of learning.

- Learner-centered and transparent
- Students are aware of and understand the curriculum intent and structure
- Learning outcomes language is student friendly
- Assessment for Learning

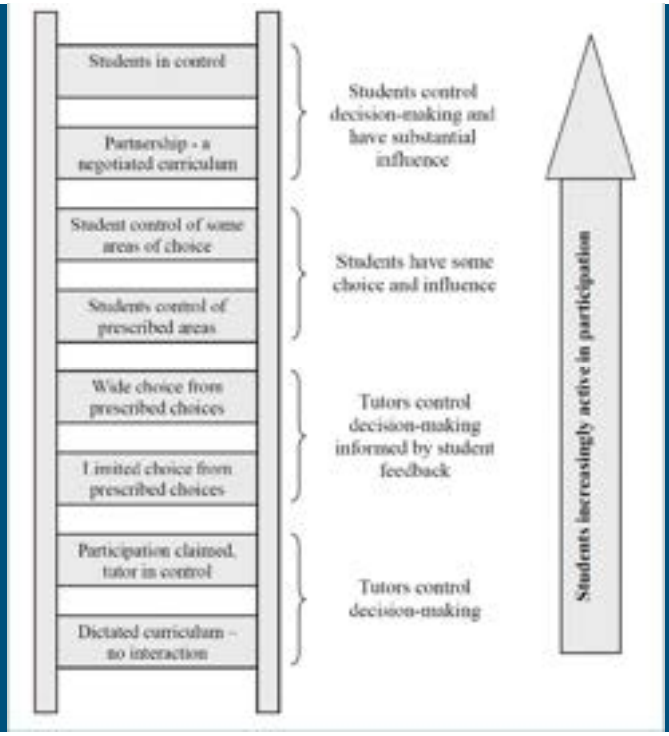


Learning from Students
Alison Cook-Sather (2009)

Consults students about the process as well as the content of teaching and learning

Asks students about their views regarding which practices are helpful or unhelpful and why

Actively engages with students in the construction of their knowledge or even co-creation



New Directions in Assessment

Trauma-Informed

Healing-centered

Equitable assessment

Questions over the role and purpose of testing

2021 Survey: Pre-Release

Respondents indicated that the most trusted sources of learning from the pandemic were presentations, portfolios, and capstones. The least trusted source of evidence of learning was standardized tests.

Negatively Impacted Learning Outcomes

1. Oral Communication
2. Teamwork
3. Civic Engagement
4. Applied and Integrative Learning

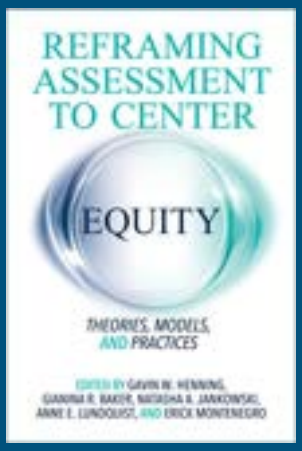
Positively Impacted Learning Outcomes

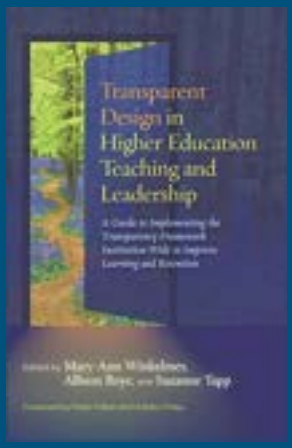
1. Social Justice (Equity and Inclusion)
2. Information Literacy

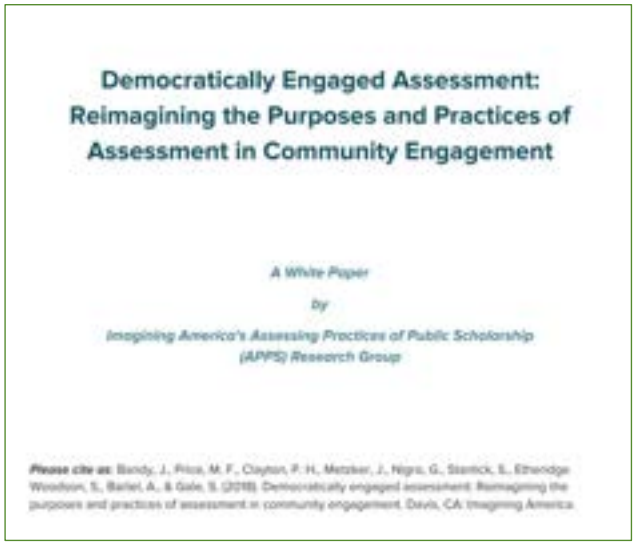
Issues in Need of Attention 2022-2025

1. The role of students in assessment.
2. The relationship between cheating, proctoring, and assessment.
3. Technology usage in support of learning.
4. Trusted evidence sources and equitable data use.
5. Assessment as an equitable pedagogical practice.

Resources







https://imaginingamerica.org/wp-content/uploads/DEA-WhitePaper_FINAL.pdf

Connecting Assessment to Improvement: Progress and Obstacles

Keston H. Fulcher

Acknowledgement of Caroline Prendergast who assisted with content.

1

Implied Logi[illegible] for Assessment

Better information about student learning → Better (and more) student learning

[illegible]here's our evide[illegible]

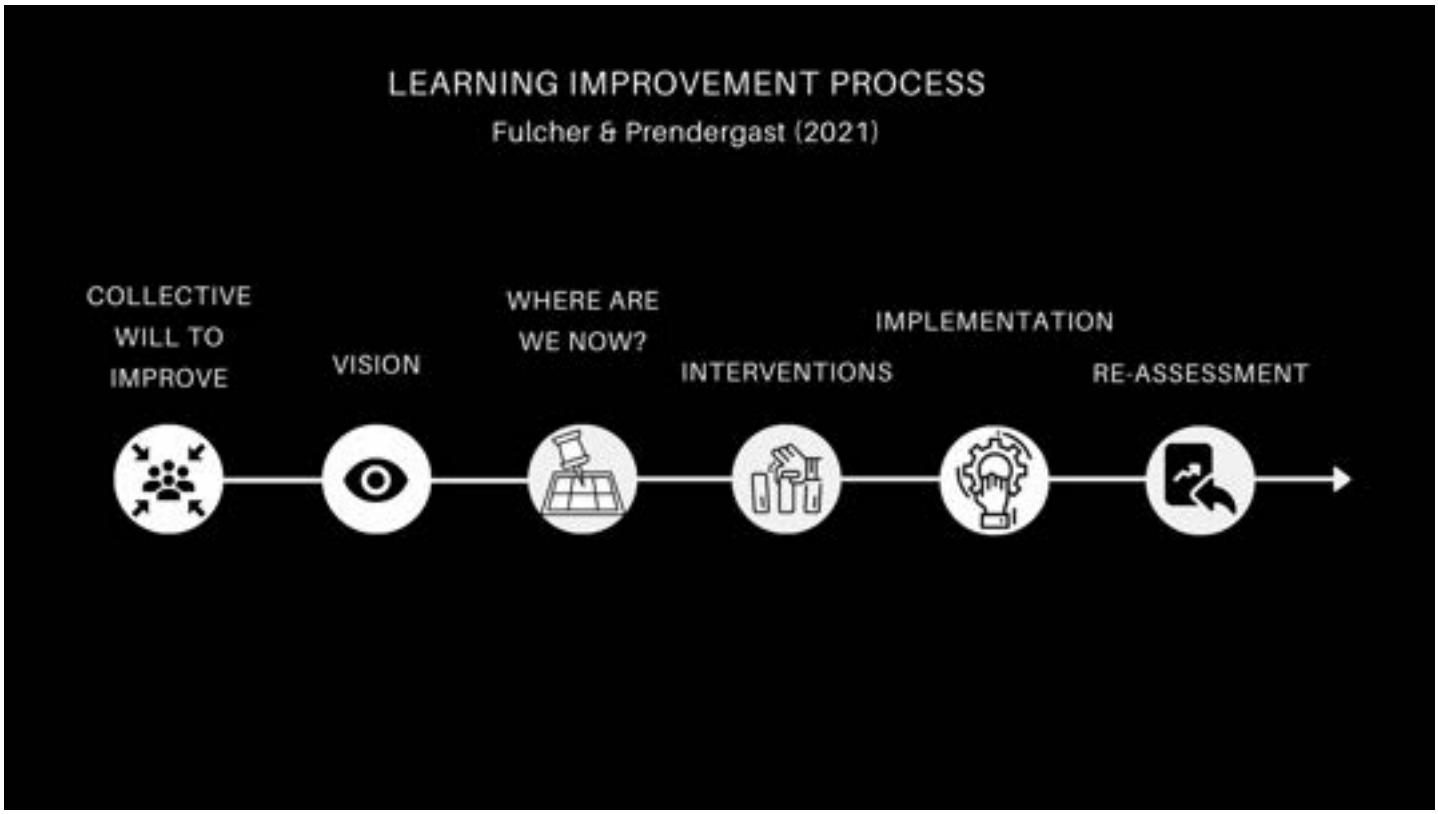
2

Progress

Acknowledgement of Assessment-Improvement Disconnect

Piloting of Improvement Projects

3



Obstacles

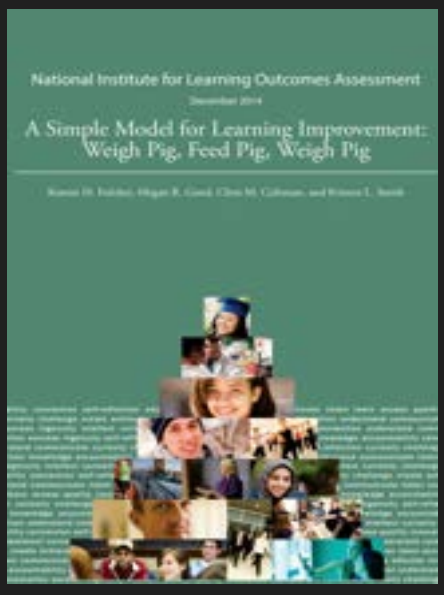
Current Accreditation Processes

Local Knowledge and Skills about Improving Learning at Scale

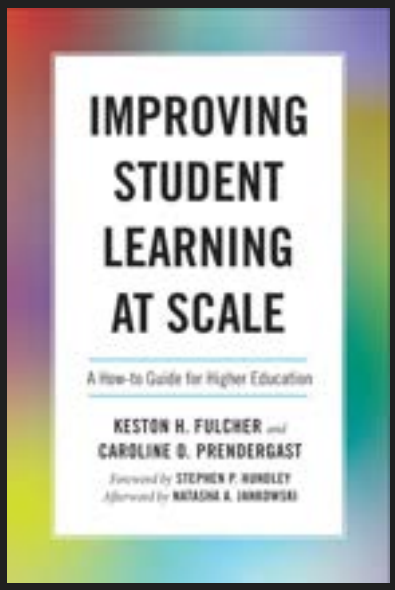
Lack of Time and Space to Strategize (exacerbated by COVID-19)

5

Resources



Learning Improvement Community



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Contact me

Keston: fulchekh@jmu.edu

7

Reference

Fulcher, K.H. & Prendergast, C.O. (2021). Improving student learning at scale: A how-to guide for higher education. Sterling, VA: Stylus.

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International Symposium on Higher Education
Learner-centred Education and Higher Education Quality Assurance Amid Covid

Education and Learning Management, and Visualization of Learning Outcomes in Japan: A Case Study of Kansai University of International Studies

2022.2.23

Atsushi Hamana, President, Kansai University of International Studies

1. Education and Learning Management in Japan

Source:MEXT "Progress of Reform of Educational Content, etc. at Universities (2019)"

- 57% of universities have established a common way of thinking and scale for the course that gives a degree to check and evaluate the results of education **based on the three policies.**
- 60% of universities have established a system to analyze the learning situation and support educational improvement.
- 29% of universities have announced their feelings of growth through university education and research activities.

- Number of universities that carry out numbering
  2016: 316 Universities (43%) → 2019: 451 Universities (61%)
- Number of universities that utilize the course system diagram (curriculum map, curriculum chart)
  2016: 495 Universities (67%) → 2019: 580 Universities (78%)
- Number of universities considering how to effectively incorporate active learning into the curriculum .
  2016: 522 Universities (71%) → 2019: 544 Universities (73%)
- Number of universities that consider the consistency of the curriculum with the purpose of human resource development and the degree awarding policy set by the entire university
  2016: 559 Universities (76%) → 2019: 624 Universities (84%)

‣Number of universities where some subjects are specified by rubrics at the undergraduate level
  2016: 95 Universities (13%) →2019: 209 Universities (28%)

2. Characteristics of Education and Learning Management at Kansai University of International Studies (KUISs)

(1) Owner-based private university with a continuous governance system

(2) In the process of creating a new university with the corporate merger with the former Kobe Yamate University in 2020

(3) A small university, yet distributed across three campuses

(4) First in Japan to create a Can-Do Diploma Policy (KUISs Learning Benchmark)→ Check-Reflection based on rubric-based self-assessment on e-portfolio

(5) Have taken a leading role in educational reform by proactively introducing visualization of learning outcomes, active learning, and High-Impact Practice.

*Examples: First-year education, Global Study (Study Abroad), Service Learning, etc.

(6) Five-day university-wide Professional Development (PD) sessions held three times annually create a shared awareness of issues among faculty members and systematically reform education

(7) Governance system based on poster sessions for mid-term and year-end business report meetings in which all department heads participate, monthly department briefings by the president, and the like

Basic information about Kansai University of International Studies

Undergraduate schools

● **Miki Campus (Miki City, Hyogo Prefecture)**
School of Business Administration: Department of Business Administration (1st- to 3rd-year students)
School of Health Sciences: Department of Nursing
School of Human Science: Department of Business Administration (4th-year students only)
School of Human Science: Department of Human Psychology (4th-year students, some 2nd- and 3rd-year students)

● **Amagasaki Campus (Amagasaki City, Hyogo Prefecture)**
School of Education: Department of Child Education and Social Welfare/Department of English Communication (4th-year students only)
School of Business Administration: Department of Business Administration (1st- to 3rd-year students)

● **Kobe Yamate Campus (Kobe City, Hyogo Prefecture)**
School of International Communication: Department of English Communication (1st- to 3rd-year students)/Department of Tourism (1st-year students only)
School of Sociology: Department of Sociology (1st-year students only)
School of Psychology: Department of Psychology (1st-year students only)
School of Human Science: Department of Human Science (some 2nd- and 3rd-year students)
School of Contemporary Society: Integrated Social Studies (2nd- to 4th-year students)/Department of Tourism (2nd- to 4th-year students)

Graduate schools

● Graduate School of Behavior Sciences: Master's program in behavior sciences
Master's program in clinical pedagogy
● Graduate School of Nursing Science: Master's program/doctoral program in nursing

As of May 1, 2021
Number of students: 2,997 undergraduate students, 41 graduate students
Number of full-time faculty members: 143
Number of full-time staff members: 109

Schools affiliated with Hamana Yamate Gakuin Educational Corporation
- **Kansai Professional Training College of Childcare and Welfare (Amagasaki City)**
- **Kobe Yamate Girls' Junior & Senior High School (Kobe City)**
- **Naniwa Ainosono Preschool, a certified childcare center (Amagasaki City)**

5

Relationship between the spirit of the founding of the school and the establishment of the educational mission after the 2020 merger

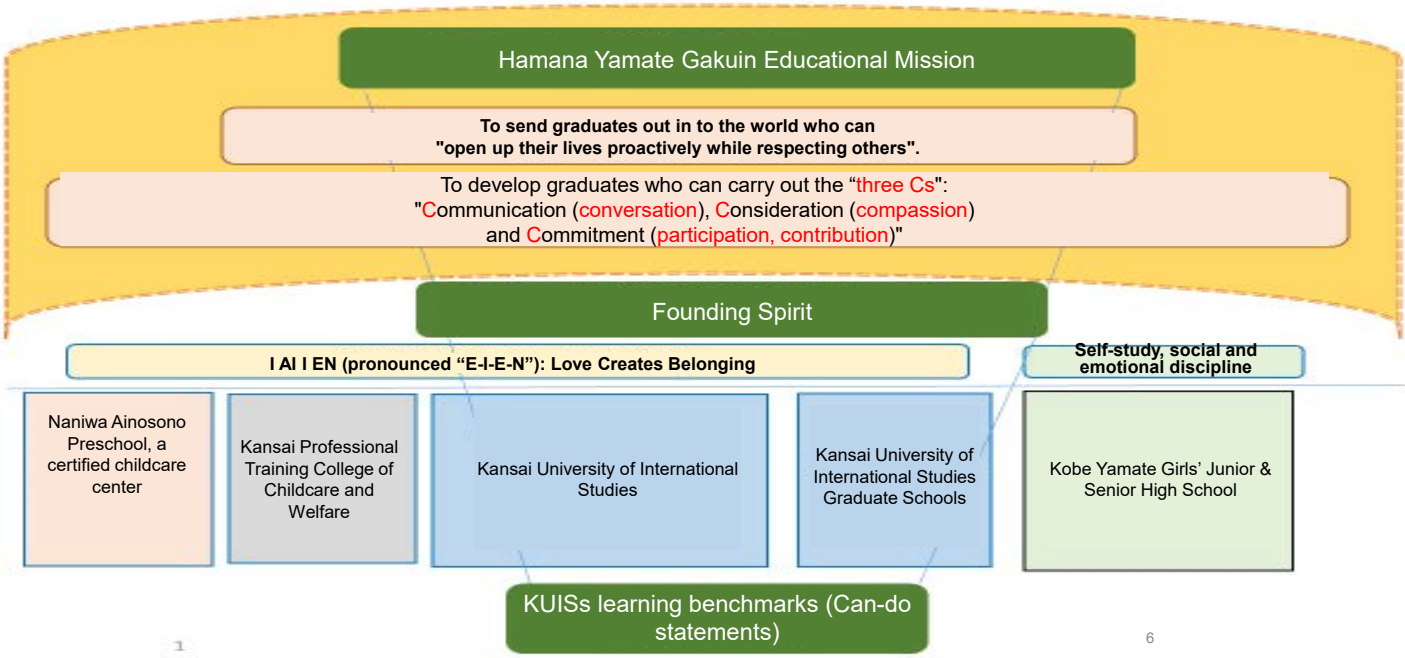

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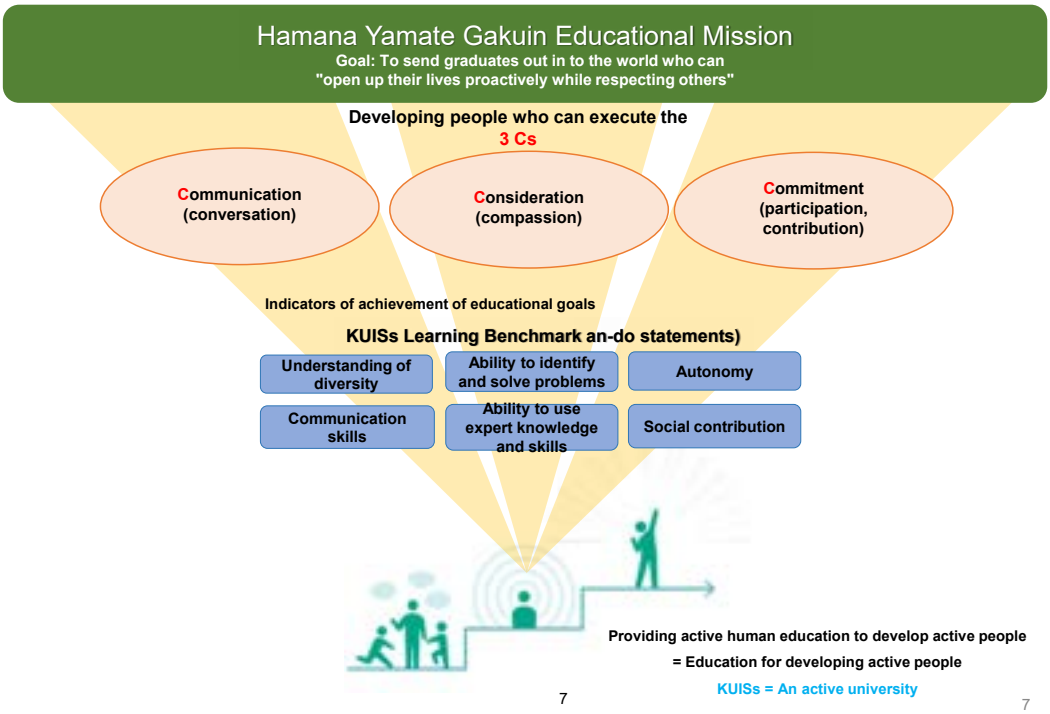
Diagram of the relationship between the KUISs Learning Benchmark and the educational mission



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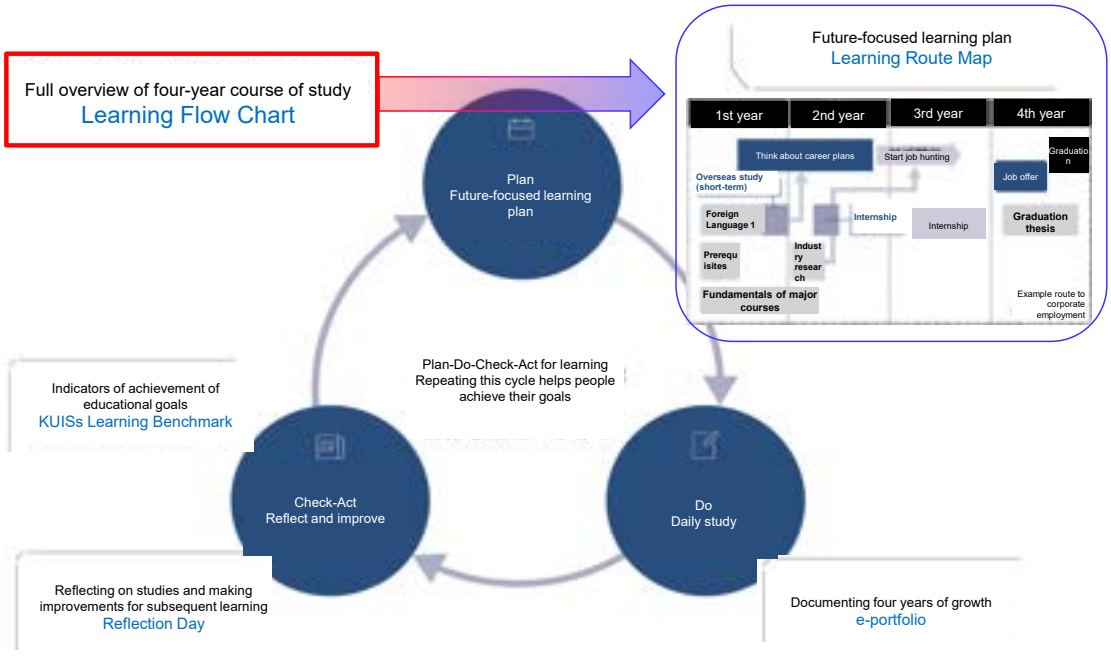
Basics of KUISs's learning system that helps students achieving their goals



3. Visualization and Sharing Awareness of learning process based on IR-based student panel data

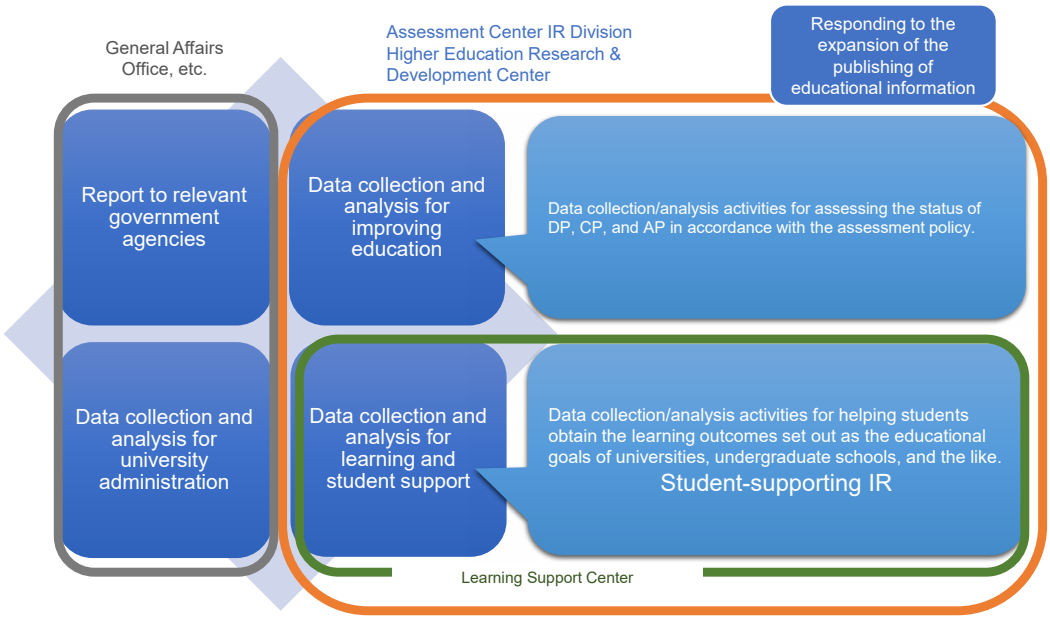
◎List of panel data collected through student-supporting IR for assessment of learning outcomes

Used to assess the level of acquisition of abilities/qualities listed in the graduation authorization/degree conferment policies (DP), and general ability to apply the abilities/qualities

	Name of assessment target	Implementation period	Scope of assessment	Method of assessment	Target level
1	KUISs's Learning Benchmark	Reflection Days in September and March of each year, and at graduation	Assessment of DP (1)-(5) in the department	Assessment using scaled rubric	University, undergraduate schools/departments, individual students
2	Graduation thesis outcomes	At graduation	Assessment of DP (6) in the department	Assessment based on learning outcomes of the graduation thesis course (Thesis rubric)	University (sampling), undergraduate schools/departments, individual students
3	Achievement test	End of the 2nd year	Retention of basic fundamentals/skills of major courses	Assessment based on a written achievement test administered at the end of the 2nd year	University undergraduate schools/departments
4	Assessment of performance and awarding of credits for each course	End of each term of each academic year	Learning objectives for each course	Achievement of learning objectives, as well as grades and the like	Individual students
5	e-portfolio	Logged when individual learning outcomes are posted	Learning experiences and outcomes gained in e-portfolio	Learning experiences and outcomes gained for explaining one's own abilities/qualities to others	University, undergraduate schools/departments, individual students
6	Study of learning behavior	Spring term: 1st year, 2nd year Fall term: 1st year, 3rd year	Results of questionnaire survey on learning outcomes	Questionnaire survey on learning outcomes	University, undergraduate schools/departments, individual students

Kansai University of International Studies Rules for Assessing Learning/Educational Goals

Organizational structure of IR (roles and responsibilities)



11

◎Aims of student-supported IR

(1) Combine and analyze student data, and actively use it to improve education and support learning and support students

(2) Investigate the effects of educational programs and the like. Verify learning outcomes.

⇒Use data to verify effects

(3) Leverage the strengths of panel data accumulation

(Past student data can signal trends, even if it does not make it easy to project how students are now and how they will be in the future)

Must be supported by data, not intuition or empirical knowledge.

Intuition/empirical knowledge ⇒ Is it really true? What is the essential problem?

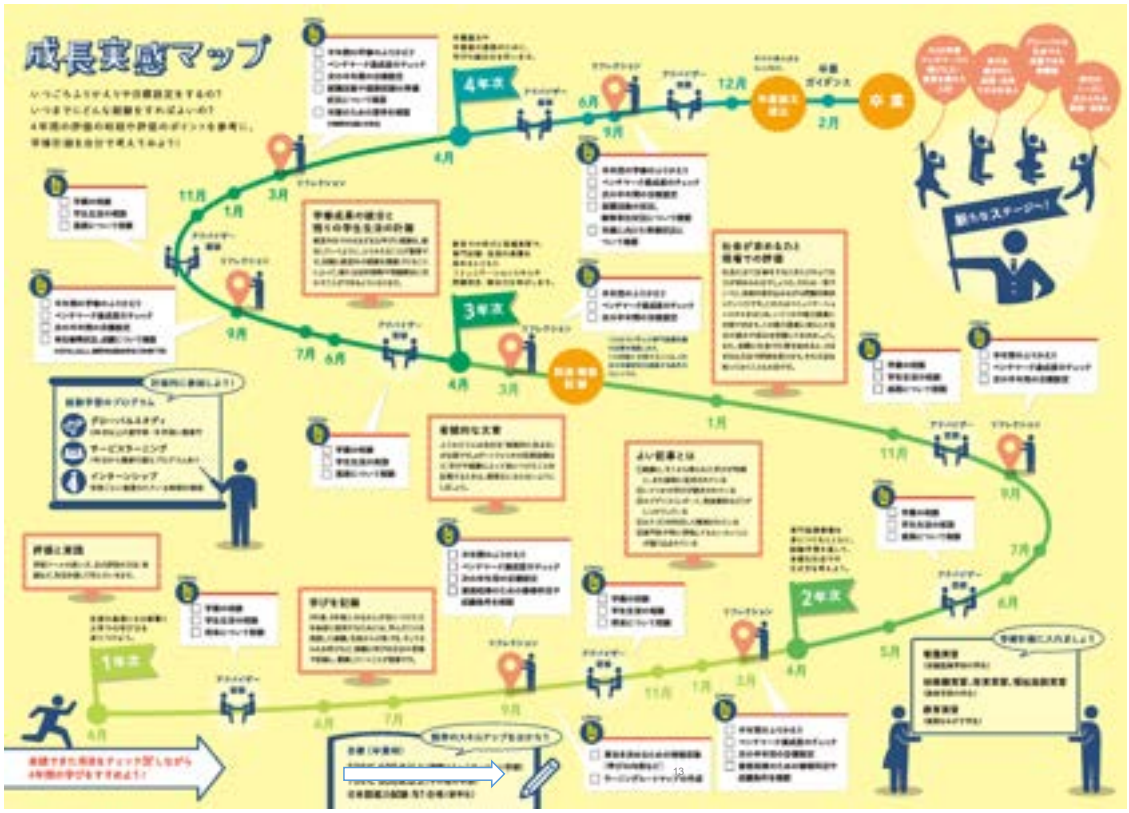
12

A matriculation-to-graduation guide to experiencing growth in learning

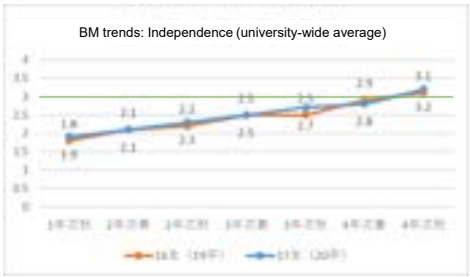
What do you want to do after graduation, and by when?

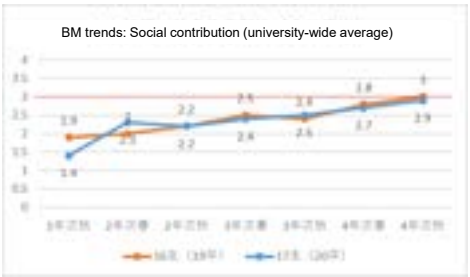
⇒Students must make their own 4-year plans

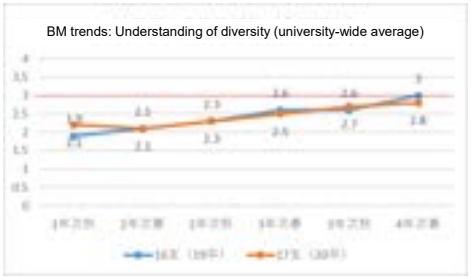
⇒Learning Route Map

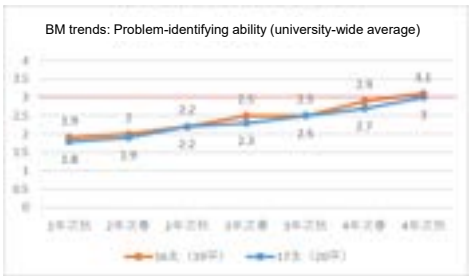


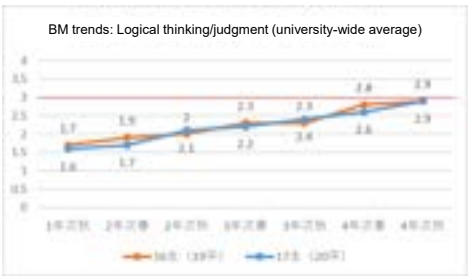
Annual trends in KUISs's Learning Benchmark: Fall of 1st year to Fall of 4th year (average)

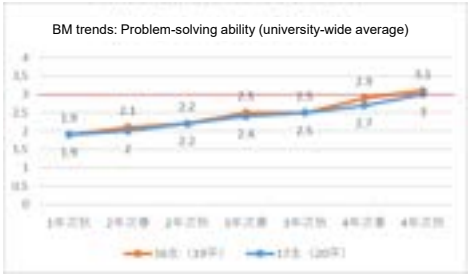




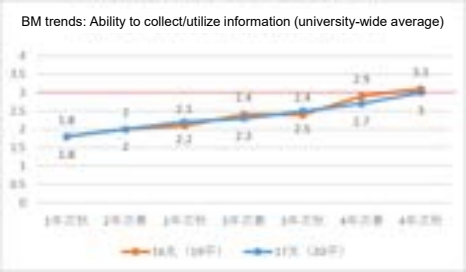


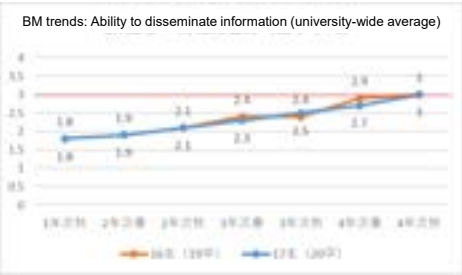


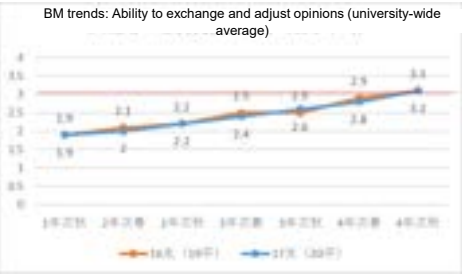




BM trends: Fall of 1st year to Fall of 4th year (average)







Levels steadily increase from the 1st year to the 4th year (on average)
The university-wide average is above Level 3 for all items except Logical thinking/judgment.

Example of analysis based on subjective self-assessment using student panel data (2021)

Differences between the group that judged themselves unable to adapt in terms of the following three items due to the pandemic, and the group that said they adapted well in terms of all three (subjective assessment of degree of adaptation)

- □Acquisition of expert knowledge and skills
- □Adaptation in terms of human relations (e.g. making friends at university)
- □Clarification of goals for the future

Judged themselves unable to adapt in terms of all three items

28 respondents

Comparison

Total: 2,148 respondents (undergraduates only)

Said they adapted well in terms of all three items

517 respondents

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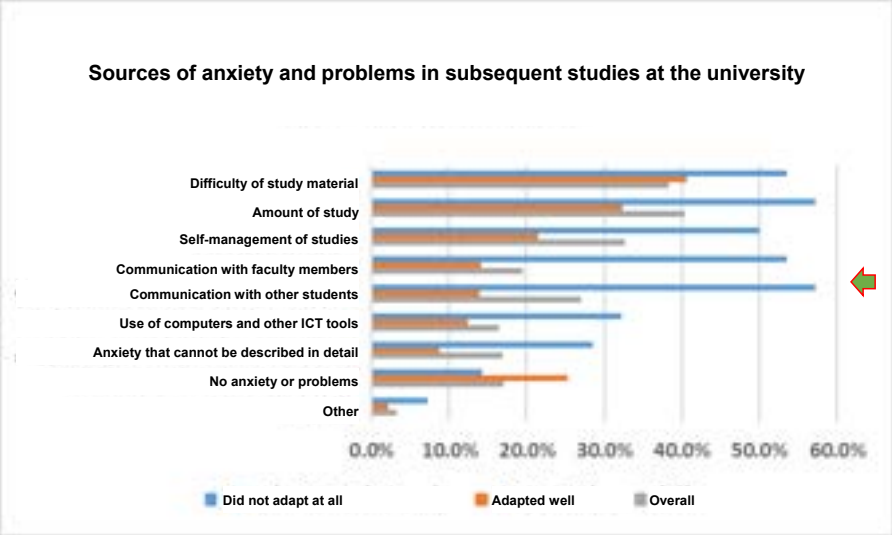
Overall anxiety and challenges noted among respondents with lower subjective self-assessment scores



Regarding the group that judged themselves unable to adapt, at least 50% of students felt anxiety for all items except the item pertaining to ICT tools. The differences between this group and the group that judged themselves as having adapted well are particularly pronounced in the communication-related items.

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3. Creating a shared awareness through university-wide Professional Development (PD) that support education and learning management

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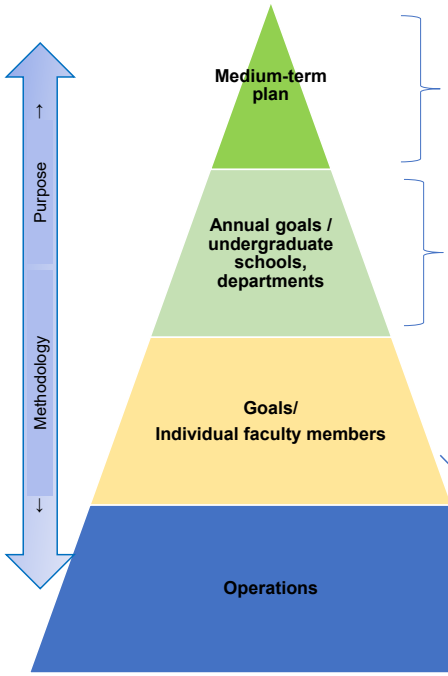
Medium-term management strategy and goal setting process

Setting goals for departments and faculty members based on the medium-term plan



◆Actualizing the vision of the university
Set out the nine strategic areas for achieving university's medium-term plan and goals

◆Managing progress of undergraduate school/department goals
Use the president's briefings (generally monthly) and self-assessment committee meetings to manage progress. Hold joint report meetings twice a year (mid-term and year-end)


Poster session


2020 ZOOM poster session/face-to-face meeting combined

◆Bonuses and salary increases for faculty members based on goal management

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Mid-term business plan report meetings/overall briefings for business plans (year-end)


Poster session


September 2020 ZOOM poster session/face-to-face meeting combined

Example of a poster

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The reality of “diversification from within”

- Differences in circumstances between undergraduate schools/departments
- Differentiation into various clusters within departments
- Diversification based on attributes (international students, men and women, living at home vs dormitories, economic circumstances, need for assistance)

A. Group of consistent adapters

B. Group of ascenders

C. Group of descenders (at-risk group)

D. Group of non-adapters (**high-risk** group)

- Can the problem be solved with one type of policy/measure? There is no universal vaccine.

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4. Post-pandemic education and learning management

- Will “diversification from within” universities in Japan expand further?
- Convenience increases and disparities expand as remote options become the norm and digital transformations progress
- There is no universal vaccine
- ↓
- There is a growing need for measures tailored to students’ backgrounds, characteristics, and challenges
- (1) Use of panel data for individual students
- (2) Need to utilize remote teaching methods (synchronous/asynchronous) and materials (e.g. EdTech)
- (3) Use PBL and HIP to enhance motivation for learning
- (4) Need to visualize learning outcomes and processes
  : especially qualitative rubric, e-portfolio, etc.
- Importance of creating a shared awareness as an organization
- Boosting faculty members’ skills in terms of educational content and methodology

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5. The need for collaboration/cooperation between universities in the future

Resolve resource shortages at individual universities!

Facilitated by the institutionalization of remote teaching methods

- Predicated on collaboration between local industries, governments, and academia

  Local consortiums? Universities and other partner corporations?

  External funding and the like are difficult to secure unless the collaboration is a legal person

- Collaboration between universities in different regions

  No conflict of interest in recruiting students

  Example: Association for Assessment of Learning Outcomes & Educational Development in Higher Education

  (Kyoai Gakuen University, Miyazaki International College, Hokuriku Gakuin, Toyama University of International Studies, Kansai University of International Studies)

- Collaboration with overseas partners

  Example: Asian Cooperative Program (ACP)

  *A consortium of leading universities in Southeast Asia with “safety management” as the key word.

  15 universities in Indonesia, Malaysia, Vietnam, Philippines, Thailand, and Myanmar, and KUIS

⇨*The meaning of education for students has changed by pandemic*

It is essential to further improve the effectiveness of face-to-face learning on how to utilize distance learning methods

.**Visualization of learning outcomes + Visualization of learning process**

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International Symposium on Higher Education
Learner-Centred Education and Higher Education Quality Assurance Amid COVID-19

Feb. 23, 2022 (Online)

Curriculum and Assessment Linking Courses and a Program:
The Theory of PEPA and a Case Study of Niigata University

Kayo MATSUSHITA (Kyoto University)
Kazuhiro ONO (Niigata University)
Yugo SAITO (Niigata University)

Purpose and outline

- **Purpose**
  - By "providing learner-centered education and ensuring its quality," university faculty members tend to focus on their individual courses.
  - However, it is necessary to focus on the entire Bachelor's degree program to support student learning and growth in undergraduate education.
  - In order to link courses to a program in curriculum and assessment, we propose the concept of PEPA (Pivotal Embedded Performance Assessment) and show its example through a case study of Niigata University Faculty of Dentistry.

- **Outline**
  - Linking Courses and a Program: The Theory of PEPA
  - Case Study of Niigata University Faculty of Dentistry

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Linking Courses and a Program:
The Theory of PEPA

Learner-centered higher education

- "Realization of Learner-Centered Education" (Central Council for Education, 2018, 2020)
  - "Review undergraduate education from the perspective of whether degree programs are optimized to help students acquire the intended learning outcomes"

- **Three Levels of Academic Management**
  - Institutional level
  - Degree program level
  - Course level

"From my course, to our program"

- Assessment of learning outcomes in undergraduate education
  - Program-level assessment should be the core to grasp learning outcomes set forth in the diploma policy.
  - But main focus has been on the assessment of each course.

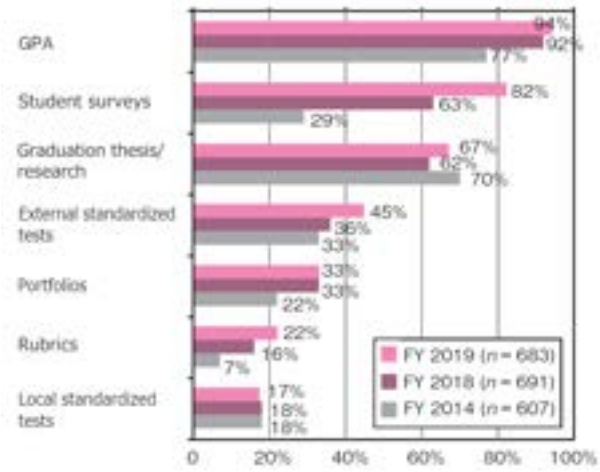
➔How do we assess learning outcomes at the program level?

How to assess the program-level learning outcomes

- Asahi Shimbun & Kawaijuku “Current Status of Universities in Japan" (2019)

Commonly used program-level assessment approaches:
GPA, student surveys, graduation thesis/research, standardized tests, portfolios, etc.

Use of program-level assessment approaches (Comparison over time)



(https://www.keinet.ne.jp/magazine/guideline/backnumber/19/11/toku.pdf)

- Characteristics of program-level assessment approaches

	Benefits	Difficulties
GPA	• The results of grading can be used directly. • All courses can be covered.	• Differences in the quality of learning outcomes in each course are ignored. • The sum does not capture the learning trajectory of students and the learning outcomes at the time of graduation.
Student survey	• Easy to make comparisons between institutions and over time • Smaller assessment burden on instructors • Wide range of investigation	• Assessment based on self-report and cannot be substituted for a direct assessment
Standardized test (of generic skills)	• Easy to make comparisons between institutions (and over time) • The burden of assessment on instructors is small (but costs are high).	• Not necessarily consistent with Diploma Policy. • Generic skills tests do not measure subject-specific knowledge and abilities. • Limited to paper tests.
Graduation thesis/research	• Have significance as a learning task, not just an assessment task • Understand the integrated ability at the time of graduation	• Cannot grasp student learning outcomes before the 4th year • Assessment criteria tend to be subjective.
Portfolio	• Students' learning trajectories can be grasped along with evidence-based materials. • Students can reflect on their own learning and growth.	• Without conferences (reflection with others) and correspondence with learning outcomes, mere storing of evidence materials will not lead to assessment.

➔Is there a better way?

How to link courses and a program?

- **Sum-based method**
  - Using the sum of the learning outcomes of individual courses to determine the overall learning outcomes of the program
    e.g., GPA, curriculum map
    - Difficult to grasp what specific competencies are being developed
    - Difficult to take into account the changes in students' competencies
- **Trajectory-based method**
  - Focusing on the student progress through the courses along the time axis
    e.g., Portfolio
    - Difficult to map a variety of evidence materials to target competencies

➔Are there any other effective assessment approaches for grasping "trajectory"?

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Our proposed approach: PEPA

- **P**ivotal **E**mbedded **P**erformance **A**ssessment (Matsushita, Ono, & Saito, 2018)
  ← Linking courses and a program while aligning curriculum and assessment
  - **Pivotal**
    = at key courses of the program
    * their objectives are directly linked with program goals
    * request knowledge integration and higher-order skills
  - **Embedded** ←→ Add-on
    = "…course assessments that do double duty, providing information not only on what students have learned in the course but also on their progress in achieving program or institutional goals" (Suskie, 2009)
  - **Performance assessment**

Trajectory-based method, but also contains a sum character

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- PEPA procedures ➔Actualization of quality assurance

1) Systematization and segmentation of the curriculum

- Systematize and segment the degree program and clarify the relationship between the program goals and each course's objectives

2) Identify key courses, and develop & implement performance assessment

- A group of faculty members develop and implement performance assessments for one key course in each segment.
- The assessment of other courses is entrusted to the expert judgment of the instructor in charge.

3) Setting of passing criteria for each performance assessment while giving it the function of formative assessment

- Students have to pass all the key courses by demonstrating performance that surpasses a certain level in all rubric dimensions.
- A series of key courses (e.g., University Study Skills 1 & 2) are arranged so that students can achieve the passing criteria.

4) Certification of program completion

- Students will be certified as having completed the course if they have achieved the required number of credits and passed all the key courses.

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Case Study of Niigata University Faculty of Dentistry

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Faculty of Dentistry, Niigata University

- 3 Policies
  - DP (Diploma Policy)
    - In order to accept the diverse values of patients and provide high quality medical care in today's rapidly changing society, we cultivate graduates who have the ability to solve problems while appropriately collaborating with related parties on new issues, and who have high dental clinical competences to practice holistic medical care.
    - Program goals
      - Knowledge and understanding (7 goals)
      - Subject-specific competences (6 goals)
      - Generic competences (8 goals)
      - Attitudes and orientation (3 goals)
  - CP (Curriculum Policy, excerpt)
    - The most important learning outcomes of this program, dental clinical competences, can be defined as problem-solving skills in the context of dental care. From the lower grades to the upper grades, students are nurtured from problem-solving competences to dental clinical competences by enhancing their expertise, comprehensiveness, and authenticity, and the quality of graduates is assured by directly assessing their learning outcomes at key courses that directly relate to the program goals.

(https://www.niigata-u.ac.jp/academics/faculty/dentistry/threepolicies-f/)

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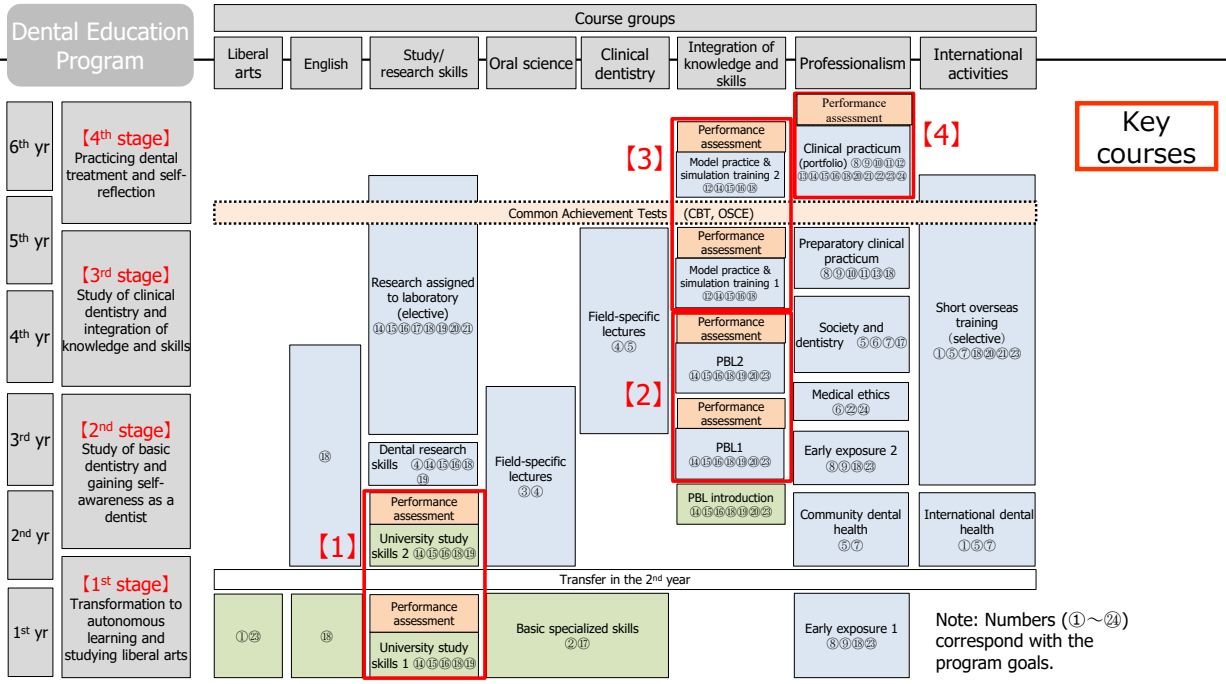
Alignment of curriculum and assessment



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Performance assessments at key courses

【1】Academic writing at "University study skills"

【2】Modified Triple Jump (Proposing a solution plan and role-play to a simulated patient) at "Problem-Based Learning" courses

【3】Designing, implementing, and revising a treatment plan at "Model practice & simulation training"

【4】Portfolio and bedside performance assessment at "Clinical practicum"




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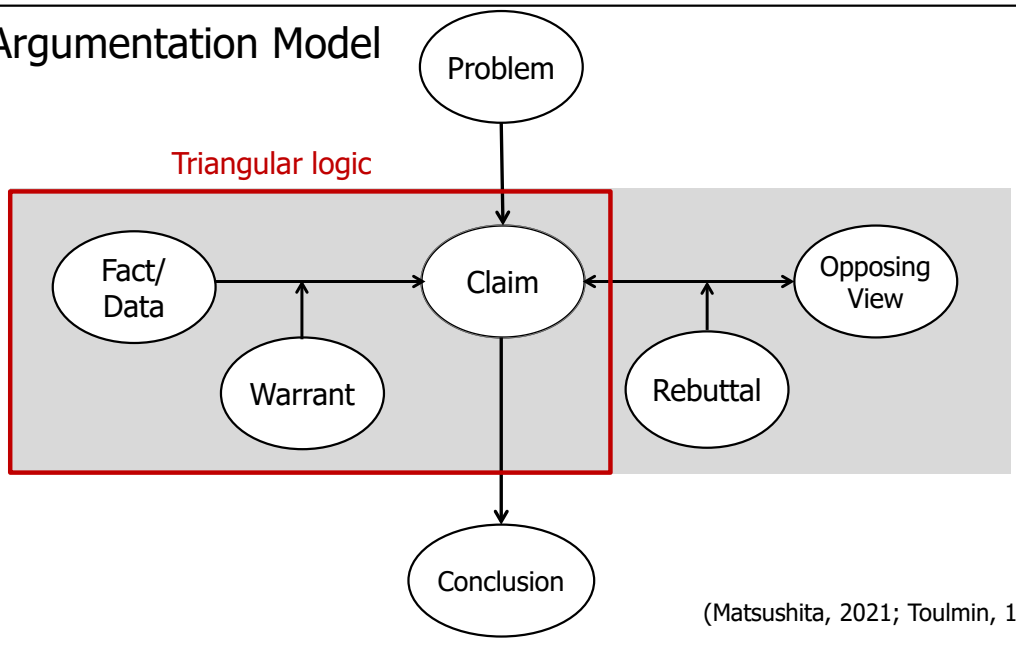
An example from a key course "University Study Skills"

- Dialogical Argumentation Model



(Matsushita, 2021; Toulmin, 1958)

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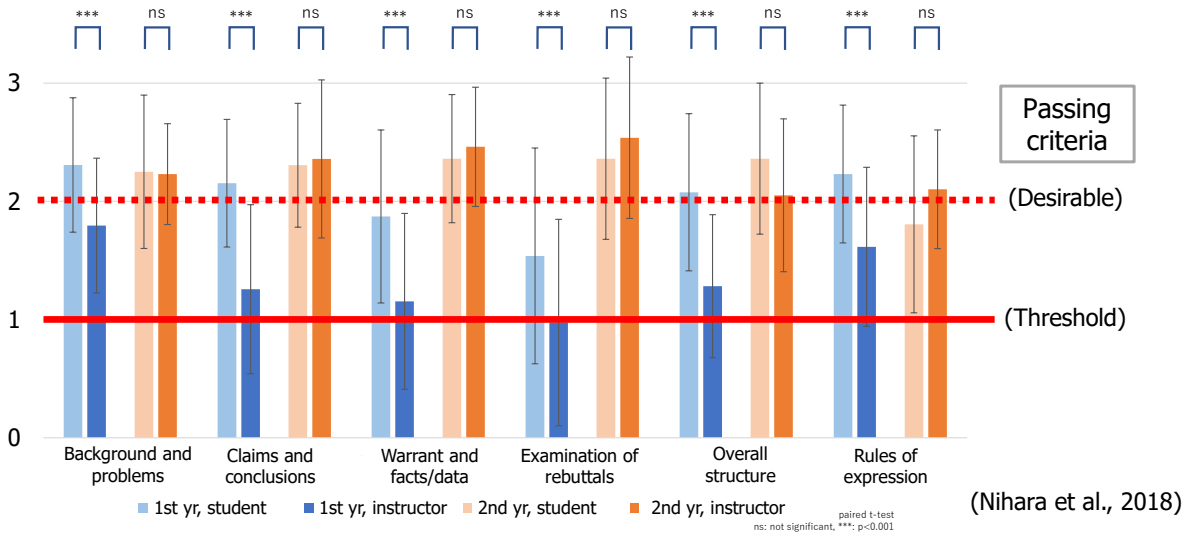
- Writing rubric based on the Argumentation Model

Dimensions	Problem solving / Logical thinking / Expression					
	Background and problems	**Claims and Conclusions**	**Warrant and facts/data**	**Examination of rebuttals**	**Overall structure**	**Rules of expression**
Explanation of dimensions	Independently identifying a problem for a given topic	Developing and connecting one's own claims that lead to a conclusion	Expressing arguments for one's own claims; providing facts and data in support of the arguments' veracity	Providing views opposing (differing from) one's own claims and refuting them (showing their weaknesses)	Logically building and expressing a course from an identified problem toward a conclusion	The rules and criteria of research report rules are observed, adopting appropriate styles as well as terminology
Level 3	Identifying a problem including its significance, giving a reason and describing its background	Developing and connecting one's own claims that lead to a conclusion, which is not common but possesses originality	Expressing arguments for one's own claims; providing multiple reliable facts and data in support of the arguments' veracity	Providing several views opposing (differing from) one's own claims and refuting all of them (showing their weaknesses)	Logically building up from an identified problem toward a conclusion with a proper paragraph structure; outline accurately describing essay's content	Adopting appropriate styles and terminology for a research report; quotations and own text are differentiated, references are provided at the end of the report; correct word count for the outline and main text *Two out of the above three conditions are fulfilled
Level 2	Identifying a problem, giving a reason and describing its background	Developing and connecting one's own claims that lead to a conclusion	Expressing arguments for one's own claims; providing at least one piece of a reliable fact or data in support of the arguments' veracity	Providing at least one view opposing (differing from) one's own claims and refuting it (showing its weaknesses)	Logically building up from an identified problem toward a conclusion with a generally solid paragraph structure	
Level 1	Problem is identified, but no reason is given, background content is insufficient.	Conclusion is expressed, but it is not sufficiently related to the developed claims	Expressing arguments for one's own claims, but failing to provide reliable facts or data in support of the arguments' veracity	Providing views opposing (differing from) one's own claims, but not refuting them (showing their weaknesses)	The outline is building up from an identified problem toward a conclusion, but the paragraph structure is problematic in multiple places	Only one of the above three conditions is fulfilled
Level 0	Level 0 is assigned when the condition for Level 1 is not fulfilled.					

(Ono & Matsushita, 2016)

- Changes in rubric scores from 1st to 2nd yr



(Nihara et al., 2018)

- Improvement in scores
- Smaller gap between assessments by students and by instructors

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- Student's reflections on his/her own progress

- "Thanks to the Argumentation Model, I learnt that the organization and expression of an essay should be easy to understand to readers. When I used the model and analyzed the essay I had written in my 1st year, I found it awful… . I think I applied the model in writing this year's essay (I hope)."

- "Through this class, I have absorbed the principles of the Argumentation Model. Looking at the essay I wrote in my 1st year, I can fully understand it had no firm foundations. I feel I have thought through this year's task and managed to write a better essay."

- Students experience growth from 1st to 2nd yr through assessment tasks
- Performance assessments function not only as "assessment of learning", but also as "assessment for/as learning".

(cf. Alverno College Faculty, 1994; Earl, 2003)

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- Characteristics of program-level assessment approaches

	Benefits	Difficulties
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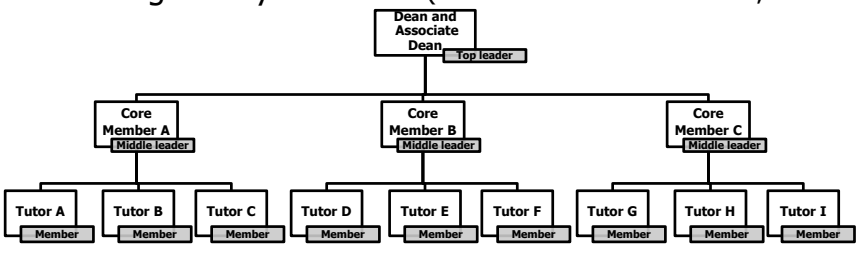
Portfolio	• Students' learning trajectories can be grasped along with evidence-based materials. • Students can reflect on their own learning and growth.	• Without conferences (reflection with others) and correspondence with learning outcomes, mere storing of evidence materials will not lead to assessment.
PEPA (Pivotal Embedded Performance Assessment)	• Direct use of course-level assessment • Have significance as a learning task, not just an assessment task • Integrated abilities at the milestones can be grasped.	• Difficult to compare between institutions? ➔Common tests (e.g., OSCE) • Too heavy assessment burden? **➔Challenge (1)** • Limited applicable field? **➔Challenge (2)**

Challenge (1) - Improving feasibility

- Management of key courses
  - Collaboration among faculty members (core members are selected, and tutors are supervised)



  - Creating a guidebook for each key course

- Other individual courses
  - Cultivate expert judgment* at key courses; other courses are entrusted to the instructor.

* "the judgment of faculty members to embody program-level learning outcomes in the knowledge and abilities of the disciplines in the courses, as well as to appropriately assess the achievement" (Fukahori et al., 2020, p. 63)

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Challenge (2) - Expanding the applicable field

- Engineering education and interdisciplinary education
  - Tokyo City University
    - SD PBL (Sustainable Development Project organized Problem Based Learning) as the core of the curriculum
    - Develop PEPA-like initiatives in engineering education and interdisciplinary education
      - "Visualization of achievement levels and continuous learning to realize the diploma policy"

➔ Further consideration of Challenge (2)

Ito, Matsushita, & Saito "Practical Research at a Science and Engineering University with a Focus on PEPA and PBL"

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Conclusions

- There are two ways of thinking about linking courses and a program in curriculum and assessment: sum-based and trajectory-based.
- While many approaches are sum-based, we propose PEPA (Pivotal Embedded Performance Assessment) as an approach to directly grasp learning trajectory.
- PEPA originated from the efforts of the Faculty of Dentistry, Niigata University. PEPA directly assesses the intermediate learning outcomes of students at key courses placed at the milestones of the degree program and links them to understand the "trajectory" of students' learning.
- The main challenges of PEPA are to improve the viability and expand the applicable field. In this regard, action research is underway at Tokyo City University as another field.

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International Symposium on Higher Education
Learner-centered Education and Higher Education Quality Assurance Amid COVID
2022.2.23（9:00～18:30）

Promoting Faculty's Expert Judgment and Institutional Change by Facilitating the Use of Learning Outcomes Assessment Tools

Japan Association for Colleges and Universities Research (JACUE) (2019-2021) (Principal Investigator: Satoko Fukahori)
Japan Society for the Promotion of Science (JSPS) Grant-in-Aid for Scientific Research (B) (2018-2021) (Project No. 18H01033)
(Principal Investigator: Satoko Fukahori)

Satoko Fukahori (Kyushu University),
Kayo Matsushita (Kyoto University),
Michiko Ito (Tokyo City University),
Hidehiro Nakajima (Ritsumeikan University),
Machi Sato (Kyoto University),
Ikko Tanaka (J.F. Oberlin University),
Kai Hatano (Osaka Prefecture University),
Yugo Saito (Niigata University),
Shotaro Naganuma (Kyushu University)

2022.2.23

The Research Framework and the Expert Judgement Scale

Satoko Fukahori (Kyushu University),
Kai Hatano (Osaka Prefecture University),
Shotaro Naganuma (Kyushu University)

2

2022.2.23

The Research Framework

Satoko Fukahori

(Kyushu University)

3

Purpose of the Study:

From Faculty Transformation to Organizational Change – Identification of Necessary Conditions

Background

- Policy/societal demands for demonstrating higher education learning outcomes
- Generation of generic/ disciplinary reference points – utilization still to be accomplished.
- Development of learning outcomes assessment tools, including assignments, test items, and rubrics, which contribute to fostering concrete-level shared understandings of abstract-level learning outcomes in Europe, US, and Japan.

Research Question:
How can HEIs make the transition to learner-centered education (learning system paradigm) through fostering faculty expertise in educational design and evaluation (expert judgment)?
What are the necessary conditions?

Review of the literature and pioneering practice (Sato)

Organizational Change

- Transition to learner-centered education (learning system paradigm)
- Necessary conditions?

Method of observation
Identification of the organizational learning/change framework.
Practical research at two universities engaged in fostering EJ within the context of a learner centered teaching and learning management system
(Ito et al; Nakajima et al)

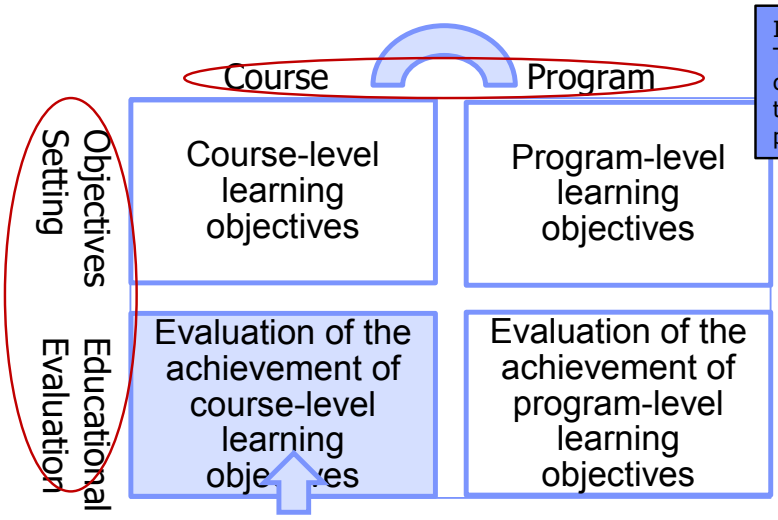
Faculty transformation

Method of observation
EJ Scale
(Hatano et al)

Fostering faculty expertise in educational design and evaluation (expert judgment)

Expert Judgement

- 《Definition》 The ability of faculty to embody program-level learning objectives established on the basis of disciplinary expertise into course-level learning objectives that correspond to disciplinary knowledge and abilities covered within the courses, as well as the ability to evaluate achievement of the program-level and course-level learning objectives (learning outcomes).



Implications drawn in the course of the research:
The importance of expertise in overseeing the curriculum – having a bird's eye understanding of the respective roles of courses that constitute the program.

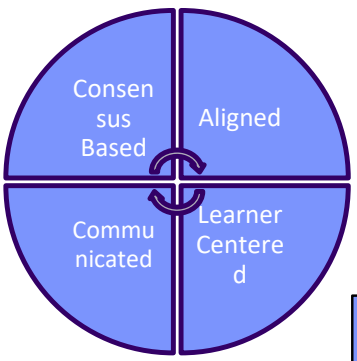
Disciplinary expertise linking program-level and course-level learning objectives.

Evaluative expertise assessing the achievement of program-level and course-level learning objectives.

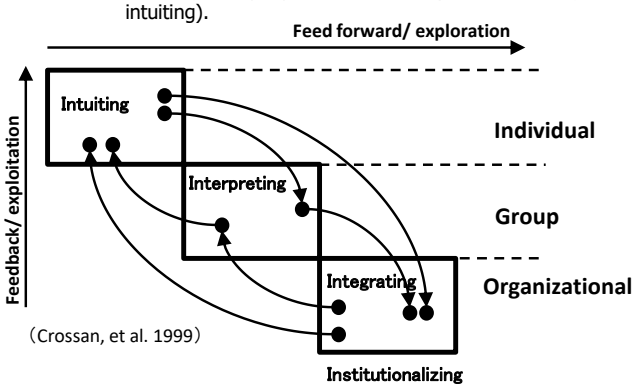
Evaluative expertise(Sadler, 1989): Sadler's main focus is on capturing the quality of learner's performance.
This study expands the concept of expert judgement by including not only educational evaluation but also objectives setting and by focusing on the relationships of course-level and program-level objectives setting and educational evaluation.

Learning Systems Paradigm

- Definition: A cognitive framework in which faculty members focus not only on the courses they teach but also on the wholeness and consistency of the program (alignment) from the perspective of the learner.
  - While the traditional concept of a learning paradigm focuses on the dissemination of pedagogical methods that nurture learning (Barr & Tagg, 1995), the learning systems paradigm focuses on realizing a "student-centered learning environment coupled with alignment" where "consensus around learning outcomes" are "clearly communicated and aligned throughout educational experiences." (Jankowski & Marshall, 2017).



- **Organizational learning** : The dynamic, multilevel process of renewal, in which individual learning is shared with members and embedded in the organization's activities, which in turn affect the way individuals think and act.
  - Feed forward/ exploration: the process in which new learning is assimilated, where new ideas and actions flow from the individual to the group to the organization levels. (interpreting-integrating)。
  - Feedback/ exploitation : the process in which what has already been learned is exploited, feeding back from the organization to group and individual levels, affecting how people act and think (institutionalizing-intuiting).



(Crossan, et al. 1999)

Implications drawn in the course of the research:
Individual transformation does not easily lead to organizational change.
Individual transformation and organizational change occurs in multiple ways.

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International Symposium on Higher Education:
Learner-centred Education and Higher Education Quality Assurance Amid Covid

Development of Expert Judgement Scale

HATANO Kai（Osaka Prefecture University）
NAGANUMA Shotaro（Kyushu University）

Definition, measurement, and use of Expert Judgement

- ＜**Definition**＞The ability of university faculty to embody the program-level learning objectives established based on their expertise into course-level achievement objectives that correspond to the knowledge and abilities of the academic disciplines covered in the courses, and to appropriately evaluate the degree of achievement of the learning objectives and achievement goals (learning outcomes).

- **Two-level of EJ**
  - **Judgmental ability to set and evaluate goals at the organization level (broad sense)**
  - **Judgmental ability to set goals and evaluate them at the course level (narrow sense)**

We develop items based on the definition（Saito et al.，2019）
（Organization：3 item, Individual：10 items）

エキスパートジャッジメントの項目

Instruction: Do you know what the diploma policy of your department is? (Please note that the diploma policy means a program-level learning outcome.)

- Yes or No

＊If the answer is "No," the survey will not be conducted.

Organization-level （3 items)
(1. disagree-4. agree)

Judgmental ability to set and evaluate goals at the organization level (broad sense)

- I know which of the learning objectives listed in the Diploma Policy my course is supposed to develop.
- I set achievement goals for my courses that are consistent with the learning objectives stated in the Diploma Policy.
- I can explain to faculty members in the same department and students attending my courses that I am appropriately evaluating the achievement goals in my courses.

Course-level (10 items)
(1. disagree-4. agree)

- **Judgmental ability to set goals and evaluate them at the course level (narrow sense)**

(e.g.,)

- I describe the relationship between the achievement goals of my courses and evaluation methods in a way that students can understand in the syllabus.
- I can prepare tests and examinations to assess the competency to use knowledge, such as the ability to think and judge, in accordance with the content of my courses.
- I can set criteria for judging students' achievement in each of the achivement objectives of my courses in a way that students can understand.

5

Provision of usage

- Organization-level items
- Short time answer is possible

→Can be used by presidents to assess the current situation.

- Course-level items
- Individual faculty members need to answer for subjects they are responsible for.

→Can be used in FD seminars and workshops

- Further examination: Does expert judgement of faculty bring about organizational change?

6

International Symposium on Higher Education: Learner-Centered Education and Higher Education Quality Assurance Amid COVID-19

Feb. 23, 2022

Promoting Faculty Expert Judgement and Institutional Change by Facilitating the Use of Learning Outcomes Assessment Tools

Practical Research at a Science and Engineering University with a Focus on PEPA and PBL

○ Michiko Ito (Tokyo City University)
Kayo Matsushita (Kyoto University)
Yugo Saito (Niigata University)

Outline

Through a case study at Tokyo City University we address:

1. Strategies for shifting to a "learning systems paradigm"
   - 1-1. SD PBL links course-level and program-level learning outcomes
2. Strategies for putting PEPA theory into practice
   - 2-1. The structure of SD PBL and PEPA
   - 2-2. System for implementation
3. Tentative conclusions drawn from the practical research

2

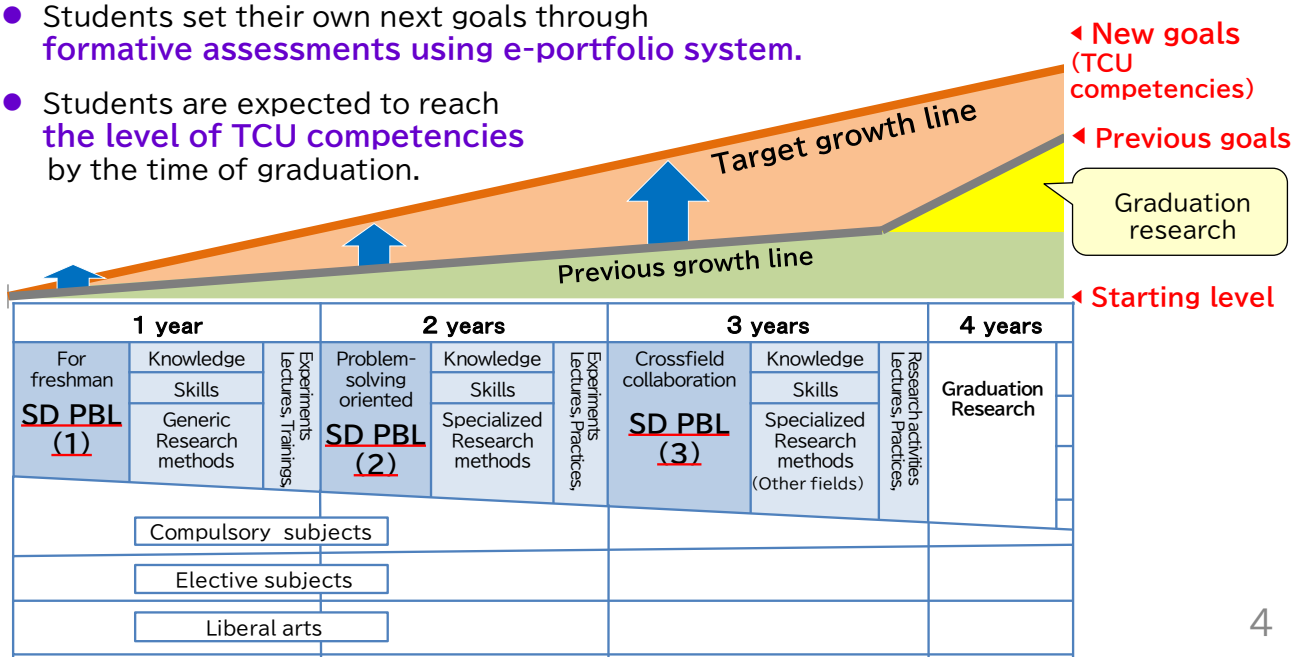
Tokyo City University (TCU)

Established	1929
Type	Private university
Organization	2 graduate schools, 7 faculties, 18 departments (11 of them are science and engineering departments), & Faculty of Liberal Arts and Sciences
Number of Students	7,667 (as of May 2021)
Location	Tokyo & Kanagawa, Japan
Fields of application of PBL	For students across all departments from the first through the third year
Background of introducing PBL into the Program	The university's executive board decided to introduce "**SD PBL**," created to solve educational issues, as a required course starting in FY2020 as part of **the university-wide educational reform**. It is now being implemented in each department.
Assessment tools	**PEPA** (performance assessments at SD PBL courses)

1. Strategies for shifting to a "learning systems paradigm"

1-1. SD PBL Links Course- and Program-Level LOs

- SD PBL = Project organized Problem-Based Learning for Sustainable Development (consistent with the university's philosophy)
- In SD PBL, student learning is assessed using "The TCU competencies framework."
- Students set their own next goals through formative assessments using e-portfolio system.
- Students are expected to reach the level of TCU competencies by the time of graduation.



2. Strategies for putting PEPA theory into practice

2-1. The Structure of SD PBL and PEPA

Performance Assessments in SD PBL & Graduation Research (Integrative courses in TCU) = **PEPA (Pivotal Embedded Performance Assessment)**

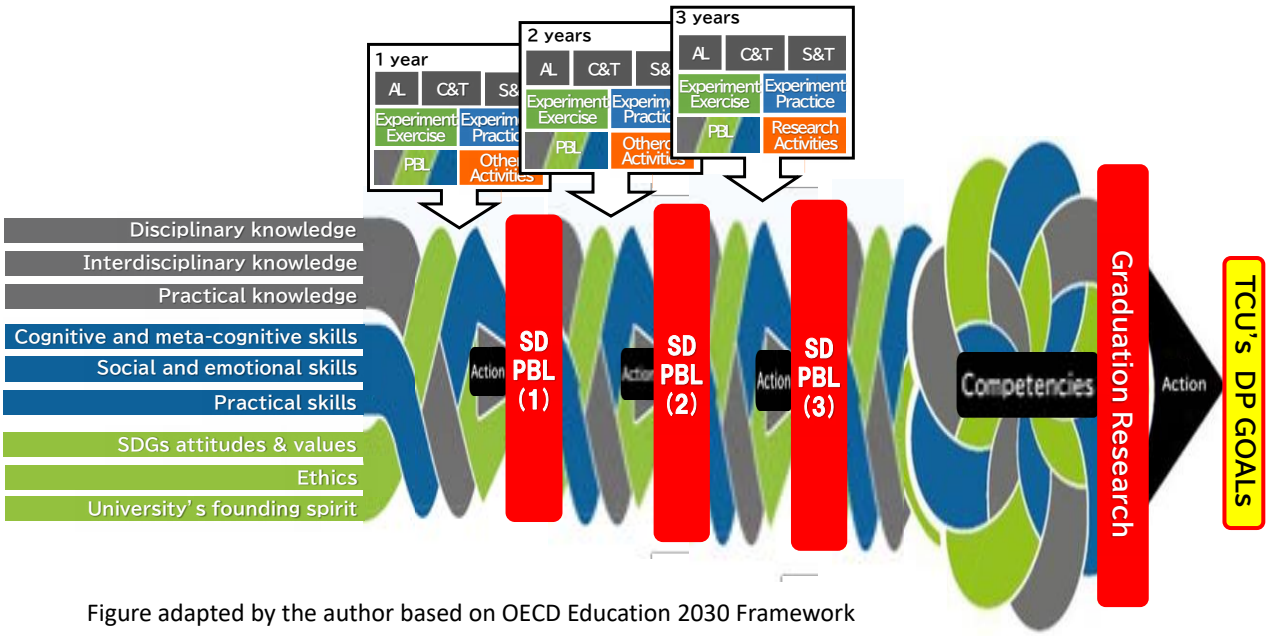


Figure adapted by the author based on OECD Education 2030 Framework

2. Strategies for putting PEPA theory into practice

2-2. System for Implementation

Executive Board <Decision-making>

➡ **Organization for Educational Excellence** <Design>

⇔ **SD PBL Design Study Group** <Workshop, lectures, etc.>

- With several faculty members from each department
- One of the aims is to extend the improvement of individual faculty members to the organizational change
- The members of this research team are involved as experts
- It provides an opportunity for mutual learning

⇔ **Faculty members in charge of SD PBL course** <Implementation>

Collaboration

➡ **University-wide Academic Affairs Committee** <University-wide consensus >

⇔ **Department** <Curriculum design>

* The action research such as interviews by this research team supports each department in facilitating their expert judgment and improving course design.

Survey of SD PBL Practices in Each Department

- **Focus group interviews**
  ➡ Thematic analysis (FY2020, 2021)
- **Changes in the organization and faculty members**
  - Still **too early to observe any changes** in the organization
  - Importance of the presence of **a key person in the department** and the collaboration around him/her.
  - **Common characteristics** of departments producing effective design and assessments

    Collaborative course management / Various learning tools / Shared identity of the department / Multiple presentation experiences / Diverse assessment methods / Student recording and reflecting on learning / Consistency in a series of SD PBL courses
- **Summary of the survey**
  - Progress from **mutual learning in FY2020** to the emergence of **the effects of that learning in FY2021**.

SD PBL during COVID-19 in FY2020

Competition-style presentation using "Zoom"

The load test videos of the pasta bridges made by students

Department of Urban and Civil Engineering

Poster-style presentation using "Miro"

Department of Architecture

3. Tentative Conclusions Drawn from the Practical Research

- TCU has **established a series of PBL courses, named "SD PBL",** as required courses for the first- to third-year students across all departments, and is trying to connect them to graduation research.
- The idea is **to directly assess student learning outcomes in SD PBL courses and graduation research（both are integrated courses and key courses in PEPA**), **grasp their learning trajectories** up to graduation, and ensure that students graduate with higher levels of achievement.
- So far, each department of TCU still focuses on the content design and implementation of SD PBL rather than assessment.
- We think **there are multiple variations and stages** of the change in faculty members and organization. **The support for using assessment tools will be more effective when an outline of the SD PBL courses has been established**.
- We hope to validate this preliminary observation by continuing our action research.

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Learner-centred Education and Higher Education

Utilization of the Tuning Test Item Bank for the Improvement of Teaching and Learning: The Kyushu University Trial

Hidehiro Nakajima (Ritsumeikan University)

Satoko Fukahori (Kyushu University)

1

Overview

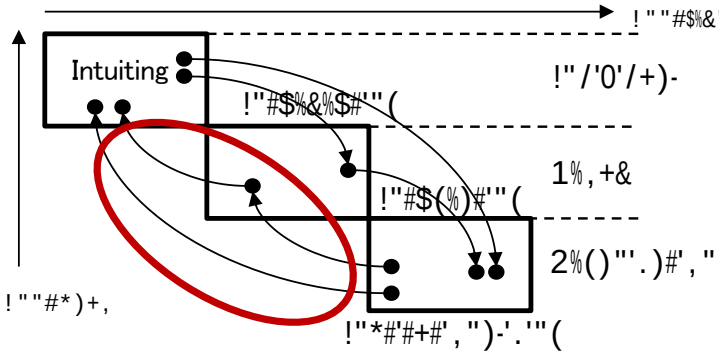
- Does the experience of participating in academic management initiatives make a difference to EJ?
  - EJ is cultivated at a high level among faculty members (understanding and sharing of educational goals). 。
    - Depends on the characteristics of the specialized field
    - Faculty who have not experienced participation also tend to refer to "calculation and basic skills".
- What are the implications of the experience of participating in teaching and learning management initiatives?
  - A system to support faculty members who have no experience in participating has been established for sharing educational goals.
    - They tend not to be recognized as "organizational initiatives" (embedded in the organizational routine.
- What organizational routines do you have in place ?
  - A system for sharing goals and assessment methods among course instructors (intra-disciplinary sharing)
  - Sharing educational goal images through the inspection of graduate school entrance exam problems (inter-disciplinary sharing)

2

Case Study

- Department of Mechanical Engineering, Faculty of Engineering, Kyushu University
  - Large-scale faculty organization (n=64)
  - Well-established discipline (mechanical engineering)
  - Participate in the Tuning test item bank with NIER (2014-)
  - Reorganization in 2021 (as a result of continuous curriculum development)
- Campus-wide educational management reforms is underway to a Learning Systems Paradigm (2018-)

How can the tools for for educational management reform be embedded in the organizational routine and values?
→ Focus on the feedback process.



Tools for educational reforms are in place.
→ Feed-forward process has been accomplished.

Qualitative Survey

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Faculty Type 1: EJ is already well cultivated through participation in the test question bank since 2014 (n=3)
Faculty Type 2: EJ has already been cultivated through discussions on teaching and learning management (discussions on assessment tasks have not been deepened) (n=9)
Faculty Type 3: Have no experience of participating in systematic discussions on setting and evaluating academic goals and objectives (n=52)

4

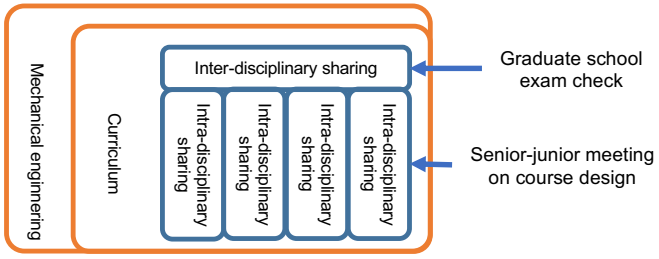
Results: Survey 1

- Do faculty members' EJ differ according to their experience in academic management initiatives?
  - EJ is cultivated at a high level regardless of management experience supported by the identity as an engineer (understanding and sharing of educational goals).
    - Faculty who have not experienced participation also tend to refer to "calculation and basic skills".
- What are the implications of the experience of management of teaching and learning as a factor for cultivating EJ?
  - A system for sharing educational goals has been established in which faculty with management experience support faculty without management experience (OJT).
    - Not only depend on their identity of engineer.

5

Results: Survey 2

- How does the characteristics of the academic field affect the improvement of EJ?
  - Less complex discipline to share the educational goals and assessment methods.
  - Curriculum in which goals and assessment methods are easily shared among faculty
    - Curriculum designed around 4 dynamics, and shared the concept among facluty.
    - Maintained by keeping tradition.
    - Maintained by responding to contemporary social needs.
- What routines are in place?
  - Sharing the educational goals, learning contents, assessment methods with junior faculty who teach seminar classes.
    - 4 dynamics courses are taught by senior faculty.
    - Junior faculty teach seminar course independently, share the course information with senior faculty.
  - Sharing the educational goals through the inspection of graduate school entrance exam problems.
    - Opportunities to connect abstract goals with measurable knowledge and skills.
    - Opportunities to reflect how our curriculum are effective.



6

Implications

- Does the experience of participating in academic management initiatives make a difference to EJ?

Management experience	Common feature	Differences
Type 1	Empathy for type 2 and 3	Evaluate own EJ strictly. Management experiences provide the insights to overlook the relationship between program objectives and course objectives.
Type 2	Advanced EJ with identity of engineer. Tradition of emphasis on 4 dynamics.	Teach courses of 4 dynamics. Course objectives should be set from the perspectives of curriculum goals.
Type 3		Teach applied courses. Course objectives include specific words such as computational and basic skills.

- Hypothesis 2: As the number of faculty members with high EJ levels increases, the EJ of faculty members who do not have management experience will also be enhanced, resulting in a change in the shared values of the organization as a whole.
  - The experience of working with high-level EJ faculty (team-teaching of lecture and seminar courses, sharing and handing over teaching materials, co-creating graduate school entrance exams) may contribute to the increase in EJ of other faculty members. However, the conditions and processes for this have not yet been clarified.

7

セッション1: カリキュラムとアセスメント （Session 1: Curriculum and Assessment）

【議論したい点】

- 〔グロスマン氏・マッキナーニ氏を中心に〕米国においてTuningを始めとする学修成果イニシアティブは、コロナ禍において停滞したのか。あるいは、現場における学修者本位の教育の取組を支える役割を果たし得たのか。ウィズコロナ時代において、どのような新たな展開を見据えておられるのか。そのために必要な次のステップは何か。
- 〔フルチャー氏・濱名氏を中心に〕政府や認証評価機関による、高等教育の質保証において重視する観点は、コロナ禍において変化したか。学生の学びの保障において、学修成果アセスメントの果たす役割はどのように変化するとお考えか。
- 〔松下チーム・深堀チームを中心に〕教育のオンライン化は、従来は担当教員と履修者以外の者には閉ざされてた学びの空間を開放して可視化する方向に作用する一方で、学びの分断を引き起こす危うさも兼ね備えている。そうした中で、統合的な学びの機会、学びの成果の統合的な把握と共有、それを支える教員のエキスパート・ジャッジメンの涵養と学習システムパラダイムへの移行が益々重要な意味を持つと考えられる。その点についての理解は、大学の教育現場でどれほど共有されているか。ウィズコロナ時代において、必要な次のステップは何か。

【Points of Discussion】

- 〔Mainly addressed to Grossman and McInerney〕 In the US, did Learning Outcomes Initiatives including Tuning stagnate due to COVID-19, or did they gain spotlight to play key roles in supporting learner-centered education during the crisis? What new developments do you foresee in teaching and learning within higher education in coexistence with the coronavirus? What are the necessary next steps to achieve this?
- 〔Mainly addressed to Fulcher and Hamana〕 Did the focus of higher education quality assurance of governments and accreditation agencies changed due to due to COVID-19? Do you foresee changes in the role of learning outcomes assessment in the assurance of student learning? What are the necessary next steps?
- 〔 Mainly addressed to Matsushita's and Fukahori's teams 〕While online education allows the virtual opening up of the classroom and visualizing the teaching and learning processes, it has the danger of fragmenting learning. Within this context, providing opportunities for integrated learning and pursuing integrative evaluation of learning, as well as fostering faculty expert judgement and shifting to a learning systems paradigm to support such efforts has become increasingly more important. How much of an understanding of this point is shared in universities? What are the necessary next steps?

Session 2: The Management of Teaching and Learning and Quality Assurance in Japan

International Symposium on Higher Education

Learner-centred Education and Higher Education Quality Assurance Amid Covid

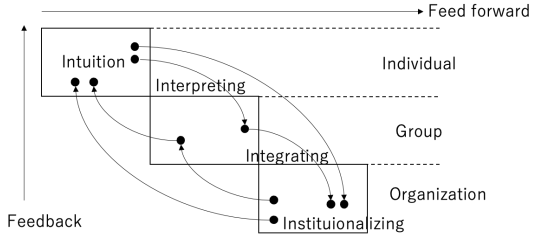
Interplay of Individual・Group・Organization and Organizational Transformation

Implications from the international case study

Center for the Promotion of Excellence in Higher Education, Kyoto University
Machi Sato

Overview

An Organizational Learning Framework



Crossan, M.M,, Lane, H.W. and White, R.E. (1999) "An Organisational Learning Framework: From Intuition to Institution", Academy of Management Review, 24(3), 522-537

- **Purpose of the case study**（Research Project "Promoting Faculty Expert Judgement and Institutional Change by Facilitating the Use of Learning Outcomes Assessment Tools"）
  - What is the relationship between the individuals, the university, and external organizations in the organizational transformation process of university education?
  - How can external organizations support the organizational transformation process?
- **The case study**
  - Focusing on the IGEA conducted by the AAC&U, an external organization, and examining how the IGEA is experienced by the participants.
  - Focusing on the Columbia University FoS team that participated in the IGEA, we examined the interaction between individuals, teams, organizations, and external groups.
- **Results, discussion, and implications for Japan**

2

About the case
Institute on General Education and Assessment, IGEA, by AAC&U and Frontiers of Science at Columbia University

About the case study

IGEA

- Attended IGEA between 5th and 8th June at the University of Uta
- Participatory observation: Various sessions, individual consultation sessions, and team discussion
- Analysis of Narrative Statement which participants had to submit prior to IGEA

FoS

- Fieldwork between 27th and 30th January
- Semi-structured interviews with FoS staff members and CTL staff. Participatory observation of the lecture, sessions, and meetings
- Analysis of related documents

4

Result of IGEA fieldwork

Mechanisms

- ✓Sharing guidelines as an external organization →LEAP
- ✓Participation as a representative of the university →The university forms a team to attend
- ✓Commitment by the university→Expensive participation fee
- ✓Identify issues before attending IGEA→Narrative Statement
- ✓Facilitators and specialists with various background

Meaning of IGEA as a space

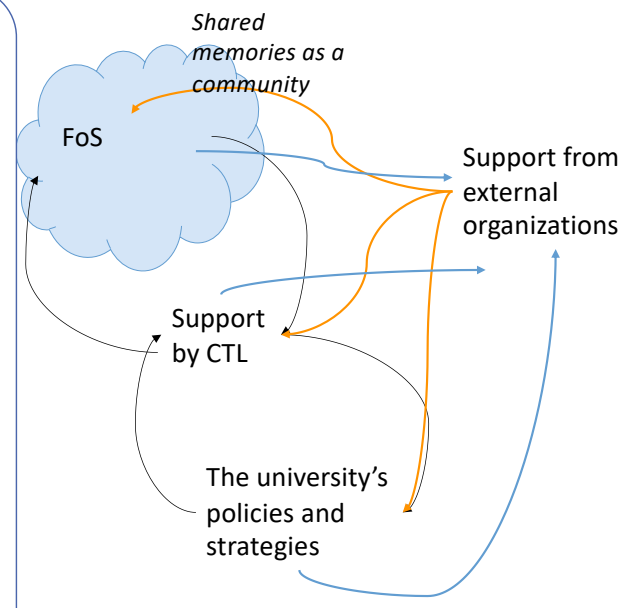
- ✓For learning from each other
- ✓For competition
- ✓For team building
- ✓For working effectively
- ✓For networking
- ✓For learning about assessment tools

Acquire the terminology, logic, communication skills, and strategies necessary to be a change agent who can promote transformation through participation in IGEA.

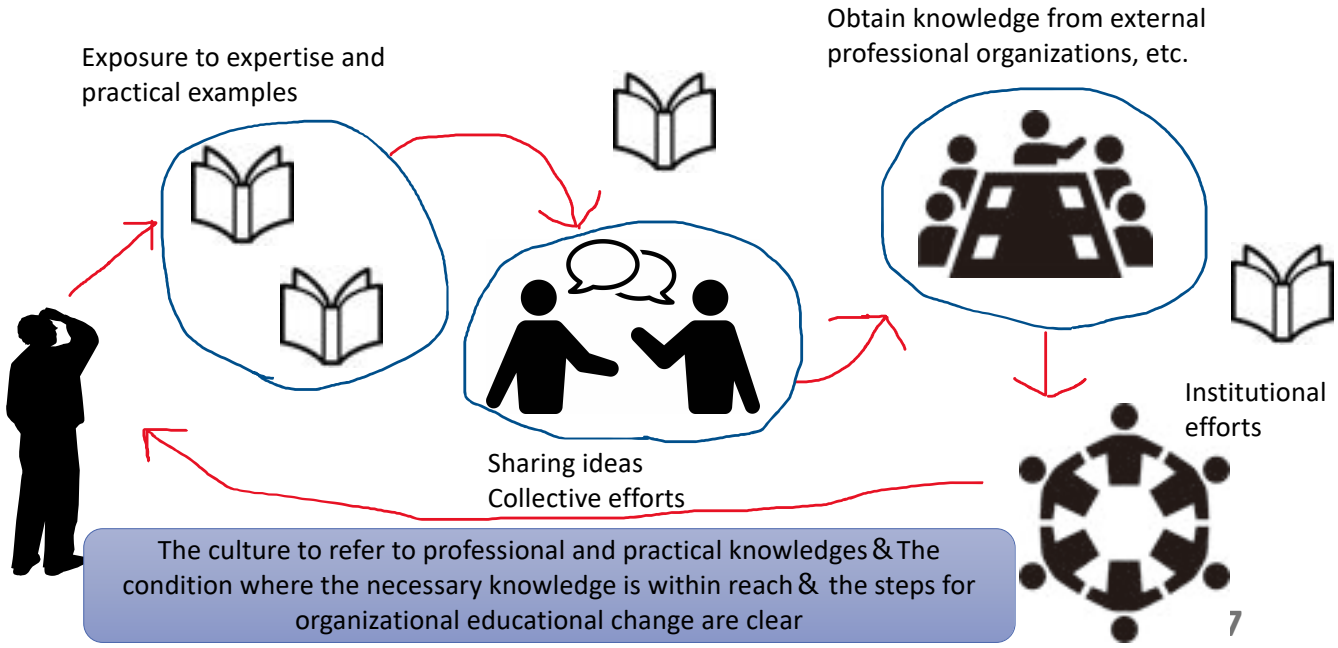
Results of the fieldwork at the FoS, Columbia University

- A shared memory of the process of evaluating and improving
- Importance of formalized frameworks and mechanisms for sharing
- Importance of collaborating on specific tasks to internalize the framework
- A mechanism for experiencing being part of a community
- Ensuring a certain degree of freedom without denying discretion
- CTL as a hub connecting individuals, educational programs, and organizations
- Existence of educational programs, CTLs, and professional associations that work with organizations

The organic presence of these elements will ensure continued learning for individuals and organizations.



Results



7

Implications for Japan

- Implications for external organizations
  - Provide direction backed by a high level of expertise.
  - Coherency and consistency as an organization (Have a character more as a professional organization rather than an academic society)
  - Strategies backed by a comprehensive understandings of how the targeted organization learn and transform.

- Implications for universities
  - The need for clear procedures (processes) so that the transformation of individuals leads to organizational transformation.
  - The need to mature an organizational culture that takes for granted the need to change when necessary
  - Need for a structure that allows people to experience being a responsible member of the community (at the university level, department level, major level, etc.)

8

筑波大学
University of Tsukuba

Feb. 23rd, 2022 14:00-15:30 (JST)

International Symposium on Higher Education: Learner-centred Education and Higher Education Quality Assurance Amid Covid

【The Management of Teaching and Learning and Quality Assurance in Japan】

Management for Teaching and Learning in University of Tsukuba

Shinji TATEISHI, Ph.D.

Assistant Professor,

Office of Management for Teaching and Learning, University of Tsukuba

IMAGINE THE FUTURE.

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筑波大学
University of Tsukuba

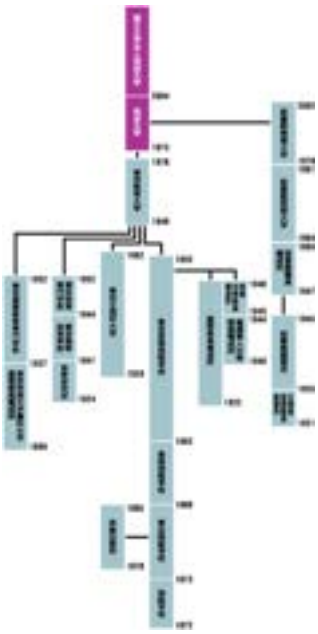
Characteristics of University of Tsukuba

筑波大学 University of Tsukuba

- Established in Oct. 1973
- 2 Campuses in Tsukuba, Ibaraki pref. and Bunkyo ward, Tokyo
- Number of Undergraduate and Graduate students: 16,540
  - Undergraduate: 9,715
  - Graduates: 6,825 (Master 4,087, Doctoral 2,537, Professional Degree 201)
- Number of Staffs

  Faculty: 2,002, Administrative: 1,065, Hospital/Affiliated School: 2,128
- Number of Degree Programs offered:

  Undergraduate level 26, Graduate and Professional level 56



As of May 1st , 2022

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Characteristics of University of Tsukuba

筑波大学 University of Tsukuba

- the University of Tsukuba was established as a "*New Concept University*," which responded to students' movement/activism in the 1960s.
  - With the expectation that it would become a leading institution by adopting the approaches taken in other countries.

  - Interdisciplinary system: University of Sussex
  - Student council system: Universities in West Germany
  - Cluster system: University of Oklahoma, University of California, San Diego
  - Separation of educational and faculty organizations (*kyokyo bunri* in Japanese): University of Oxford, University of Cambridge
  - Project research: Institute for Advanced Study, Princeton

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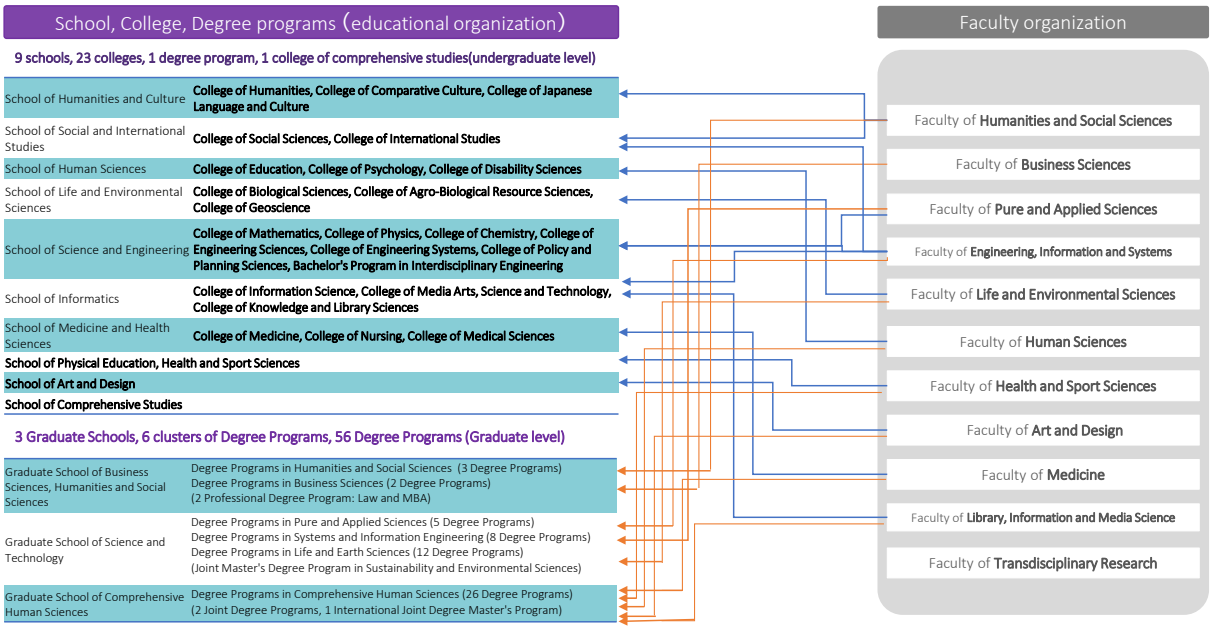
Separation of educational and faculty organization

筑波大学 University of Tsukuba



Cf) Mission Statement of University of Tsukuba

筑波大学 University of Tsukuba

The University of Tsukuba aims to establish free exchange and close relationships in both basic and applied sciences with educational and research organizations and academic communities in Japan and overseas. While developing these relationships, we intend to pursue education and research to cultivate men and women with creative intelligence and rich human qualities.

The University of Tsukuba endeavors to contribute to the progress of science and culture. Formerly, Japanese universities tended to remain cloistered in their own narrow, specialized fields, creating polarization, stagnation in education and research and alienation from their communities.

The University of Tsukuba has decided to function as a university which is open to all within and outside of Japan. Toward this end, the university has made it its goal to develop an organization better suiting the functions and administration with a new concept of education and research highly international in character, rich in diversity and flexibility and capable of dealing sensitively with the changes occurring in contemporary society.

To realize this, it has vested in its staff and administrative authorities the powers necessary to carry out these responsibilities.

https://www.tsukuba.ac.jp/en/about/outline-concept/

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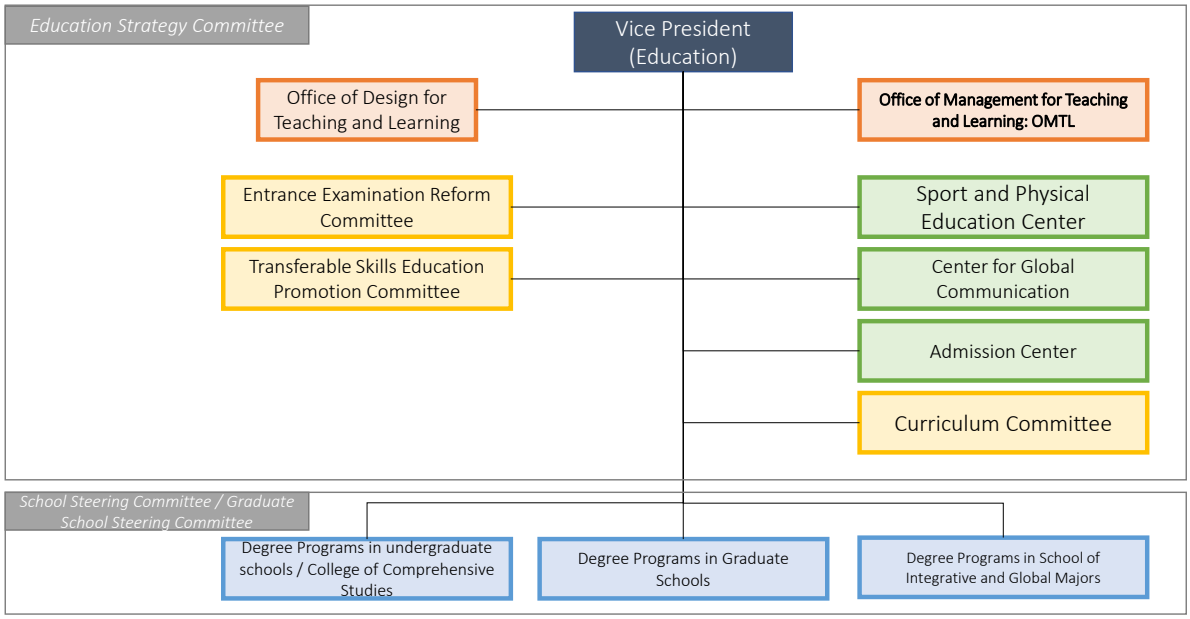
Organizations related to Teaching and Learning

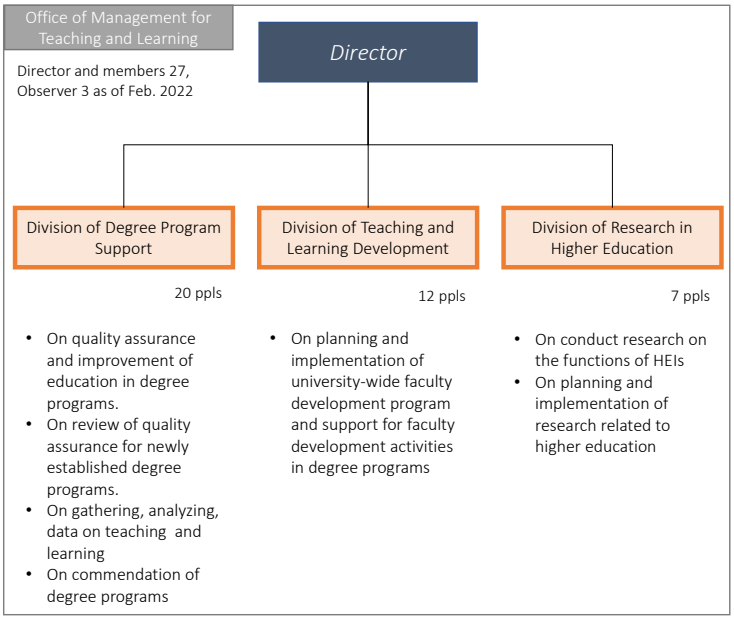
筑波大学 University of Tsukuba



Structure and Efforts of the OMTL

筑波大学 University of Tsukuba

- The Office Launched in Apr. 2020
  - To improve the quality of education under the degree programs system, and to establish and enhance internal quality assurance
  - Main responsibilities:
    - Monitoring (annually)
      - Self-check of quantitative and qualitative data on the current status of delivering the program and report to the OTML
    - Program Review (once every six years)
      - Comprehensive review based on the results of monitoring for years and *Dialogue* among chairs and the OMTL
    - Approval Process of a new degree program
    - Faculty Development



Timeline

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2020
- OMTL Launched in Apr.
- Monitoring (all program) and Program Review (21 programs of undergraduates level)

2021
- Monitoring (all program) and Program Review (18 programs)

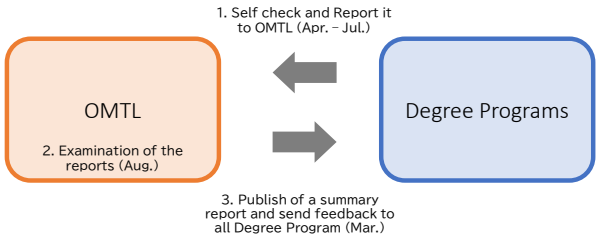
2022
- Monitoring (all program) and Program Review (24 programs of graduates level)

2023
- Monitoring (all program) and Program Review (22 programs of graduates level)

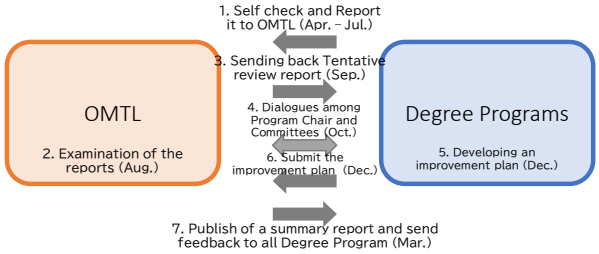
2024
- Monitoring (all program)
- Accreditation

Program Review will be completed in four years in the first round, and in six years in the second round after FY2024.

Monitoring



Program Review



Monitoring

筑波大学 University of Tsukuba

- Each degree program will conduct *self-assessments (monitoring)* based on Rubrics.
- The Rubrics include the following 12 items;
  - (1) Setting up educational goals/objectives and three policies (admission, curriculum and degree-granting), (2) Ensuring curriculum well-organized, (3) Efforts to enhance transferable skills education, (4) Preparation and improvement of syllabi, (5) Evaluation of academic performance, (6) Visualization of learning outcomes, (7) Research supervision and evaluation of theses (graduate schools only), (8) Efforts to improve students' second language proficiency, (9) Admission, (10) Ensuring sustainability of course offering, (11) Faculty development, (12) Hearing opinions from students and stakeholders.
- The Rubrics consist of five levels (Excellent, Satisfactory, Minimal, Weak, Defect). The minimum goal of the University is that all degree programs achieve Minimal or higher levels in all items by 2023.

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Program Review

筑波大学 University of Tsukuba

- *Program Review Committee, PRC*, is established every year to conduct the Program Review.
  - The PRC sets up three sub-committees within itself.
  - Each committee consists of Internal, External and Student members.
  - External and Student committee members are appointed by the Director of the OMTL based on recommendations from degree programs to be reviewed.
  - External committee members: nominated from the candidates who have worked outside of the University of Tsukuba
  - Student committee members: nominated from students who take the degree program to be reviewed, or graduates of the program and enrolled in a higher level course related to the program to be reviewed.
- All committee members are required to take a short course on program assessments prior to *the Dialogue*.

Achievement and Challenges over the past two years (personal opinion)

筑波大学 University of Tsukuba

- Achievement: Any members in the University are becoming more aware of the importance of evidence-based understanding of their program's educational activities.
- Challenges: Reduction of workload, Renewal of monitoring and review method according to the characteristics of each program, Making *the dialogue* more effective
- Next step is to provide:
  - more fruitful information and support necessary to promote the improvement of teaching activities in each degree program.
    - Further innovations for sharing good practices across programs of different sizes and fields
    - IR team (one associate professor and two assistant professors) in the Division of Support for Degree Program have been working to refine documents / materials for Monitoring and/or Program Review.
  - Faculty Development on topics with high need, such as syllabus

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Fostering a culture of *dialogues in an evidence-informed way*

筑波大学 University of Tsukuba

- Research topics that the IR team has been working on during these two years are:
  - Online classes under the Covid-19, Open-ended text in class evaluation questionnaires, Comparison of grade distributions 2019 vs. 2020, Satisfaction/academic achievements of graduates, Graduation rates, Relationship between entrance examinations and GPA, Relationship between high school grades and GPA, Enrollment of female students and international students, English proficiency

The IR team could achieve this with the cooperation of each department that shares the data with the team.

In lieu of conclusion – "What does higher education guarantee in the age of *with-coronaviruses*?"

筑波大学 University of Tsukuba

- From July to August 2020, We conducted a survey to develop a policy for online classes in the upcoming semester (cf. Tateishi et al. 2021).
- This survey includes questions of "I am satisfied with my learning through online classes." and "The online classes have raised my interests in the fields".
  - Satisfied: Undergraduates 43.5%, Gradates students (Tsukuba campus) 64.5%, (Tokyo campus) 69.6%
  - Raised my interests: Undergraduates 59.2%, Graduate students (Tsukuba) 68.3%, (Tokyo) 72.5%

→ Higher education should guarantee students experiences to acquire the attitude of trust in the knowledge and the competencies of reskilling for when they want to learn more in future?

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筑波大学
University of Tsukuba

- Reference:
  - Shinji TATEISHI, Shinji DOI, Toshimasa YAMANAKA, 2021, Survey Report on Learning Conditions Regarding Online Classes at the University of Tsukuba, *University Studies*, 47: 39-87, Research Center for University Studies, University of Tsukuba.
- Contacts: tateishi.shinji.gw@u.tsukuba.ac.jp
- Disclaimer: The opinions expressed in this presentation are the author's own and do not represent the view of the OMTL, other departments and the University.

IMAGINE THE FUTURE.

Management of teaching and learning at Hokkaido University of Science

Educational quality assurance system with assessment policy

International Symposium on Higher Education: Learner-centred Education and Higher Education Quality Assurance Amid Covid
2022/2/23

Hokkaido University of Science

Contents

About Me
Name：Takahiro Masuda
Affiliation：Faculty of Engineering, Department of Electrical and Electronic Engineering
Specialty：Theoretical Physics
Affairs：Institutional Research Committee Chair of Our University

About Hokkaido University of Science

https://yahoo.jp/f1dfJ5

- In 1924, incorporated educational institution established.
  In 1967, Hokkaido Institute of Technology established.

- Our Campus is located at Teine in Sapporo, Hokkaido.

- In 2014, Hokkaido Institute of Technology renamed Hokkaido University of Science.
  - Faculty of Engineering (five departments)
  - Faculty of Health Sciences (five departments)
  - Faculty of Future Design（two departments)

- In 2018, Hokkaido Pharmaceutical University integrated into Hokkaido University of Science, Department of Pharmacy in Faculty of Pharmaceutical Sciences established.

# of students(4,630), # of faculty and staff (238+132)

Background of the project

- About 10 years ago, our university fell into a state of under-enrollment. A strong sense of crisis emerged within incorporated educational institution, and drastic reform began in 2014.

"Centennial Anniversary Branding Vison"

By 2024, we will cultivate human resources with both fundamental skills and expertise, and become Hokkaido's best comprehensive university for practical learning that develops, and grows together with the local community.

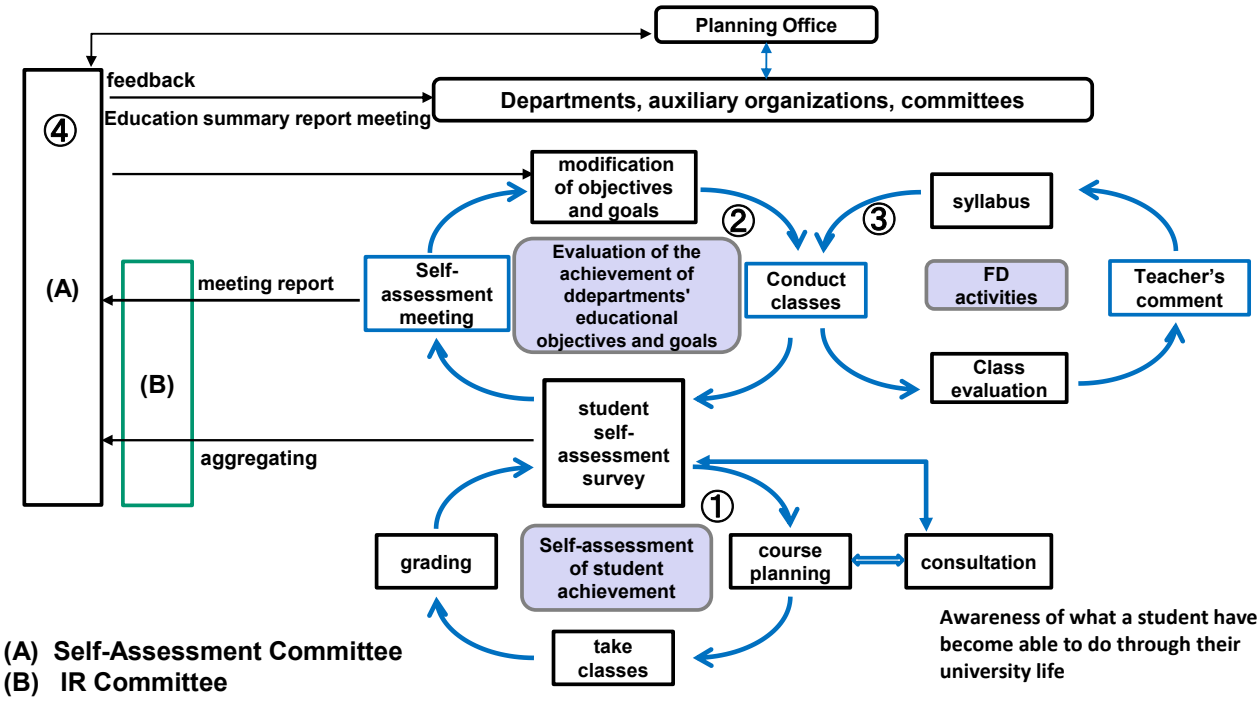
"Medium-term plan": As a basic requirement, in line with the report of the Central Council for Education.

- In order to improve the quality of education across the entire university, it is necessary to establish an internal quality assurance system through a thorough review of management of teaching and learning, rather than simply reorganizing academic departments.

- Under the leadership of the President, the core of the restructuring of the management of teaching and learning through collaboration between faculty and staff:
  ⇒ "Assessment system" and "Assessment policy".

Assessment System of Our University (Since 2014)

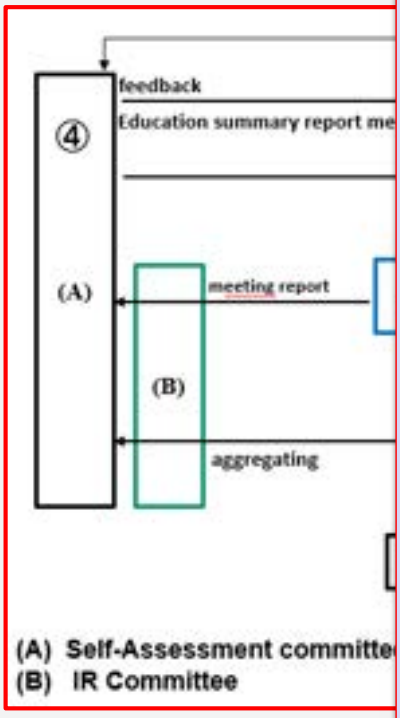
(System for evaluation and feedback on the status of achievement of educational objectives)



(A) Self-Assessment Committee
(B) IR Committee

Assessment System of Our University (Since 2014)

(System for evaluation
objectives)



Internal Quality Assurance System of our university

"Self-Assessment Committee" (President chairs the committee.)
"IR Committee" (lower branch)

- Evaluation of the learning outcomes is conducted at the "university", "program(curriculum)", "course", and "student" levels.
- Each department submits a self-assessment report to the Self-Assessment Committee based on the implementation of the educational self-inspection, and reports it at the education summary report meeting.
- The President will request the head of the relevant organization to implement improvements in matters that require improvement.
- The head of the organization aims for permanent improvement through the PDCA cycle based on the assessment system.

Assessment Policy

- In 2014, Assessment system started.

- In 2018, Assessment policy developed.
  - Systems and policies for evaluating learning outcomes and for verifying the validity of the three policies themselves.

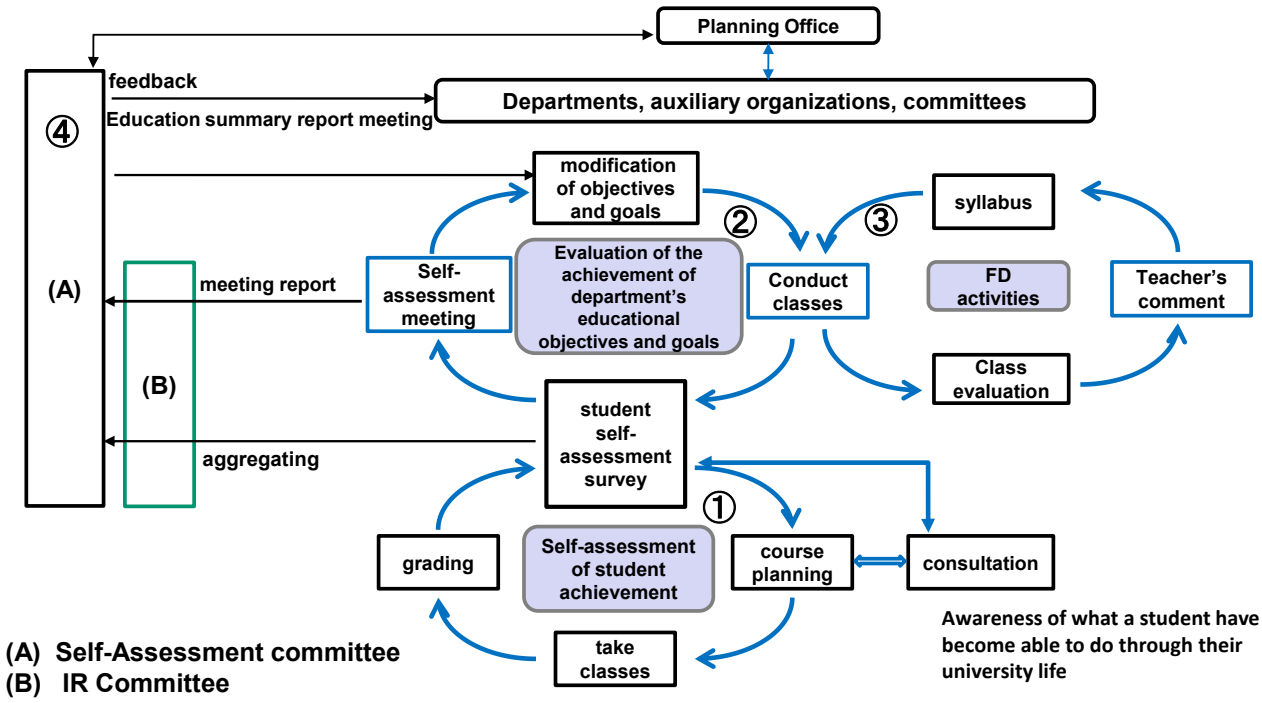
- Under the direction of the President, the Vice President for Reform and IR Committee will take the lead in the review.
- "Class surveys", "Peer review of the syllabus" (general tools),
  "Consultation" (previous efforts),
  "Student self-assessment survey", "Self-assessment meeting"
  (unique initiatives)
  "Assessment test (external test for generic skills)",
  "Student survey of IR Consortium of Japanese University",
  are imported.

https://www.hus.ac.jp/upload/files/pdf/academics_hus/assessment_policy.pdf

- In 2016, "3 Policies Review and Curriculum Revision Committee" established under the Planning Office. Review of curriculum consistency, particularly with DP as the starting point, and establishment of a system to improve consistency between course goals and grading, including changes to syllabus format.

Assessment System of Our University (Since 2014)

(System for evaluation and feedback on the status of achievement of educational objectives)



(A) Self-Assessment committee
(B) IR Committee

①Evaluation for students

➢ “Individual portfolio consultations”
Interviews with all students and faculty, conducted for about 20 years.
Several times a year, including life, academic, and career guidance.

➢ “Student self-assessment survey”

- Self-evaluation of achievement of DP (indirect evaluation of learning outcomes)
- Answer that the courses they took in the previous year helped them to develop their DP abilities.

➢ “Consultation for learning outcomes”
Delivery of individual forms that visualize the following items for each DP (visualization of learning outcomes)

- GPA
- Student self-assessment survey
- Assessment test (external test for generic skills)

Feedback through interviews and formative assessment to ensure that students achieve their DP

②③Evaluation of the program and the course

➢ “Self-assessment meeting”

- Self-assessment of departmental education in accordance with assessment policy
- Is there sufficient awareness among teachers regarding the position of individual subjects in the program?
- Are they able to develop systematic education in cooperation and connection with other class subjects?
- Is it possible to grasp the status of student learning and consider how the results can be used to improve curricula and classes?

Self-Assessment committee directs the contents of inspections.
IR committee provides information and materials.

contents of inspections	information and materials
Check the status of incoming students	Scholastic Aptitude Survey for New Students、assessment test (external test for generic skills)
Analysis of learning situation by grade level	GPA distribution, credits distribution
Evaluation of learning outcomes throughout the program	GPA, student self-assessment survey, assessment test
Curriculum, achievement goals for each class, and Grading method, etc.	Detailed curriculum map (student self-assessment survey, grade distribution, class survey results)
Achievement status of diploma policy	Employment rate, national qualification results, etc.

④Evaluation of the institution

- Confirmation of departmental education self-assessment reports submitted by each department
- Questions from the Self-Assessment Committee to the department regarding the contents of the report

- "Department Chair's Summary Report Meeting"

- President convenes the meeting, and the department chair reports on the content of the departmental education self-assessment.
- Responses to preliminary questions from the Self-Assessment Committee.

- Questions about quality improvement efforts
  - Report on the status of sharing and utilization of examination (or grading materials) in each department, and exchange opinions.
  - Report on the possibility of introducing "Pivotal Embedded Performance Assessment" (PEPA), and exchange opinions.

Summary

- The project plan was not limited to the mere reorganization of faculties and departments, but was set as a basic requirement to be in line with the report of the Central Council for Education, and was carried out.
- Currently, the quality assurance system with the assessment policy at its core has started the improvement cycle and is on track.

The university that develops and grows together with the local community by cultivating human resources with both fundamental skills and expertise.

- Next step Toward Quality and Excellence in Education

- We will gradually increase the authenticity of the current exploration of individual student learning outcomes and the evaluation and visualization of educational outcomes, with the aim of realizing learner-centered education.

- Improving the quality of teachers："Teaching Statements"
  all faculty members will prepare and publish the report within the university during 2021. In the future, we will consider organically combining it with faculty comments on the results of class evaluations.

The Japanese Higher Education Experience and Future Directions (Shibaura Institute of Technology)

Nobuhisa SAKAKIBARA

理工学教育共同利用拠点（教育イノベーション推進センター）
EDUCATIONAL CENTER FOR ENGINEERING AND SCIENCE （EDUCATIONAL INNOVATION CENTER）
芝浦工業大學 SHIBAURA INSTITUTE OF TECHNOLOGY

Shibaura Institute of Technology (SIT)

- College of Engineering, College of Systems Engineering and Science, College of Engineering and Design, School of Architecture (Graduate schools, 2 affiliated Junior & Senior High schools)
- 17 Departments in 3 campuses in Great Tokyo area with 8,500 UG Students and 1,000 PG Students
- 300 Full-time faculty, 200 Full-time administrative staff

芝浦工業大學 SHIBAURA INSTITUTE OF TECHNOLOGY

Founding Philosophy of SIT

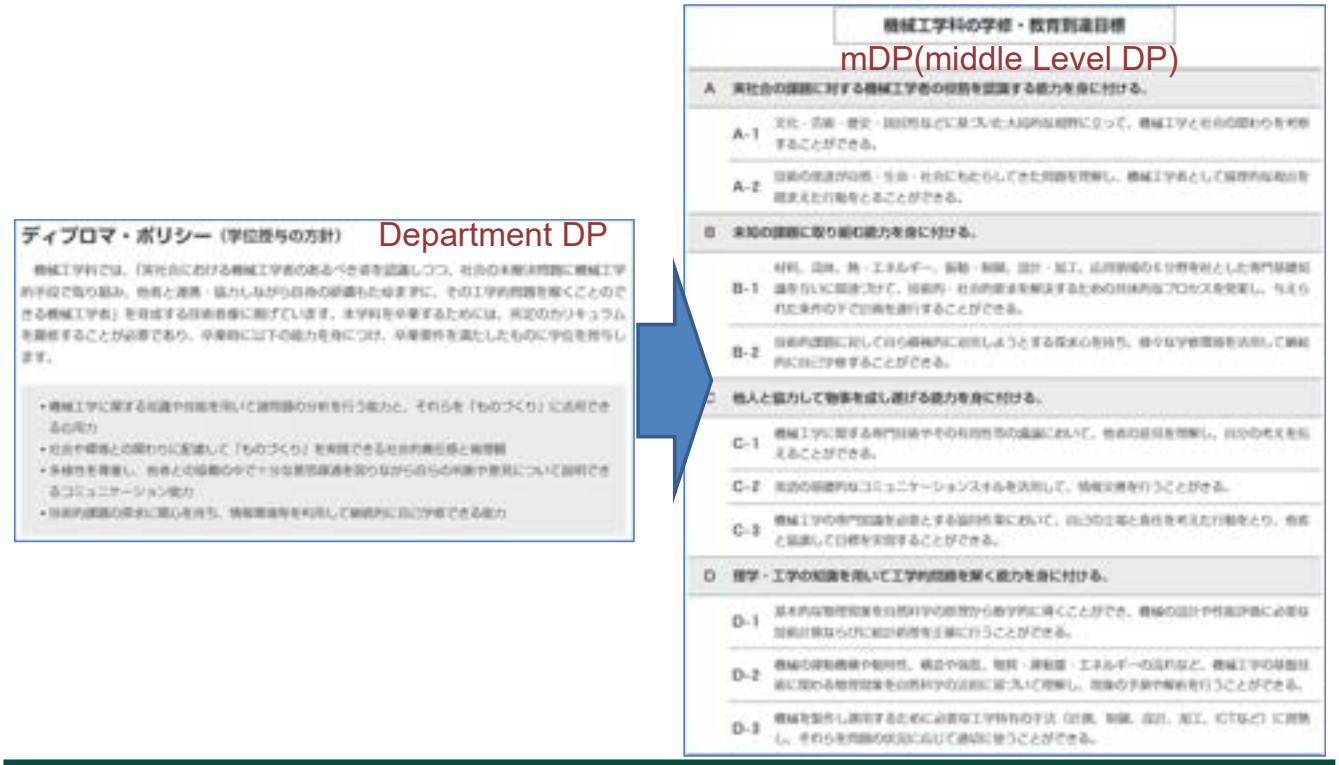
【Founding Philosophy】
Nurturing engineers who learn
from society and contribute to society

【Centennial SIT Action】
Fostering scientists and engineers
who learn from the world
and contribute to global sustainability

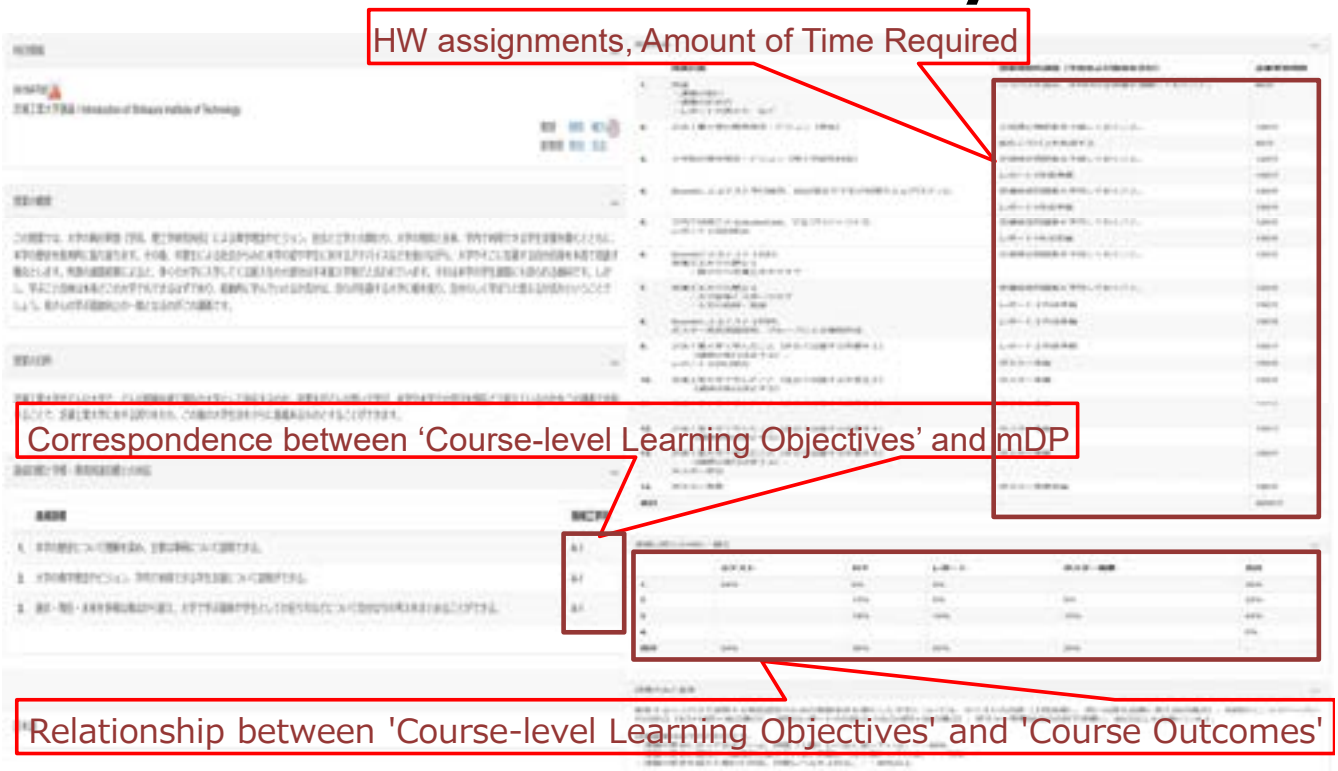
Management of Teaching and Learning of SIT

1. Detailed department DP to mDP
2. Enhancement of WEB syllabus
   - Correspondence between
     'Course-level Learning Objectives' and mDP
   - HW assignments, Amount of time required
   - Relationship between ' Course-level Learning Objectives' and 'Course Outcomes'
3. Confirmation / revision of curriculum tree
4. Fostering a common understanding of management of teaching and learning
5. Visualization of the achievement of mDP
   and development of autonomous learners

Detailed Department DP to mDP

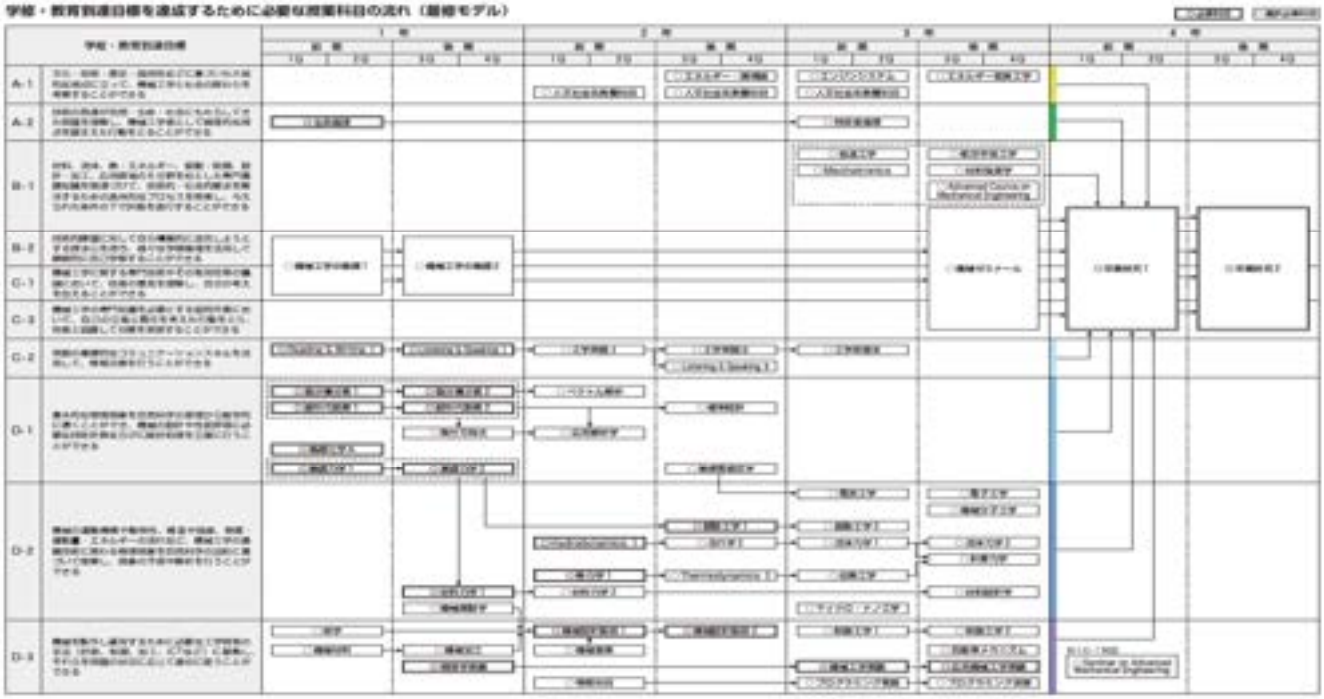


Enhancement of WEB Syllabus



Confirmation / Revision of Curriculum Tree

＊Exchange opinions with all departments in parallel with confirmation / revision work



芝浦工業大學 SHIBAURA INSTITUTE OF TECHNOLOGY

Fostering a Common Understanding of Management of Teaching and Learning

【Joint Usage of Education Centers】（2016～）

Through participants from outside of SIT, we receive various perspectives, awareness, and motivation.

【Active External Training for Middle Management Staff】

Training workshop for curriculum coordinator

Training course for promoter of management of teaching and learning

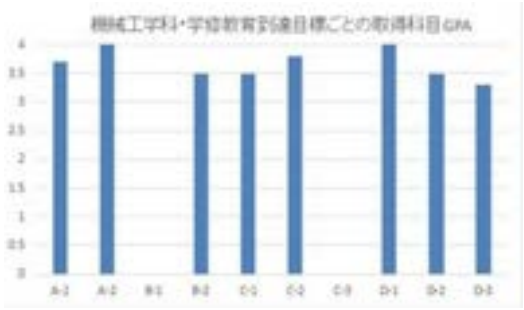
⇒To be a key member person, an important member, who promotes Management of Teaching and Learning

芝浦工業大學 SHIBAURA INSTITUTE OF TECHNOLOGY

SIT Portfolio

- Learning goals
  for this semester
- Self-evaluation
- Attendance record
- Learning hours of outside of the class
- Total credit earned
- GPA
- Academic rank
- TOEIC Score
- PROG Score
- CEFR Level

mDP achievement



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Development of Autonomous Learners

【Goal setting (every year)】
・First year, check DP and set goals of the year
・Following year, look back on reflect yourself against on the goals of the previous year → set goals of the year
・Check in SIT portfolio

↓

(Course registration, learning)

↓

【Self-assessment through course evaluation】
・Students reflect themselves on their achievement goals for each subject.
・Check in SIT portfolio
・Results of each class will be open

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Development of Curriculum Database

- Link between mDP and all lesson subjects/codes
- Clear visualization of the achievement of mDP status
- [Individual Student]
  Visualization of learning outcomes,
  and supplements of diploma
  [Faculty Department]
  Visualization of learning outcomes,
  and improvement of curriculum evaluation

芝浦工業大學
SHIBAURA INSTITUTE OF TECHNOLOGY

Using ICE model: where is our room for improvement?

From an experiment at the Higashi-Nippon International University

Deputy director, Professor
Centre for Research and Development in Higher Education
Izumi SEKIZAWA
sekizawa@tonichi-kokusai-u.ac.jp

Higashi-Nippon International University (**HNIU**)

There is some room for improvement.

It is not as good as it could be.

From *Oxford Advanced Learners Dictionary*

There is some room for improvement.

It is important to give children room to think for themselves.

From *Oxford Advanced Learners Dictionary*

3

There is some room for improvement.

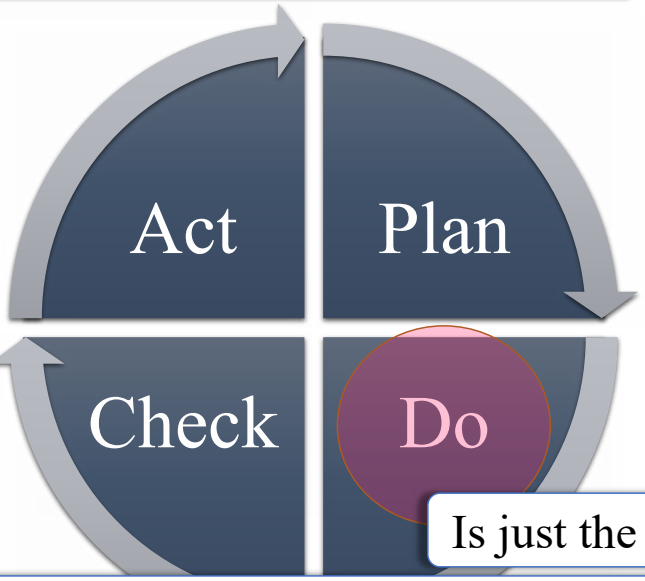
How can we make such room for the faculty to actively engage in the improvement/enhancement process?

It is important to give children room to think for themselves.

From *Oxford Advanced Learners Dictionary*

4

"*PDCA cycle*" as a quality assurance tool widely promoted in Japan, including HEIs

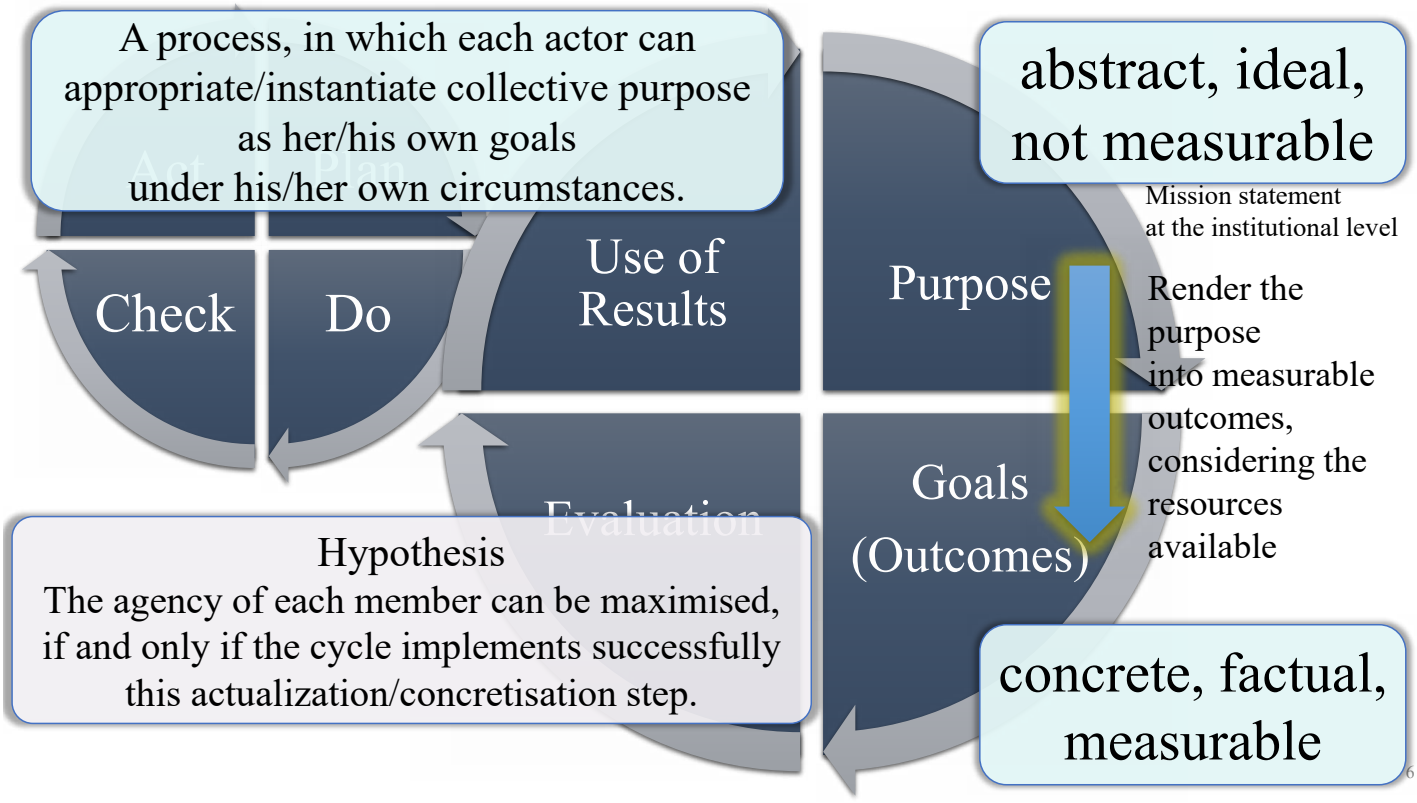


Institutional Effectiveness Cycle proposed in Head 2011, 8-9

Is just the phase of execution ("do") omitted?

Is simply the phase of planning divided into "purpose" and "goals/outcomes" phases?

A process, in which each actor can appropriate/instantiate collective purpose as her/his own goals under his/her own circumstances.



abstract, ideal, not measurable

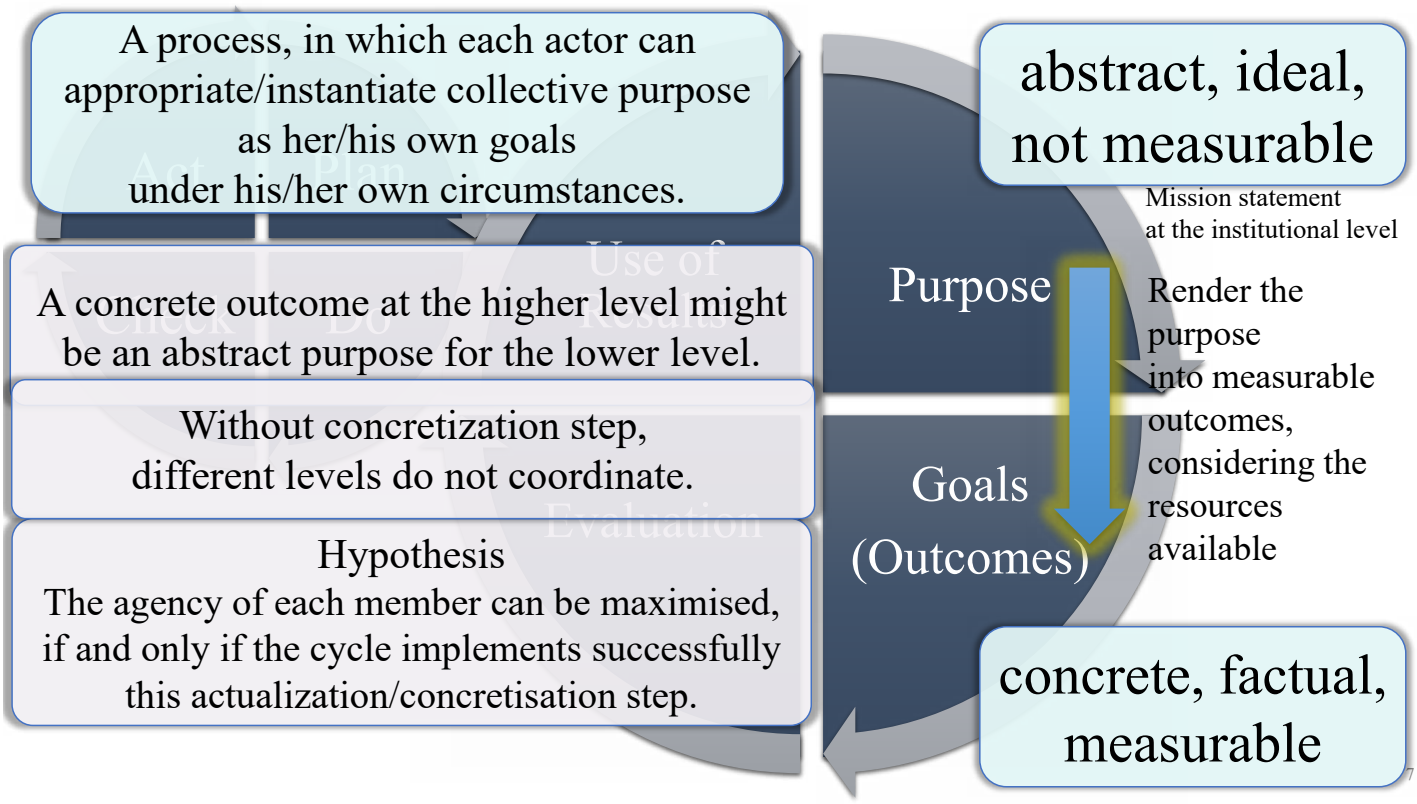
Mission statement at the institutional level

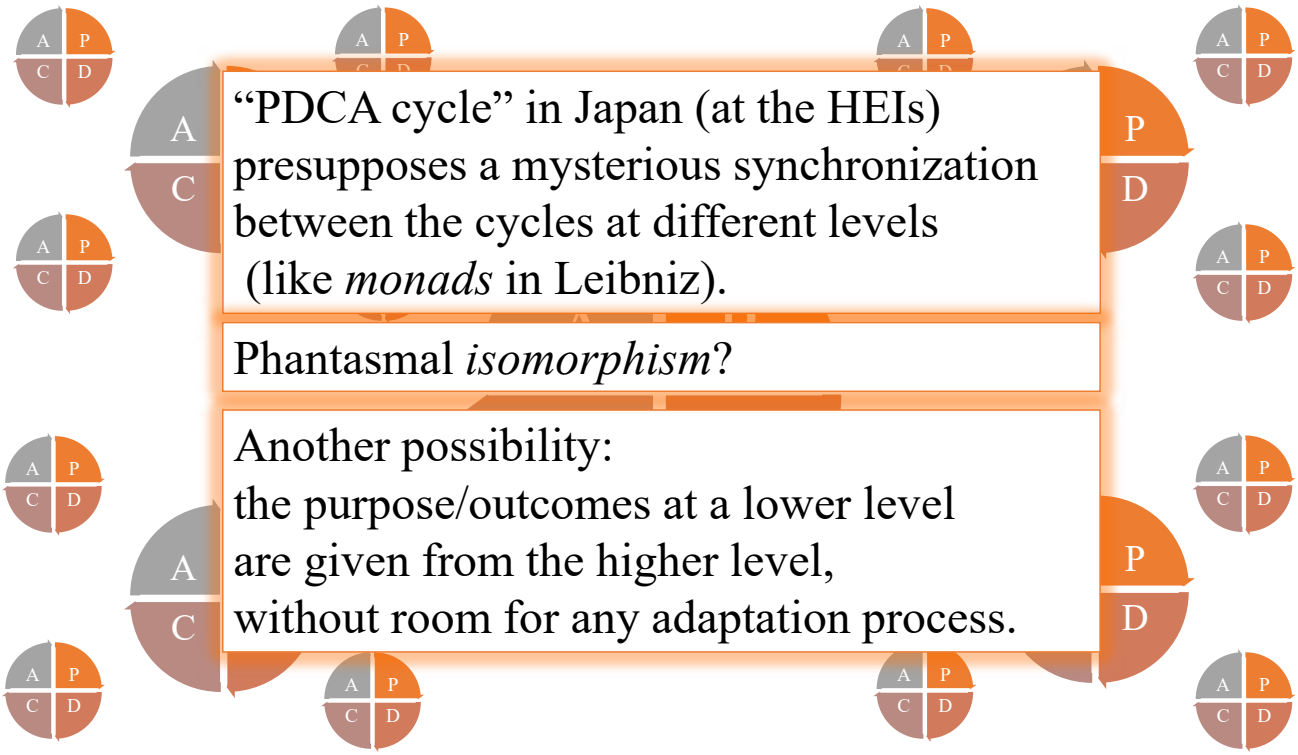
Render the purpose into measurable outcomes, considering the resources available

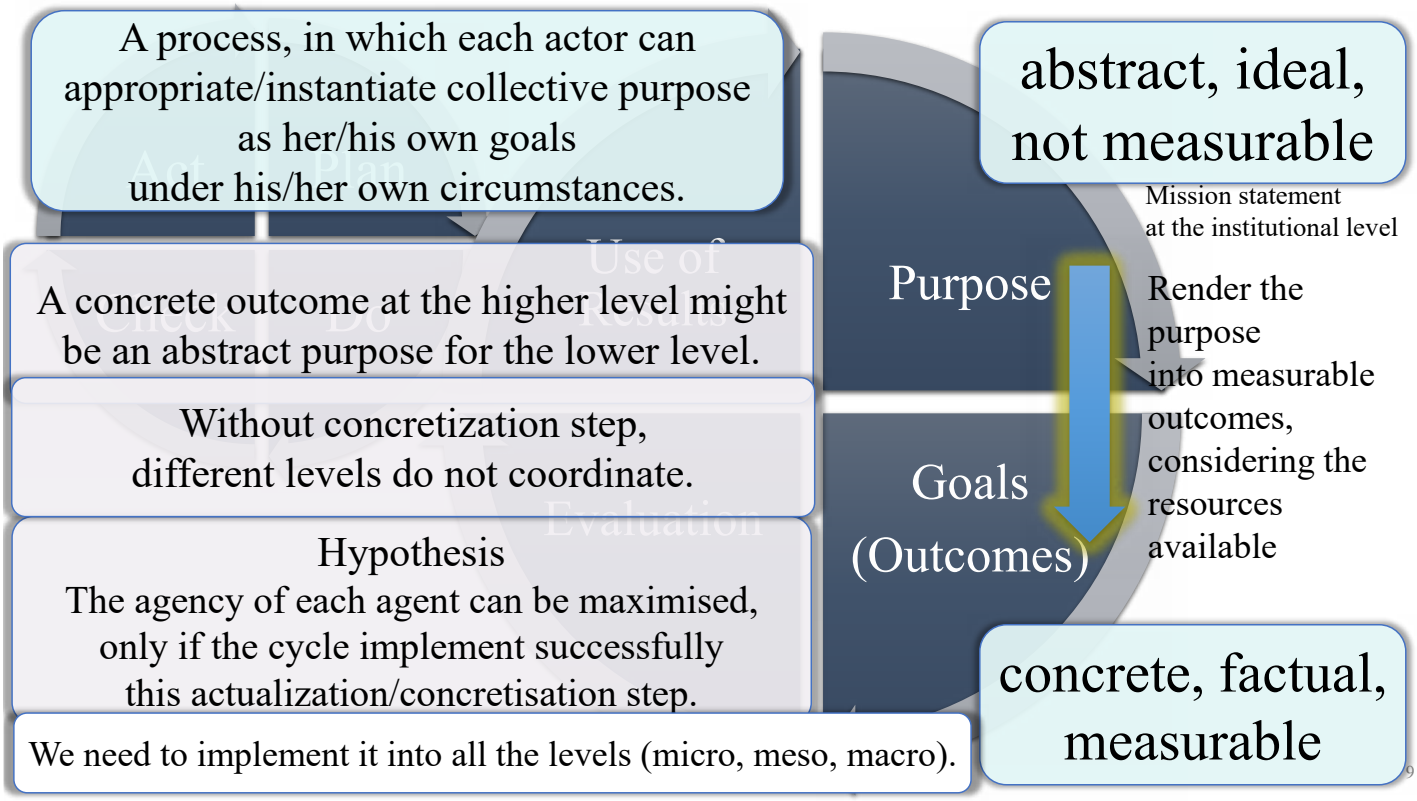
concrete, factual, measurable

Hypothesis

The agency of each member can be maximised, if and only if the cycle implements successfully this actualization/concretisation step.


A process, in which each actor can appropriate/instantiate collective purpose as her/his own goals under his/her own circumstances.
A concrete outcome at the higher level might be an abstract purpose for the lower level.
Without concretization step, different levels do not coordinate.
Hypothesis
The agency of each member can be maximised, if and only if the cycle implements successfully this actualization/concretisation step.
abstract, ideal, not measurable
Mission statement at the institutional level
Purpose
Render the purpose into measurable outcomes, considering the resources available
Goals (Outcomes)
concrete, factual, measurable


"PDCA cycle" in Japan (at the HEIs) presupposes a mysterious synchronization between the cycles at different levels (like *monads* in Leibniz).
Phantasmal *isomorphism*?
Another possibility:
the purpose/outcomes at a lower level are given from the higher level, without room for any adaptation process.



i. How can we implement such transition/translation process (from the abstract to the concrete)
- at all the levels (micro, meso, macro),
- sharing the process and products,
to maximise the agency of each actor?

ii. For ongoing programmes, it is difficult to redesign them from the zero base using the ideal backward curriculum design method.

We need some mechanism allowing (i) to share such processes realised at different levels, (ii) to make the current status (start point) visible (for enhancement)

A solution at the HNIU

Macro (institution) level

Meso (programme) level

Micro (course) level

Skills expressed in the Mission Statement

LOs expression bank (**similar to descriptors in CEFR** Common European Framework of Reference for Languages)

Accumulated choices of LOs by the members render collectively the current state of the programme visible.

The ICE taxonomy: stratification of LOs

Expected LOs for each course

Each faculty member (re)formulates the LOs of her/his courses supported by the LOs expression bank.

abstract, ideal, not measurable

concrete, factual, measurable

Support from the ICT system

abstract, ideal, not measurable

concrete, factual, measurable

ICE verbs, proposed by Dr. Sue Fostaty Young at Queen's University, CANADA

IDEAS つかむ	assemble calculate cite compile calculate define	describe	label	mimic	replicate
CONNECTIONS つなぐ	adapt adjust apply assess blend calibrate categorize	compare compute convert	distinguish estimate paraphrase	any anize k	
EXTENSIONS つかう					

Deeper

A portable (simplified) taxonomy of learning objectives (based on SOLO taxonomy): easy to use for faculty members not specialised in the field of education (**Bloom's & SOLO's require some background knowledge**)
Easy to make (qualitative) rubrics by using it

We *decomposed* the LOs (skills) of the programmes into expressions (can-do) by using these verbs and implemented them into the expression bank for syllabi.

12

Online Syllabus (Course Catalogue): view from professors

When a professor writes her/his syllabus on the ICT system, once one of the skills (expected by the programme) selected, the system proposes a series of possible LOs (can-do statements) for the course (he/she can modify it).

13

Online Syllabus (Course Catalogue): view from students

Expected Learning Outcomes I C E

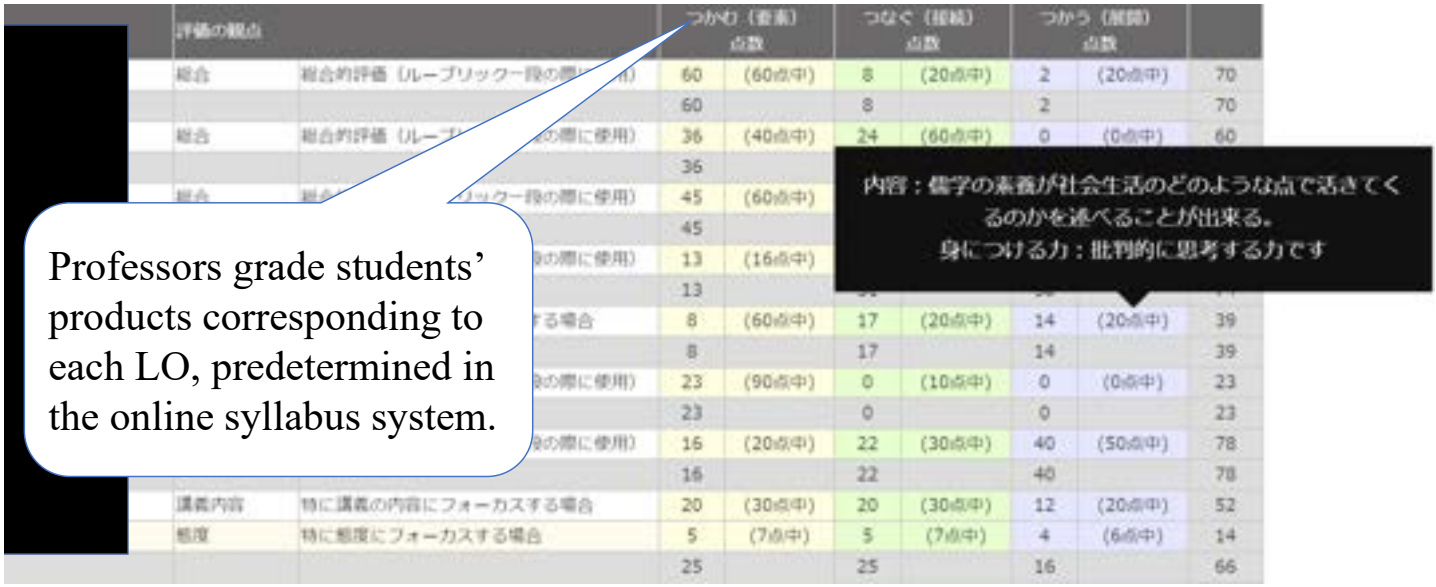
ICE		
つかむ(要素) 内容 / **身につける力** / 点数	つなぐ(接続) 内容 / **身につける力** / 点数	つかう(展開) 内容 / **身につける力** / 点数
・文化について語ること、思想について語ることとは何であるかを説明できる。 ・戦後の歴史をおおまかに説明できる。 ・戦後の思想の特徴を記述できる。 **日本語で他者を聴き取る力** 27点 Active listening	・二つの時代を比較できる。 ・遠い時代、特に江戸時代との関わりで，文献に基づき多くの思想を対比できる。 ・他人の説を別のことばで言い表せる。 ・他人の説を自分のまわりの出来事と繋げることができる。 **論理的に思考する力** 35点 Logical thinking	・私たちが生きている時代に生じている出来事について、他者の判断を参照しつつ、歴史の中で批判的に位置づけることができる。 **批判的に思考する;** 38点 Critical thinking
27点	35点	38点

※These expressions in blue are expected skills of the programme, embedded into the course by the can-do statements.

14

Screen capture of the professor view

Ideas Connections Extensions



評価の観点		つかむ（着眼）点数		つなぐ（接続）点数		つかう（展開）点数		
総合	総合的評価（ルーブリック一段の際に使用）	60	(60点中)	8	(20点中)	2	(20点中)	70
		60		8		2		70
総合	総合的評価（ルーブリック一段の際に使用）	36	(40点中)	24	(60点中)	0	(0点中)	60
		36						
	（ルーブリック一段の際に使用）	45	(60点中)					
		45						
	（の際に使用）	13	(16点中)					
		13						
	する場合	8	(60点中)	17	(20点中)	14	(20点中)	39
		8		17		14		39
	（の際に使用）	23	(90点中)	0	(10点中)	0	(0点中)	23
		23		0		0		23
	（の際に使用）	16	(20点中)	22	(30点中)	40	(50点中)	78
		16		22		40		78
講義内容	特に講義の内容にフォーカスする場合	20	(30点中)	20	(30点中)	12	(20点中)	52
態度	特に態度にフォーカスする場合	5	(7点中)	5	(7点中)	4	(6点中)	14
		25		25		16		66

内容：儒学の素養が社会生活のどのような点で活きてくるのかを述べることが出来る。
身につける力：批判的に思考する力です

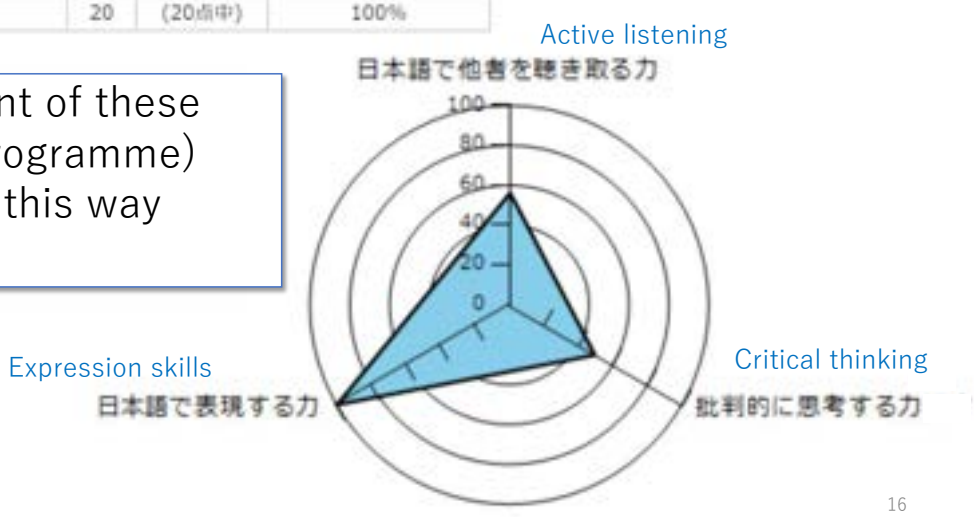
Professors grade students' products corresponding to each LO, predetermined in the online syllabus system.

Student View (Japanised DS will be made from these elements)

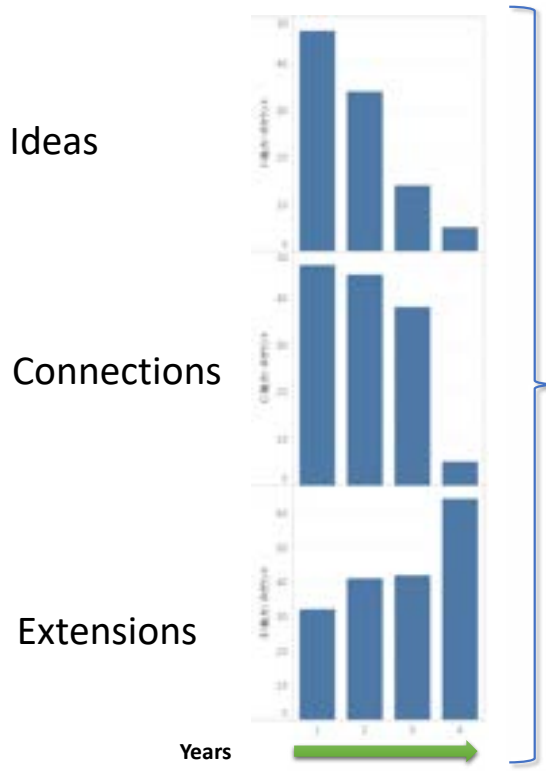
身につける力

身につける力	点数		比率 ※小数点以下切り捨て
日本語で他者を聴き取る力	34	(60点中)	56%
批判的に思考する力	20	(40点中)	50%
日本語で表現する力	20	(20点中)	100%

Student achievement of these skills (LOs of the programme) will be displayed in this way (online & final DS).



16

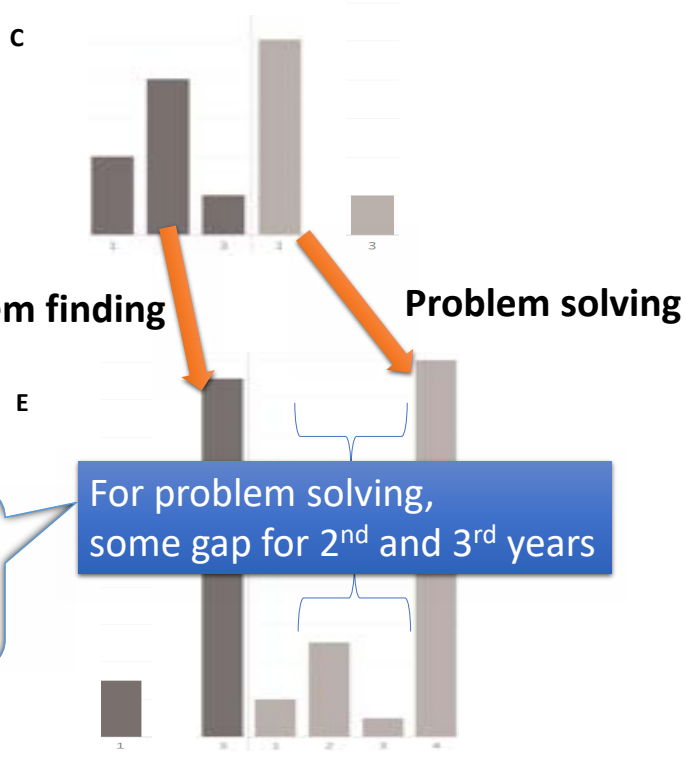


Embedded LOs of the programme visualised
(the case of the faculty of economy and management)

As the expected LOs for the courses of the 1st years,
Ideas/Connections level objectives are mostly selected.
Extensions are gradually increased alongside with the years.

Current status of the distribution of the expected skills

Critical Thinking in C



Need to interevent!

For problem solving,
some gap for 2nd and 3rd years

Well articulated.

14_Discussion: The Management of Teaching and Learning and Quality Assurance in Japan_Ikko Tanaka

Machi Sato

- proposes the model of orngaizational transformation through the fieldwork at the IGEA and the FoS.
- How can we connect universities with external organizations in Japan?

Shinji Tateishi

- reports the management system for teaching and learning with “monitoring” and “program review.”
- What are the examples of improvements?

Takahiro Masuda

- shows the multi-aspect assessment system of teaching and learning.
- How do you implement the assessment system across departments?

Nobuhisa Sakakibara

- takes a multidimensional approach to visualize the SLOs and the their correspondence with DP.
- How did you develop a common understanding and culture among faculty members?

Izumi Sekizawa

- conducts the ICE model as a mechanism by which higher-order objectives are reflected in different levels of activity.
- How do we demonstrate and understand the significance of education specific to each subject and each discipline?

・What are the prospects for simplification and transferability of each approach?
・What is the role of experts in the ongoing consolidation of FD centers?
・With the rapid increase in the number of tasks for teachers in the Corona disaster, it is important to be selective in our efforts. In anticipation of “With Corona” and “Post Corona,” did you see what should be retained and what should be lost in the various challenges? What do we really need?

2

Session 3: Tuning and Reference Points

International Symposium on Higher Education
Learner-centred Education and Higher Education Quality Assurance Amid Covid
23 February 2022

The European Higher Education Area Anno 2022: Looking for enhanced cohesion. From most recent developments to next steps

Prof. Dr. Robert Wagenaar
International Tuning Academy
University of Groningen, the Netherlands

The European Higher Education Area Anno 2022

In European Higher Education policy making to be distinguished:

- Bologna Process / Developing a European Higher Education Area (48 countries)

Main tools:

- ✓ European Standards and Guidelines for Quality Assurance (version 2015)
- ✓ European Credit Transfer and Accumulation System (student-workload and learning outcomes based) (version 2015)
- ✓ Qualifications Framework for the European Higher Education Area (2005)

European Union / Commission (27 EU countries) / Developing a European Education Area

Main tools:

- ✓ European Qualifications Framework for Lifelong Learning (2008)
- ✓ ERASMUS + Programme (2021-2027)

The European Higher Education Area Anno 2022

Bologna Process / EHEA next steps: Rome Communiqué

Rome Ministerial Communiqué 19 Nov. 2020 and beyond

The structure:

- Preamble
- Our vision
- Fundamental Values
- Building the Future:
  - An inclusive EHEA
  - An innovative EHEA
  - An interconnected EHEA
- Implementation
- The EHEA in a global setting

The Annexes:

1. Statement of Academic Freedom
2. Principles and Guidelines to Strengthen the Social Dimension of Higher Education in the EHEA
3. Recommendations for national/governmental support/action for the enhancement of Higher Education Learning and Teaching in the EHEA

The European Higher Education Area Anno 2022

Rome Ministerial Communiqué 19 Nov. 2020

The vision

An EHEA

- in which students, staff and students can move freely
- fully respects the fundamental values of higher education and democracy and the rule of law
- which is inclusive, innovative and interconnected
- prepares learners to become active, critical and responsible citizens
- meets the United Nations' Sustainability development Goals (SDGs) by 2030
- which assures a robust culture of academic and scientific integrity

The European Higher Education Area Anno 2022

Rome Ministerial Communiqué 19 Nov. 2020
(work in progress) (4)

Annex 3: Recommendations for national/governmental support/action for the enhancement of Higher Education Learning and Teaching in the EHEA

Three recommendations:

- **Making student-centred learning a reality**: innovative education; prepare students for the future society; student-centred – active learning; flexible learning paths; open education strategies
- **Fostering future teaching** : make teaching and research mutually supportive; support professional development and create attractive career pathways
- **Strengthening higher education institutional and systems' capacity to support learning and teaching**: develop strong and effective strategies for learning and teaching in a digital world; foster national and European cooperation

The European Higher Education Area Anno 2022

Rome Ministerial Communiqué 19 Nov. 2020: Next steps

Building the Future: An innovative EHEA

Ministers support Higher Education institutions to:

- Search for solutions to the challenges our societies face. (Special emphasis on social, human and creative sciences and arts)
- (Swift) Up-dating of knowledge, skills and competences
- Flexible and open learning paths / Student-centred learning / smaller (and flexible) units of learning
- Development of digital skills and competences for all (sharing materials)

The European Higher Education Area Anno 2022

European Union / Commission: Developing a **European Education Area**

Based on outcomes 2017 Gothenburg Summit of EU leaders:

Focus on:
- Social inclusion
- Extension mobility and exchanges
- Strengthening University institutional partnerships (Emmanuel Macron proposal)
- Enhancing language learning and mutual recognition

The European Higher Education Area Anno 2022

EU agenda operationalized in ERASMUS+ Framework Programme 2021-2027:

Five topics:

- Improving quality and equality in education and training
- Revalorize teaching profession: teachers, trainers and school leaders
- Development high-performing European digital education ecosystem (enhancing competences and skills)
- Green education: Strengthening sustainability competences
- The European Education Area in the World: Strengthening international cooperation

The European Higher Education Area Anno 2022

Action programme ERSASMUS+:

Key Action 1 – Mobility of Individuals

Key Action 2 – Cooperation among organisations and institutions:

- ✓ Cooperation Partnerships / Small-scale Partnerships
- ✓ Partnerships for Excellence, including: European Universities / Erasmus+ Teacher Academies / Erasmus Mundus Action
- ✓ Partnerships for Innovation: Alliances (Work Based Learning) and Forward-looking projects

Key action 3 – Support to policy development and cooperation

Particular Initiatives European Commission:

- **European Universities Initiative: flagship initiative for boosting excellence and ambitious cooperation**
- Council Recommendations, such as 'Microcredentials' and 'Education for Environmental Sustainability'
- Feasibility studies, such as establishing 'European Degree', 'European Recognition and Quality Assurance System'

The European Higher Education Area Anno 2022

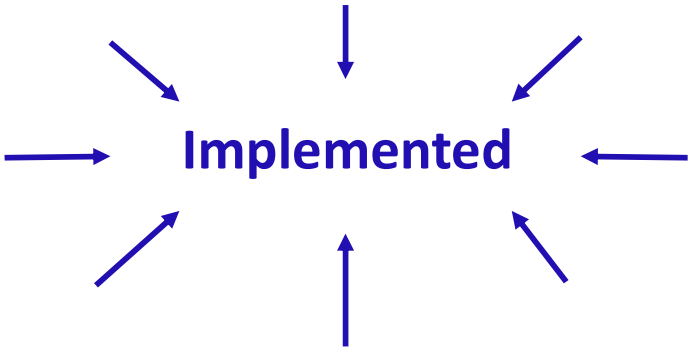
Thank you for your attention!

Tuning 2.0: Promoting implementation of learner-centred higher education at micro and meso levels

Dr. Maria Yarosh
International Tuning Academy
University of Groningen, the Netherlands

Learner-Centred Higher Education

Learner-Centred Higher Education



Learner-Centred Higher Education

Implemented

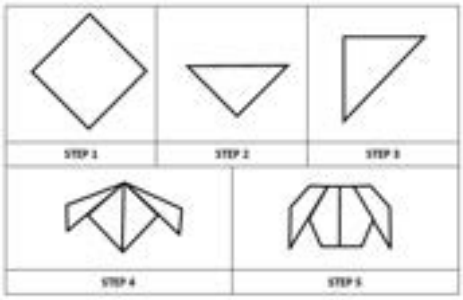
Learner-Centred Higher Education

Implemented

Learner-Centred Higher Education

Implemented

Learner-Centred Higher Education



Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Meso Level

Regional Subject-Specific Qualifications and Assessment Reference Frameworks

→ recognition, social relevance, student-centredness
→ inspirational examples of TLA

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Meso Level

Regional Subject-Specific Qualifications and Assessment Reference Frameworks

→ recognition, social relevance, student-centredness
→ inspirational examples of TLA

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Programme Level

- Teams of Academics – champions of L-C HE
- L-C processes & mechanisms tried & tailored
- Solutions to problems that impeded implementation

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Programme Level

- Teams of Academics – champions of L-C HE
- L-C processes & mechanisms tried & tailored
- Solutions to problems that impeded implementation

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Micro Level

Academics who have
- experienced L-C HE
- engaged others in implementing L-C HE
- tried L-C elements of their choice with own SS

Implemented

Learner-Centred Higher Education

Faculty development opportunities,
with a highest possible level of agency

Micro Level

Academics who have
- experienced L-C HE
- engaged others in implementing L-C HE
- tried L-C elements of their choice with own SS

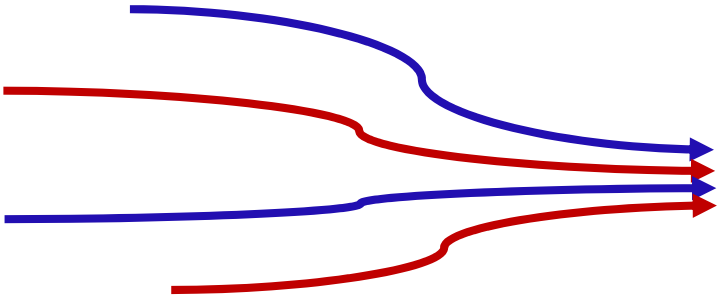
Implemented

Learner-Centred Higher Education

What kind of professionals & persons we want to prepare?

Implemented

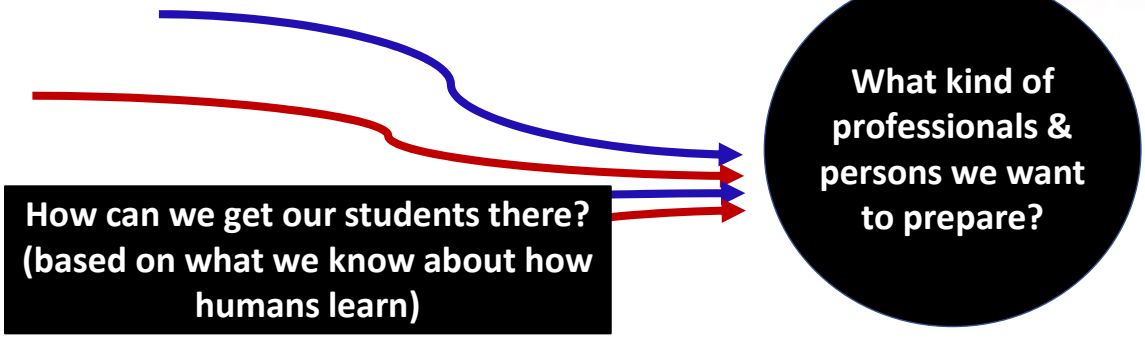
Learner-Centred Higher Education



What kind of professionals & persons we want to prepare?

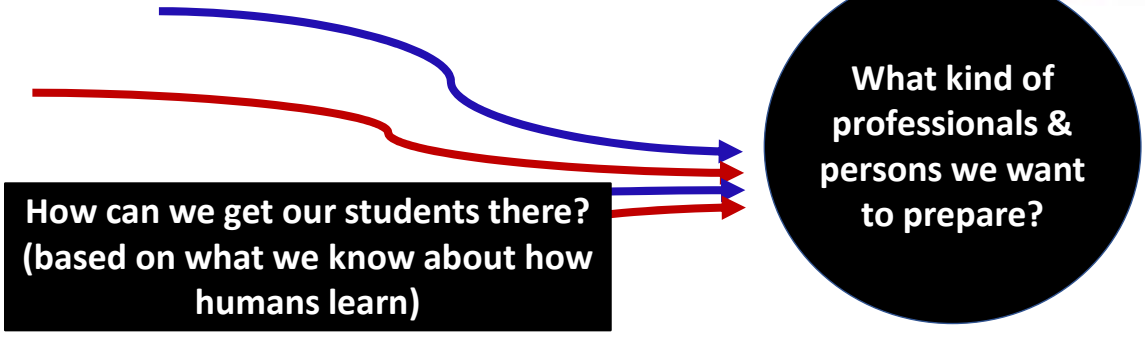
Implemented

Learner-Centred Higher Education



Implemented

Learner-Centred Higher Education



Regional Subject-Specific Qualifications and Assessment Reference Frameworks

Implemented

Learner-Centred Higher Education

Mindsets

Meaning

Models

Means

Movement

Implemented

Learner-Centred Higher Education

Culture

- together with others
- first-hand experience
- big questions
- small but steady steps

Implemented

https://www.calohee.eu/

https://calohea.org/

https://erasmus-ace.com/

https://projectforth.org/

Maria Yarosh: m.yarosh@rug.nl
International Tuning Academy
University of Groningen, the Netherlands

Creation of Civil Engineering Competence Framework in Project CALOHEE

Alfredo Soeiro
University of Porto

International Symposium on Higher Education: Learner-centred Education and Higher Education Quality Assurance Amid Covid
Kyushu University, Tokyo, Japan, 23Feb22

U.PORTO

Towards a more reliable model for evidence based learning and quality assurance and enhancement

Twenty-first Century Challenges

Millions of students finish university education every year. They enter the labour market with sets of competences based on their personal experiences and their studies.

- *Are they really prepared for the jobs they go after?*
- ***What are the demands of employers?***
- *Are they equipped to fully engage with their civic responsibilities?*
- ***Are universities up to speed?***
- *Do existing quality assurance instruments offer sufficient evidence to answer those questions?*
- ***Can institutional performances be compared to identify best practices?***

Civil Engineering Frameworks

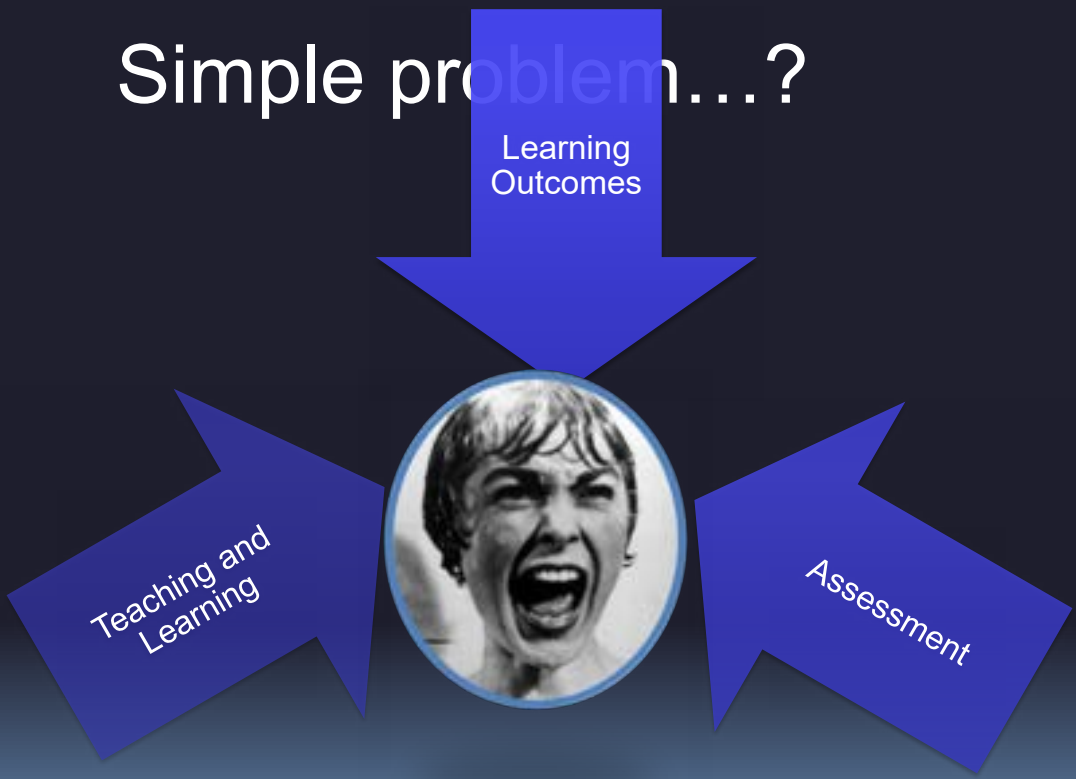
- Tuning-AHELO framework;
- EUCEET framework;
- EUR-ACE framework;
- International Engineering Alliance (IEA) framework;
- ABET framework;
- Conceiving, Designing, Implementing, Operating (CDIO) Initiative framework;
- National Society of Professional Engineers framework;
- American Society of Civil Engineering (ASCE) framework.

CALOHEE Dimensions model

1. Do justice to the character of specific academic domain
2. Structures sets of learning outcomes in a logical way
3. Allows for combining existing frameworks

Subject area/ Dimension	*Civil engineering*	*Teacher Education*	*History*	*Nursing*	*Physics*
1.	Knowledge and understanding	Knowledge management and creation	Human beings: Cultures and Societies	Professional values and the role of the nurse associated competences	Knowledge and understanding
2.	Analysis and problem solving	Design and management of processes of learning, teaching and assessment	Texts and Contexts	Nurse practice and clinical decision making competences	Mathematical methods
3.	Design	Learner empowerment, potential and creativity	Theories and Concepts	Knowledge and cognitive competences	Experimental design and scientific investigation
4.	Investigation	Communication	Interdisciplinarity	Communication and interpersonal competences	Problem solving
5.	Practice	Values and social leadership	Communication	Leadership, management and team working	Scientific (physics) culture
6.	Decision making	Development as professionals and life-long learners	Initiative and Creativity		Ethical awareness
7.	Team-working		Professional development		Communication
8.	Communication				Management and teamwork
9.	Lifelong Learning				

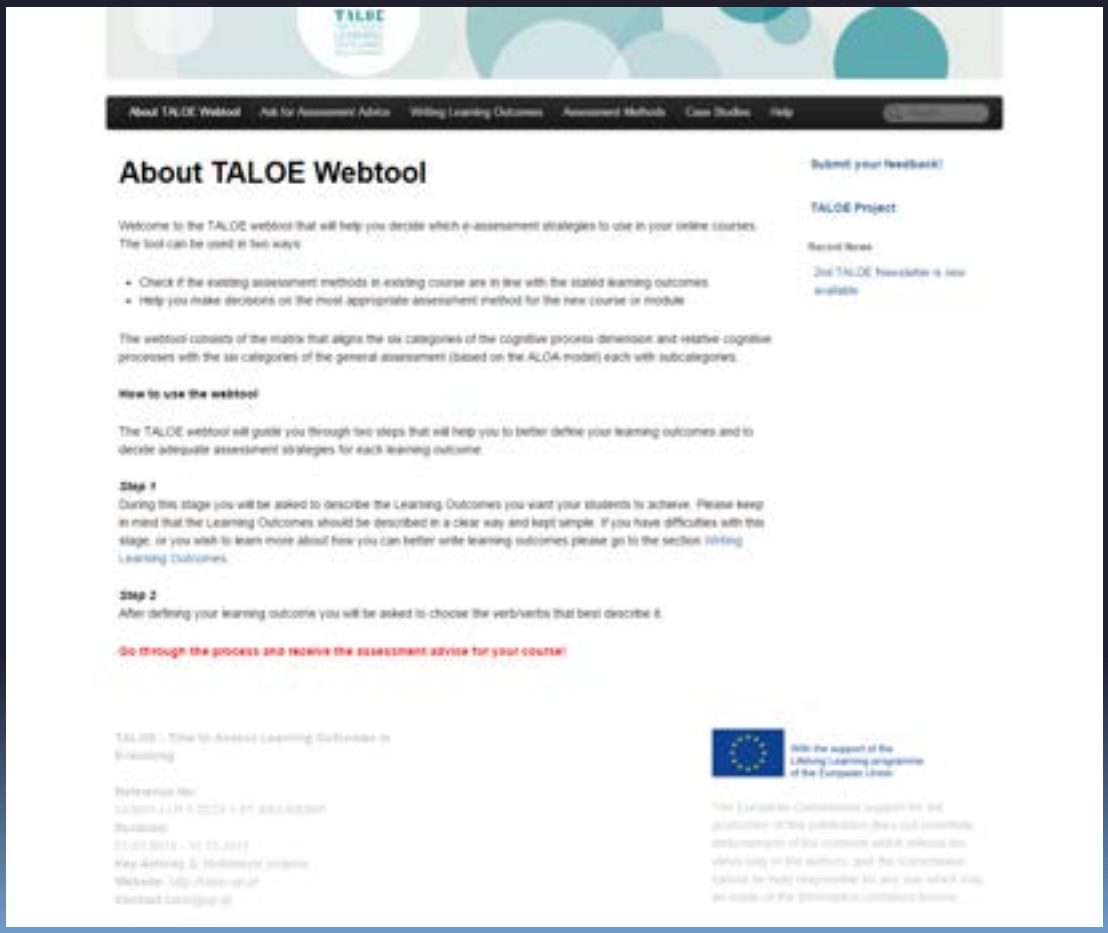
Simple problem…?



Teaching and learning

- Flexible process;
- Respects and attends to the diversity of students and their needs, enabling flexible learning paths;
- Considers and uses different modes of delivery, where appropriate;
- Properly uses a variety of pedagogical methods;
- Regularly evaluates and adjusts the modes of delivery and pedagogical methods;
- Includes learning outcomes as goals of T&L.

6



1. **Multiple Choice Questions (MCQ):** Remember, Understand, Apply, Analyse, Evaluate and Create.
2. **Essays:** Speculative essay, Quote to discuss, Assertion, Write on, Describe/Explain, Discuss, Compare, Evaluate and Problem.
3. **Problem solving:** Routines, Diagnosis, Strategy, Interpretation and Generation.
4. **Practical work**: Demonstration, Exercise, Structured enquiry, Open-ended enquiry and Project
5. **Short-answer questions:** Select crucial evidence, Explain methods, procedures and relationships, Present arguments, Describe limitations of data, Formulate valid conclusions, Identify assumptions, Formulate hypothesis and Formulate action plans.
6. **Reflective Practice Assignments**: Concrete experience, Reflective observation, Abstract conceptualization and Active experimentation.

Example from CALOHEE – Civil Engineering

Dimension 6 : Decision making			
	Knowledge	Skills	Wider Competences (Responsibility and Autonomy)
Level 6 descriptor (First cycle/ Bachelor)	Demonstrate awareness of the key aspects of professional, ethical and social responsibilities linked to management of civil engineering activities, decision making and judgment formulation.	Manage work contexts in civil engineering subject area, take decisions and formulate judgments.	Identify appropriate and relevant approaches to manage work contexts in civil engineering subject area and reflect on professional, ethical and social responsibilities in taking decisions and formulating
Assessment	**Essays Problem Solving Practical Work**	**Essays Problem Solving Practical Work**	**Problem Solving Practical Work Reflective Practice Assignments**
Teaching	**Lectures Seminars Tutorials Flipped classroom Blended teaching**	**Exercise courses / Practical classes Problem-based classes Design-based classes Role play Peer review**	**Problem-based classes Design-based classes Work-based practice Role play Peer reviewing**
Learning	**Attending lectures, seminars Participating in flipped classroom Blended learning Problem-based learning Design-based learning**	**Participating in exercise courses/ practical classes Problem-based learning Design-based learning Practising professional skills**	

Tuning CALOHEE

ありがとう!

Thank you!

avsoeiro@fe.up.pt

U.PORTO

IEA International Agreements on the Graduate Attributes and Professional Competencies of Engineers

エンジニアとして身につけることが期待されている知識・能力に関する国際協定 ―国際エンジニアリング連合の取組

Kikuo Kishimoto, Satoko Fukahori, Makoto Yamamoto, Shinnosuke Obi
岸本喜久雄 深堀聰子 山本誠 小尾晋之介

What is Engineering?

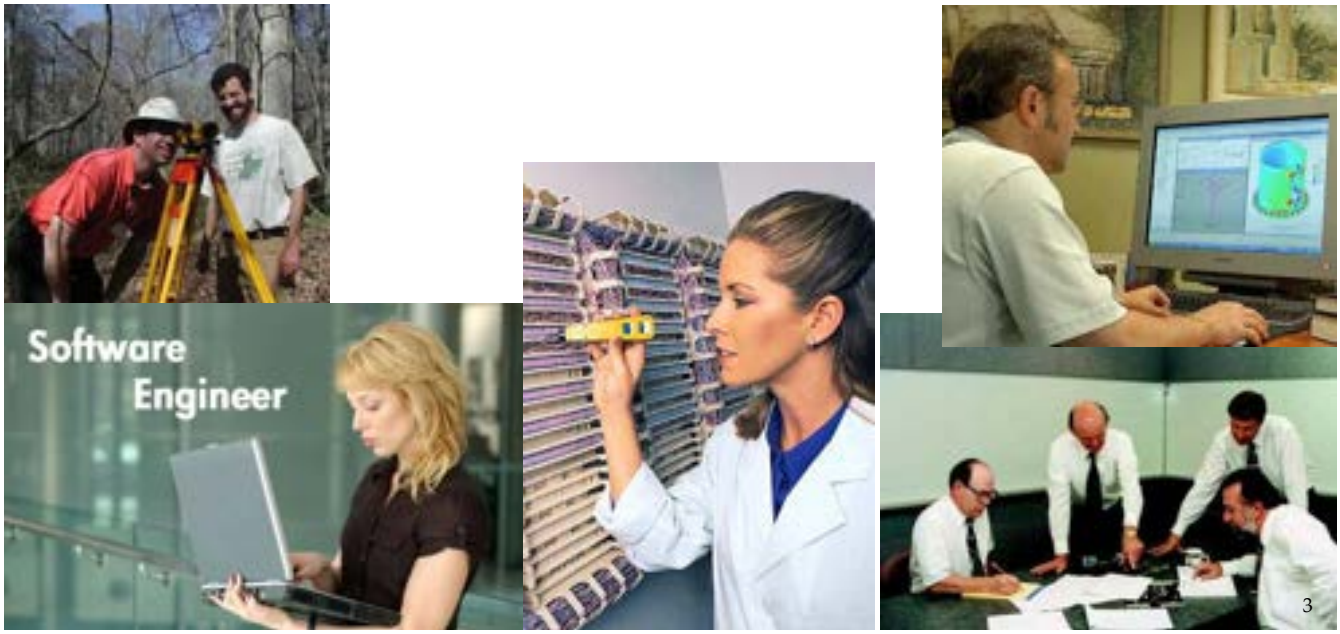
Engineering

The activity of applying scientific knowledge to the design, building and control of machines, roads, bridges, electrical equipment, etc.

Oxford Advanced Learner's Dictionary

In a word: engineers

- *They are people who don't wish a problem away, but start doing something to solve it!*



3

What is IEA?

https://www.ieagreements.org/

国際エンジニアリング連合

The International Engineering Alliance (IEA) is a global not-for-profit organization, which comprises members from 42 jurisdictions within 29 countries, across seven international agreements. These international agreements govern the recognition of engineering educational qualifications and professional competence.

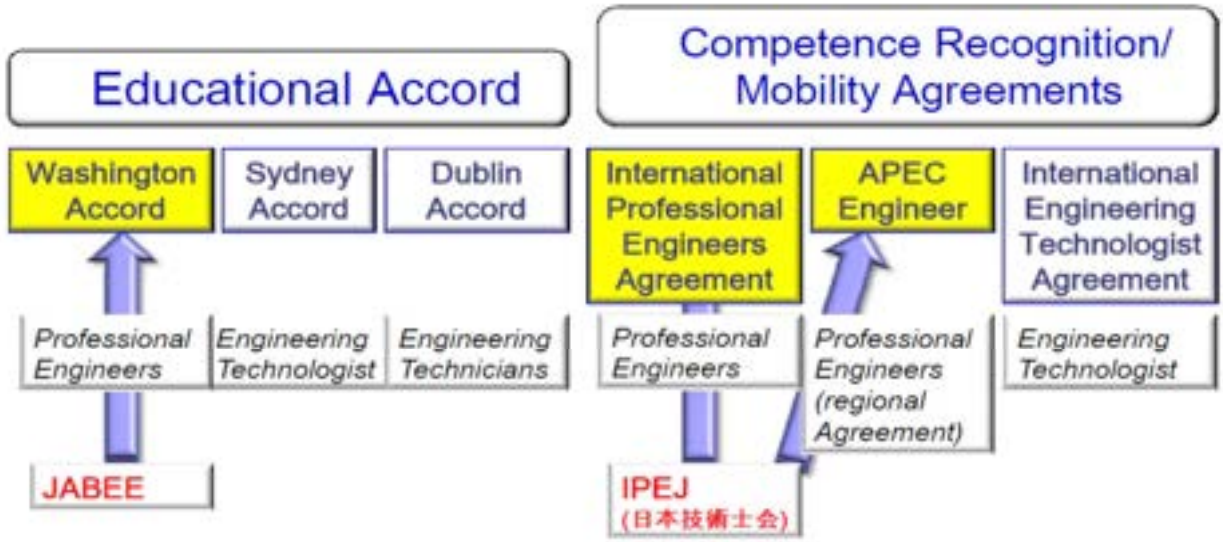
Through the Educational Accords and Competence Agreements members of the International Engineering Alliance establish and enforce internationally bench-marked standards for engineering education and expected competence for engineering practice.

国際エンジニアリング連合(IEA) は、エンジニアリング教育認定の3協定と、専門職資格認定の4枠組で構成されており、高等教育機関における教育の質保証・国際的同等性の確保と、専門職資格の質の確保・国際流動化は同一線上のテーマであるという観点のもと、運営されている。

4

IEA (International Engineering Alliance)

Working together to advance educational quality and enhance global mobility within the engineering profession

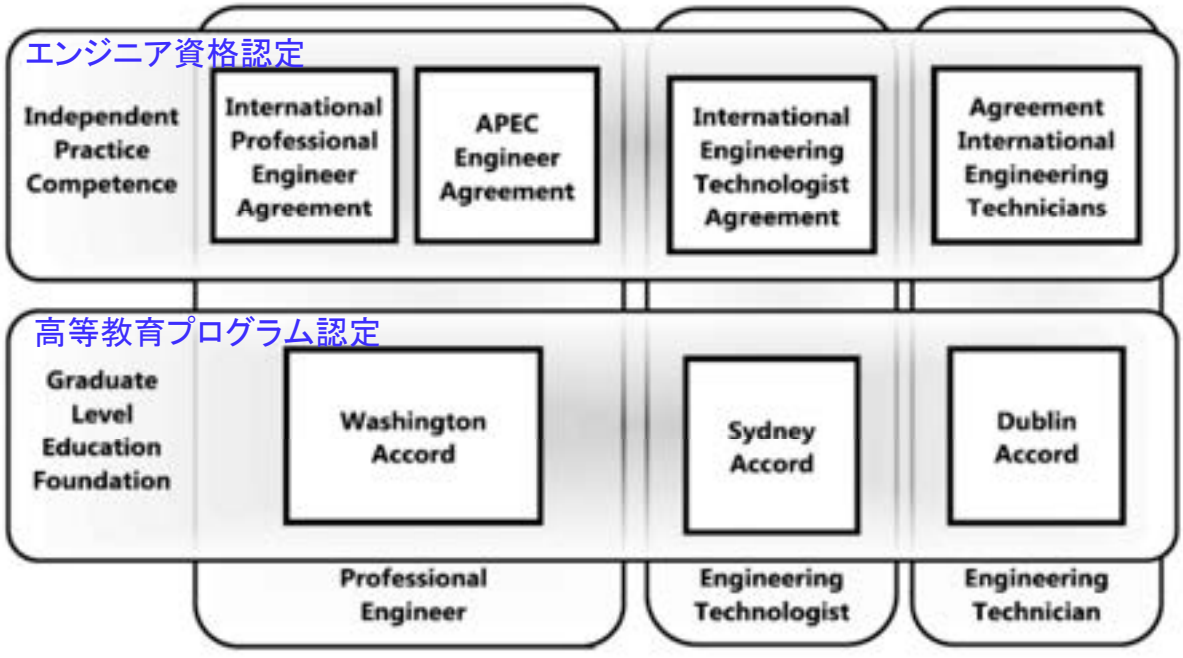


Substantial Equivalence of the graduate attributes
(修了生の実質的同等性)

Substantial Equivalence of the professional competence
(専門職技術者の能力の実質的同等性)

5

IEA (International Engineering Alliance)



プロフェッショナル エンジニア

エンジニアリング テクノロジスト

エンジニアリング テクニシャン

6

Signatories of Washington Accord
ワシントン協定加盟団体の国と地域

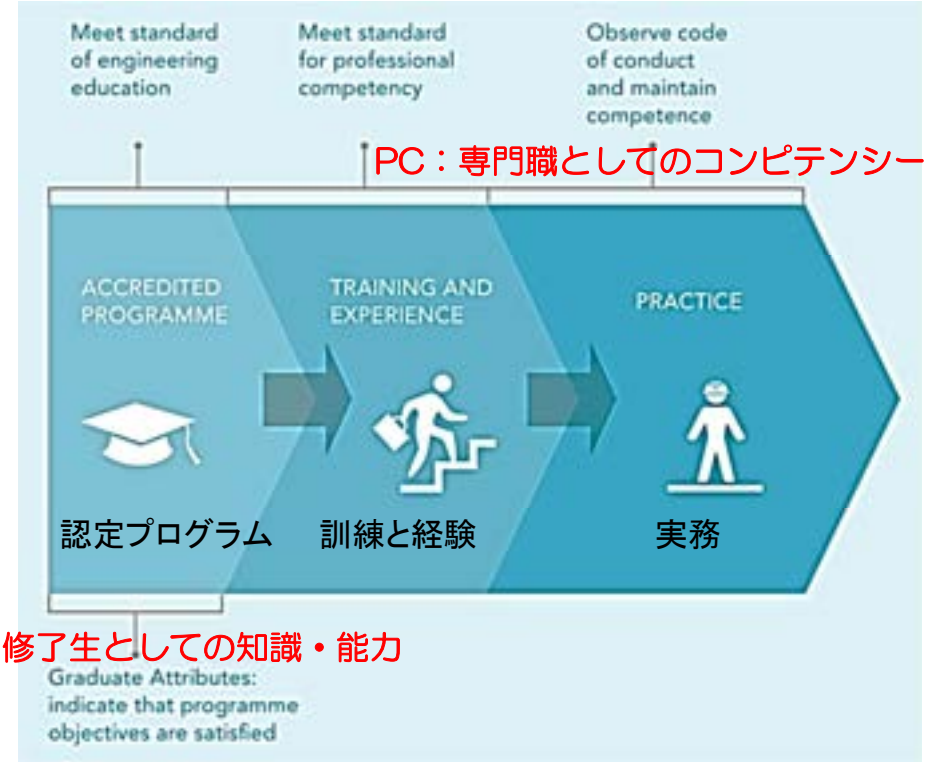
EUは教育期間の違い等により ENAEE（ The European Network for Accreditation of Engineering Education）を結成

暫定加盟
バングラデシュ、チリ、メキシコ、フィリピン
インドネシア、ミャンマー、タイ

PROVISIONAL SIGNATORIES
Bangladesh, Chile, Indonesia
Mexico, Myanmar, Philippines, Thailand

2021年6月現在
21の国と地域

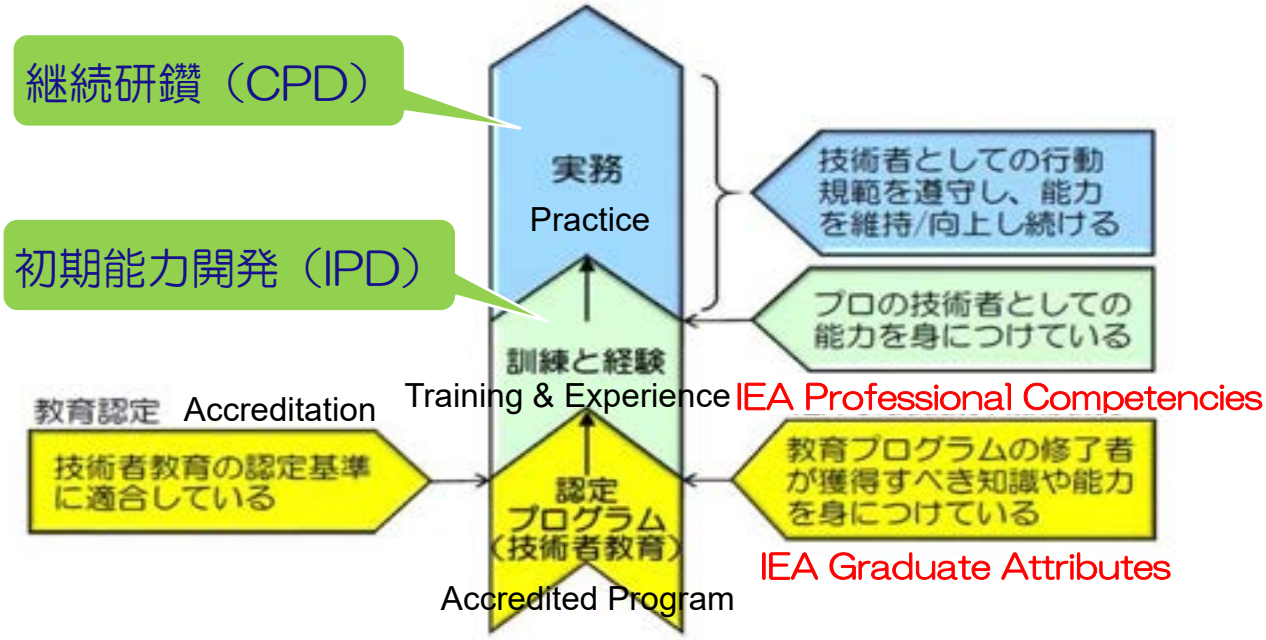
Education and Training in the Formation of a Practising Engineer
エンジニア教育から専門職エンジニアへの流れ



https://www.ieagreements.org/assets/Uploads/Documents/History/25YearsWashingtonAccord-A5booklet-FINAL.pdf

Education and Training in the Formation of a Practising Engineer
エンジニア教育から専門職エンジニアへの流れ

The 1st step to *professional*



認定された教育プログラムの修了を、高度専門技術職（PE等）や公的技術職の資格獲得の要件とすることが国際的標準となりつつある.

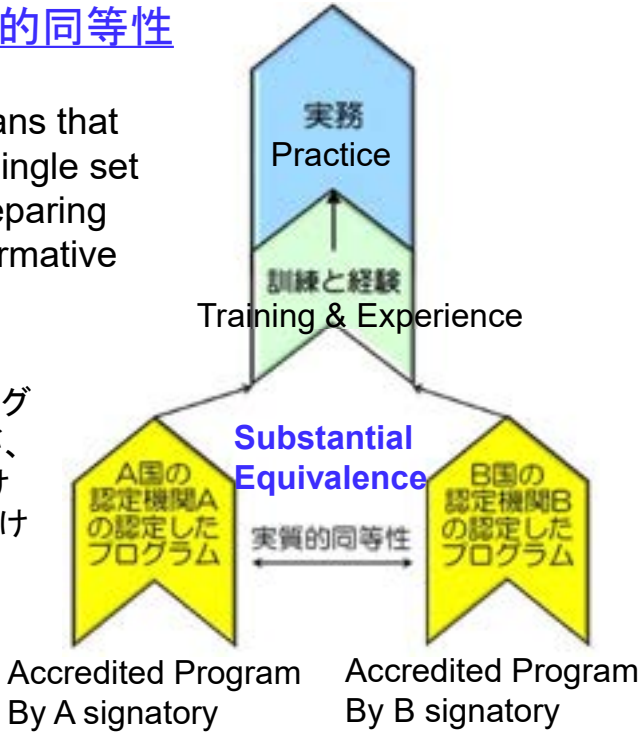
9

Educational and professional accords for mutual recognition
相互認証の意味

Substantial Equivalence / 実質的同等性

Applied to educational programs means that two programs, while not meeting a single set of criteria, are both acceptable as preparing their respective graduates to enter formative development toward registration.

教育プログラムに適用する場合、2つのプログラムが同一の基準を満たすわけではないが、それぞれの修了生が、専門職の登録に向けて継続研鑽を始める準備として、どちらも受け入れられることを意味する。

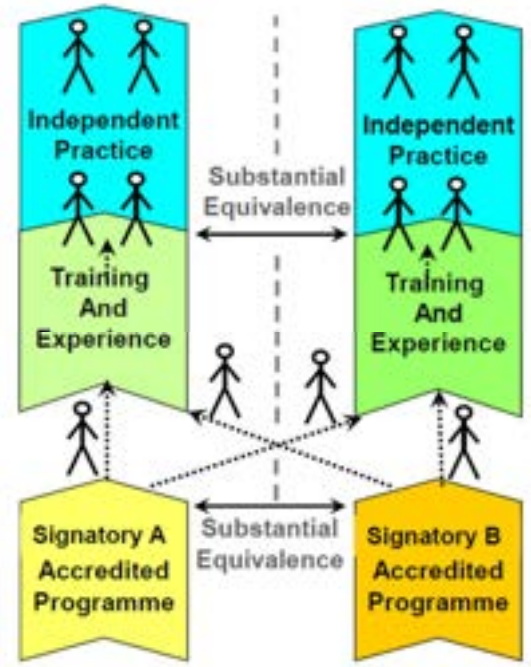


10

Educational and professional accords for mutual recognition
相互認証の意味

Graduates from Signatory A's program are able to proceed to continuous professional development (CPD) in Signatory B's jurisdiction, and vice versa

加盟団体Aの認定プログラムを修了した者が、加盟団体Bの国・地域で継続的研鑽（CPD）に進むことができ、その逆も同様である。



11

Definition of GAPC／GAPCの定義

Graduate attributes is a set of individually assessable outcomes that are indicative of a **graduate's potential** to acquire competence to practice at the appropriate level. The attributes are clear, succinct statements of the expected capability.

GAは、個々に測定可能な学習成果の集合体であり、適切な水準の実務遂行のためのコンピテンシー（PC）を（継続研鑽を通じて）獲得できる修了生のポテンシャルを示している。それらは、期待される能力を明確かつ簡潔に表している。

Professional competency profiles are the elements of competency necessary for performance that a professional is expected to be able to demonstrate at the stage of **attaining registration.**

PCは、専門職としての資格登録を行う段階で、獲得していることを包括的に示すことが期待されるコンピテンシーの要素をまとめたものである。

12

Five tables characterizing GAPC
GAPCを特徴付ける5つのテーブル

1. **Range of Problem Identification and Solving（問題の識別と解決のレンジ）:** problem solving capabilities that distinguish the 4-5-year programs with engineer graduates from those that have a teaching duration of 3-4 years for technologists or 2 years for graduating technicians
2. **Range of Engineering Activities（エンジニアリング活動のレンジ）:** complex activities for an engineer, broadly-defined activities for a technologist, and well-defined activities for a technician
3. **Knowledge and Attitude Profile（知識と態度のプロフィール）:** can be viewed as describing what the curriculum of an engineering program must contain at a minimum
4. **Graduate Attribute Profiles（修了生としての知識･能力）:** the qualifications (assimilated knowledge, skills, and attitudes) of an engineer or technologist or technician at the time of graduation
5. **Professional Competency Profiles（専門職としてのコンピテンシー）:** the competencies for a qualified engineer/technologist/technician attained, not only during school education but also, through lifelong learning and professional development.

13

Graduate Attributes & Professional Competencies
修了生としての知識･能力と専門職としてのコンピテンシー

http://www.ieagreements.org

1. Range of Problem Identification and Solving／問題の識別と解決のレンジ

	Professional Engineer (エンジニア)	Engineering Technologist (エンジニアリング･テクノロジスト)	Engineering Technician (エンジニアリング･テクニシャン)
	Washington Accord program	**Sydney Accord program**	**Dublin Accord program**
Attribute (属性)	**Complex Engineering Problems (複合的な問題)**	**Broadly-defined Engineering Problems (大枠で定義された問題)**	**Well-defined Engineering Problems (明確に定義された問題)**
Depth of Knowledge Required (知識の深さ)	**WP1:** Cannot be resolved without in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 which allows a fundamentals-based, first principles analytical approach	**SP1:** Cannot be resolved without engineering knowledge at the level of one or more of SK 4, SK5, and SK6 supported by SK3 with a strong emphasis on the application of developed technology	**DP1:** Cannot be resolved without extensive practical engineering knowledge as reflected in DK5 and DK6 supported by theoretical knowledge defined in DK3 and DK4
Range of conflicting requirements (相反する要求)	**WP2:** Involve wide-ranging and/or conflicting technical, non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements	**SP2:** Involve a variety of conflicting technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements	**DP2:** Involve several technical and non-technical issues (such as ethical, sustainability, legal, political, economic, societal) and consideration of future requirements
Depth of analysis required (分析の深さ)	**WP3:** Have no obvious solution and require abstract thinking, creativity and originality in analysis to formulate suitable models	**SP3:** Can be solved by application of well-proven analysis techniques and models	**DP3:** Can be solved in standardized ways
Familiarity of issues (論点の身近さ)	**WP4:** Involve infrequently encountered issues or novel problems	**SP4:** Belong to families of familiar problems which are solved in well-accepted ways	**DP4:** Are frequently encountered and thus familiar to most practitioners in the practice area
Extent of applicable codes (規格基準の適用性)	**WP5:** Address problems not encompassed by standards and codes of practice for professional engineering	**SP5:** Address problems that may ~~May~~ be partially outside those encompassed by standards or codes of practice	**DP5:** Addresses problems that are ~~Are~~ encompassed by standards and/or documented codes of practice
Extent of stakeholder involvement and conflicting requirements (ステークホルダーの関与)	**WP6:** Involve collaboration across engineering disciplines, ~~and~~ other fields, and/or diverse groups of stakeholders with widely varying needs	**SP6:** Involve different engineering disciplines and other fields with several groups of stakeholders with differing and occasionally conflicting needs	**DP6:** Involve a limited range of stakeholders with differing needs
Interdependence (相互依存性)	**WP 7:** Address high level problems with many components ~~parts~~ or sub-problems that may require a systems approach	**SP7:** Address components of ~~, or~~ systems within complex engineering problems	**DP7:** Address discrete components of engineering systems

14

Graduate Attributes & Professional Competencies
修了生としての知識・能力と専門職としてのコンピテンシー

http://www.ieagreements.org

2. Range of Engineering Activities／エンジニアリング活動のレンジ

	Professional Engineer (エンジニア)	Engineering Technologist (エンジニアリング・テクノロジスト)	Engineering Technician (エンジニアリング・テクニシャン)
	Washington Accord program	**Sydney Accord program**	**Dublin Accord program**
Attribute (属性)	**Complex Activities** (複合的な活動)	**Broadly-defined Activities** (大枠で定義された活動)	**Well-defined Activities** (明確に定義された活動)
Preamble (前文)	**Complex activities** means *(engineering)* activities or projects that have some or all of the following characteristics:	**Broadly defined activities** means *(engineering)* activities or projects that have some or all of the following characteristics:	**Well-defined activities** means *(engineering)* activities or projects that have some or all of the following characteristics:
Range of resources (リソースの範囲)	**EA1:** Involve the use of diverse resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software	**TA1:** Involve a variety of resources including people, data and information, natural, financial and physical resources and appropriate technologies including analytical and/or design software	**NA1:** Involve a limited range of resources for example people, data and information, natural, financial and physical resources and/or appropriate technologies
Level of interactions (相互作用のレベル)	**EA2:** Require optimal resolution of interactions between wide-ranging and/or conflicting technical, non-technical, and engineering issues	**TA2:** Require the best possible resolution of occasional interactions between technical, non-technical, and engineering issues, of which few are conflicting	**NA2:** Require the best possible resolution of interactions between limited technical, non-technical, and engineering issues
Innovation (革新性)	**EA3:** Involve creative use of engineering principles, innovative solutions for a conscious purpose, and research-based knowledge	**TA3:** Involve the use of new materials, techniques or processes in non-standard ways	**NA3:** Involve the use of existing materials techniques, or processes in modified or new ways
Consequences to society and the environment (社会と環境への影響)	**EA4:** Have significant consequences in a range of contexts, characterized by difficulty of prediction and mitigation	**TA4:** Have reasonably predictable consequences that are most important locally, but may extend more widely	**NA4:** Have predictable consequences with relatively limited and localised impact.'
Familiarity (身近さ)	**EA5:** Can extend beyond previous experiences by applying principles-based approaches	**TA5:** Require a knowledge of normal operating procedures and processes	**NA5:** Require a knowledge of practical procedures and practices for widely-applied operations and processes

15

Revisions of GAPC(改定の動き)

2005(ver1), 2009(ver2), 2013(ver3), 2021(ver4)

Key points of the 4th edition revision／第4版改訂のポイント

1. **Accommodate future needs of engineering professionals and the profession –** strengthen the required attributes on team work, communication, ethics, sustainability.
2. **Emerging technologies – incorporate** digital learning, active work experience, lifelong learning.
3. **Emerging and future engineering disciplines and practice areas –** while retaining discipline independent approach, enhance the skills on data sciences, other sciences, life-long learning.

1. エンジニア専門家と専門職の将来ニーズへの対応 – チームワーク、コミュニケーション、倫理観、持続可能性など、必要な知識・能力を強化する。
2. 新しい技術 – デジタル学習、参加型の職業体験、生涯学習を取り入れる。
3. 最先端および将来的な専門分野と実践領域 – 専門分野固有のアプローチを維持しながら、データサイエンス、その他の科学、生涯学習に関するスキルを強化する。

16

Revisions of GAPC(改定の動き)

2005(ver1), 2009(ver2), 2013(ver3), 2021(ver4)

4. **Incorporate UN Sustainable Goals -** in the development of solutions that consider diverse impacts – technical, environment, social, cultural, economic, financial and global responsibility
5. **Diversity and Inclusion** – include these considerations within ways of working in teams, communication, compliance, environment, legal etc. systems.
6. **Intellectual agility, creativity and innovation** – emphasize critical thinking and innovative processes in design and development of solutions

4. 国連の持続可能な開発目標(SDGs)の導入 – 多方面（技術的、環境的、社会的、文化的、経済的、財政的、そしてグローバルな責任）に影響を及ぼしうる解決策を開発する際に国連の持続可能な開発目標を導入する 。
5. 多様性と包摂性 – チームで取り組む仕事の進め方、コミュニケーション、コンプライアンス、環境、法律などのシステムに多様性と包摂に関する考慮事項を盛り込む。
6. 知的俊敏性、創造性、革新性 – 解決策の設計・開発において、批判的思考と革新的プロセスを重視する。

17

3. Knowledge and Attitude Profile／知識と態度のプロフィール

A Washington Accord programme

Revisions in the 4th edition are in red.
赤字は第4版での改訂箇所

http://www.ieagreements.org

WK1: A systematic, theory-based understanding of the **natural sciences** applicable to the discipline and awareness of relevant **social sciences**（自然科学と社会科学）
WK2: Conceptually-based **mathematics**, numerical analysis, data analysis, statistics and formal aspects of computer and information science to support detailed ~~study~~ analysis and modelling applicable to the discipline（数学、数値解析、データ分析、統計学、コンピュータ・情報科学）
WK3: A systematic, theory-based formulation of **engineering fundamentals** required in the engineering discipline（エンジニアリング基礎）
WK4: Engineering **specialist knowledge** that provides theoretical frameworks and bodies of knowledge for the accepted practice areas in the engineering discipline; much is at the forefront of the discipline（エンジニアリングの専門知識）
WK5: Knowledge, including efficient resource use, environmental impacts, whole-life cost, re-use of resources, net zero carbon, and similar concepts, that supports **engineering design and operations** in a practice area（エンジニアリング・デザインとオペレーション）
WK6: Knowledge of **engineering practice** (technology) in the practice areas in the engineering discipline practice areas in the engineering discipline; much is at the forefront of the discipline（エンジニアリングの実践知識）
WK7: ~~**Comprehension**~~ **Knowledge of** the role of engineering in society and identified issues in engineering practice in the discipline, ~~ethics and~~ such as the professional responsibility of an engineer to public safety and sustainable development ~~the impacts of engineering activity: economic, social, cultural, environmental and sustainability~~practice areas in the engineering discipline; much is at the forefront of the discipline（エンジニアリングの社会的役割・責任）
WK8: Engagement with selected knowledge in the current **research literature** of the discipline, awareness of the power of critical thinking and creative approaches to evaluate emerging issues（最新の文献知識、クリティカルシンキング、創造的アプローチ）
WK9: ~~**Ethical attitude**~~ **Ethics, inclusive behavior and conduct.** Knowledge of professional ethics, responsibilities, and norms of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes. （倫理観、包摂的な振る舞いと行動）

18

4. Graduate Attribute Profiles／GAのプロフィール

1	Engineering Knowledge	エンジニアリングに関する知識
2	Problem Analysis	問題分析
3	Design/development of solutions	解決策のデザイン／開発
4	Investigation	調査研究
5	~~Modern~~ Tool Usage KNOWLEDGE	ツールの活用
6	The Engineer and ~~Society~~ the World	エンジニアと世界
	~~Environment and Sustainability~~	（第4版では「エンジニアと世界」に統合）
7	Ethics ENGINEER & SOCIETY	倫理
8	Individual and Collaborative Team work	個人および共同チームでの活動
9	Communication	コミュニケーション
10	Project Management and Finance	プロジェクトマネージメントと財務
11	Lifelong learning WAYS TO WORK	生涯継続学習

http://www.ieagreements.org

Revisions in the 4th edition are in red.
赤字は第4版での改訂箇所

19

5. Professional Competence Profiles／PCのプロフィール

1	Comprehend and apply universal knowledge	**普遍的知識の理解と応用**
2	Comprehend and apply local knowledge	**地域的な知識の理解と応用**
3	Problem analysis	**問題分析**
4	Design and development of solutions	**解決策のデザイン/開発**
5	Evaluation SOLUTION & EVALUATION	**評価**
6	Protection of society	**社会の保全**
7	Legal, ~~and~~ regulatory, and cultural	**法律、規制および文化**
8	Ethics ENGINEER & SOCIETY	**倫理**
9	Manage engineering activities	**エンジニアリング活動のマネジメント**
10	Communication and Collaboration	**コミュニケーションと協働**
11	Continuing Professional Development (CPD) and Lifelong learning	**継続研鑽（CPD）と生涯学習**
12	Judgement WAYS TO WORK	**判断**
13	Responsibility for decisions	**決定への責任**

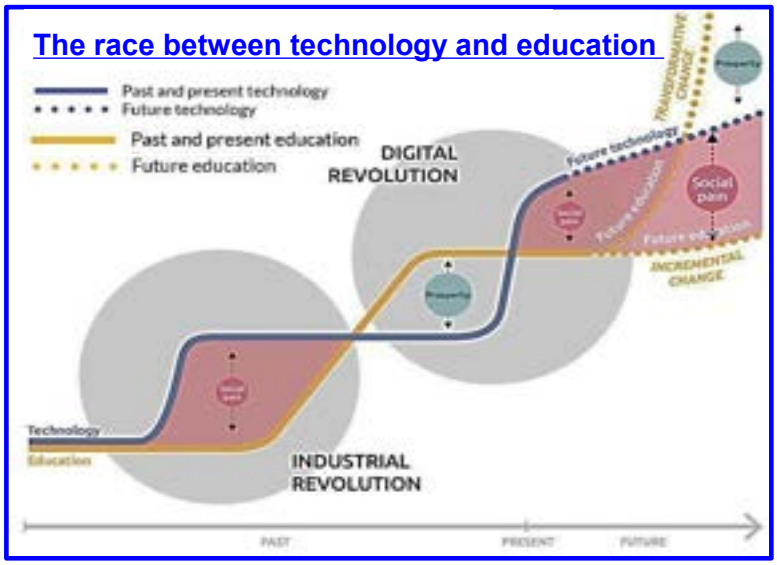
http://www.ieagreements.org

Revisions in the 4th edition are in red.
赤字は第4版での改訂箇所

20

OECD

http://www.oecd.org/education/2030-project/



In the face of an increasingly volatile, uncertain, complex and ambiguous world, education can make the difference as to whether people embrace the challenges they are confronted with or whether they are defeated by them. And in an era characterised by a new explosion of scientific knowledge and a growing array of complex societal problems, it is appropriate that curricula should continue to evolve, perhaps in radical ways.

「VUCA」(不安定，不確実，複雑，曖昧)が急速に進展する世界に直面する中で，教育の在り方次第で，直面している課題を解決することができるのか，それとも解決できずに敗れることとなるのかが変わってくる。新たな科学に関する知識が爆発的に増大し，複雑な社会的課題が拡大していく時代において，カリキュラムも，おそらくは全く新しい方向に進化し続けなければならないだろう。

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Summary / まとめ

- Through activities at the International Engineering Alliance (IEA) and other organizations, a common global understanding has been developed about the knowledge and abilities (GA) that graduates of higher education should acquire and the competencies (PC) required of engineers as professionals.

- It is necessary to draw a vision of the ideal future of human resource development and to put it into practice. Further evolution of engineering education in Japan is highly expected.

- 高等教育の修了生が身につけるべき知識・能力(GA)や専門職としてのエンジニアに求められるコンピテンシー(PC)について、国際エンジニアリング連合(IEA)などにおける活動を通じて世界的な共通認識が醸成されている。

- 人材育成のあるべき未来像を描き、それに向けた実践が求められる。我が国の技術者教育のさらなる進化が期待される。

22

International Symposium on Higher Education
Learner-centered Education and Higher Education Quality Assurance Amid Covid
2022.2.23（9:00～18:30）

NIER Tuning Test Item Bank

- Assessment of Higher Education Learning Outcomes in Engineering

Satoko Fukahori, Kikuo Kishimoto, Jeffrey Cross, Shinnosuke Obi,
Makoto Yamamoto, Yugo Saito

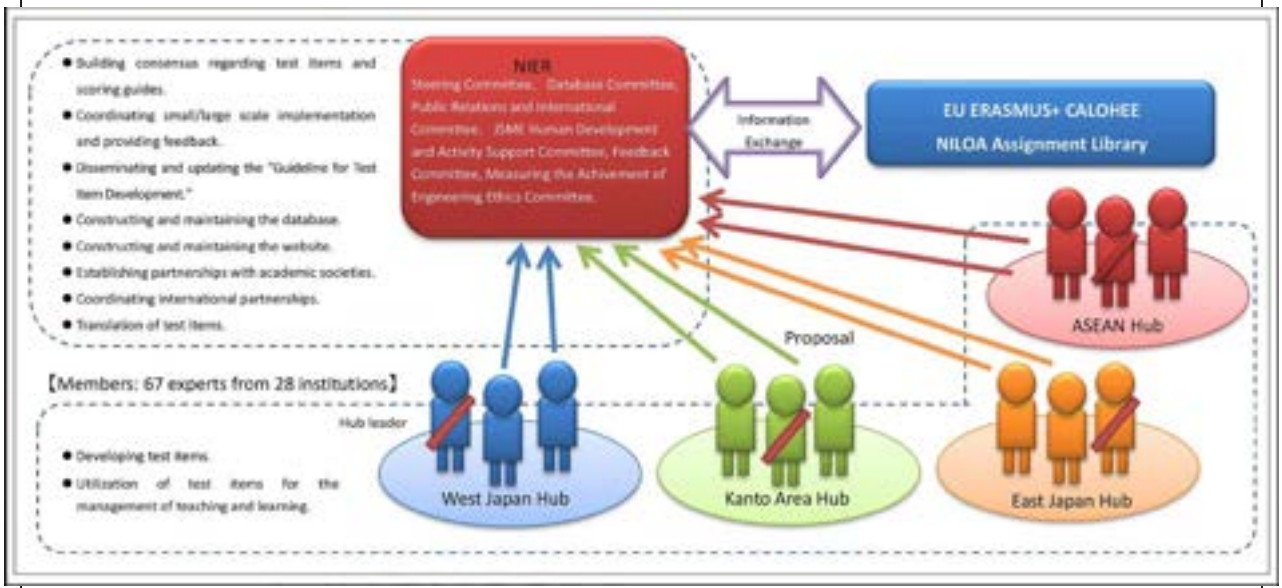
Outline

1. Overview of the Tuning Test Item Bank
2. Utilizing the Tuning Test Item Bank to Assess the Achievement of Learning Outcomes – A Trial
3. Higher Education and Learning Outcomes Assessment Amid and Beyond Covid

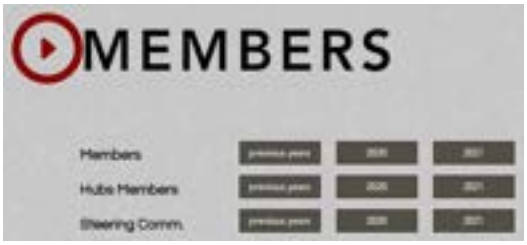
1. OVERVIEW OF THE TUNING TEST ITEM BANK

The Tuning Test Item Bank is a collaborative effort among higher education experts of generating common understandings of higher education learning outcomes through jointly developing and sharing test items that measure how well students know, understand, and can do upon completion of their degree programs. By developing sophisticated approaches to assessing the achievement of learning outcomes and providing feedback for educational improvement, the project also aims to enhance university management of teaching and learning.

Jeffrey S. Cross, J. S. Ekawati, E., Fukahori, S., Obi, S., Saito, Y., Tandian, N. P., Triawan, F. (2017). Development of a Mechanical Engineering Test Item Bank to promote learning outcomes-based education in Japanese and Indonesian higher education institutions. Tuning Journal for Higher Education, 5(1). 41-73.



The Tuning Test Item Bank Steering Committee



https://en.me-testbank.org/

▸ Steering Committee		
Chairperson	Kikuo Kishimoto	Professor Emeritus, Tokyo Institute of Technology Fellow, National Institute of Educational Policy Research.
Vice Chairperson	Satoko Fukahori	Senior Visiting Researcher, National Institute of Educational Policy Research. Professor, University Education Innovation Initiative, Kyushu University.
▸ JSME Human Development and Career Support Committee		
Chairperson	Makoto Yamamoto	Professor, Faculty of Engineering, Tokyo University of Science.
▸ Test Item Development Working Group		
Chairperson	Nobuyuki Iwatsuki	Professor, Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology.
▸ Public Relations / International Committee		
Chairperson	Jeffrey Cross	Professor, Department of Transdisciplinary Science and Engineering, School of Environment and Society, Tokyo Institute of Technology.
Vice Chairperson	Shinnosuke Obi	Professor, Department of Mechanical Engineering, Keio University.
Vice Chairperson	Farid Triawan	Head of Mechanical Engineering Dept., Faculty of Engineering and Technology, Sampoerna University, Indonesia. Visiting Associate Professor, School of Environment and Society, Tokyo Institute of Technology, Japan.
▸ Database Committee		
Chairperson	Hideki Mima	Program-Specific Professor, Academic Center for Computing and Media Studies (ACCMS), Kyoto University.
▸ Feedback Committee		
Chairperson	Yugo Saito	Associate Professor, Office for Educational Planning, Niigata University.
▸ Engineering Ethics Test Item Development Working Group		
Chairperson	Aiko Tanaka	Associate Professor, College of Arts and Sciences, J.F. Oberlin University.
▸ Regional Hubs		
Director, Kanto Hub	Hirotsugu Inoue	Professor, Department of Mechanical Engineering, School of Engineering, Tokyo Institute of Technology.
Director, East Japan Hub	Hideo Miura	Professor, Fracture and Reliability Research Institute, Graduate School of Engineering, Tohoku University.
Director, East Japan Hub	Masao Watanabe	Professor, Division of Mechanical and Aerospace Engineering, Hokkaido University.
Director, West Japan Hub	Satoshi Watanabe	Professor, Faculty of Engineering, Kyushu University.
Director, West Japan Hub	Seiichi Hata	Professor, Graduate School of Engineering, Nagoya University.
Director, ASEAN Hub	Nathanael Tandion	Lecturer, Mechanical Engineering Program, Faculty of Mechanical and Aerospace Engineering, Bandung Institute of Technology.
▸ Secretariat		
Representative	Hideki Hirota	Senior Researcher, Department for Lifelong Learning Policy Research, National Institute for Educational Policy Research.

From test item development to utilization in teaching and learning

		Test Item Development	Verification	Copyright Translation	Large Scale Implementation	Feedback Improvement
Exploration Phase	H26 (2014)	Multiple Choice Questions n=92, Constructed Response Tasks				
	H27 (2015)	How can we generate common understandings of engineering learning outcomes and embody them as test items?				
Verification Phase	H28 (2016)				The Machine Tool Item ver1	Revisions
	H29 (2017)		The Machine Tool Item ver2	Is the test item effective in measuring the achievement of intended learning outcomes? Documentation of guidelines for test item development.		
	H30 (2018)		The Machine Tool Item ver3			
Utilization Phase	R1(2019)	Item revisions: Wind Power Generation, Computer, Robot, Heat Treatment and Swords				
	R2(2020)	Wind Power Generation ver2		How can the test items be utilized for educational improvement? How can we facilitate easier use? Smaller selection of learning outcomes; Development of the website and database; enhancement of and public relations activities.		
	R3(2021)	Item revisions: Bicycles, Gas Turbines				

Tuning-AHELO Competence Framework for Engineering

OECD (2011), "A Tuning-AHELO Conceptual Framework of Expected Desired/Learning Outcomes in Engineering", *OECD Education Working Papers*, No. 60, OECD Publishing, Paris, https://doi.org/10.1787/5kghtchn8mbn-en.

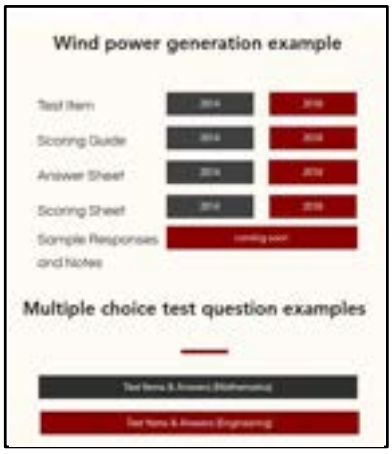
https://en.me-testbank.org/competencies

The Tuning Test Item Bank Competence Framework Derived from the Tuning-AHELO Competence Framework

Engineering Generic Skills	【EGS】 The ability to use diverse methods to communicate effectively with the engineering community and with society at large.
Basic and Engineering Sciences	【BES】 The ability to demonstrate a systematic understanding of the key aspects and concepts of their branch of engineering.
Engineering Analysis	【EA1】 The ability to apply their knowledge and understanding to identify, formulate and solve engineering problems using established methods.
	【EA2】 The ability to apply knowledge and understanding to analyse engineering products, processes and methods.
Engineering Design	【ED】 The ability to apply their knowledge and understanding to develop designs to meet defined and specified requirements.
Engineering Practice	【EP-Integration】 Ability to select, integrate, and utilize applicable theories and methods and their constraints to solve engineering problems..
	【EP-Ethics】 The ability to demonstrate understanding of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context, and commit to professional ethics, responsibilities and norms of engineering practice.
	【EP-Management】 The ability to demonstrate knowledge of project management and business practices, such as risk and change management, and be aware of their limitations.

https://en.me-testbank.org/competencies

English translation planned as part of 2022 activities.



https://en.me-testbank.org/testitems

Measuring how well students can "Think like an engineer."

風力発電は，風車を使用して風の運動エネルギーを電気エネルギーに変換する発電方式であって，環境負荷が小さく，発電コストが比較的低いなどの長所がある反面で，風速変動に伴う出力変動，強風や落雷などによる破損可能性などの短所もある。

図1は，北海道天塩郡幌延町にあるオトンルイ風力発電所の概観である。この発電所は 2003 年から本格稼働しており，風車 1 基当たり 750 kW，全 28 基で 21,000 kW の出力を有する集合型風力発電所（多数の風車を 1 カ所に集約設置した発電所。ウィンドファーム。）である。風車の直径は 50.5 m，支柱高さは 74 m である。

図 1　集合型風力発電所の例
提供：幌延町（オトンルイ風力発電所）

このような集合型風力発電所について，その基本構成要素である風車の構造と性能，発電所の設置条件，事故対策などについて考察する。以下の問題に対して，機械工学を中心とする工学的観点から解答せよ。特に，論述問題においては，論理的な文章表現をもって解答せよ。

English translation planned as part of 2022 activities.

問1．図 2 は，風車の回転軸が風向と平行な水平軸型風車の代表例であり，(a)は風力発電に多く用いられているプロペラ型，(b)は伝統的なオランダ型である。

(a)　風力発電用風車（プロペラ型）　(b)　伝統的風車（オランダ型）

図 2　水平軸型風車の例

出所：(a)［2000 ピクセル以上のフリー写真素材集］ (b) Marijn Roos,

両者のブレード（羽根）には，それらの動作原理と関係した違いがある。風が作用したブレードには揚力と抗力が発生するが，風力発電用風車は揚力を利用して回転トルクを発生させる揚力型であるのに対し，伝統的風車は抗力を利用して回転トルクを発生させる抗力型である。このことを踏まえて，風力発電用風車の「ブレード」に関する次の(1)~(3)の問題に答えよ。

(1)　風力発電用風車のブレードはガラス繊維強化プラスチック製の中空構造（内部補強リブ付き）であるのに対し，伝統的風車のブレードは木製の骨組みに布を張った構造である。また，風力発電用風車は，伝統的風車に比べてブレードが細長く，先細である。風力発電用風車について伝統的風車と対比して推察し，回転軸まわりの慣性モーメントの違いおよびそれに伴う回転性能の特徴と利点を 100~200 字で説明せよ。

(2)　風力発電用風車のブレードは，図 3 に示すように飛行機の翼と同様の断面形状（翼型）を有している。解答欄に図 3 のような一般的な二次元翼型を描いた上で，その周囲の空気の流線および発生する揚力と抗力を矢印を用いて簡単に図示せよ。

図 3　二次元翼型

(3)　風力発電用風車のブレードは，根元から先端に向かってねじれている，すなわち，図 4 に示す先端付近の断面 A-A と根元付近の断面 B-B のそれぞれでは，図 5 に示すような違いがある。

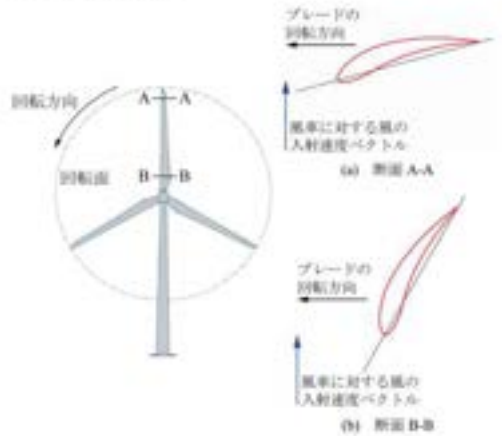


図 4　プロペラ型風車の概略図　　図 5　ブレードのねじれ

解答欄に図 5 のような断面 A-A と断面 B-B の翼型を描き，ブレードに入射する空気の速度ベクトルを図示した上で，ブレードがねじれている理由を 100~200 字で説明せよ。ただし，次の条件の下で考えよ。

- 一定速度の風が風車の回転面に垂直に入射し，風車が定常回転している。
- 両断面の断面形状と寸法は同一であって，方向だけが異なる。

また，次のことを考慮せよ。

- ブレードと空気の間の相対速度は，風車の回転の影響を受ける。
- 揚抗比は，迎角がある適切な値のときに最大となる。なお，揚抗比とは，抗力に対する揚力の大きさの比であり，迎角とは，図 3 に示したように，翼の前縁と後縁を結ぶ直線に対する空気の入射角である。

Linking abstract program-level learning outcomes with concrete (course/test)-level learning outcomes: the Wind Power Generation (Fluid Mechanics) Item Example

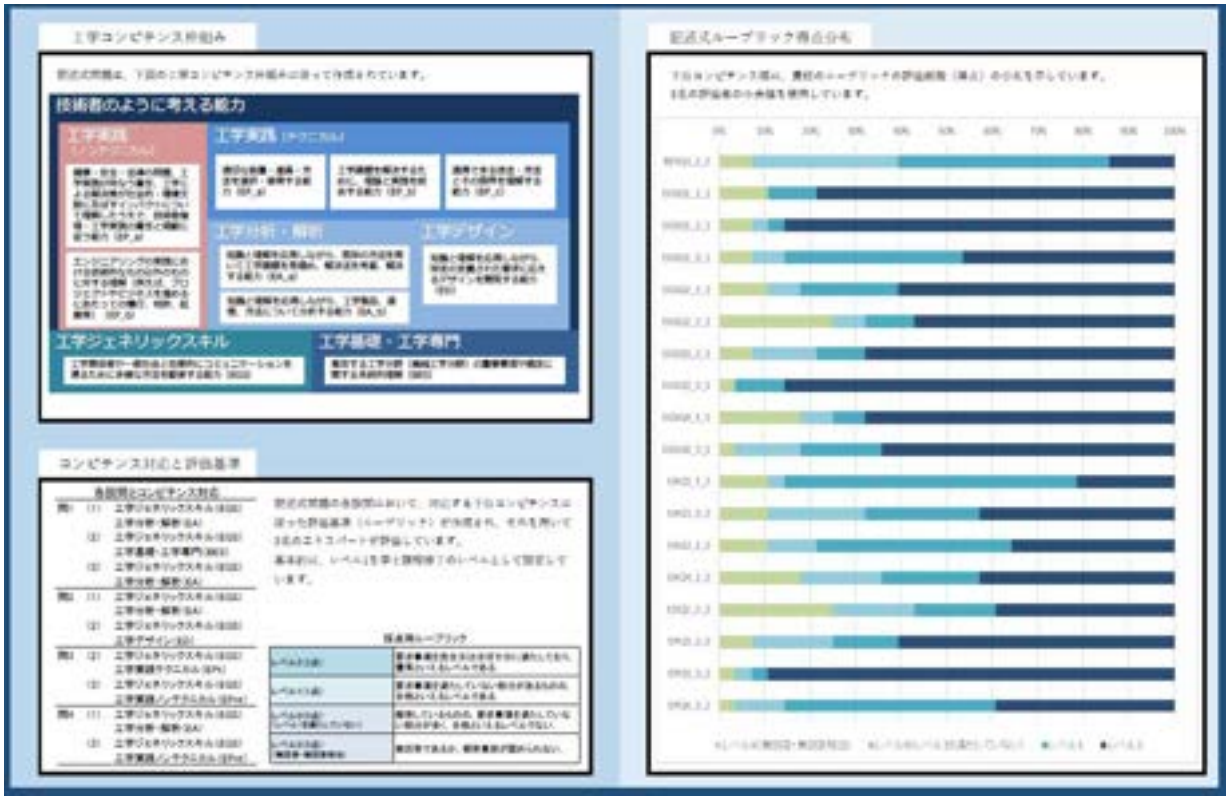
Generic Skills	Program-level learning outcomes	Course/test-level learning outcomes
Communication, Teamwork, Leadership.	【EGS】 The ability to use diverse methods to communicate effectively with the engineering community and with society at large.	Actions to be taken as an engineer can be identified when deficiencies are discovered after the completion of a wind turbine, and the reasons for such corrective action can be explained.
Knowledge, Understanding.	【BES】 The ability to demonstrate a systematic understanding of the key aspects and concepts of their branch of engineering.	The airflow streamlines around the turbine blade and the lift/drag forces acting on the blade can be explained by drawing an illustration.
Logical thinking, Critical thinking, Problem solving.	【EA2】The ability to apply knowledge and understanding to analyse engineering products, processes and methods	The aerodynamic performance of modern wind turbine blades can be explained in contrast to traditional wind mills.
	【ED】The ability to apply their knowledge and understanding to develop designs to meet defined and specified requirements.	Given the constraints of the expected wind speed, blade dimensions, and rotational speed, the perspectives of dynamics to be considered for determining the number of blades (e.g. 2, 3 or 4) to use in the turbine design can be explained.
	【EP-Integration】Ability to select, integrate, and utilize applicable theories and methods and their constraints to solve engineering problems.	Benefits and rational or reasons for selecting a particular site for a wind farm installation can be explained to engineers and the general public.

Example of Feedback to Universities

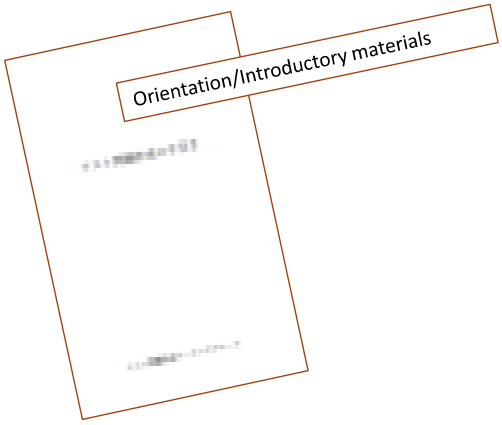
English translation planned as part of 2022 activities.

Example of Feedback to Universities

English translation planned as part of 2022 activities.



Improving Usability

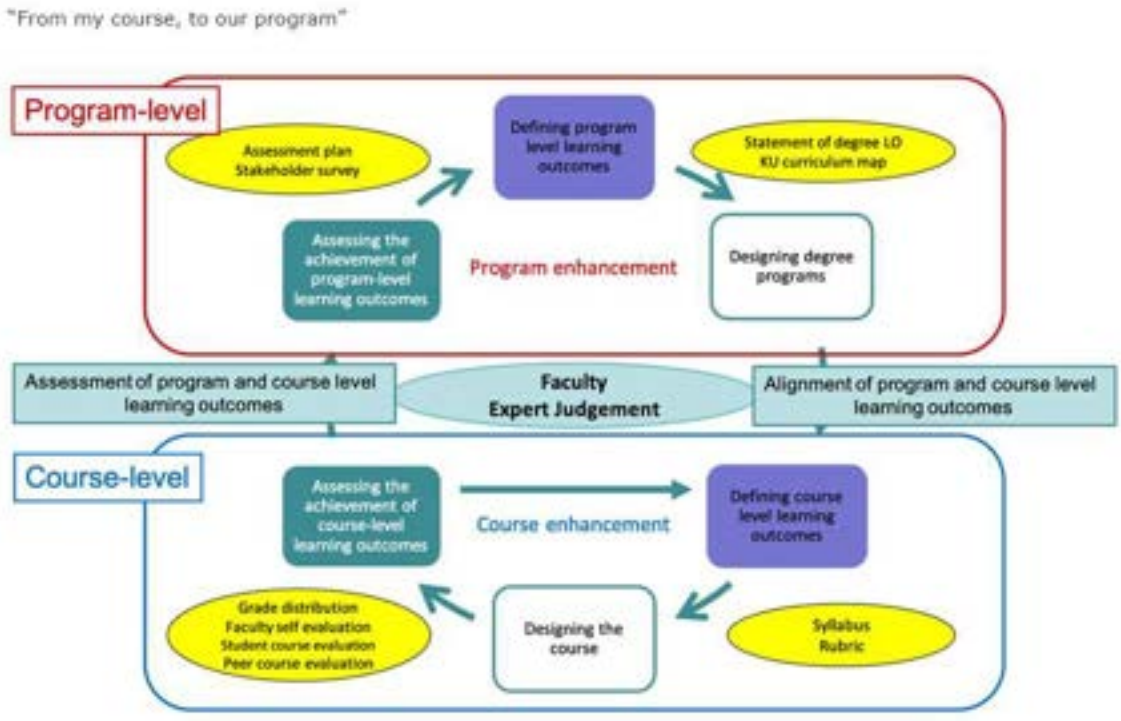


2. UTILIZING THE TUNING TEST ITEM BANK TO ASSESS THE ACHIEVEMENT OF LEARNING OUTCOMES – A TRIAL

Kyushu University, School of Engineering

Department of Mechanical Engineering (formally Department of Mechanical, Aeronautics and Astronautics)

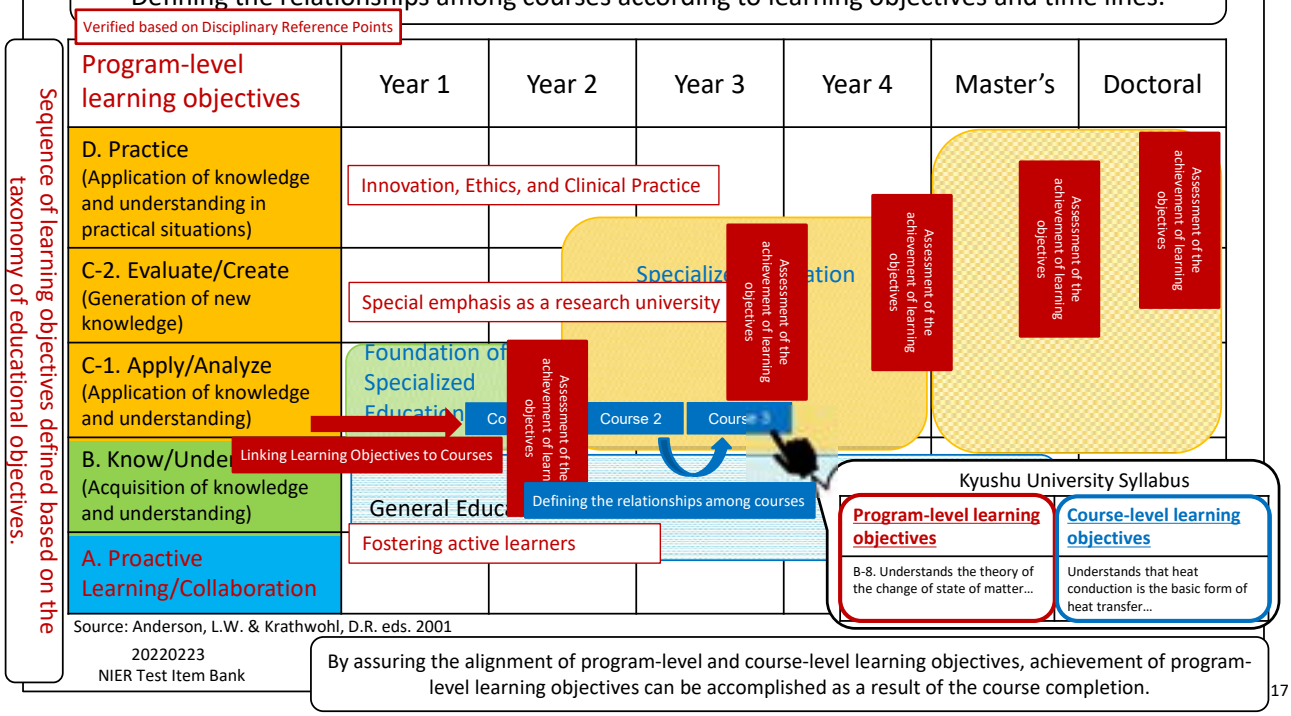
Kyushu University Education and Learning Management Framework



https://ueii.kyushu-u.ac.jp/en/pages/curriculum.php

Kyushu University Curriculum Map Conceptual Model(2019-)

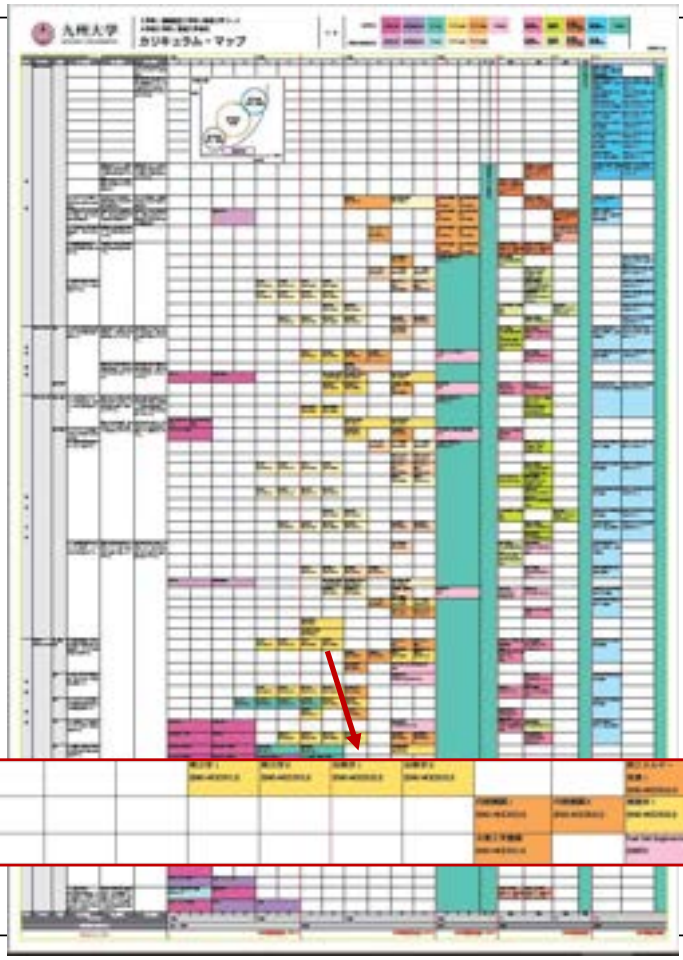
Linking Program-level learning objectives with courses.
Defining the relationships among courses according to learning objectives and time lines.



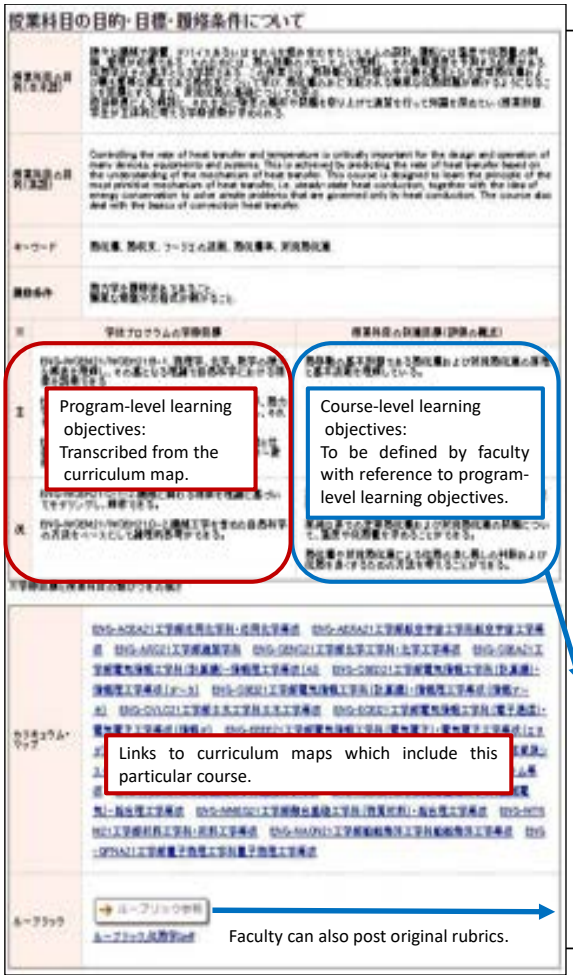
Source: Anderson, L.W. & Krathwohl, D.R. eds. 2001

By assuring the alignment of program-level and course-level learning objectives, achievement of program-level learning objectives can be accomplished as a result of the course completion.

An example: Curriculum map for the mechanical engineering program at KU



Curriculum maps for degree programs at KU
https://ueii.kyushu-u.ac.jp/pages/curriculum.php



Kyushu University Syllabus

Contents

1. Outline of the course
2. Goals, learning objectives, requirements
3. Course plan
4. Grading
5. Office hours and policies

Example: Heat Transfer 1.

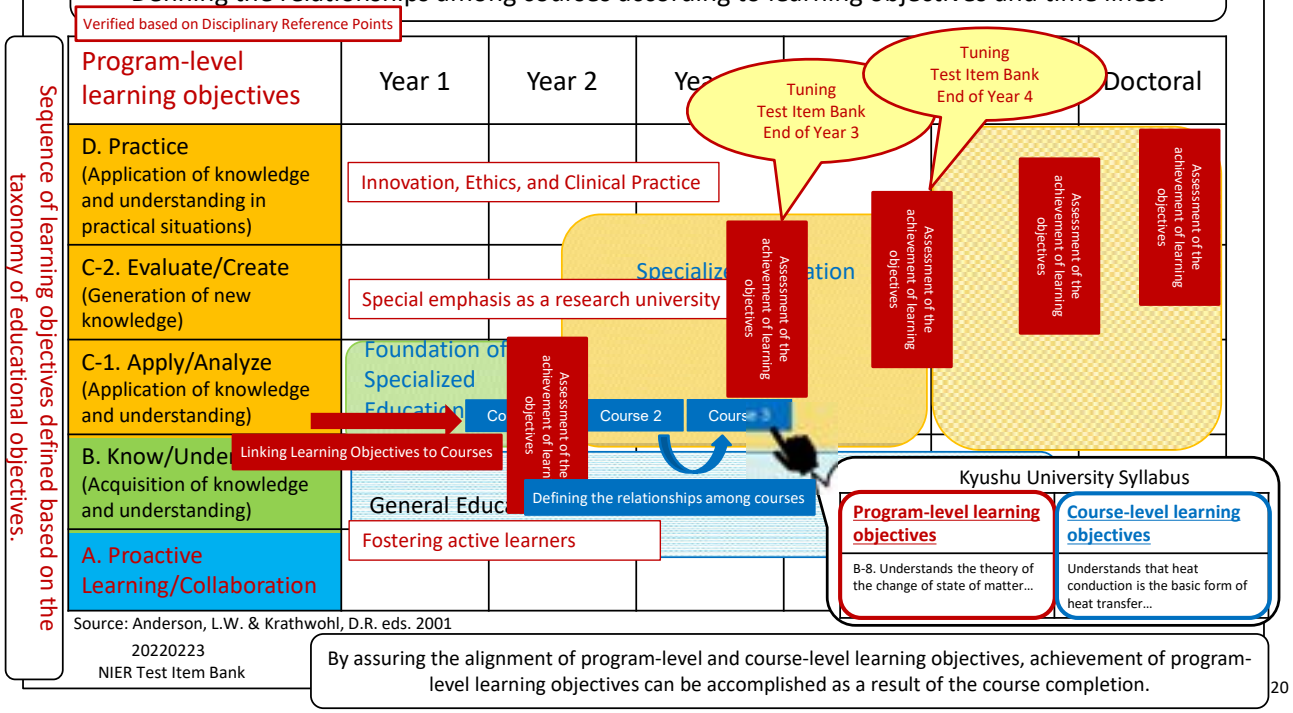
Single point rubric

By default, the course-level learning objectives are transcribed as the dimensions of the rubric. The rubric can be edited to add levels and criteria.

Utilizing the Tuning Test Item Bank to Assess the Achievement of Learning Outcomes – A Trial at the Mechanical Engineering Program at Kyushu University

Linking Program-level learning objectives with courses.

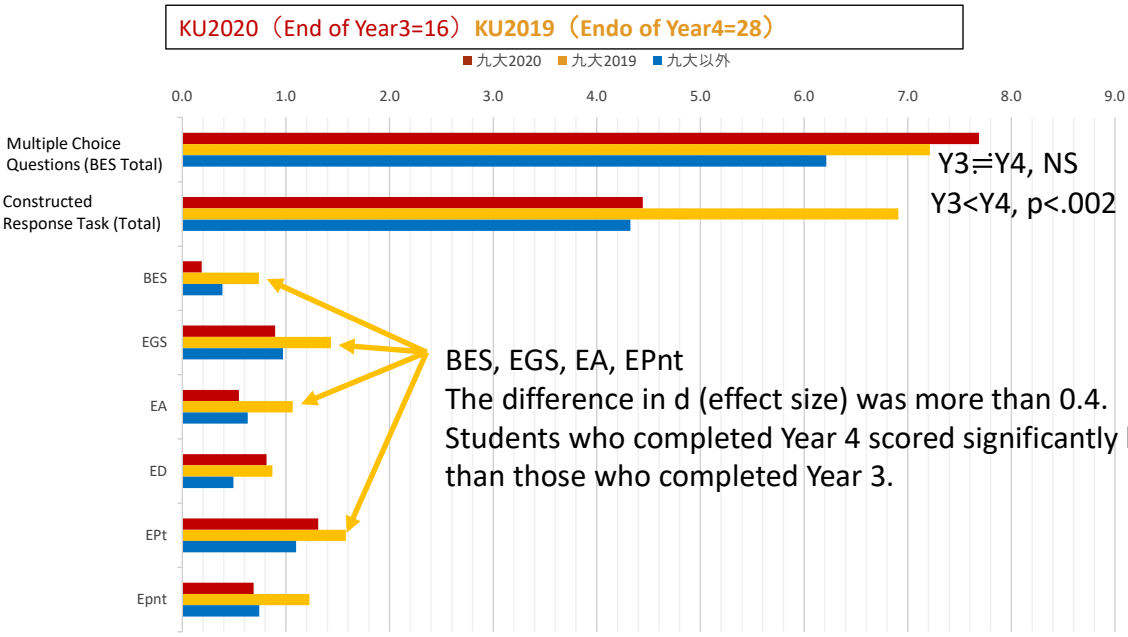
Defining the relationships among courses according to learning objectives and time lines.



Source: Anderson, L.W. & Krathwohl, D.R. eds. 2001

By assuring the alignment of program-level and course-level learning objectives, achievement of program-level learning objectives can be accomplished as a result of the course completion.

Verifying of the effectiveness of the curriculum:
The education in Year 4 at Kyushu University can be seen as effective in helping students acquire the ability to "think like an engineer."



3. HIGHER EDUCATION AND LEARNING OUTCOMES ASSESSMENT AMID AND BEYOND COVID

Online education: Liberalization of time and space in teaching and learning. Time to question the validity of trying to manage learning based on actual "study hours."

Standards for the Establishment of Universities

- Article 21: The number of credits for each course shall be determined by the university.
- 2 In determining the number of credits set forth in the preceding paragraph, the standard shall be that a one credit course consists of content requiring 45 hours of study, and the number of credits shall be calculated according to the following standards, taking into consideration the educational effects of the class and the study required outside class hours, in accordance with the class method.

Student Workload: The time (expressed in hours) that it is expected that and average learner (at a particular cycle/level) will need to spend to achieve specified learning outcomes. This time includes all the learning activities in which the student is required to carry out (e.g. lectures, seminars, practical work, private study, professional visits, examinations).
Source: Gonzalez, J. and Wagenaar, R. (2008). *Tuning Educational Structures in Europe, Universities' contribution to the Bologna Process: An Introduction.*

★Determining "content requiring 45 hours of study" requires faculty expert judgement (the ability of individual faculty to set learning objectives and evaluate their achievement).
★Requires concrete level shared understandings of learning objectives/ outcomes among faculty sharing responsibilities over an educational program.
★Joint effort among academics within disciplinary communities to support the alignment.
UK Subject Benchmark Statements, Tuning, The Science Council of Japan Disciplinary Reference Points, IEA Graduate Attributes and Professional Competencies (GAPC), ENAEE EUR-ACE.

Remote Work: Liberalization of time and space for Work

- Membership-based employment (internal labor market) .

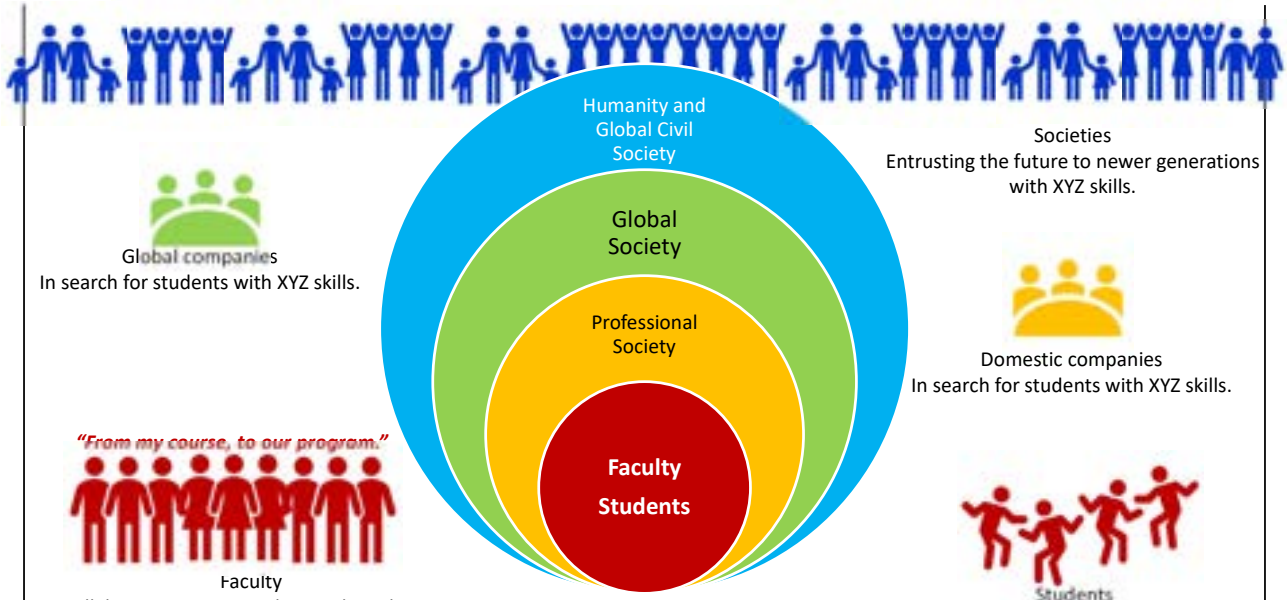
  → Job-based employment (external labor market).
- Ability-related pay (seniority-based, lifetime employment, general-purpose skills)

→ Job-specified pay (performance-based, specific specialized knowledge and skills)

- Digitalization and information sharing, cross-organizational collaboration.

- How should HEIs respond to changes in professional society and employment, and support students to make successful transitions from university to the professional world?
- Students will need to be able to explain what knowledge and skills they have acquired through their higher education in words easily understandable by professional communities and society.
  - For professional education programs, the importance of obtaining educational accreditation and supporting students to preparation for registration is increasing, particularly for international students.
- Students will also need to understand their potential contribution in multidisciplinary teamwork – based on their disciplinary background what makes them unique in terms of "how they perceive the world" and "how they engage with the world" (http://www.scj.go.jp/ja/member/iinkai/daigakuhosyo/pdf/kaisetsu.pdf ）

Higher Education Institutions – Society Dialogue on Learning Objectives
Towards Mutual Trust and Collaboration Amid and Beyond Covid
The Substantive Value of HE will be Challenged by DX



Thank you for your attention!

20. NIER Tuning Test Item Bank - The Development of Engineering Ethics Test Items

Ikko Tanaka, J.F. Oberlin University
Kentaro Sakai, International Pacific Univeris

目次

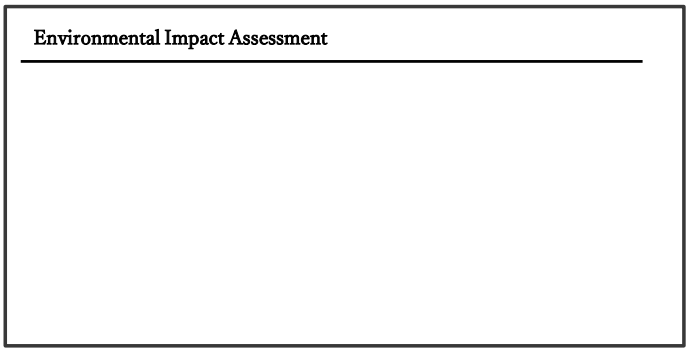
1. Examples of Questions
2. Ethical Competence in Engineering
3. Measuring Ethical Competence in Engineering
4. Scope and Difficulty
5. Prospect for the Development Engineering Ethics Test Items

1. Example Question_1

Q. 4 You belong to a company that designs, manufactures, and constructs wind power generation equipment. Answer the following questions from (i) to (iii) in relation to the wind power generation project.

(i) Your company has decided to hold a briefing session for local residents when constructing a wind power generation system. The following figure is one of the slides you prepared for the meeting. Choose one photo from (1) to (4) below **that is not appropriate** to be included in this slide.

図



① ② ③ ④

Projected only on the day of the event

1. Example Question_2

(iii) The company to which you belong has decided to carry out reinforcement work on the support columns of wind turbines in order to reduce the risk of collapse of the turbines, and to hold an explanatory meeting for local residents regarding the work. Select one of the following **inappropriate ideas** for holding an explanatory meeting for local residents from (1) to (4) below.

① The obligation of a business operator to hold an explanatory meeting for local residents when installing a wind power generation facility may not always be stipulated by ordinances. On the other hand, the project plan may have to be revised or withdrawn due to lack of understanding by local residents. In order to prevent such a situation from occurring, it is necessary to communicate closely with local residents.

② In some cases, the subjective anxiety of local residents remains high even if it is found that the safety of wind turbines can be sufficiently ensured by reinforcing the wind turbine supports. The risk perceived by experts is called objective risk, while the risk perceived by the public is called subjective risk. Bridging the gap between the two is an important issue in risk communication conducted by experts, and community information meetings can function effectively for this purpose.

③ The public's safety, health, and well-being are the top priorities for the professionals who design, manufacture, and construct wind power generation systems. This includes not only local residents, but also local governments that issue building permits for wind turbines, workers who understand your company's policies, and yourself. Therefore, the project must be fully explained to all the stakeholders so that they can understand it.

④ Work related to technology is said to have the aspect of "social experiment". This is because the artifacts produced by technology contain unknown aspects that can only be understood in the process of actual use in society. In this case, you and your company engaged in the reinforcement of the wind turbine are the "experimenters" and the local residents are the "subjects". At that time, the local residents should be promised that the wind turbines will be monitored on a continuous basis.

2. Ethical Competence in Engineering

Engineering Generic Skills	【EGS】 The ability to use diverse methods to communicate effectively with the engineering community and with society at large.
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	【EP-Management】 The ability to demonstrate knowledge of project management and business practices, such as risk and change management, and be aware of their limitations.

EGS

Ability to Communicate with the Public and Engineers Themselves

EP-Ethics

Ability to assume professional ethics, responsibilities, and norms as an engineer

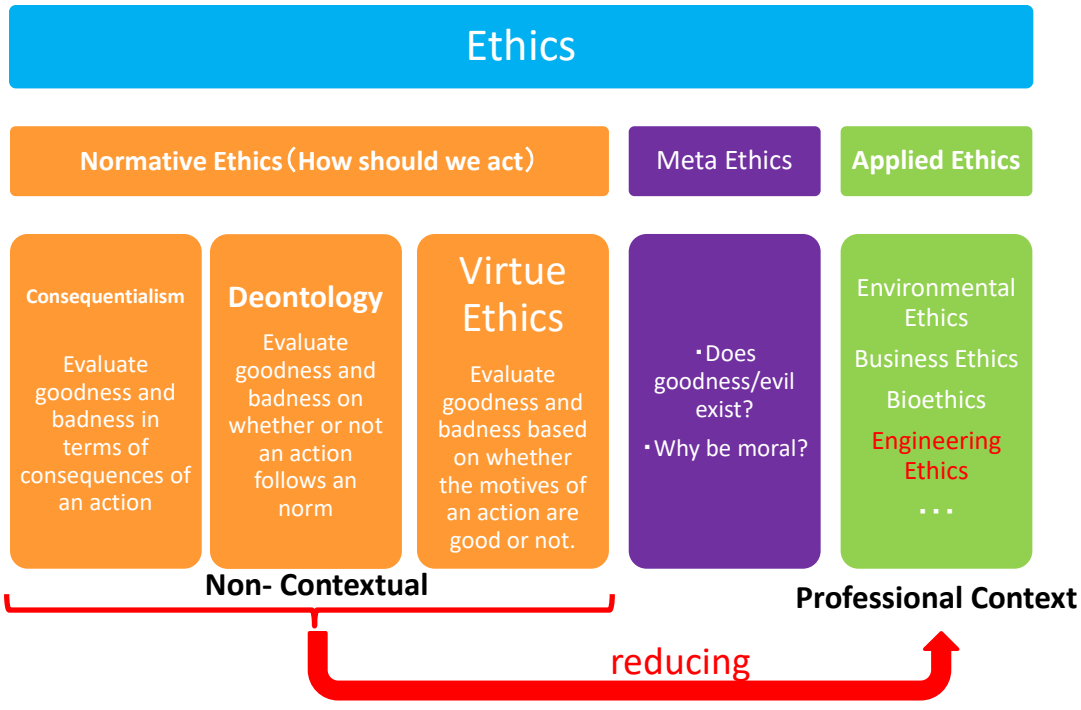
EP-Magement

Risk management and business project management skills

How do we measure them?
How can we test them ?

・Kuwae(2017)

3. Measuring Ethical Competence in Engineering : Three Perspective



3. Measuring Ethical Competence in Engineering : Three Perspective

E.g. whistleblowing on design faults

- **Consequentialism : What are the benefits, damages, and risks to the user, the company, the whistleblower, and the supervisor?**
- **Deontology: Is the action consistent with the relevant rules, code of ethics, and common sense?**
- **Virtue Ethics: What is the purpose of the whistleblower?**

– It is possible to question these analytical skills without using the terminology of ethics.

3. Measuring Ethical Competence in Engineering: Previous Studies

PSRDM (Professional Social Responsibility Development Model)

- Canny and Bielefeldt (2015)
- 50 questions to measure the socially responsible attitude of engineering students
- 7-point scale (from strongly agree to strongly disagree)
- Based on PSRI(the Personal and Social Responsibility inventory, AACU)
- Example of items :
  - "Engineers can have a positive impact on society"
  - "I feel called by the needs of society to pursue a career in engineering"
  - "I would be willing to have a career that earns less money if I were serving society"

ESIT (The Engineering and Science Issues Test)

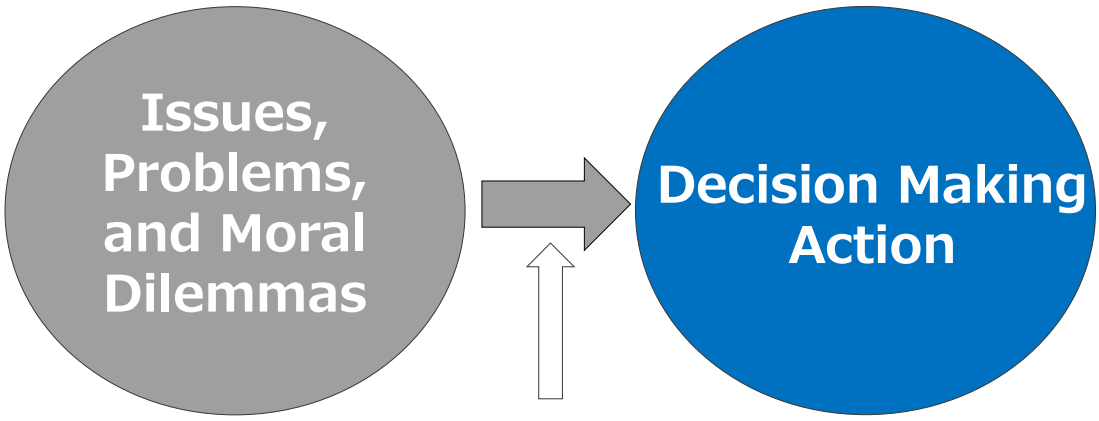
- Borenstein, Drake, Kirkman and Swann (2010)
- Pre and Post Test. Pre-post evaluation. For six case studies related to moral dilemmas, 12 questions related to decision making are presented.
- The importance of each question was rated using a 5-point scale (very important to not important at all).
- Based on DIT and DIT-2 (Difining Issues Test 1,2. Rest and Narvaez (1994); Rest and Narvaez (1998))
  - Case example: "Engineer Jameson owns stock in RJ Industries, which is a vendor for Jameson's employer, Modernity, Inc., a large manufacturing company. Jameson's division has been requested by management to cut one vendor: either RJ Industries or Pandora Products, Inc. Pandora Products makes a component that is slightly higher in quality and slightly more expensive than that made by RJ Industries. Management and the other engineers in her division do not know that Jameson has a financial interest in one of the two vendors. Jameson is unsure whether she should participate in the decision.
  - Question Example: "Will Jameson's decision potentially cause harm to the public?"

3. Measuring Ethical Competence in Engineering: Previous Studies

Direct assessment using a rubric

- **Sindelar, Shuman, et al. (2003)**
- **Developed a rubric that can be applied to moral dilemma scenarios in engineering.**
- **Five-point evaluation from five perspectives**
  - **Recognition of Dilemma**: Whether Clearly perceiving the dilemma or not.
  - **Information**: Whether ignoring or misrepresenting the facts or not.
  - **Analysis**: Whether similar cases and relevant codes have been examined for applicability to the scenario in question, with appropriate citations.
  - **Perspective**: Does it consider global perspectives, society, employers, and expertise?
  - **Resolution**: Whether or not the decision considers the risks it poses to the public and other stakeholders. If you do not consider them and just follow the code, you will get the lowest rating; if you propose win-win situations, you will get the highest rating.

3. Measuring Ethical Competence in Engineering



Knowledge for Decision Making

- **Relevant Laws and Codes of Ethics**
- **Professional Knowledge in Engineering**

Creating scenarios of issues, problems, and moral dilemmas that cannot be solved without the expertise of engineers.

4. Scope and Difficulty

Differences in the educational content of each university

- Syllabi and Topics
- Expertise of Teachers
- Number of Required Credits

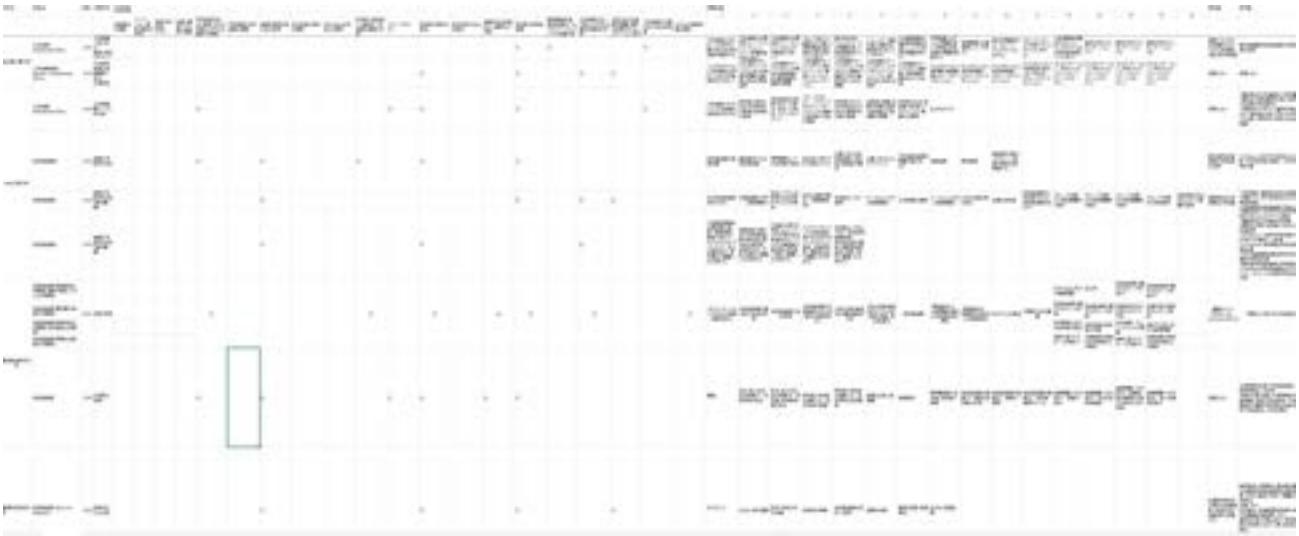
Standardization of educational goals and development of model syllabi

Futatsugawa(2004);Kobayashi and Fudano(2014); Japanese Society for Engineering Education(2016)

⇒Setting the scope and level of difficulty of the questions through investigation of the educational content.

11

4. Scope and Difficulty: Investigation of Syllabi



12

4. Scope and Difficulty: textbook survey; Past Examinaton of the Professional Engineers

Examinaton of the Professional Engineers 2018

- Average age of successful applicants : 43.2.
- Educational Background : Graduate Degree, 50.1%; Undergraduate Degree, 41.8%.

5. Prospect for the Development Engineering Ethics Test Items

Future Issues

- Development of Questions
- Conducting Trial Tests
- Continuing to Investigate the Education of each University

Continuing to develop questions that can be used while gaining the trust of each university.

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On the Reference Points of Science Council of Japan for the Quality Assurance of University Education

Kazuo Kitahara (International Christian University and Tokyo Institute of Technology)
kitaharakazuo@icu.ac.jp

Hideki Hirota (National Institute for Educational Policy Research)
hhirota@nier.go.jp

Yuji Shirakawa (Chiba University).
shirakawa@faculty.chiba-u.jp

From "Report of Central Council of Education" to Committee SCJ for Quality Assurance Framework of Subject-specific Education for Universities"

"Towards the Enhancement of Undergraduate Degree Programs" of Central Council of Education, MEXT, December 2008

Japanese universities today are unable to provide a clear answer to the question on the skills assured by the degrees.
(Learning goals provided by each university is rather abstract.)

→ Proposal of typical graduate attributes
Knowledge and understanding, Generic skills, Ethics and attitudes, Coherent learning experience and ability to think creatively

Then how to foster these attributes?

Priority has not been placed on maintaining minimum coherence of undergraduate programs of each area among diverse universities. Namely each university defines areas of study, which may differ in other universities.

What is the education of each area based properly on characteristic of the subject area? Inquiry to Science Council of Japan(May. 2008), Committee SCJ(Visit of SCJ team at QAA (Feb. 2009)

Three Themes discussed in Committee SCJ

- Framework for Assuring Quality of Subject-specific Education

  Supporting autonomous improvement of university education by "Reference Points" for each subject area

- Relation between Liberal Arts and General Education and Subject-Specific Education

  Fostering citizenship, which makes possible the collaboration beyond the barrier of subject areas for sustainable society

- Linkage between University Education and Workplaces

  Constructing society, which respects professional knowledge and skills

  Report to MEXT "Quality Assurance Framework for University Education" (July, 2010)*, suggesting "Disciplinary Reference Points for Curriculum Design and Quality Assurance of University Education

  (*English text is available)

Contents of "Reference Points" for each subject area

Core of higher education

1. Definition and Characteristics of the subject area
   Recognition of the world & Engagement in the world
2. Basic knowledge to be shared by all students in the subject area
   Basic knowledge, concepts and skills of the subject area and generic skills, fostered in the subject-specific learning
   ★ It is important to put emphasis on the implication for students' future as good professionals, or as good citizens.
3. Basic concept of assessment of learning process and outcomes
   ★ Not just knowledge or understanding of issues, but the ability of relate them with reasons
4. Coordination of liberal arts education/general education and subject-specific education for good citizens

33 Reference Points of SCJ by 2020

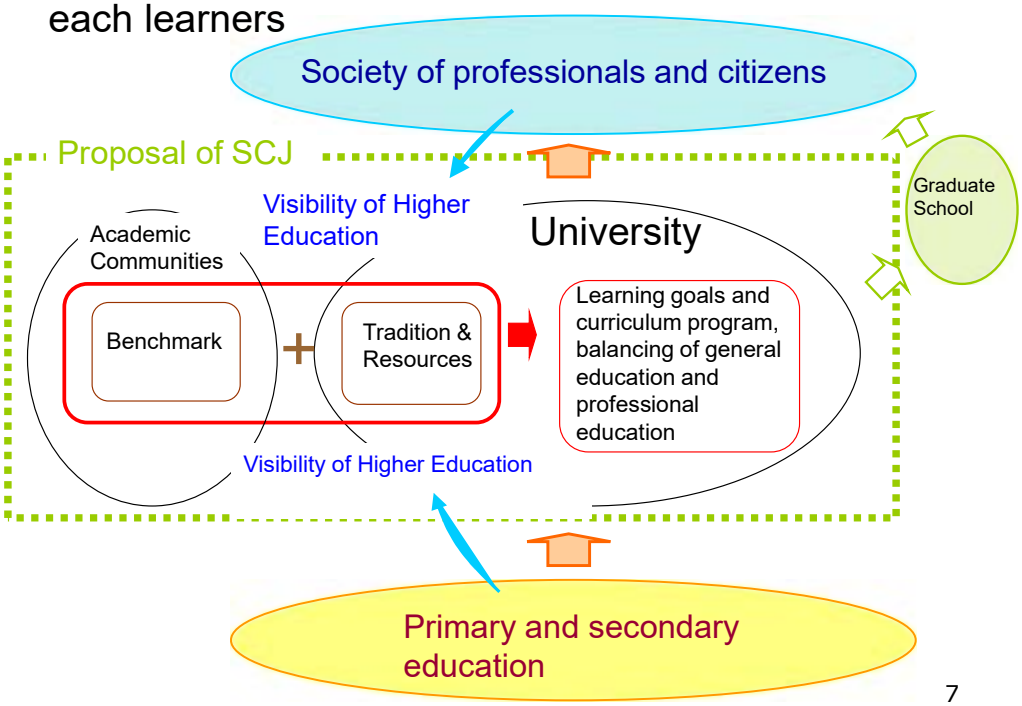
- Language/Literature, History*, Geography, Philosophy*, Psychology, Cultural Anthropology, Law, Politics, Economics. Management*, Sociology, Social Welfare*, Service, Regional Studies, Education
- Medicine, Dentistry, Pharmacy, Nursing Science, Home Economics, Agriculture
- Mathematical Science, Statistics, Physics/Astronomy*, Biology, Earth and Planetary Science, Mechanical Engineering*, Electric/Electronic Engineering, Informatics, Civil Engineering/Architecture*, Material Engineering, Computational Mechanics, Chemistry

(English summaries of all RP are available. Full English texts are available for *-marked subjects)

Engineering

- Electric/Electronic Engineering is about the transformation of energy and information by electronics into the better forms of them
- Mechanical Engineering is about the transformation of energy and information by machines into the better forms of them
- ***Common among all engineering disciplines***
- 1)Engineering is about the transformation of raw form of energy, information and matter by means into into the better forms of them
- 2) "transformation into the better forms" requires the knowledge of humanity and social science

For higher education to become meaningful to each learners



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Afterwards….

- Some academic societies, such as management societies, creates more concrete proposals of curriculum. Reference Points of Physical Education was formulated by Society of Physical Education
- SCJ has not yet discussed about arts (music, dance. drama, fine arts etc.) while Tuning and QAA published reports on these subjects.
- Some universities, according to MEXT survey, use Reference Points in some ways for curriculum reform.
- Kyushu University's curriculum reform

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February 23, 2022
16：00-18：30

International Symposium on Higher Education
Learner-centred Education and Higher Education
Quality Assurance Amid Covid

Session 3［Tuning and Reference Points］
No.22

Learning outcomes in tertiary education and the NQF approaches – the academic-vocational nexus -

Keiichi YOSHIMOTO (Jikei University of Health Care Sciences)
Chisako ETO (Kurume University)

Today's agenda

1. Structural requirements for NQF
   - The Long Search for a Standard of Competence in Japan
   - Exclusionary Competition and Public Goods in Education and the Professions
   - Japan's version of the NQF: A matrix of academic outcomes and occupational competencies
2. The process of creating the matrix of the seven professional fields
   - Tuning of educational and vocational competency standards
   - Developing the model of competence accumulation

Structural Requirements for a National Qualifications Framework (NQF) in Japan

—Diversity in Tertiary Education and the Japanese Labor Market—

Keiichi YOSHIMOTO

（Jikei University of Health Care Sciences）

Jikei University of Health Care Sciences

1. Smooth transition to occupations that do not require vocational skills in Japan

- Rapid expansion and diversification of higher education in many countries around the world and in Japan since the end of World War II (new universities, non-university higher education)
- In Japan, due to the steep hierarchy of universities, the practice of hiring new graduates on a regular basis and long-term employment, using university rank(the deviation score of the entrance exam) as an indicator of trainability of human capital.
- After the collapse of the bubble economy in the 1990s, there was a movement in the business world to narrow down the pool of human resources to "long-term accumulated ability utilization type" and to require a certain level of ability from university graduates (Japan Federation of Employers' Associations, 1995).
- since the beginning of the year 2000, the difficulty of transitioning college graduates has led to the argument that the academic ability of college students is declining, and furthermore, to the claim that primary and secondary education should be relaxed (PISA shock!?）

2. Various approaches to competency standards

- In the 2000s, a number of competency theories emerged due to the focus on learning outcomes in quality assurance at universities.
  - Gakusei-ryoku(competency of bachelor), zest for life, basic and versatile competencies, basic social skills, employability, etc.
- In 2002, an initiative for "Occupational Competency Evaluation Standards" to make the evaluation of the competency of professionals not company-specific, but to set standards in each industry, etc., for the creation of an external labor market within the industry
- For the next two decades, unlike the major national development of the NCS in Korea, which started at the same time, in Japan it remained an initiative within one ministry and one bureau（Yoshimoto2017b）
- Discipline-specific reference standards for university bachelor's level by an academic organization
- The NQF (National Qualifications Framework), which sets standards for educational programs and guidelines for the development of learners' competency, is possible if these various factors are taken together. Since the early 2000s, there has been no policy decision to introduce the NQF, although it is understood.(Yoshimoto 2006, 2020b)

3. NQF Development and Global Policy Learning

- NQF First Generation : a few Commonwealth Countries
  - National Vocational Qualifications (NVQs and SVQs) in England and Scotland since the 1990s
  - Jessup (1991) "Outcomes" approach to learning outcomes
- The second generation of EU and Commonwealth and related countries
  - EQF as a tool to promote free movement of learners and workers in the EU
  - Policy learning in EU member states and related countries
  - ILO (2007) and OECD (2007) international policy studies
- Commonwealth countries as the third generation, countries and regions with human exchange with the EU
  - Regional Degree Qualification Framework (RQF) with participation of UNESCO and others from EQF
  - NQF will be developed and introduced by more than 150 countries in 2019

（Yoshimoto 2017b, 2020a）

4. Japanese Challenges in Building NQF

- The reality of articulation among different levels of educational programmes
  - A mechanical approach to the articulation between educational programmes, such as the transfer arrangement just based on years of study (completion of two years at junior college to transfer to the third year at a four-year university)
- Difficulties of NQF in Japan (e.g. Yoshimoto 2020a)
  - Difficulties in dialogue between education and labour administrations
  - Lack of a standard approach to learning outcomes in both worlds of education and labour
  - Patrimonial bureaucracy as principles of control common in East Asia
- External pressures of internationalisation towards the international relevance of higher education
  - Entry into force of the Tokyo convention (The Asia-Pacific Regional Convention on the Recognition of Qualifications in Higher Education) in 2018

5. Prototype of a Japanese NQF(1):
Consideration of structural requirements for consistency and interactivity with other countries' NQFs

1. Multiple levels described by learning outcomes
2. A combination of taxonomy and levels to describe the learning outcomes
3. Formation of a "common sense" of the correspondence between educational programmes for qualifications and the professional roles of graduates
4. Classification of education and training disciplines to enable the expression of learning outcomes by discipline and to align with the NQF, noting the substantive differences discussed in the Tokyo Conventions and elsewhere (Yoshimoto 2019, 2021)

6. Prototype of the Japanese NQF (2) : Eight levels of qualification

1. Graduation from junior high school as compulsory education
2. Completion of two-years of upper secondary course in Upper Secondary Specialized Training School (e.g. training as a enrolled nurse)
3. Graduation from senior high school, graduation from a three-year upper secondary course specialized training college, completion of three years of college of technology, etc.
4. Graduation from a one-year of postsecondary course, completion of a one-year high school advanced course
5. Associate degree, Associate, Diploma, etc.
6. Bachelor's degree, Advanced Diploma, etc.
7. Master, professional master
8. Doctorate

7. Prototype of the Japanese NQF (3) : Four dimension of learning outcomes Taxonomy

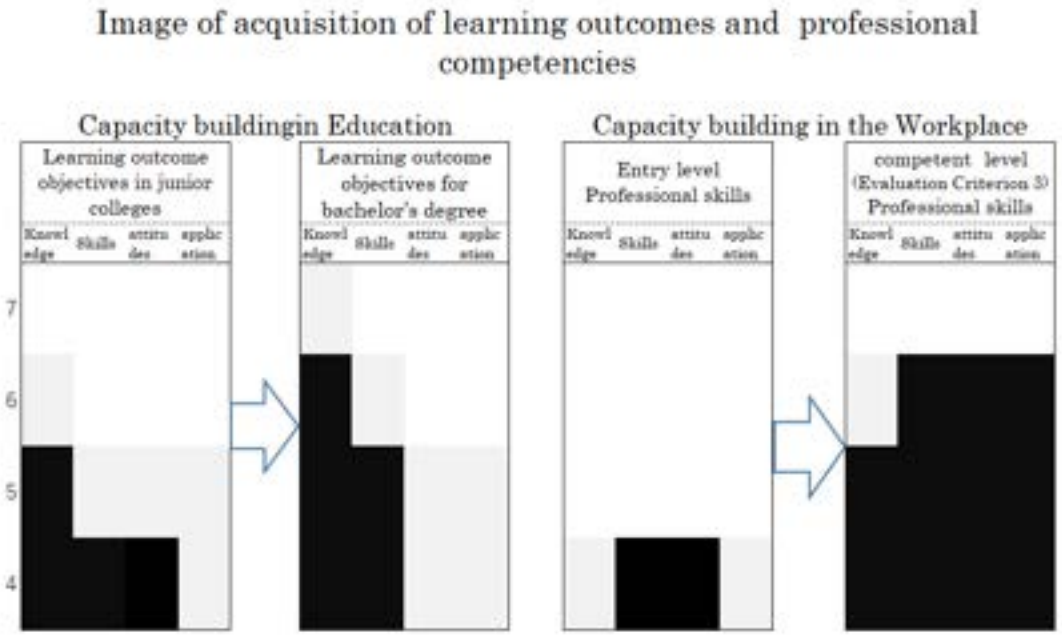
- The requirements of the NQF's learning outcomes taxonomy are consistent with the national system and allow for international dialogue.
- An analysis of the wording of the objectives and targets in the School Education Act and other relevant legislation for the construction of the NQF in Japan shows that the taxonomy for setting learning outcomes targets can be understood in four dimensions: (1)**knowledge**, (2)**skills**, (3)**attitudes**, and (4)**the application of knowledge, skills and attitudes in the field context** (Yoshimoto 2020a).
- This can also be transposed to discipline-specific reference standards and bachelor competences, and can be checked for compatibility with the taxonomy of learning outcomes used in other countries qualifications frameworks and regional reference frameworks such as the EQF.

7-2. Extraction of NQF taxonomy from the objectives and targets provisions of each school type in the School Education Act etc.

		Educational Objectives					goals' qualities to be fostered and developed
		Knowledge	Skill	Attitude	application of knowledge/skill/attitude in on site context		
Primary schools	Article 30(2) of the School Education Act	Basic knowledge	Basic skill	An attitude of independent learning	Thinking, judging, expressing and other abilities necessary to solve problems using these (knowledge and skills)	※1	To cultivate a foundation for lifelong learning.
Junior High School	Article 49 (Article 30, paragraph 2 applies mutatis mutandis)					※2	
Senior High School	Article 51	Improve your general education and acquire specialist knowledge	Acquisition of specialised techniques and skills	Attitude to contribute to the development of society by developing a broad and deep understanding of society and a sound critical mind, while striving to establish individuality	To further develop and expand on the results of compulsory general education, to cultivate a rich humanity, creativity and a healthy body, and to develop the qualities necessary to be a shaper of the nation and society.	※2	To further develop and expand the results of compulsory general education, to cultivate a rich humanity, creativity and a healthy body, and to develop the qualities necessary to be a shaper of the nation and society.
University	Bachelor's degree and Article 83 of the School Education Act	Knowledge and understanding	General purpose skills	Attitude and orientation	An integrated learning experience and the ability to think creatively	※3	To develop intellectual, moral and applied skills.
	Discipline specific reference standards	Basic "knowledge and understanding" acquired through the study of the discipline	Generic skills " acquired through intellectual training specific to the discipline		"Competence" demonstrated through the use of basic knowledge and understanding	※3	

Yoshimoto（2020a）

8. How to reconcile the inconsistency between the taxonomy of learning outcomes and vocational skills



9. Integral Matrix of learning outcomes and professional competencies

【education】 level of degree/certification	learning outcomes－professional competencies				【occupation】 Professional roles at each level
	Knowledge	Skills	attitudes	application of knowledge/skill /attitude in on-site context	
8 PhD., equal to or more advanced	○○○○	○○○○	△△△△	△△△△	□□□□
			○○○○	○○○○	
7 master's degree or a professional degree	○○○○	○○○○	△△△△	△△△△	□□□□
			○○○○	○○○○	
6 bachelor's degree or an advanced specialist	○○○○	○○○○	△△△△	△△△△	□□□□
			○○○○	○○○○	
5 An associate degree, an associate of arts, or a specialist	○○○○	○○○○	△△△△	△△△△	□□□□
			○○○○	○○○○	
4 A one-year course of study at a professional training college, or an advanced course of study at an upper			△△△△	△△△△	□□□□
			○○○○	○○○○	
3 A diploma from a secondary school, the completion of the third year of a higher course of study at an advanced vocational school, or the completion of the third year of a college of technology with the acquisition of the prescribed number of credits	○○○○	○○○○	△△△△	△△△△	□□□□
			○○○○	○○○○	

Satisfaction in vocational integrated learning (WIL) or workplace training

Matrix of learning outcomes/ professional competencies and their levels YOSHIMOTO(2020a)

10. Order of taxonomy by discipline

- Knowledge
  - As the breadth and depth of expertise
    - Understanding of the subject area, knowledge of the job and its principles and systems, knowledge of occupational safety, health, and wellness, etc.
  - Relevant fields beyond expertise and broad general knowledge
- Skills
  - Specialised skills
  - Communication Skills
  - General citizenship skills
- Attitude
  - Professional ethics and responsibility
  - Attitudes common to a wide range of professional and social life
    - Public orientation and values and lifelong learning attitude
- Application of knowledge, skills, attitude in on-site context
  - Expanding field applications for career development (subordination and autonomy) and differentiation (professional, management, education and research)

11. Dialogue areas for the process of building a Japanese-style NQF

- What do we want from NQF: reform, improvement and adjustment, or dialogue? (Raffe 2014)
- The key to building a Japanese version of NQF is dialogue (or compromise) across boundaries.
  - Dialogue between the educational and professional worlds
    - ➢ Dialogue with Professional Stakeholders in Educational Program Development
    - ➢ See the opinion of the education and training system in the formulation of standards for professional competence.
    - ➢ Breaking down the stove-piped administration of education and labour
  - Mutual understanding among sectors within the world of education
    - ➢ Dialogue between academic and vocational sectors
    - ➢ Functional differentiation within the university sector and a move away from research university-centric policy and research debates
  - Stepping up to the standards within the professional world
    - ➢ To the visualization and common understanding of the qualification system of each company within the same industry (e.g. TOYOTA's sales staff certification and NISSAN's car salesman certification are incompatible but with some communality to be explored)

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The process of creating the matrix of the seven professional fields

—where Academic and Profession meet—

Chisako ETO(Kurume University)

KURUME UNIVERSITY

1. Basic framework of EQ Matrix
Matrix of learning outcomes/ professional competencies and their levels

【education】 level of degree/certification	learning outcomes－professional competencies				【occupation】 Professional roles at each level
	Knowledge	Skills	attitudes	application of knowledge/skill /attitude in on-site context	
8 PhD., equal to or more advanced	○○○○	○○○○	△△△△ ○○○○	△△△△ ○○○○	□□□□
7 master's degree or a professional degree	○○○○	○○○○	△△△△ ○○○○	△△△△ ○○○○	□□□□
6 bachelor's degree or an advanced specialist	○○○○	○○○○	△△△△ ○○○○	△△△△ ○○○○	□□□□
5 An associate degree, an associate of arts, or a specialist	○○○○	○○○○	△△△△ ○○○○	△△△△ ○○○○	□□□□
4 A one-year course of study at a professional training college, or an advanced course of study at an upper	○○			△△△△ ○○○○	□□□□
3 A diploma from a secondary school, the completion of the third year of a higher course of study at an advanced vocational school, or the completion of the third year of a college of technology with the acquisition of the prescribed number of credits	○○○○	○○○○	○○○○	△△△△ ○○○○	□□□□

Satisfaction in vocational integrated learning (WIL) or workplace training

A process to develop specific level descriptors for each area

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2. The building process of Japanese-style NQF
2-1. Contrastive seven expertise fields

Fields where vocational skills are visible
（job-based labour market）
- Long term care
- Childcare
- Food and culinary
- IT
- Design

Fields that are cross-industry and difficult to identify vocational skills
（with a strong Japanese context: membership）
- Tourism and Hospitality
- Business

2022/2/23

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3.The process of creating matrices for each field
3-1. Creation process and reference standards

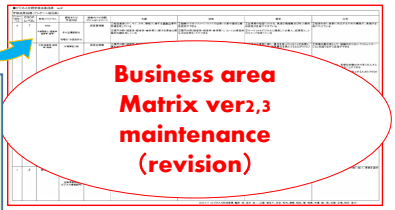
- Creation process
  - Business：focusing Level 6 (Bachelor) and setting upper and lower levels later
  - Design, food and culinary, child care, co-medical：focusing level 5(two-year professional training college or junior college) and setting upper and lower levels later

- Reference standards
  - Level descriptors of NQF (e.g. EQFs) in other countries
  - Educational side
    - Level 3(graduates from high school)：MEXT, "the government course guidelines for high school"
    - Level 6(bachelor)： Science Council of Japan , "Sectoral reference standards"
    - Specification rules of training school etc.
  - Labour side
    - Ministry of Health, Labour and Welfare ,"Vocational ability evaluation standards"
    - Ministry of Health, Labour and Welfare ," Career Grading system（ long-termed aged care）"
    - Various national qualification, Certification Tests etc.

3.3 The process of creating a matrix for each business field
3−2 Reference Criteria for Business Field Matrices

【the reference standard of matrix ver.1】
level4：graduates from university（DP of Business administration and Commerce）
level3： graduates from two-year professional training college or two-year junior college：JAUCB「Certified Business Administrator」
level2： graduates from one-year professional training college：bookkeeping etc.
level1： the government course guidelines for high school（Commerce）

＜labour side＞
・Vocational ability evaluation standards（clerical occupations）
→focused on accounting, IT and sales
・ Various tests（business）



Business area Matrix ver2,3 maintenance (revision)

＜Level descriptors used in foreign countries＞
・Australian AQF（Training Package）
・Korean NCS（area classification）

＜educational side＞
- Based on "sectoral reference standards"（business, economics）
- the government course guidelines for high school（Commerce）
- Rubric for business, economics and commerce

＜prior research＞
・EQ area classification of education and training（WP2）
・EQ1,EQ2 graduate surveys（WP3,WP4）
・matrix of referred areas like IT

- **Four taxonomy(descriptor) :knowledge, skill, attitude and practical application**
- **Consideration on educational side was launched from bachelor level in sectoral reference standard (business and economics).**
- **Consideration on labour side was focused on accounting , IT and sales of clerical occupations.**

- **Setting five levels corresponding educational programme and occupation（level3：high school～level 7：graduate school）**
- **Setting levels focused on core "piling up" area in each level**

3.The process of creating matrices for each field
3-3.Example of EQ Matrix <Business Field>

Learning outcomes

Advanced/ latest

critical

Comprehe-nsive

basic

Fundamental

Vocational Competence

Head of organisation／management

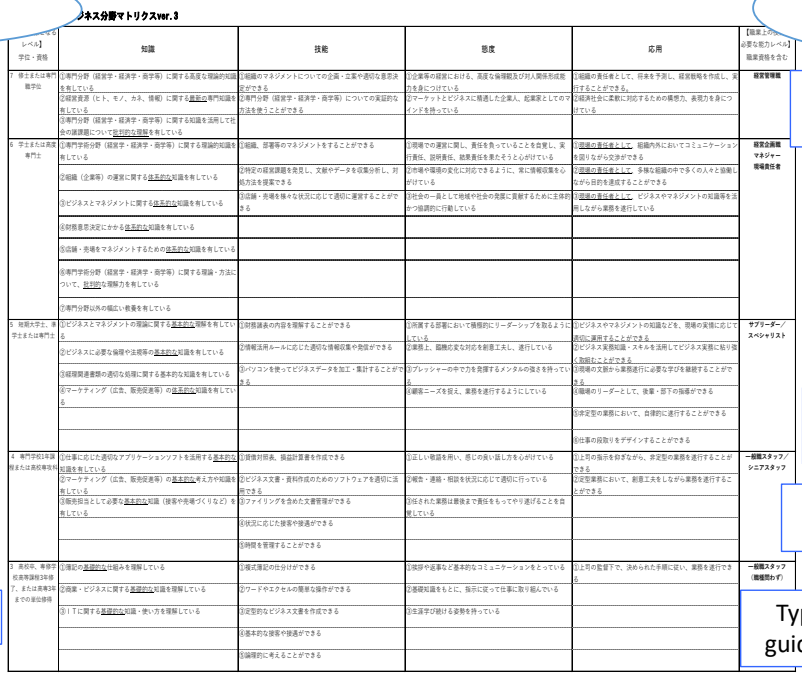
Site manager／management

Instruct juniors as the leader

Perform autonomously

Atypical works under the guidance of their superior

Typical works under the guidance of their superior

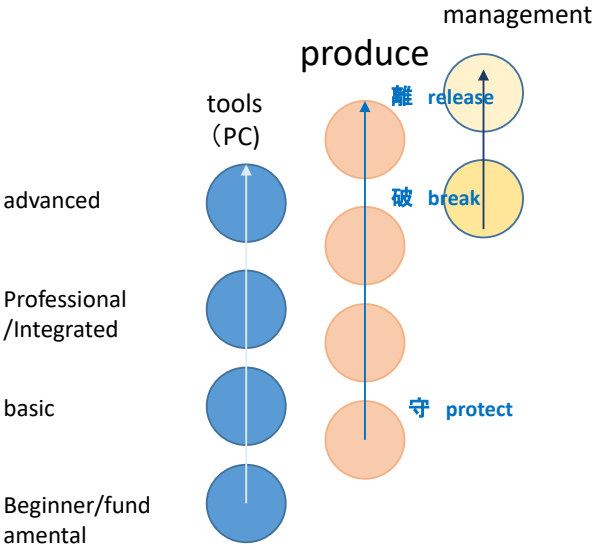


Formulation of longitudinal abstract terms by level

4. Development of the accumulation model for job-based skills
4-1. The Japanese model of stacked skills (waza) acquisition

- design
  - Focused on level 5 (professional training college)
    - Level 5＝start working＝upper levels mean ones with 1-3yrs experiences
  - The Current labour market of design doesn't seem to be ready for level 6 (graduate from university)and higher.
  - For graphic designer, introduction of PC enabled to visualise the process and skills.
    ⇒emerge the stacked model
- Food and culinary
  - a licensed cook（national qualification）could be a barrier to develop "pilling up" model?
  - Difficulties in cooperation between the world of cook characterized by craftsmanship and the registered dietitian

【graphic designer】
image for stacked "skills"

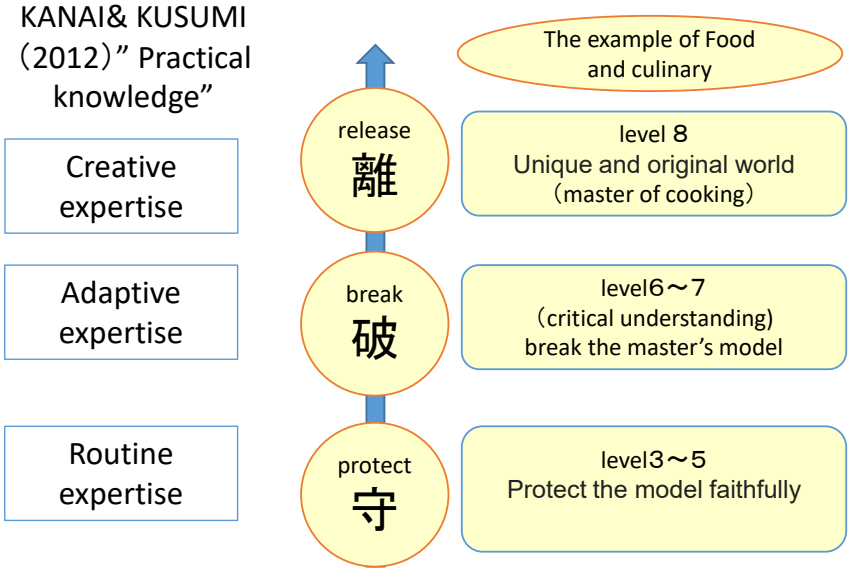


4. Development of the accumulation model using job-type competence
4-2. The need for a common terminology in the Japanese context

Cross-cutting considerations with other disciplines require a common language(terms) to reach a common understanding.

For stacked skills, the concept of 'protect, break and release' is helpful to promote a common understanding.
Ex: Japanese apprenticeship system , so-called "Tao" of tea ceremony, Japanese fencing

KANAI& KUSUMI (2012)" Practical knowledge"

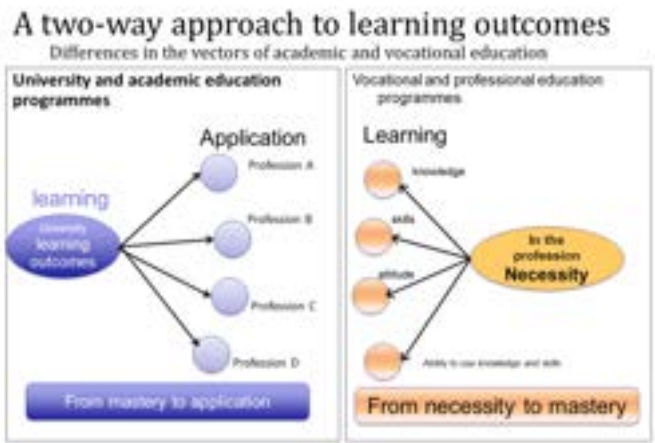


Resistance to the word "critical understanding" ,level6 e.g. "reconstruction" as an alternative term.

5. Business fields have a high affinity with the Japanese membership-based labour market

- "Attitude" and "Application" are highly transferable to other fields.
  - Particularly high transferability of entry level (basic level) and management level

- In the business sector, the model of skill building at the workplace is similar to that in other sectors.
- However, in school education, there is no model of knowledge and skills building among schools with different duration.



YOSHIMOTO (2016) p66

6. Implications from the development of the matrices of seven fields

- Confirmation that the ability building model of taxonomy can be applied in multiple fields
  - The need for longitudinal abstract terms at different levels
- Gaps of 'attitude' and 'application' in transition to profession were identified.
  - The need for nexus programme between academic and profession
- Evaluation indicators adapted to the diversity and functional differentiation of higher education
  - Need to overcome the debate on policy for research universities

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Thank you for your attention

Research centre for Tertiary Education and Qualifica
（RTEQ）
https://rteq.jp/rteq/

Contact：eqgcoffice@gmail.com

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Keiichi YOSHIMOTO
k-yoshimoto@juhs.ac.jp

セッション3: Tuning/参照基準 （Session 3: Tuning and Reference Points）

- **共通する問題意識**
  - 卒業後のCPD（Continuing Professional Development）も視野に入れつつ、大学で何を・どこまで身につけさせるか? 目標を語る概念はどうあるべきか?
  - その際、大学間で、何を共通のものとし、何を個々の大学の独自性にゆだねるか?
  - 目標、カリキュラム、評価（ツール・基準など）は、どのような形式で、どこまで共有されるか? それは分野によって異なるのか?
- **議論したい点**
  - 今回の報告の多くは教える側の視点に立っていて、学生がどう学んでいるかはあまり見えない。「学修者本位の教育」とは何か? 学修成果を意識する以外に何が必要か? COVID-19は「学修者本位の教育」にどんな変化をもたらすか?
  - 大学と社会のつなぎ方は、分野別に考えるだけでよいか? 大学での学びと職業の関係が弱い分野についてどう考えるか?

- **Common Issues**
  - What and to what extent should students learn at university, with a view to CPD after graduation? What should the concept of goals be?
  - What should be common among universities, and what should be left to the uniqueness of each university?
  - In what form and to what extent will goals, curricula, and assessments (tools, standards, etc.) be shared? Do they vary by discipline?
- **Points of Discussion**
  - Most of the presentations are from the teaching side, and do not show how students learn. What is the meaning of "learner-centred education"? What else is needed besides an awareness of learning outcomes? What changes will COVID-19 bring to "learner-centered education"?
  - Is it enough to consider the connection between the university and society by discipline? (What do we think about fields where the relationship between university learning and profession/vocation is weak?)