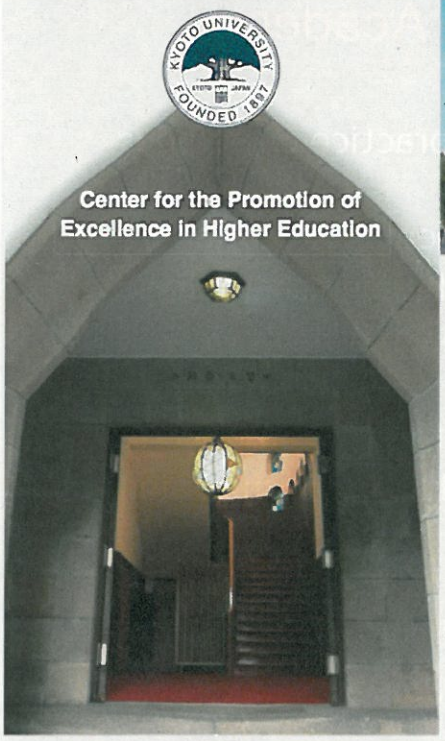
Advancing Institutional Agenda on Learning and Teaching by Harnessing Open Educational Innovation and Improvement

Toru Iiyoshi, Ph.D.

Director & Professor
Center for the Promotion of Excellence in Higher Education
Deputy Vice President for Education

Kyoto University

National University of Tainan Delegation Meeting, June 8, 2015



History and Organization

The Center for the Promotion of Excellence in Higher Education (CPEHE) was originally established as the Research Center for Higher Education (RCHE) in 1994, and reorganized into its present form in 2003.
The Center currently conducts higher education research and development in the following areas:

- Teaching and Learning Methods
- Curriculum
- Assessment and Evaluation
- Technology and Innovation

The CPEHE has played a central role in educational reform and research, for Kyoto University as well as for other institutions of higher education nationwide.

Projects

Building the Core in Faculty Development

In 2008, the Center launched an ambitious project called "Building the Core in Faculty Development" in coordination with the Ministry of Education, Sports, Science, and Technology. The goal of this project is to build faculty development communities and networks, both face-to-face and online, with a view to faculty development at four levels:

- Institutional
- regional
- national
- International

Mutual Faculty Development Core

The Center was designated as a national center that supports and coordinates other higher educational institutions in faculty development by the MEXT in 2010, and given the designation, "Mutual Faculty Development Core."

Building the Core at International Level

The Center is collaborating with higher educational institutions abroad in building theories of faculty development and sharing effective practices of advancing teaching and learning.

Some of the past and current collaborating institutions include:
Stanford University, Harvard University, MIT, Beijing Normal University, etc.

Past international symposia and workshops held by the CPEHE:

"How to Collect and Analyze Data on Student Learning: MOOCs, Active Learning, and Learning Analytics" (January 2014; Guest speaker: Phillip Long)

"Learning Assessment and Technology to Enhance Deep Active-Learning: Focusing on Learning Catalytics" (October 2013; Guest speaker: Eric Mazur)

"Advancement of Higher Education in the Network Age: Sustaining the Mutual Evolution of Learning and Teaching" (January 2013; Guest speaker: Randy Bass & Elizabeth Barkley)

"Deepening Active Learning with Peer Instruction" (October, 2012; Guest speaker: Eric Mazur)

"Portfolios for University Education: from Class Improvement to Curriculum Improvement" (February 2012; Guest speaker: Daniel Bernstein)

"Towards Higher Education based on Deep Learning" (December 2011; Guest speaker: Ference Marton)

"Transition from School (High School/University) to Work" (February 2011; Guest speaker: James Côté)

"The Future of Science Education at Undergraduate Level" (September 2009; Guest speaker: Carl E. Wieman)

"Building the Core in Faculty Development" (January 2009; Guest speakers: Mary T. Huber, Jennifer M. Robinson, Toru Iiyoshi, and Frank Prochaska)

Building the Core at National Level

Research Forum for the Promotion of Higher Education (1994–)
Sharing faculty development activities and related research in Japan

University Student Research Forum (2008–)
Exploring the learning and career development of university students

Japan Faculty Development Network (2008–)
Bridging regional faculty development networks and turning them into a large national network

MOST (Mutual Online System for Teaching and Learning) (2009–)
Providing an online environment for sharing educational practices

MOST Fellowship Program (2012–)
Offering a one-year fellowship program that helps build a national faculty community of practice using the MOST

Building the Core at Regional Level

Kansai Faculty Development Association (2008~)

This Japan's largest regional faculty development network was formed in 2008, and it currently has approximately150 member institutions.

Building the Core at Institutional Level

Faculty Development Committee (2006~)

- "Pre-FD" (preparing future faculty) workshop for graduate students
- Preparing Future Faculty Program for the Graduate School of Letters
- Kyoto University Student Survey
- Annual teaching workshop for newly hired faculty members

3

KU Teaching and Learning Academy

- Create a cross-disciplinary community of practice on campus
- Help make faculty members' and departments' educational development and improvement effort visible and sharable so that they can learn from and build upon each other's work
- Search for and "dig out" innovative and effective practice as well as detect challenges, issues, and wishes in teaching and student learning
- Raise the awareness of the significance of continuous educational innovation and improvement among faculty members and departments

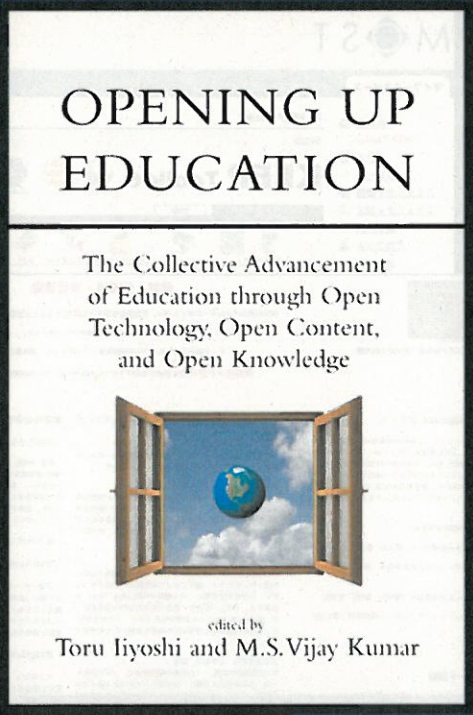
4

KU Teaching and Learning Academy: Activities

- Support small "niche" topic/theme-based faculty communities of practice → to help them generate some shared ideas and excitement
- Provide institutional mini grants → to turn their ideas for educational innovation and improvement into feasible plans
- Help further develop these pilot projects → to obtain major government and other external fundings to build the necessary support capacity for sustainable effort at all levels (institution, departments, and individual faculty)
- Make the ongoing successes visible and reward them through publicity, multimedia SoTL portfolios, and educational innovation fairs → to create community culture and values

Open Education

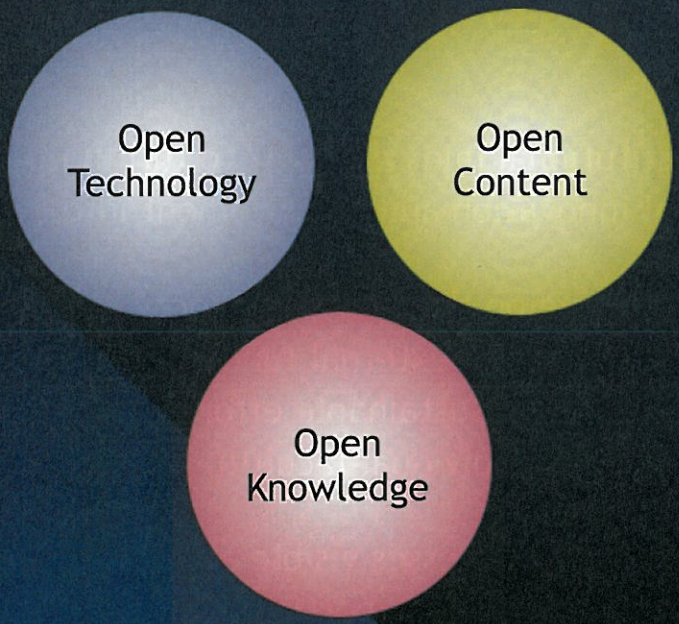
- "How can we advance teaching and learning by taking full advantage of open education?"
- A hardcover book + free online distribution with Creative Commons
- 30 chapters by 38 prominent leaders and visionaries (Foreword by John Seely Brown)
- Lessons learned and visions of the future from: OKI, IMS, CNI, Sakai, Moodle, ETUDES, iCampus, VUE, Mellon Foundation, OCW, Connexions, OLI, MERLOT, OpenLearn, SOFIA, Creative Commons, LAMS, Hewlett Foundation, CASTL, VKP, ISSOTL, Open University, Educause, Carnegie Foundation, and more



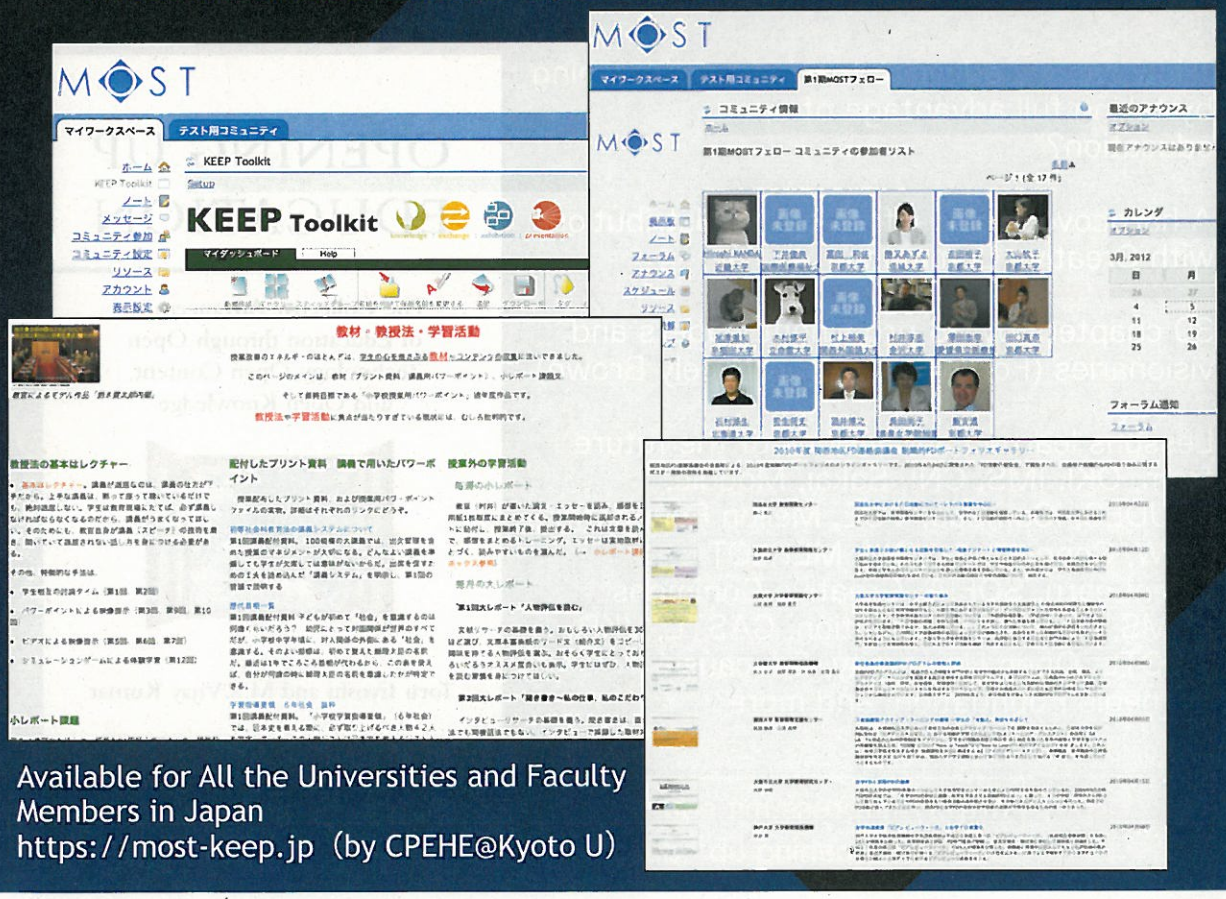
http://mitpress.mit.edu
Search: "opening up education"

Carnegie Foundation's Book on Open Education (August 2008, MIT Press)

Open Education: Three Components



MOST: Mutual Online System for Teaching & Learning



Available for All the Universities and Faculty Members in Japan
https://most-keep.jp（by CPEHE@Kyoto U）

HOME | MOSTについて | MOST TOUR | MOST GALAXY | COSMOST | ユーザー掲示板

MOSTは、大学教員の相互研修の場をコンセプトとする招待制のコミュニティサイトです。

Mutual Online System for Teaching & Learning

現在の登録者数554名 | コミュニティ83件 | スナップショット1773件

MOSTムービー

MOST紹介ビデオ

インストラクションビデオ

MOSTでできること

簡易マニュアル (2BF、PDF 11.4MB)

MOSTちらし (PDF 1.3MB)

MOSTおすすめスナップショット

FD活動報告会2012 関西地区FD連絡協議会

コースポートフォリオ 山田義博先生（藍野大学）

カリキュラム改善 E. バークレイ（フットヒルカレッジ）

What's New

● 教員コミュニティによるコースポートフォリオ実践プログラムの成果公開
13.3.25 2011年度後期に、藍野大学および大阪府立大学工業高等専門学校における教員コミュニティによって取り組まれたコースポートフォリオ実践プログラムの成果を公開しました。

・藍野大学医療保健学部理学療法学科における成果はこちら
・大阪府立大学工業高等専門学校メカトロニクスコースにおける成果はこちら

● 第1期MOSTフェロー スナップショット公開のお知らせ
13.3.13 特徴ある授業実践をおこなっている10名の大学教員で構成される第1期MOSTフェローによるスナップショットを公開しました。MOSTフェローは、1年間かけて対面やオンラインで継続的に交流しながら、自身の授業実践のスナップショットを作成しました。下記のスナップショットギャラリーから各フェローのスナップショットをご覧になれます。

第1期MOSTフェロー スナップショット ギャラリー
MOSTフェローシッププログラムについて（外部サイト）

MOST TOUR

MOSTやKEEP Toolkitを活用した教育研修プログラムを紹介します

- 概要
- 組織的FDポートフォリオ
- 組織的FDポートフォリオ（関西FD）
- コースポートフォリオ
- 授業分析
- Web公開授業

MOST GALAXY

KEEP Toolkitで作成された特徴的なスナップショットにアクセスできます

- 概要
- 組織的FDポートフォリオ（関西FD）
- コースポートフォリオ
- MOSTフェロー

MOST GALAXY -スナップショットギャラリー-

現在の登録者数554名 | コミュニティ83件 | スナップショット1775件

MOST GALAXY

- 概要
- 組織的FDポートフォリオ（関西FD）
- コースポートフォリオ
- MOSTフェロー
- SOTLの事例
- 授業／コースの改善
- 組織的FD活動
- Web公開授業

- パスワード再発行
- 利用規約
- プライバシーポリシー
- ライセンス
- MOSTヘルプ

MOST 講習会実施中

お問い合わせ info@most-keep.jp

Gallery of Teaching & Learning

第1期MOSTフェロー スナップショット・ギャラリー

特徴ある授業実践をおこなっている10名の大学教員で構成される「第1期MOSTフェロー」によるスナップショットです。MOSTフェローは、1年間かけて、対面・オンラインで継続的に交流しながら、自身の授業実践のスナップショットを作成しました。MOSTフェローの授業実践の成果は、第19回大学教育研究フォーラムの個人研究発表でも報告されます。（MOSTトップへ）



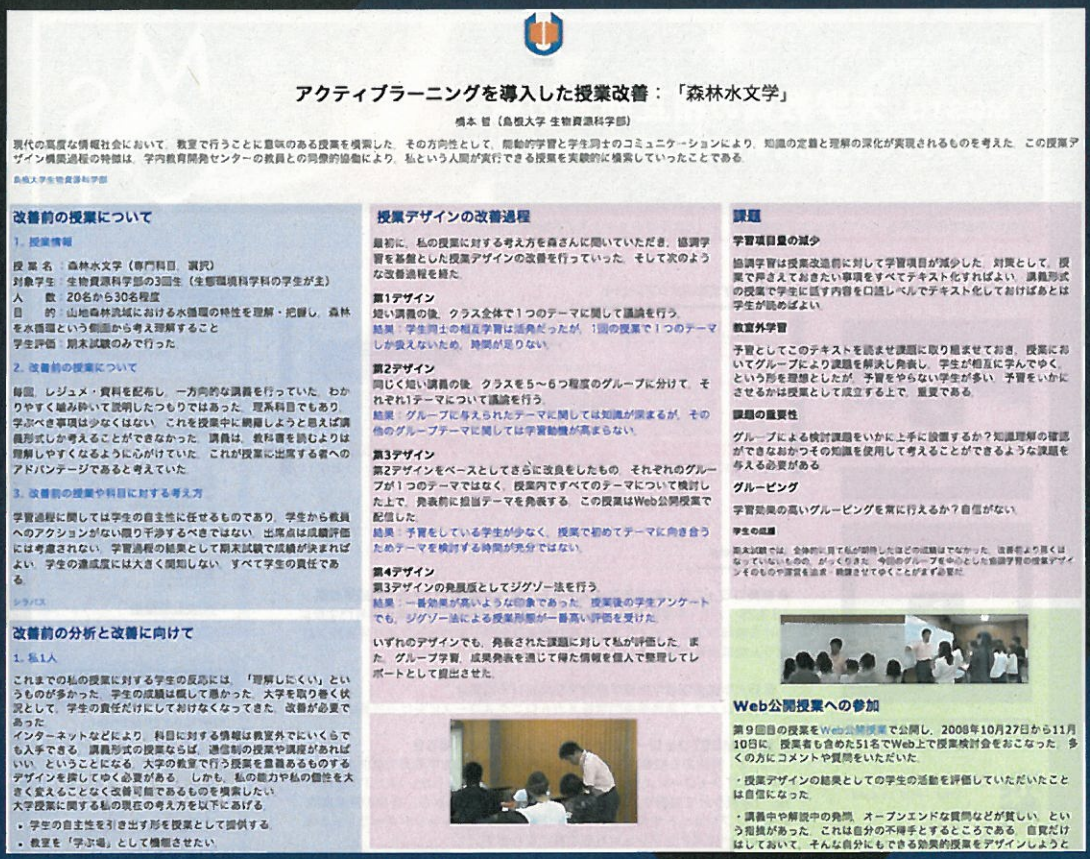
■ スナップショット・ギャラリー

防災コミュニケーション実習
石村源生先生（北海道大学）

CoSTEPでは、毎年一般からプロジェクトを公募し、適切なものを一年間の実習授業として組み入れている。2012 年度は、「北海道における津波防災教育プログラムの実施」をテーマとした実習授業を実施する予定である。特に昨今は、昨年の東日本大震災の教訓を 踏まえ、防災教育に対する社会的ニーズが高まっている。北海道は災害の多い地域であるが、広範囲に及ぶ地域のそれぞれで事情がことなり、プログラ ムのカスタマイズが必要である。また、一方向的な「啓蒙」ではなく、双方向的なコミュニケーション活動が有効であると考えられる。何箇所か地域を 絞り込みつつ、それぞれの地域にあった防災教育プログラムを実施する予定である。
→ 第19回大学教育研究フォーラム・発表スライド

他者を意識することによる活動の深化
長田尚子先生（清泉女学院短期大

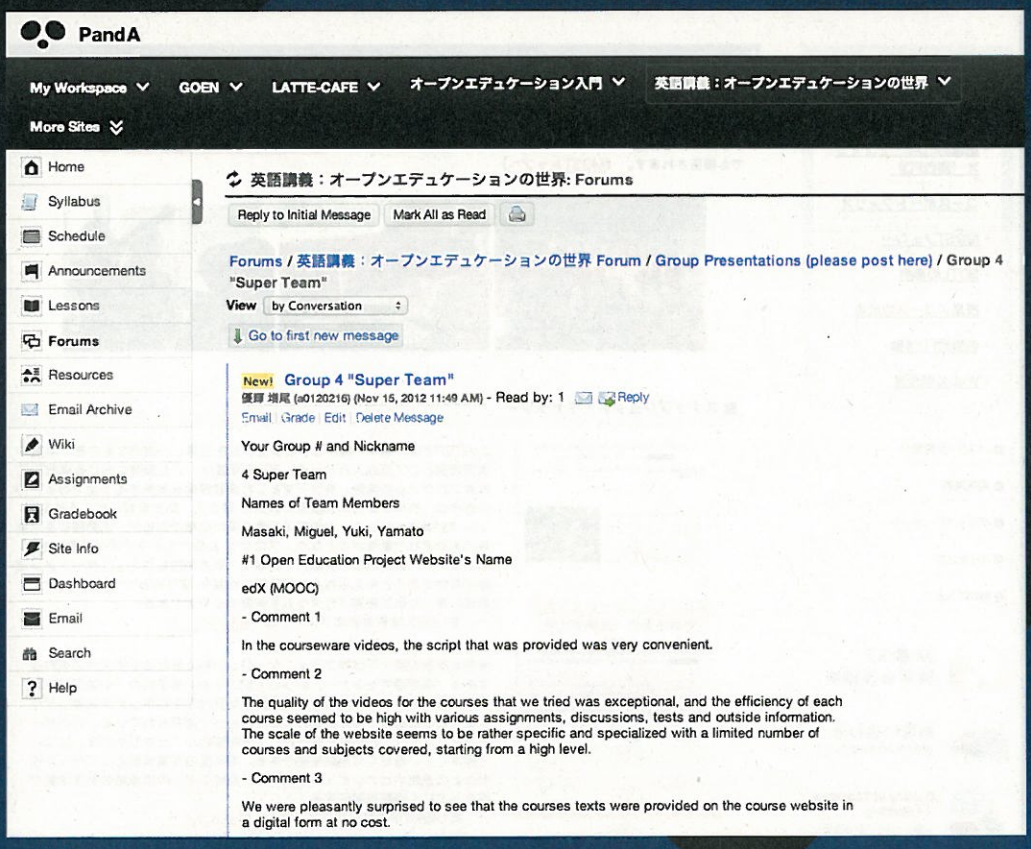
清泉女学院短期大学国際コミュニケーション科における２年次の必修科目である「卒業研究セミナー」について記述する。本学科の「卒業研究セミナー」は、各コースに関連する専門的な学習内容を応用したり発展したりすることを目的に、専任教員によるゼミとして運営されている。このポートフォリオでは、認知科学を応用して情報発信の「分かりやすさ」について探求しているゼミの活動を紹介する。本年度の授業改善として行った他ゼミとの連携やピアレビューを通じて、高校生向けの広報紙の制作活動が深まっていく過程を報告する。
→ 第19回大学教育研究フォーラム・発表スライド



Sharing Effective Practice in Course & Curriculum Improvement

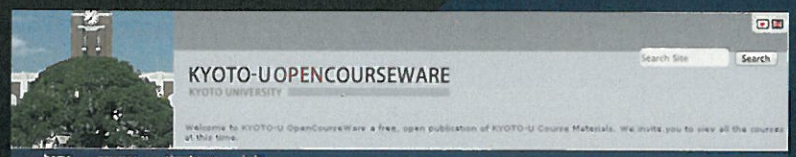
11

Learning Management System: PandA



12

OCW



Recent lecture note

Welcome to Kyoto-U OCW.

Welcome to KYOTO-U's OpenCourseWare:

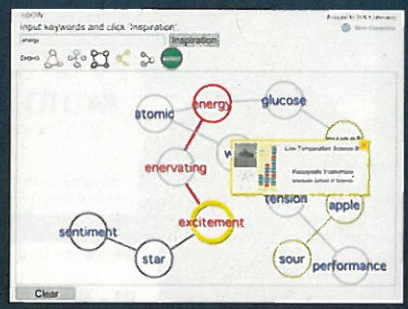
The Three Principles of Kyoto University

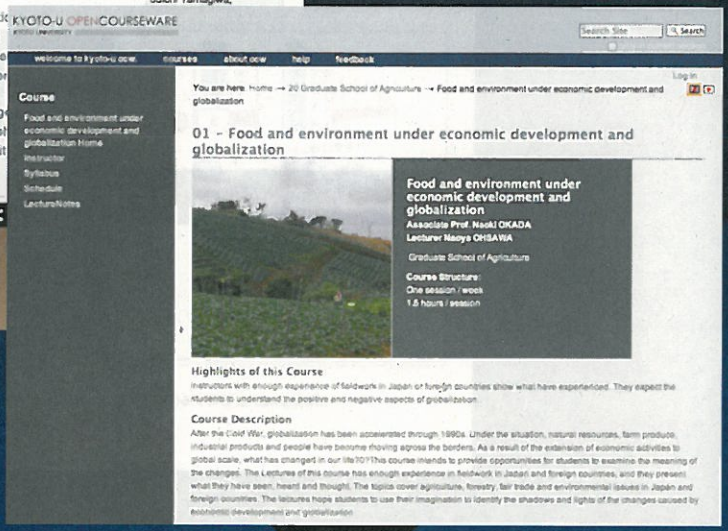
Advance the scholarship of mankind and contribute to the light of the earth. Scholarship is the antithesis of physical force. Each of the modern sciences is tied to scholarship.

Message from President

Juichi Yamagiwa,

Divisions





13

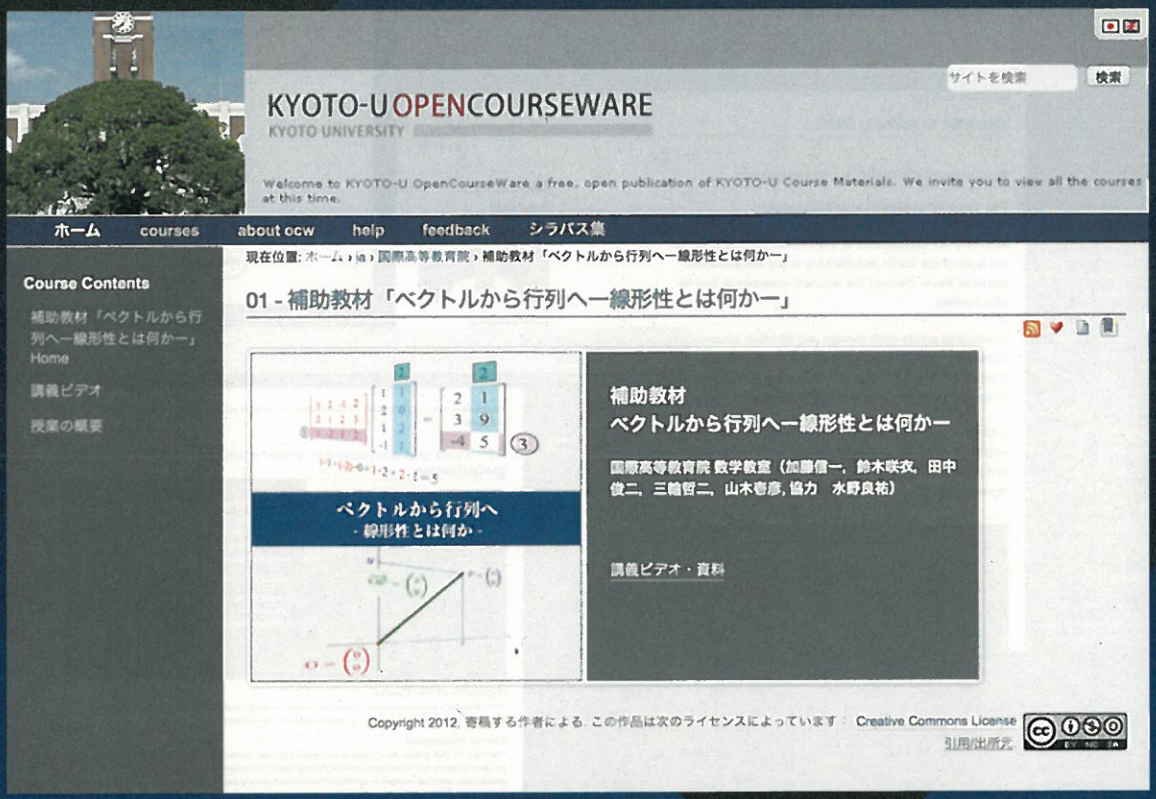
Research Ethics Education

2日目（7月18日）

SES#	概要	資料
1	仮説と検証のプレゼン [6:25]	Video
2	「モーツァルト効果」の種明かし [8:21]	Video
3	科学不正行為の存在 [5:02]	Video
4	過去に起こった意図的な科学的不正行為、捏造、盗用事件の事例(1) [13:54]	Video
5	過去に起こった意図的な科学的不正行為、捏造、盗用事件の事例(2) [10:37]	Video
6	身近なところにある似非科学、ニセ科学情報の問題点、社会的弊害 [12:49]	Video
7	似非科学、ニセ科学情報の問題点、社会的弊害 [21:25]	Video
8	科学における不正行為は、なぜ起こるのか？ [4:26]	Video
9	科学的不正行為を防ぐには？ [11:22]	Video
10	研究現場の生の声 [18:42]	Video

14

From Vector to Determinant: What is Linearity?

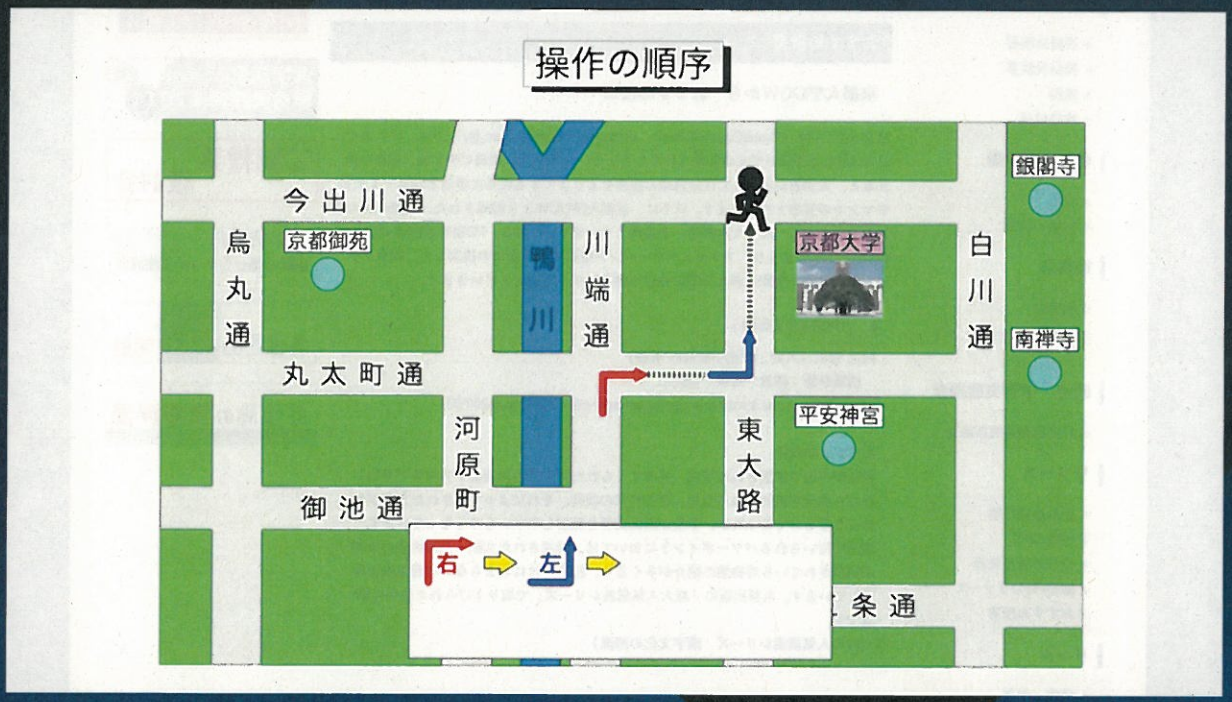


15

From Vector to Determinant: What is Linearity?

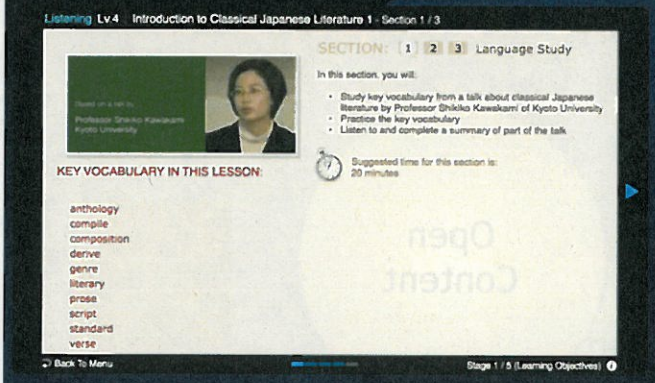
16

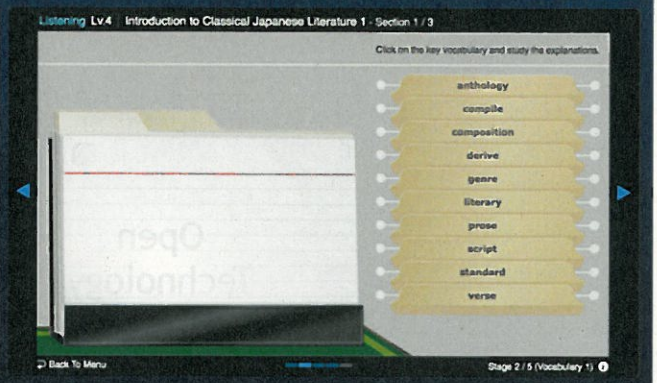
From Vector to Determinant: What is Linearity?
Lesson 1

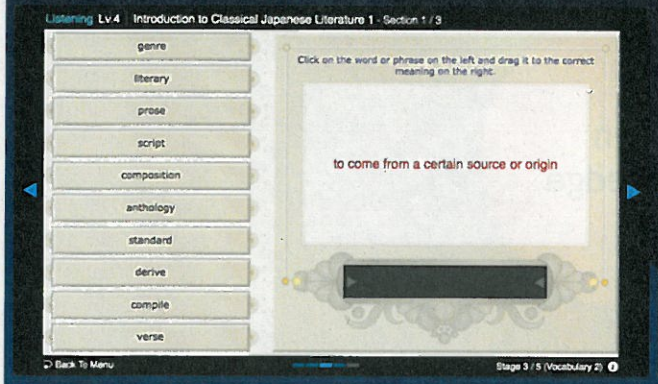


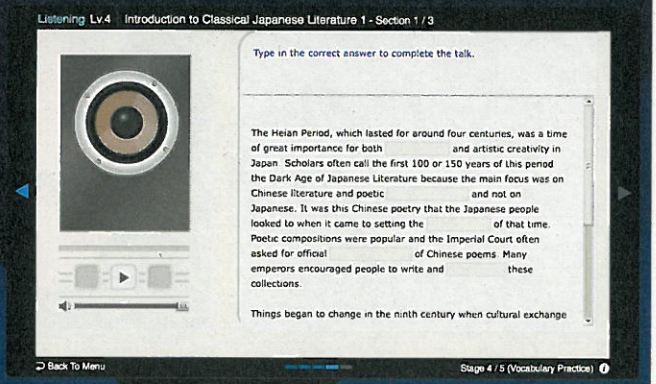
17

OCW-Based Academic English Listening Skills Builder









(by courtesy of Profs. Akira Tajino & Sachi Takahashi @ Kyoto U.)

18

京都大学
FD研究検討委員会
Faculty Development Committee

サイトマップ　新着情報　お問い合わせ
検索

委員会について
- 委員会概要
- 委員長挨拶
- 規程
- 活動日誌

委員会の活動
- 主催
- 共催・協賛

勉強会
- 勉強会
- 授業評価ワークショップ

教育・学習実態調査
- 自学自習等実態調査

リソース
- 委員会刊行物
- 部局のFD
- 全学の教育改善
- 部局のFDリソース
- おすすめ授業

リンク
- 学内・学外
- PandA（学習支援サービス）

ホーム > おすすめ授業

新任教員教育セミナー2014
大学院生のための教育実践講座2014
公開授業検討会
文学研究科 連続公開セミナー・検討会
各部局のFD活動
各部局の授業評価

おすすめ授業

京都大学OCWから　おすすめ授業

京都大学OCW（OpenCourseWare）（http://ocw.kyoto-u.ac.jp/）では、これまでに2,000もの講義ビデオが蓄積されてきました。このような講義ビデオは、視点を変えると、大学教員にとって自分自身の授業をよりよくするために参考となるアイデアやヒントの宝庫とも言えます。以下に、京都大学OCWより推薦された、授業改善のために参考となる「おすすめ授業」を掲載しています。今後も、FD研究検討委員会とOCWとの連携により、アクティブラーニング型授業や英語での授業など、授業デザインや教室内で実際に教える際に役立つ講義ビデオを紹介していきます。

「中国文字文化論」

阿辻 哲次（人間・環境学研究科 教授）
　授業形態：講義／対象：全回生
URL：http://ocw.kyoto-u.ac.jp/ja/general-education-jp/h207001

おすすめの理由
先生が中国で撮影された写真、集めてこられた青銅器の複製品や文献などを示しながら講義が進められるため、その時代の技術、それによって残された文字がどのようなものであったか、学生が因果関係を理解しやすいものとなっています。授業で用いられるパワーポイントにおいては、提示された文献・資料画像の本物が展示されている博物館の紹介が多くあり、授業だけに収まらない学習意欲を促進しています。丸善出版の「京大人気講義シリーズ」で取り上げられた先生の講義です。
（京大人気講義シリーズ　漢字文化の源流）

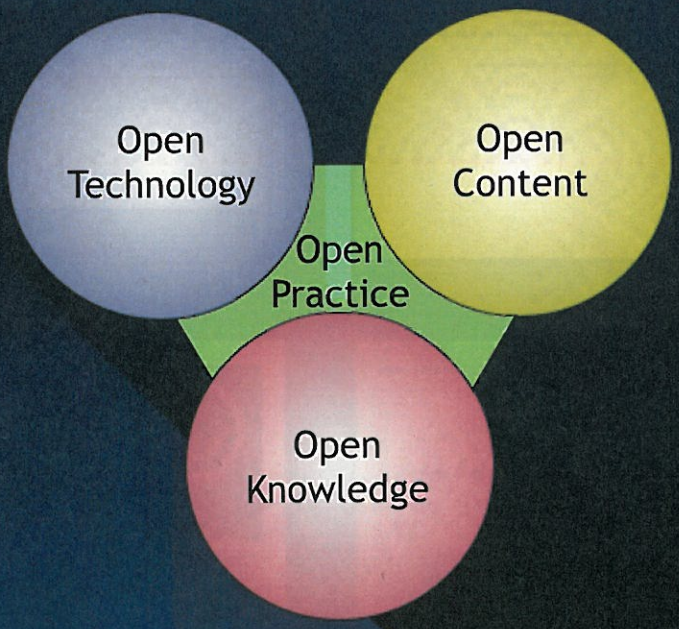
「有機分子たちを考えて日常生活を理解しよう」

年光 昭夫（化学研究所 教授）
　授業形態：ゼミ／対象：1回生／期間：2012年度・前期
URL：http://ocw.kyoto-u.ac.jp/ja/general-education-jp/S176001

19

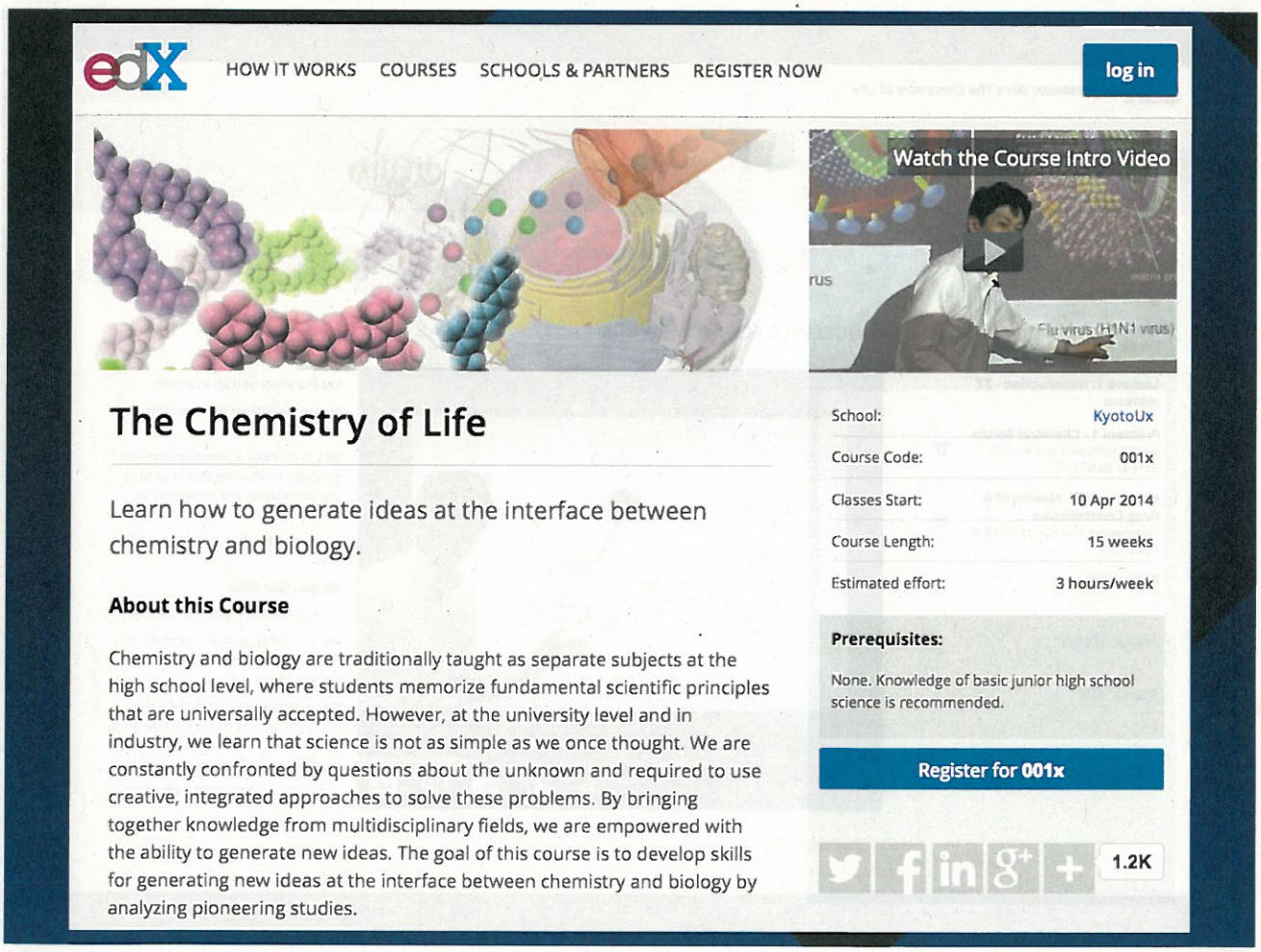
Open Education: Three Components

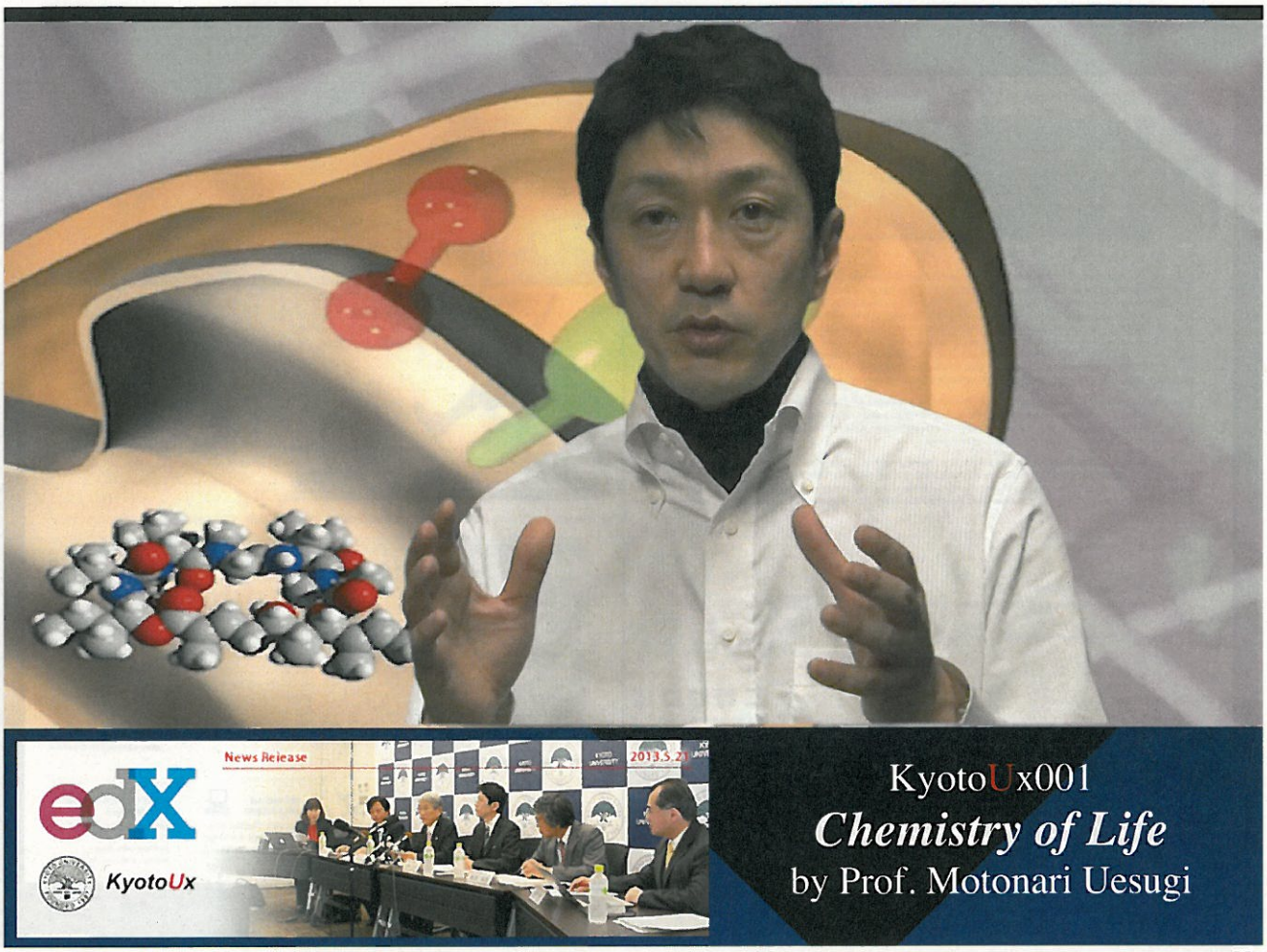
+1



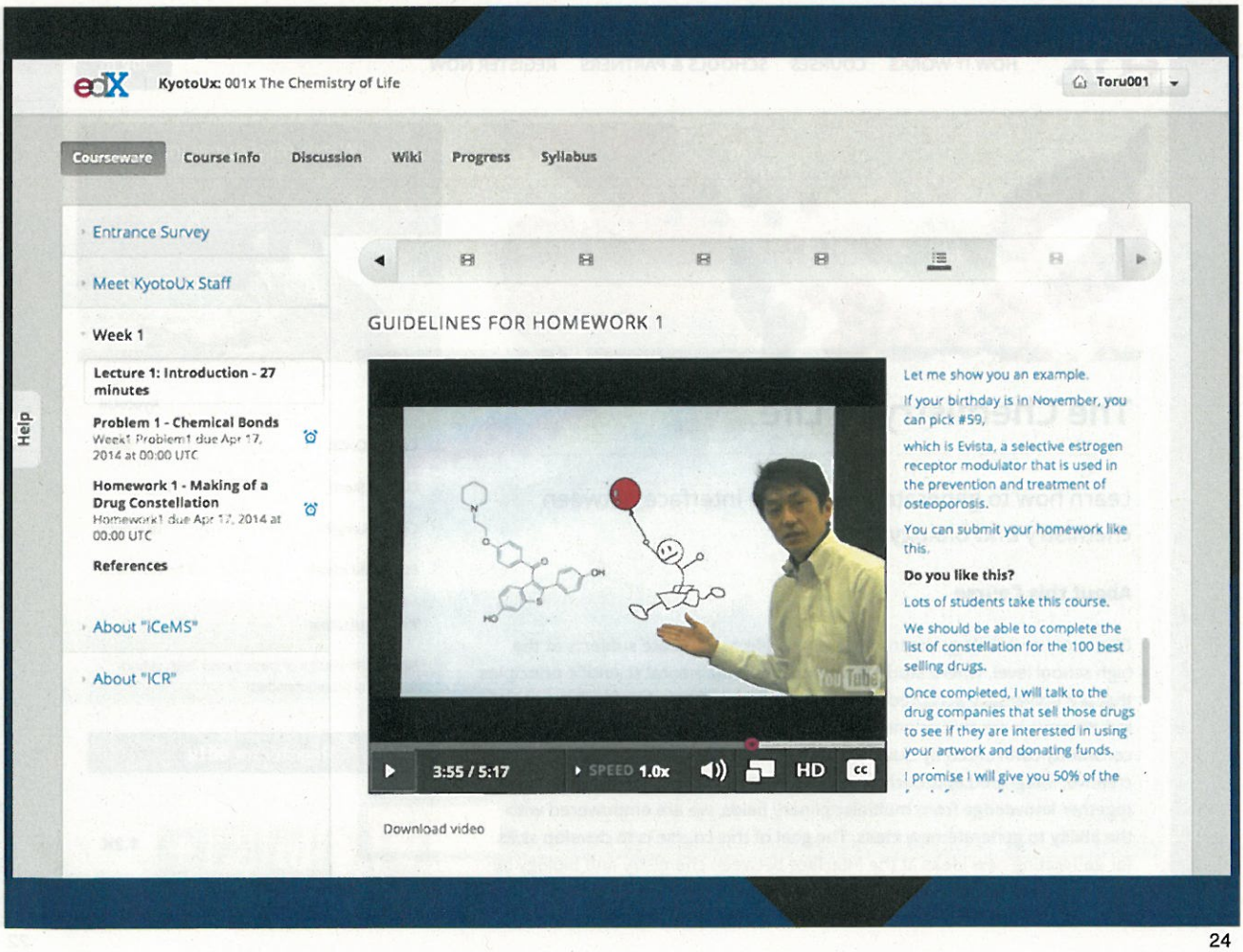
20


HOW IT WORKS
COURSES
SCHOOLS
REGISTER NOW
京都大学
KYOTO UNIVERSITY
KyotoUx
ID:001: Chemistry of Life
coming soon
About Us
Jobs
Press
FAQ
Contact
RETHINK YOUR WORLD—
experience the best courses
wherever, whenever you want.
Study, have fun, and uncover a new passion or learn skills that just may change your life
REAL CLASSES
AN AMAZING EXPERIENCE
ON YOUR SCHEDULE
MEET NEW FRIENDS
Become an edX student, it's easy
FIND YOUR NEW COURSE
REVIEW AND CHOOSE
BECOME AN edX STUDENT
START STUDYING AND HAVE FUN

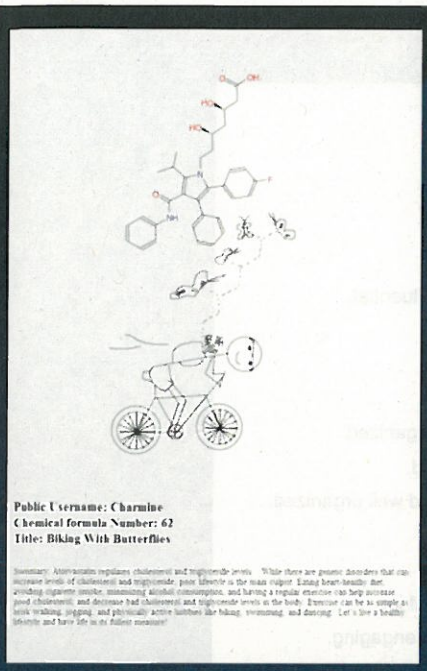

HOW IT WORKS
COURSES
SCHOOLS & PARTNERS
REGISTER NOW
log in
Watch the Course Intro Video
Flu virus (H1N1 virus)
The Chemistry of Life
Learn how to generate ideas at the interface between chemistry and biology.
About this Course
Chemistry and biology are traditionally taught as separate subjects at the high school level, where students memorize fundamental scientific principles that are universally accepted. However, at the university level and in industry, we learn that science is not as simple as we once thought. We are constantly confronted by questions about the unknown and required to use creative, integrated approaches to solve these problems. By bringing together knowledge from multidisciplinary fields, we are empowered with the ability to generate new ideas. The goal of this course is to develop skills for generating new ideas at the interface between chemistry and biology by analyzing pioneering studies.
School: KyotoUx
Course Code: 001x
Classes Start: 10 Apr 2014
Course Length: 15 weeks
Estimated effort: 3 hours/week
Prerequisites:
None. Knowledge of basic junior high school science is recommended.
Register for 001x
1.2K


News Release
2013.5.21
edX
KyotoUx
KyotoUx001
Chemistry of Life
by Prof. Motonari Uesugi

23

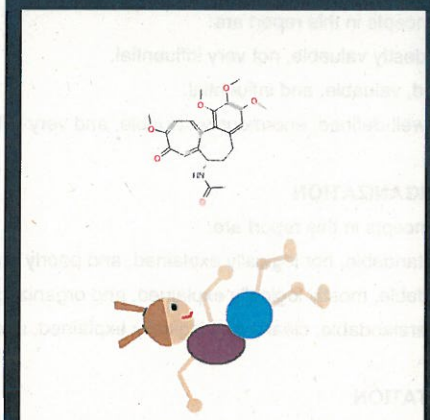

edX
KyotoUx: 001x The Chemistry of Life
Toru001
Courseware
Course Info
Discussion
Wiki
Progress
Syllabus
Help
Entrance Survey
Meet KyotoUx Staff
Week 1
Lecture 1: Introduction - 27 minutes
Problem 1 - Chemical Bonds
Week1 Problem1 due Apr 17, 2014 at 00:00 UTC
Homework 1 - Making of a Drug Constellation
Homework1 due Apr 17, 2014 at 00:00 UTC
References
About "iCeMS"
About "ICR"
GUIDELINES FOR HOMEWORK 1
3:55 / 5:17
SPEED 1.0x
HD
Let me show you an example.
If your birthday is in November, you can pick #59,
which is Evista, a selective estrogen receptor modulator that is used in the prevention and treatment of osteoporosis.
You can submit your homework like this.
Do you like this?
Lots of students take this course.
We should be able to complete the list of constellation for the 100 best selling drugs.
Once completed, I will talk to the drug companies that sell those drugs to see if they are interested in using your artwork and donating funds.
I promise I will give you 50% of the
Download video

24



Public Username: Charmine
Chemical formula Number: 62
Title: Biking With Butterflies

Summary: Atorvastatin regulates cholesterol and triglyceride levels. While there are genetic disorders that can increase levels of cholesterol and triglyceride, poor lifestyle is the main culprit. Living heart-healthy diet, avoiding cigarette smoke, minimizing alcohol consumption, and having a regular exercise can help increase good cholesterol, and decrease bad cholesterol and triglyceride levels in the body. Exercise can be as simple as brisk walking, jogging, and physically active hobbies like biking, swimming, and dancing. Let's live a healthy lifestyle and have life in its fullest measure!



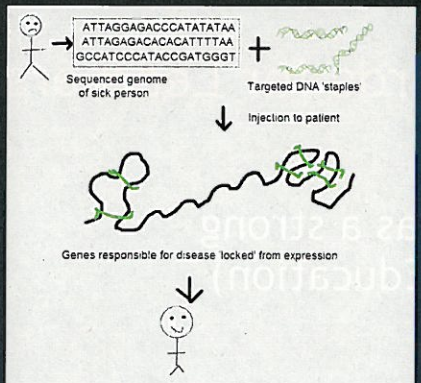
Public Username: HGD
Chemical formula Number: 77
Title: Breakdance

Summary: This drug is used to treat symptoms of arthritis and gout. Using this drug will have you dancing again in no time!

Public Username: Pra7na
Chemical formula Number: 10
Title: Bee Happy

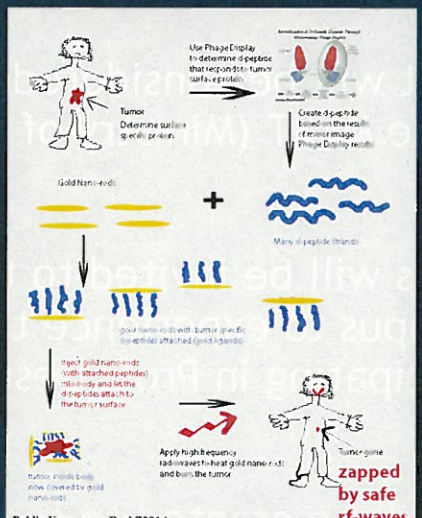
Summary: Staf cretin is used for the relief of moderate to severe pain. The bee is relieved of pain and is happily carrying away the pollen.

25



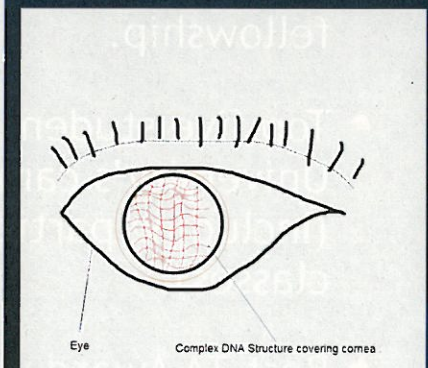
Public Username: Valjeans
Title: Locking gene expression with DNA staples

Summary: By analysis of the genome of a person suffering from genetic illness. We can use the technique from DNA Origami to synthesize staples to tie up genes in the patient's DNA responsible for the disease. By altering the three-dimensional structure of the DNA, this will inhibit expression of the gene into RNA and therefore inhibit the related disease.



Public Username: BarbZ2014
Title: Thermal tumor zapper using gold ligand D-peptide

Summary: Use tumor image phage display to identify tumor specific D-peptide. Create gold ligands (on gold nanorods) of the tumor specific D-peptide to deliver and attach gold to the tumor site. The gold nanorods at the tumor site can then be excited buried with harmless high frequency radio waves to zap burn the tumor in vivo without causing any other non-tumor tissue. This procedure would be an alternative, highly tumor specific non-nuclear type of radiation treatment that would be less harmful than standard nuclear based radiation treatment for benign and malignant tumors.



Public Username: Orimi
Title: DNA Vision

Summary: Contact Lenses have a lot of problems associated with them. DNA being bio-compatible substance can be used to enable biolenses. A complex continuous polymeric structure of DNA can help to enable proper transparent biolense. These lenses can prevent problems such as Superficial punctate keratitis Due to Dry Eyes and would create a artificial boundary between eyes and surroundings. If this plan of biolense is successful it can also be surgically implanted in eyes further in future.

26

Peer Evaluation Rubrics

I. SIGNIFICANCE

The ideas/concepts in this report are:

0. vague, modestly valuable, not very influential.
1. well-defined, valuable, and influential.
2. extremely well-defined, enormously valuable, and very influential.

II. LOGIC/ORGANIZATION

The ideas/concepts in this report are:

0. not understandable, nor logically explained, and poorly organized.
1. understandable, mostly logically explained, and organized.
2. easily understandable, clearly and logically explained, and well organized.

III. PRESENTATION

The ideas/concepts in this report are presented in a way that is:

0. limitedly compelling, visually appealing, and intellectually engaging.
1. averagely compelling, visually appealing, and intellectually engaging.
2. extremely compelling, visually appealing, and intellectually engaging.

IV, ORIGINALITY

The ideas/concepts in this report are:

0. not very unique and/or currently existing,
1. somewhat new, unique, and creative.
2. extremely novel, ingeniously creative, and mind-blowing.

KyotoUx 001: Three Special Rewards for Learners

- The best student will be considered as a strong candidate for the MEXT (Ministry of Education) fellowship.
- Top five students will be invited to the Kyoto University's campus to experience the campus life (including participating in Prof. Uesugi's and other classes).
- Best TA Award will be granted to some select students who have helped other students voluntarily.

(Announced at the press conference on Nov. 1, 2013)

29

July 7, 2014 @ Kyoto University

30

msn 産経ニュース west

ニュース　関西版　フォト

トップ　速報　できごと　スポーツ　ライフ　経済　地域　ランキング

ニュース　写真　トピックス　芸能プレミアム　ベテラン記者コラム　【浪速風】

ライフ

ツイート 17　Recommend 2

京都大のネット無料配信授業　１万９千人のうち上位６人招待

2014.7.8 12:35

京都大は８日、世界トップレベルの大学がインターネットで講義を無料配信するオンライン教育機関「ｅｄＸ（エデックス）」を通じて４月から配信していた授業で、成績が上位だった国外の６人が来日したと発表した。京大が招待していた。

京都大が招待したオンライン教育機関「ｅｄＸ（エデックス）」の優秀者

６人はベトナム、ラトビア、セルビア、ペルー、米国、フィリピン出身の１０～２０代の大学生や社会人で、エデックスで上杉志成教授の授業「生命の化学」を英語で受講。ミニテストや宿題の評価が、世界中の受講者約１万９千人の中でトップクラスだった。

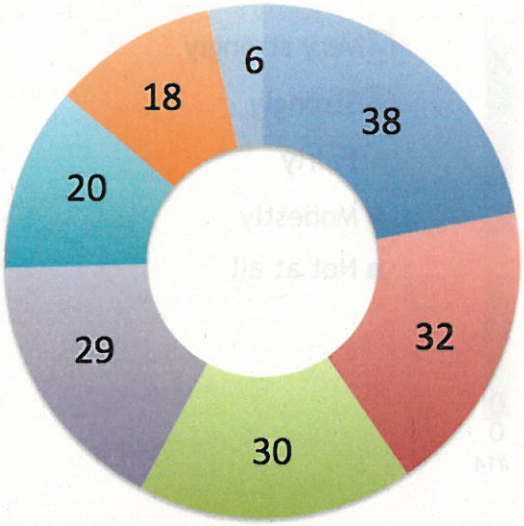
６人は京都に１週間ほど滞在する。経済的な理由で大学を途中でやめたというフィリピンのエース・スペンサー・アポロニオさん（１７）は記者会見で「もともと化学が好きではなかったけど、この授業のおかげで興味が湧いた」と話した。

31

Blended x Blended

32

Q. What are you expecting to gain from KyotoUx 001 "Chemistry of Life"?

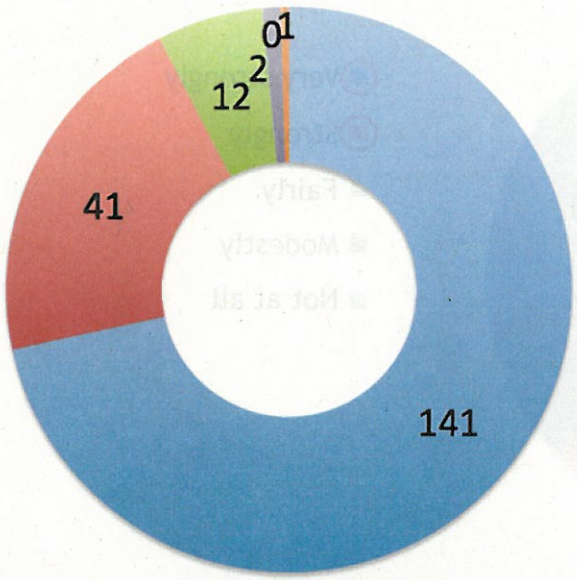


- Abilities to generate new ideas
- Basic knowledge of biology and chemistry
- Learning in English
- Advanced knowledge of biology and chemistry
- Experience in learning with MOOC/Internet
- Intellectual interactions with learners around the world
- Abilities to utilize Internet/ICT for learning

(By courtesy of Shuhei Kimura, 2014)

33

Q. Where did you take KyotoUx 001 ?

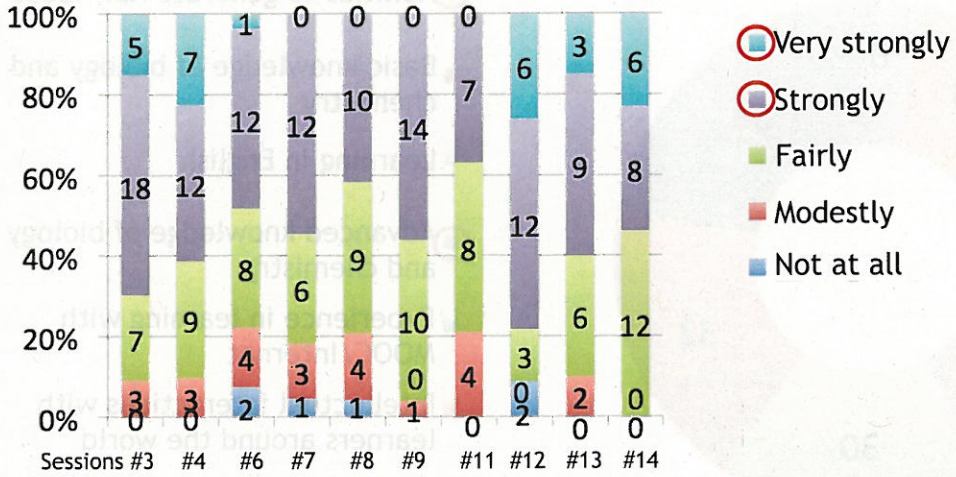


- In my room
- On campus
- During commute
- Public venue (e.g. park, library, etc.)
- During a break at work
- Others

(By courtesy of Shuhei Kimura, 2014)

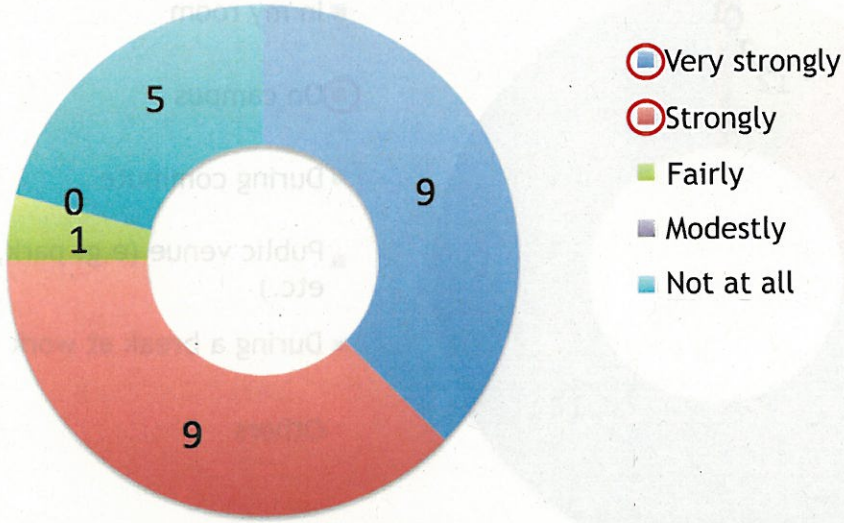
34

Q. Did F2F class session help your learning and understanding from KyotoUx 001?



(By courtesy of Shuhei Kimura, 2014)

Q. Do you recommend this type of blended learning to other students?



(By courtesy of Shuhei Kimura, 2014)

Develop more educational methods & resources

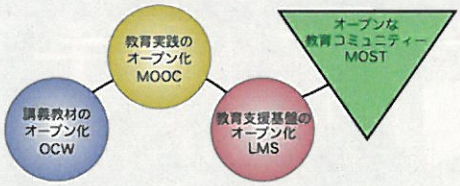
Increasing use by faculty — T — Collect and analyze more T&L data — L — Increasing use by students

Accelerate T&L improvement and educational innovation

Prmoting Educational Excellence at Kyoto University

Until Now

Independently operated

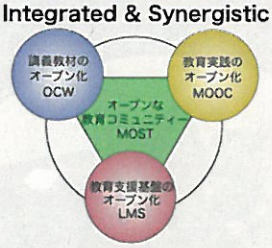


Challenges:

- More faculty engagement
- More student involvement and use
- Lack of learning and teaching data collection and analysis
- Insufficient support capacity and infrastructure for faculty and students

From Now

Integrated & Synergistic



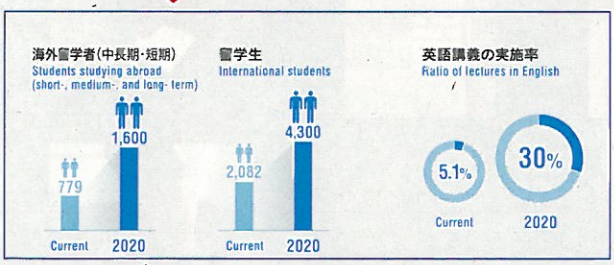
- More systematic design, development, and evaluation of educational resources and tools
- Providing effective educational content and methods
- Visualizing learning and teaching process and outcomes
- Building advanced learning and teaching support models for more holistic and sustainable educational improvement and quality assurance

Develop more educational methods & resources

Increasing use by faculty — T — Collect and analyze more T&L data — L — Increasing use by students

Accelerate T&L improvement and educational innovation

Prmoting Educational Excellence at Kyoto University



- Increase the number and diversity of international students
- Increase the number of Japanese students who study abroad
- Create joint/double-degree programs with international institutional partners
- Provide educational quality assurance with the international standards
- Promote the shift from "learning English" to "learning in English"

Institute for Liberal Arts and Sciences

Kyoto University Global Academy

Graduate School of Advanced Leadership Studies

Enable Kyoto University students to take courses online towards degrees while they are studying abroad

Enable international students to take online courses from their home countries

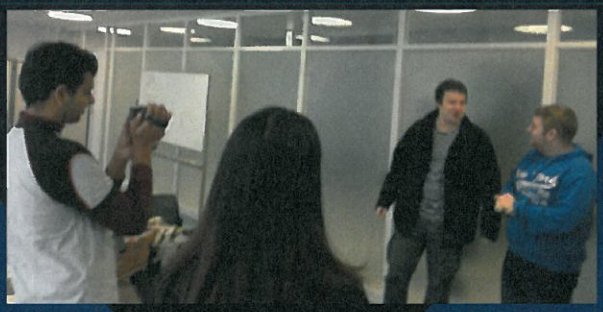
Reach out to students and faculty around the world through OCW and MOOC

Provide advanced online courses (medicine, engineering, mathematics, chemistry, Japan studies, etc.) via MOOC and LMS

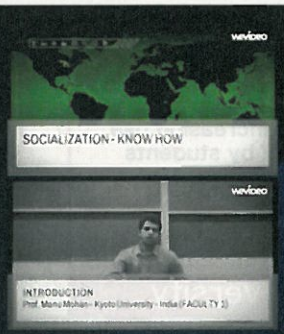
Provide faculty development courses for global education (e.g., teaching to international students)

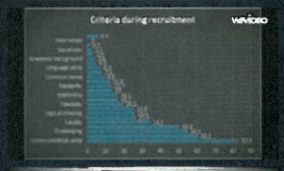
MOOCing to Learn

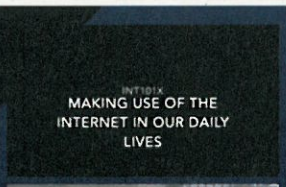
MOOC Production Projects by Students in "The World of Open Education"

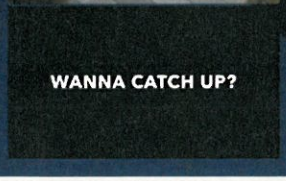


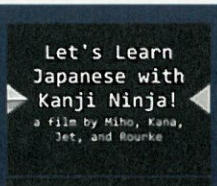
39

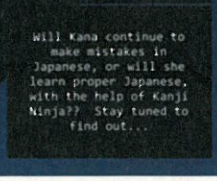












40