EDUCATION 4.0: STRATEGY FOR MILLENNIAL AND POST-MILLENNIAL GENERATION

UNIVERSITAS GADJAH MADA

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Center for Academic Innovation and Studies
Pusat Inovasi dan Kajian Akademik (PIKA)

ASEAN University Network
AUNILO
Libraries of ASEAN University Network

15th AUNILO Meeting, 5-8 August 2019

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Webex Teams

UGM.AC.ID

LOCALLY ROOTED, GLOBALLY RESPECTED

Today's Talks:

1. Connection between Industrial Revolution 4.0 and Education 4.0

2. Understanding the Changes of Generation

3. Digital Natives and Independent Learners

4. Changes in the Education Paradigm

5. UGM's Strategy and Innovation in Education

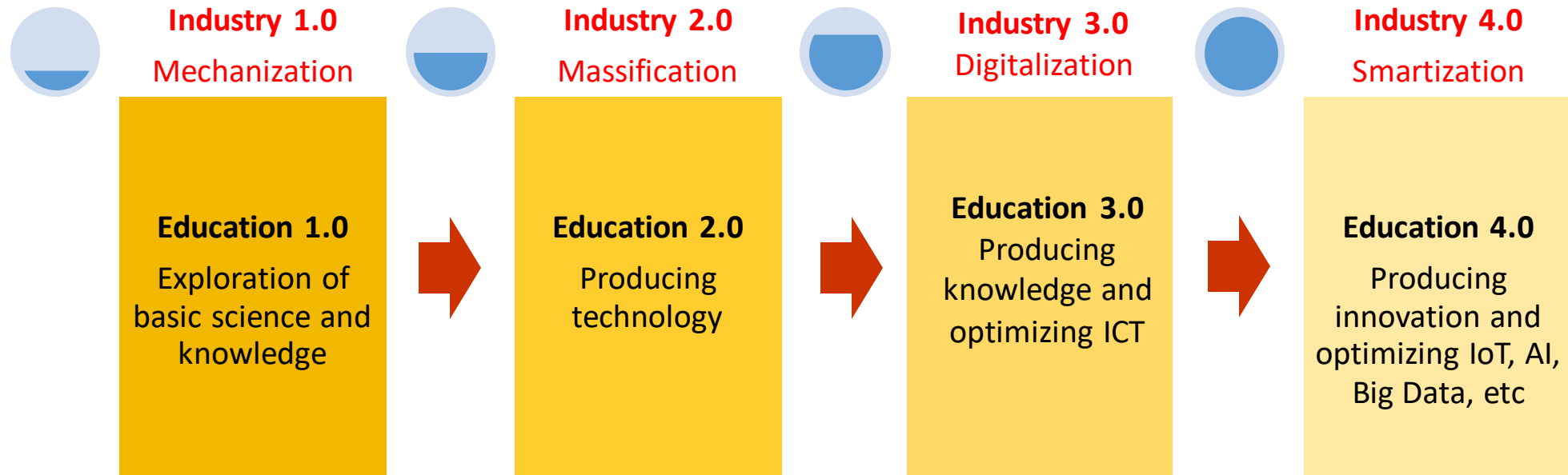# 1. Connection between Industrial Revolution 4.0 and Education 4.0

Industrial Revolution 4.0
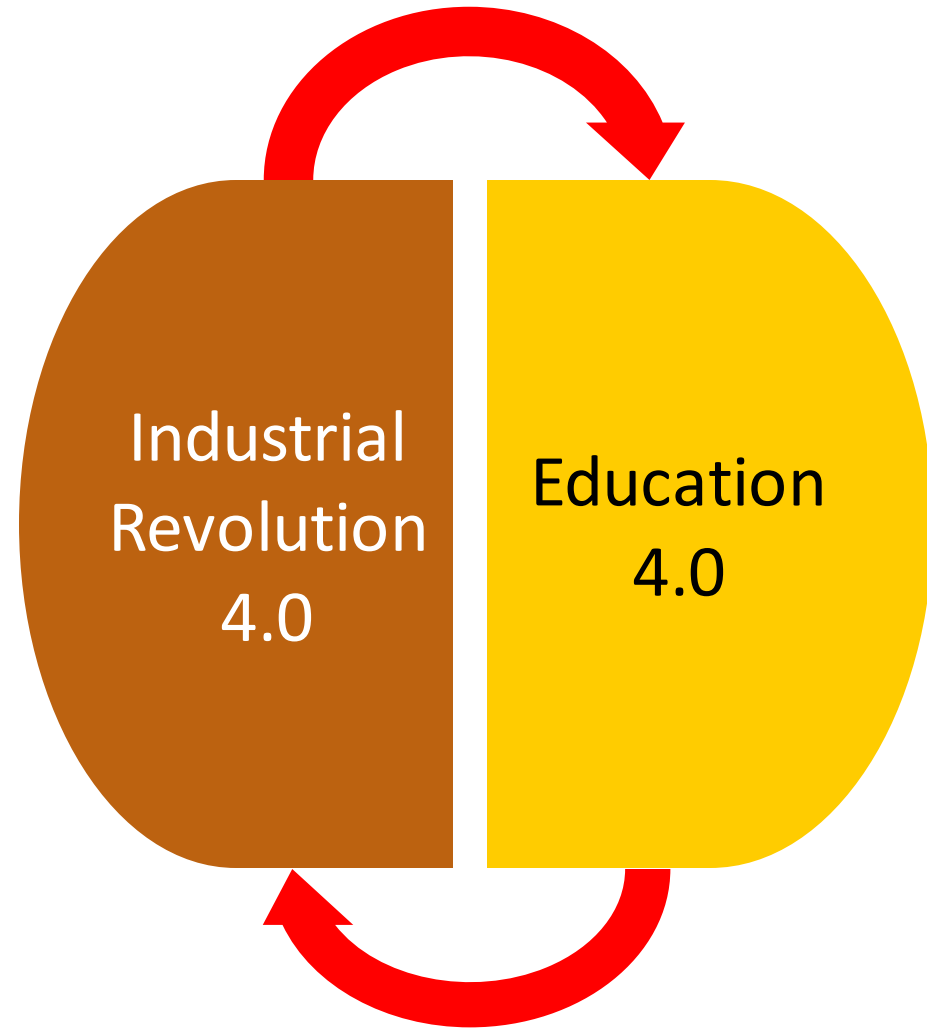
Education 4.0

Source: *1st AUN-QA Workshop,*
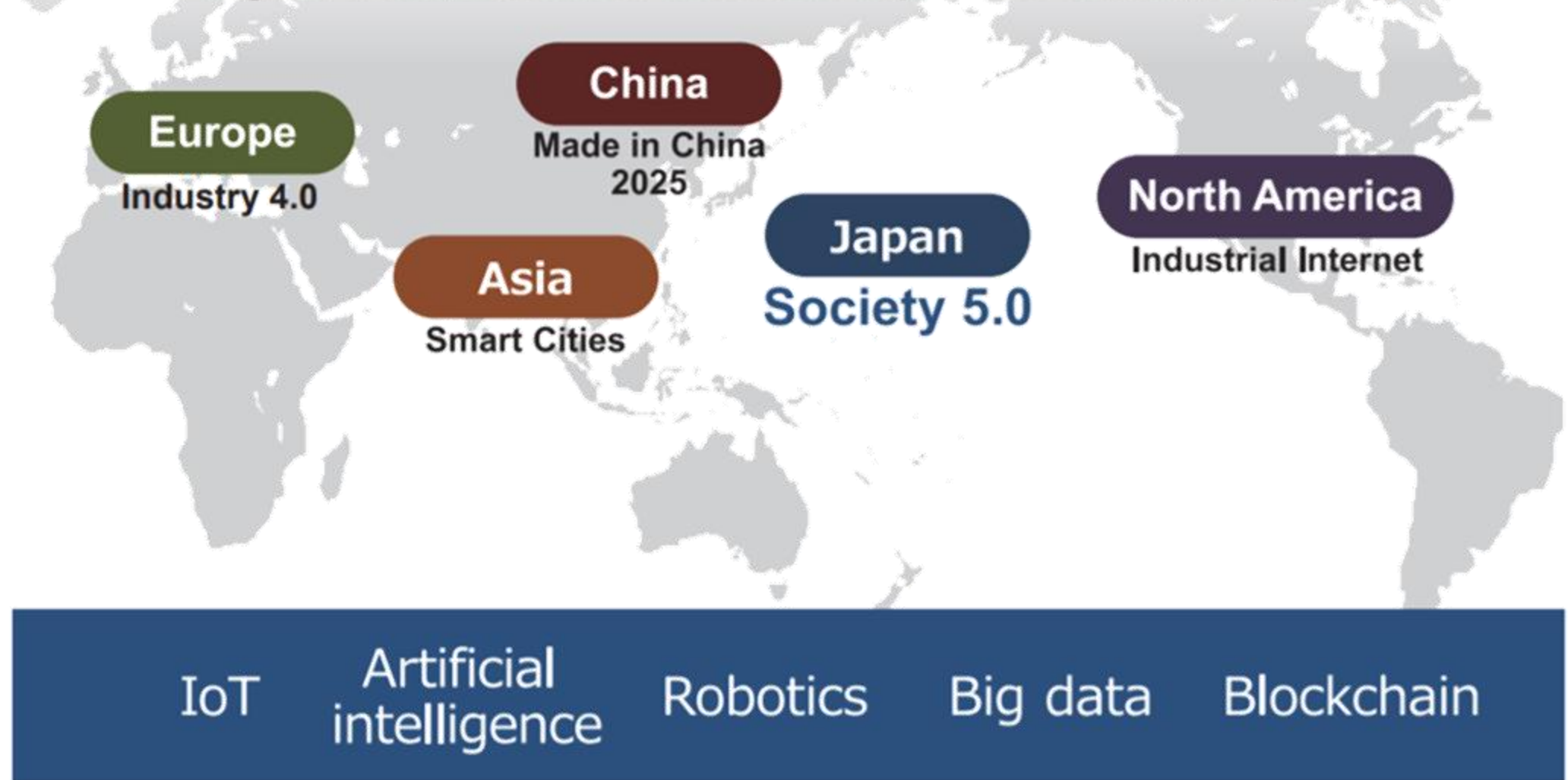*Applied Approach to Designing and Implementing OBE Framework*

Connection between Industrial Revolution 4.0 and Education 4.0

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Industry 1.0
Mechanization

Industry 2.0
Massification

Industry 3.0
Digitalization

Industry 4.0
Smartization

Education 1.0
Exploration of basic science and knowledge

Education 2.0
Producing technology

Education 3.0
Producing knowledge and optimizing ICT

Education 4.0
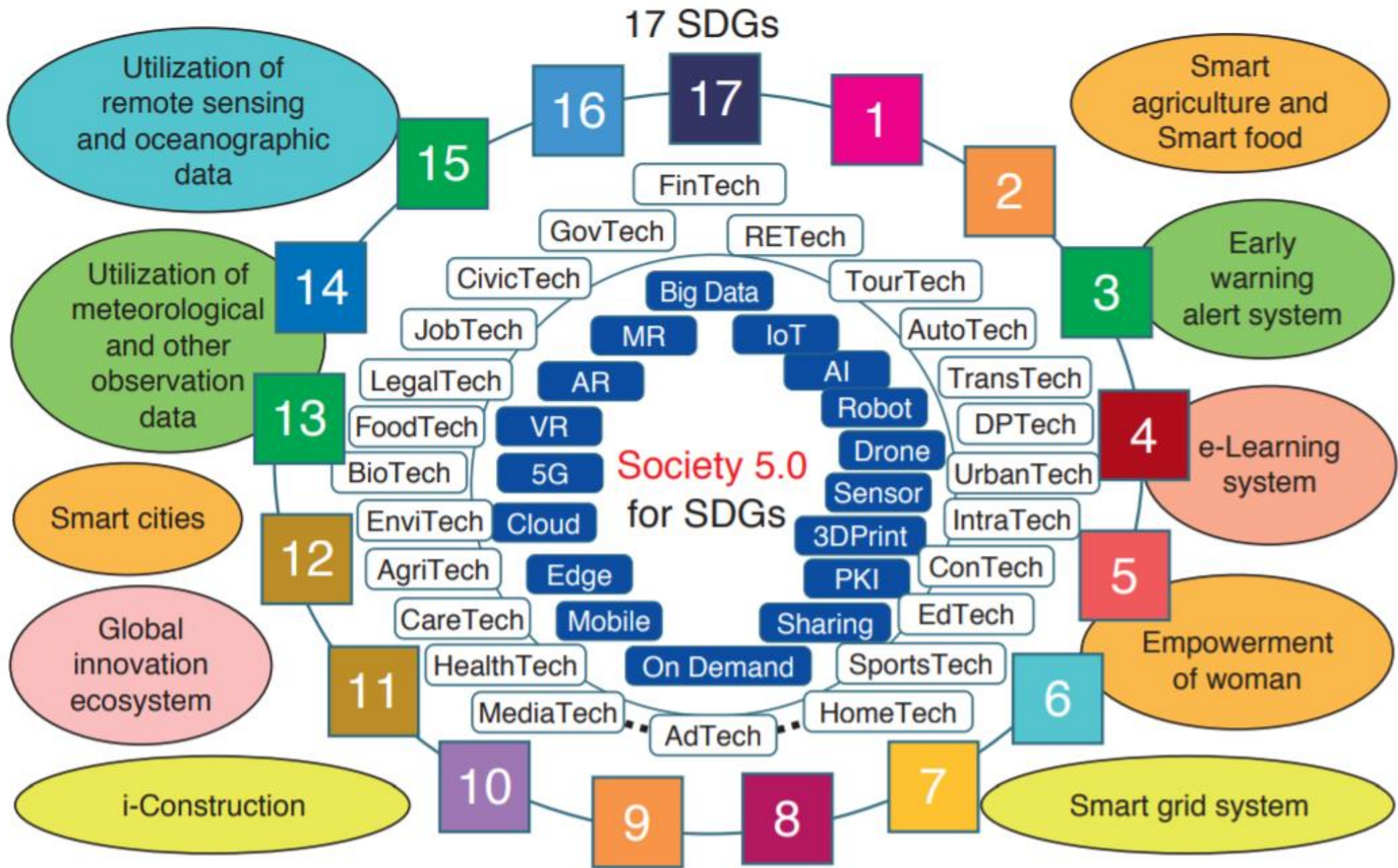Producing innovation and optimizing IoT, AI, Big Data, etc

Digital transformation

The digitalization of industrial and social infrastructures is accelerating throughout the world.
Digital transformation becomes a pillar of industrial policy.

China
Made in China 2025

Europe
Industry 4.0

Asia
Smart Cities

Japan
Society 5.0

North America
Industrial Internet

IoT   Artificial intelligence   Robotics   Big data   Blockchain

17 SDGs

Society 5.0 for SDGs

Ovals (outer concepts):
- Utilization of remote sensing and oceanographic data
- Smart agriculture and Smart food
- Early warning alert system
- e-Learning system
- Empowerment of woman
- Smart grid system
- i-Construction
- Global innovation ecosystem
- Smart cities
- Utilization of meteorological and other observation data

SDG numbers: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17

Tech labels (outer ring): FinTech, GovTech, RETech, CivicTech, TourTech, JobTech, AutoTech, LegalTech, TransTech, FoodTech, DPTech, BioTech, UrbanTech, EnviTech, IntraTech, AgriTech, ConTech, CareTech, EdTech, HealthTech, SportsTech, MediaTech, HomeTech, AdTech

Tech labels (inner ring): Big Data, MR, IoT, AR, AI, Robot, VR, Drone, 5G, Sensor, Cloud, 3DPrint, Edge, PKI, Mobile, Sharing, On Demand

Reference: Mayumi Fukuyama, 2018. Society 5.0: Aiming for a New Human-Centered Society. Japan Spotlight

2. Understanding the Changes of Generation

G.I./GREATEST	SILENT	BOOMERS	X	MILLENNIALS
Born	**Born**	**Born**	**Born**	**Born**
• 1901 - '24 (S&H)	• 1925 - '42 (S&H)	• 1943 - '60 (S&H)	• 1961 - '81 (S&H)	• 1982 - 2004 (S&H)
• Pre 1928 (Pew)	• 1928 - '45 (Pew)	• 1946 - '64 (Pew)	• 1965 - '80 (Pew)	• Post 1980 (Pew)

KEY • Strauss & Howe (S&H)   • Pew Research Center (Pew)

G.I.'s Born

Boomers Born

Millennials Born

Generation Z

1900	1910	1920	1930	1940	1950	1960	1970	1980	1990	2000

Silents Born

Xers Born

1903 Wright Bros. take flight

1914 WWI begins

1929 Stock market crashes

1939 WWII begins

1954 Vietnam War begins

1964 Civil Rights Act enacted

1980 - '81 AIDS emerges

1989 Fall of Berlin Wall

2001 September 11 attacks

3%	14%	33%	28%	22%
Percent of 2010 adult population (Census estimate)	Percent of 2010 adult population (Census estimate)	Percent of 2010 adult population (Census estimate)	Percent of 2010 adult population (Census estimate)	Percent of 2010 adult population (Census estimate)
83+	65 - 82	46 - 64	30 - 45	29-
age in 2010 (Pew)	age in 2010 (Pew)	age in 2010 (Pew)	age in 2010 (Pew)	age in 2010 (Pew)

Katharine Hepburn Born 1907

George H. W. Bush Born 1924

Martin Luther King, Jr. Born 1929

Tina Turner Born 1939

Oprah Winfrey Born 1954

Michael Jordan Born 1963

Jay-Z Born 1969

Tiger Woods Born 1975

Christina Aguilera Born 1980

Mark Zuckerberg Born 1984

SOURCES "Generations: The History of America's Future, 1584 to 2069" by William Strauss and Neil Howe, Pew Research Center's "Millennials: A portrait of Generation Next" report, US Census, Getty Images
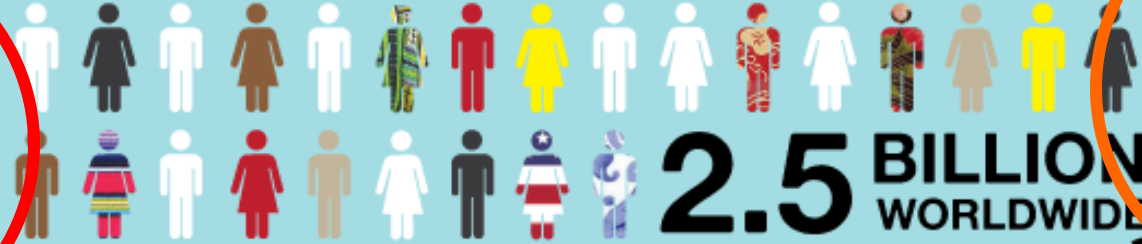
Generation Y (Millenial)
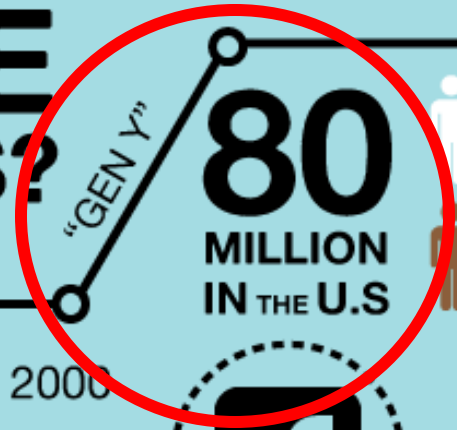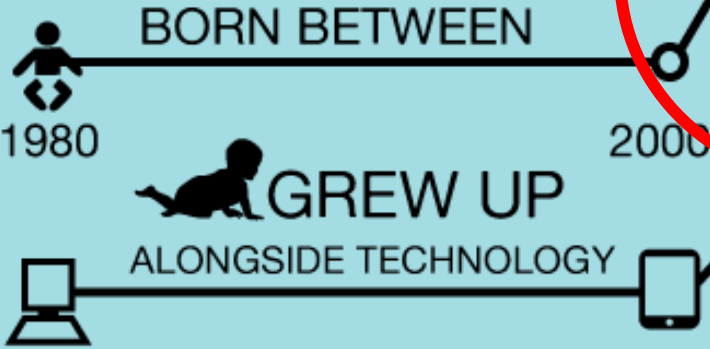
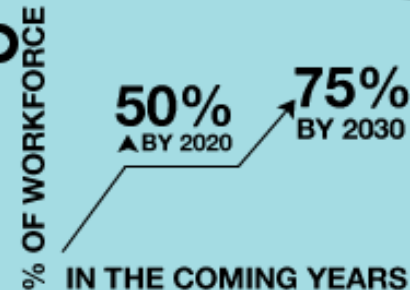Sumber: http://whymillennialsmatter.com/

GENERATION Z
★ BORN 1995-2009 ★

ZEES GLOBAL GEN
GEN Z iGEN
DIGITAL INTEGRATORS CLICK 'N GO KIDS

MOBILITY
17 JOBS | 15 HOMES
IN A LIFETIME*

TOP NAMES
William	1	Lily
Jack	2	Chloe
Jacob	3	Isabella
Lachlan	4	Mia
Oliver	5	Olivia

EDUCATION
X 1 in 4
Y 1 in 3
Z 1 in 2*
UNIVERSITY EDUCATED

WEALTH
Avg. annual earnings in 2063 (as Gen Z retire)*
$222,000
Average capital city house price (2063)*
$2.5 MIL.

10 TE...
5,100 SEAR...
YouTube 4 VI...
1,000, ACT...
5 TWEETS/DAY
1,000,000+ APPS

EFFECTIVE ENGAGEMENT

BB		Z
Verbal	→	Visual
Sit & listen	→	Try & see
Teacher	→	Facilitator
Content (what)	→	Process (how)
Curriculum centred	→	Learner centric
Closed book exams	→	Open book world

SLANGUAGE
ELTH +
...ely to be obese/ ...weight when all ...Z have reached ...thood (2027)*
7.9 61.8
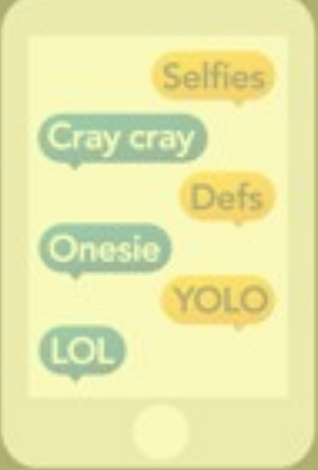
Selfies
Cray cray
Defs
Onesie
YOLO
LOL

21%	35%			
		Y	1994	20-34
		1995		
2%	12%	Z	2009	5-19

200 150 100 50 0 | 0 50 100 150 200
POPULATION (THOUSANDS)

GLOBAL GENERATION
2,000,000,000 2 BILLION GEN Zs
COUNTRIES WITH LARGEST NUMBER
1 2 3

REDEFINED LIFESTAGES

3. Digital Natives and Independent Learners

TIME SPENT WITH MEDIA

AVERAGE DAILY TIME SPENT CONSUMING AND INTERACTING WITH MEDIA [SURVEY BASED]

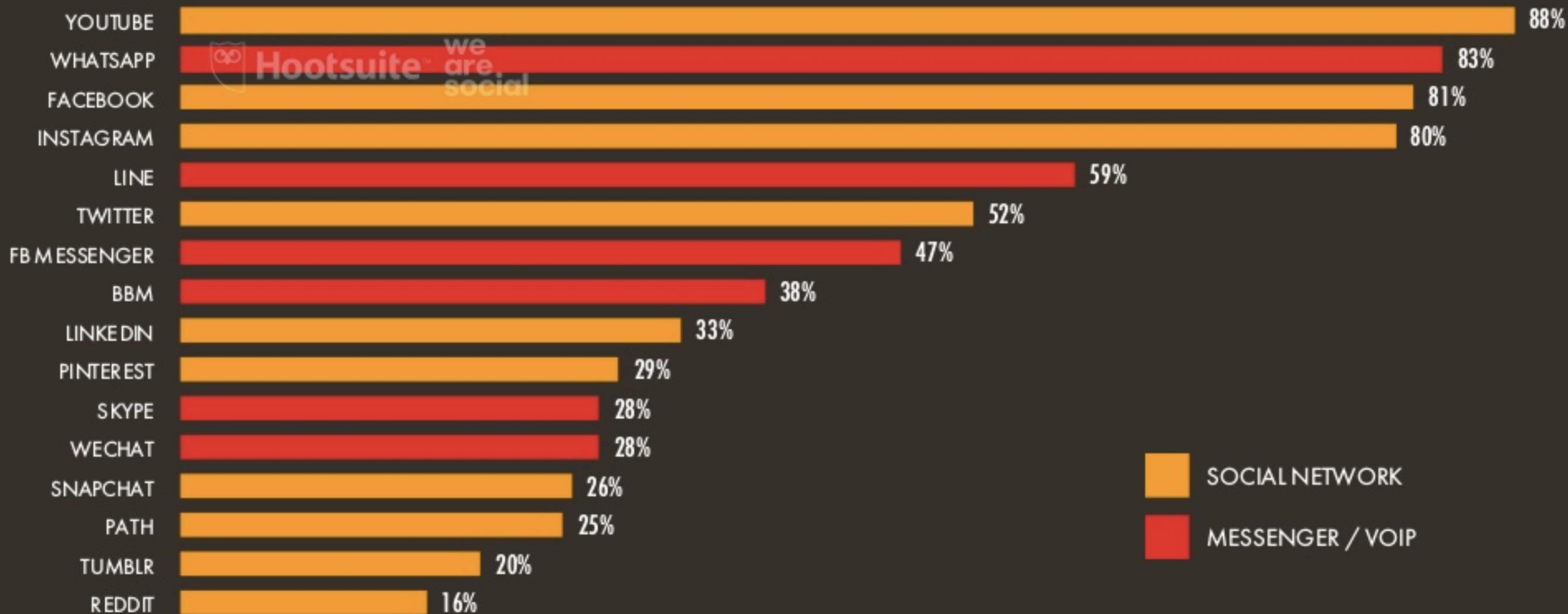| AVERAGE DAILY TIME SPENT USING THE INTERNET VIA ANY DEVICE	AVERAGE DAILY TIME SPENT USING SOCIAL MEDIA VIA ANY DEVICE	AVERAGE DAILY TV VIEWING TIME (BROADCAST, STREAMING AND VIDEO ON DEMAND)	AVERAGE DAILY TIME SPENT LISTENING TO STREAMING MUSIC
8H 36M	3H 26M	2H 52M	1H 22M

Hootsuite™   we are social

MOST ACTIVE SOCIAL MEDIA PLATFORMS

JAN 2019

PERCENTAGE OF INTERNET USERS WHO REPORT USING EACH PLATFORM [SURVEY BASED]

Platform	Percentage
YOUTUBE	88%
WHATSAPP	83%
FACEBOOK	81%
INSTAGRAM	80%
LINE	59%
TWITTER	52%
FB MESSENGER	47%
BBM	38%
LINKEDIN	33%
PINTEREST	29%
SKYPE	28%
WECHAT	28%
SNAPCHAT	26%
PATH	25%
TUMBLR	20%
REDDIT	16%

SOCIAL NETWORK

MESSENGER / VOIP

Hootsuite we are. social
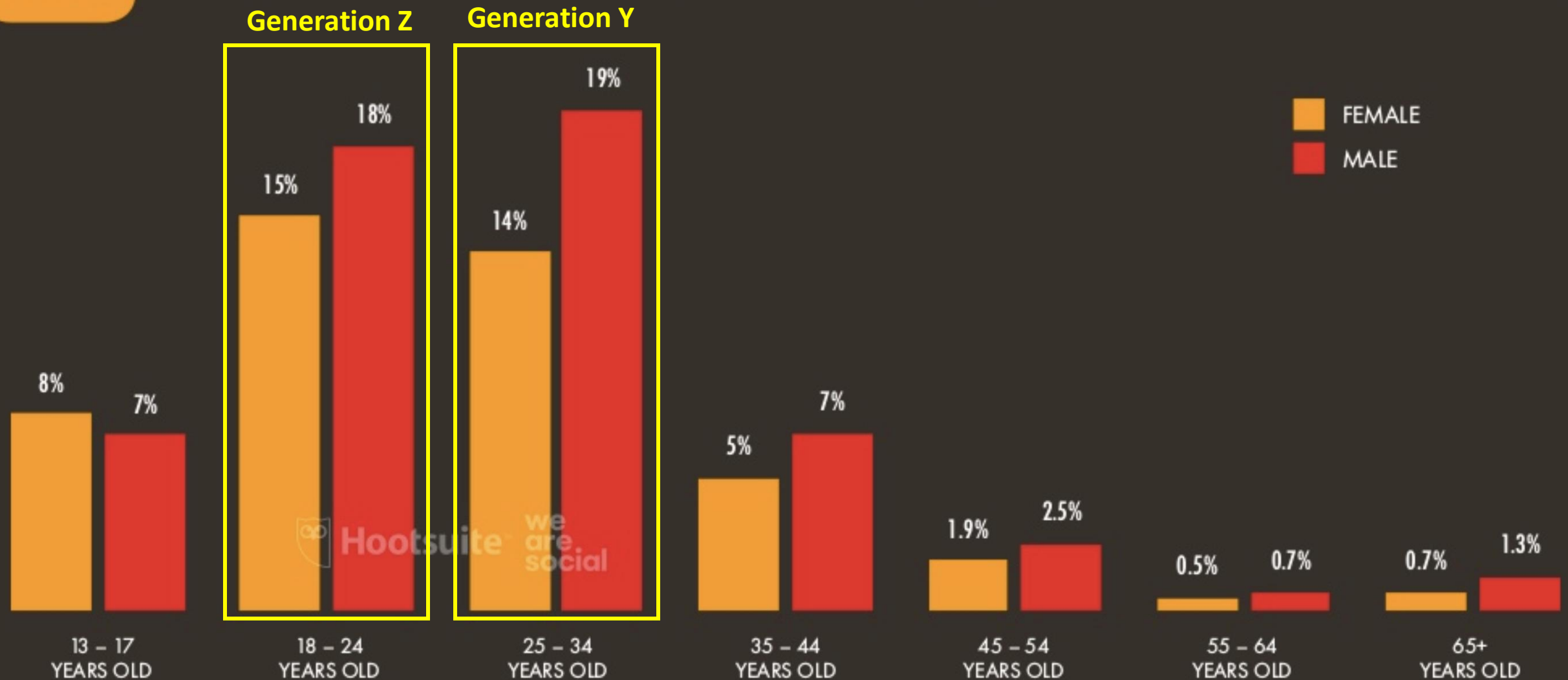
> 80.000 *online courses* available

Viewing 2259 results matching

Search: 🔍

Refine your search

Availability

Current	1019
Starting Soon	219
Upcoming	177
Wider subjects	1191
Archived	980

Subjects

Architecture	27
Art & Culture	121
Biology & Life Sciences	158
Business & Management	422
Chemistry	44
Communication	90
Computer Science	576

SHOW MORE...

Featured Courses

VERIFIED ✓

BUx
Driving Digital Innovation through Experimentation

Starting Soon
Starts: July 24, 2018

MicroMasters®

VERIFIED ✓

BerkeleyX
Bitcoin and Cryptocurrencies
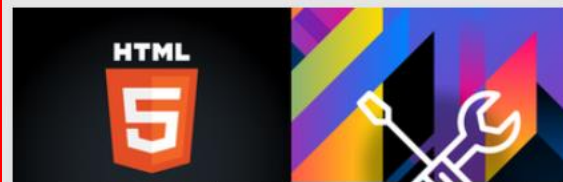
Starting Soon
Starts: July 9, 2018

VERIFIED ✓

Microsoft
Introduction to Python: Absolute Beginner

Current
Self-Paced

Charter Members   Members   More About Partnering

Schools and Partners

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EdX offers the highest quality courses from institutions who share our commitment to excellence in teaching and learning.

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courses in subjects such as humanities, math, computer science	learners worldwide, representing every country	enrollments across edX courses

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SORBONNE UNIVERSITÉ
CRÉATEURS DE FUTURS
DEPUIS 1257

4. New Paradigm in Higher Education

New Paradigm in Higher Education

1. Education should be able to create the strong nation characters, independency and high nation competitiveness.

2. Competence Based Education and Outcome Based Education.

3. Many kinds of external learning resources (internet based), teachers and books in the library are not the main learning resources anymore.

4. New era of Internet of Things (IoT) with cloud, mobile, social media, and big data.

5. The raising of generation post-millennial (digital natives), called TGIF (Twitter, Google, Instagram, dan Facebook) or FANG (FB, Alibaba, Netflix, Google).

6. Transforming from Teacher Centered Learning (TCL), to Student Centered Learning (SCL) and Community & Student Centered Learning (CSCL).

7. ICT based e-Learning and MOOC's.

8. High demand of Blended Learning, Virtual Learning, Distance Learning.

9. Education and knowledge in UGM have to be inclusive, disseminated to the society.

10. Multi-discipline, trans-discipline knowledge.

11. Support to lifelong learning.

12. Connected to sustainable development learning pillars (learning to know, learning to do, learning to transform oneself and society, learning to give and share)

HIGHER EDUCATION
In Industry 4.0 Revolution Era

Re-design of Curriculum
- Development of New Literacy (data, technology, *humanities*) and new skills & subjects: coding, big data, artificial intelligence, e-commerce, etc.
- Promote Extra-curricular activities to develop leadership, collaborative teamwork.
- *Facilitating entrepreneurship* & *internship* with industries.

Hybrid/Blended Learning, Online
Application of *Hybrid/Blended Learning* system through SPADA-IdREN.

Lifelong Learning Development
Endorse universities to have a unit that facilitates lifelong learning development.

Promote internationalization and connectivity

5. UGM's Strategy and Innovation in Education

UGM's Strategy in Education

- Optimize internal and external learning resources using ICT.
- Improve the Foundational Literacies
- Improve the competence of 21st century (4Cs).
- Improve the Character Qualities
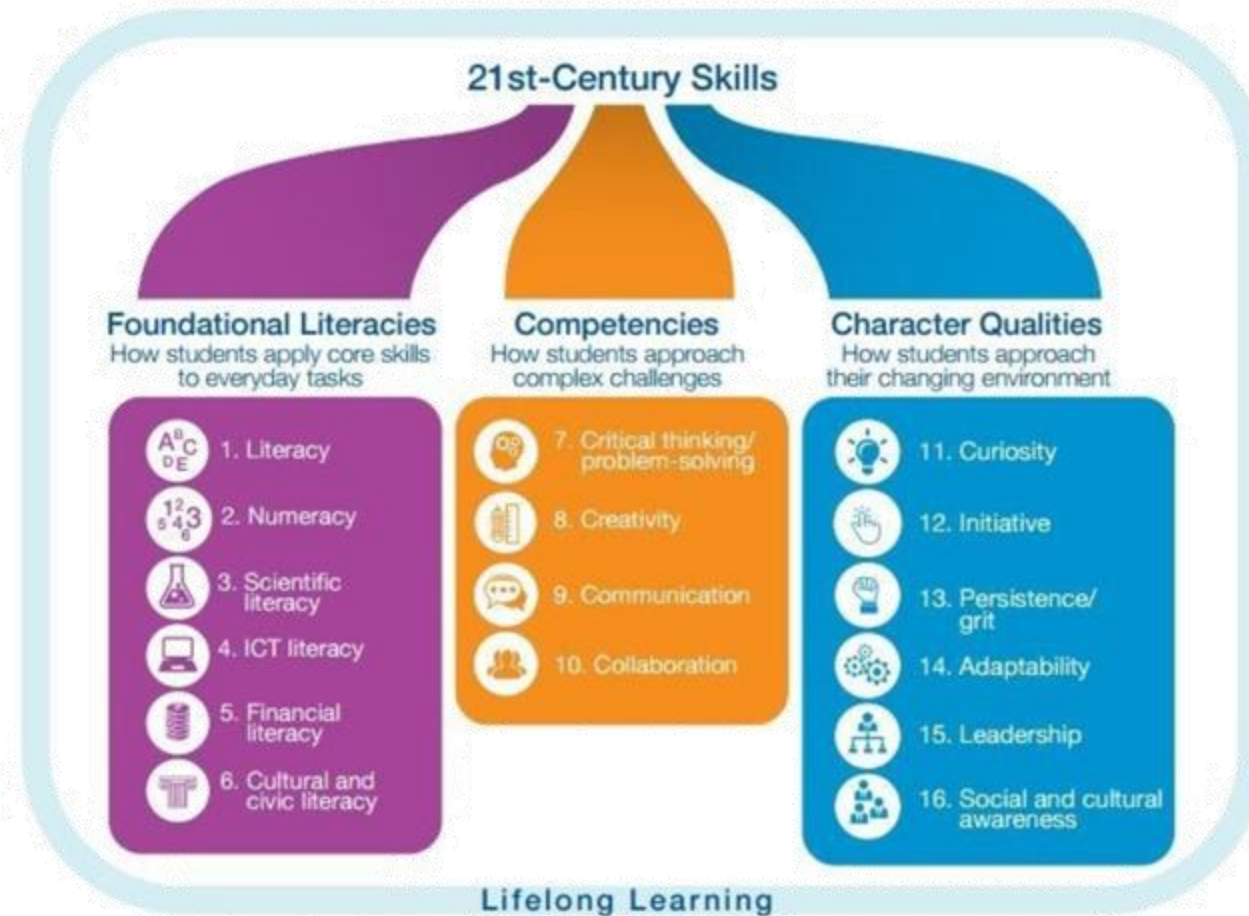- Encourage the lifelong learning

21st-Century Skills

Foundational Literacies
How students apply core skills to everyday tasks
1. Literacy
2. Numeracy
3. Scientific literacy
4. ICT literacy
5. Financial literacy
6. Cultural and civic literacy

Competencies
How students approach complex challenges
7. Critical thinking/problem-solving
8. Creativity
9. Communication
10. Collaboration

Character Qualities
How students approach their changing environment
11. Curiosity
12. Initiative
13. Persistence/grit
14. Adaptability
15. Leadership
16. Social and cultural awareness

Lifelong Learning

Image: World Economic Forum, New Vision for Education (2015)

LOCALLY ROOTED, GLOBALLY RESPECTED

a. Science Channel for Knowledge Dissemination

UGM is committed that knowledge must be able as public goods and disseminate to society through internet technology.
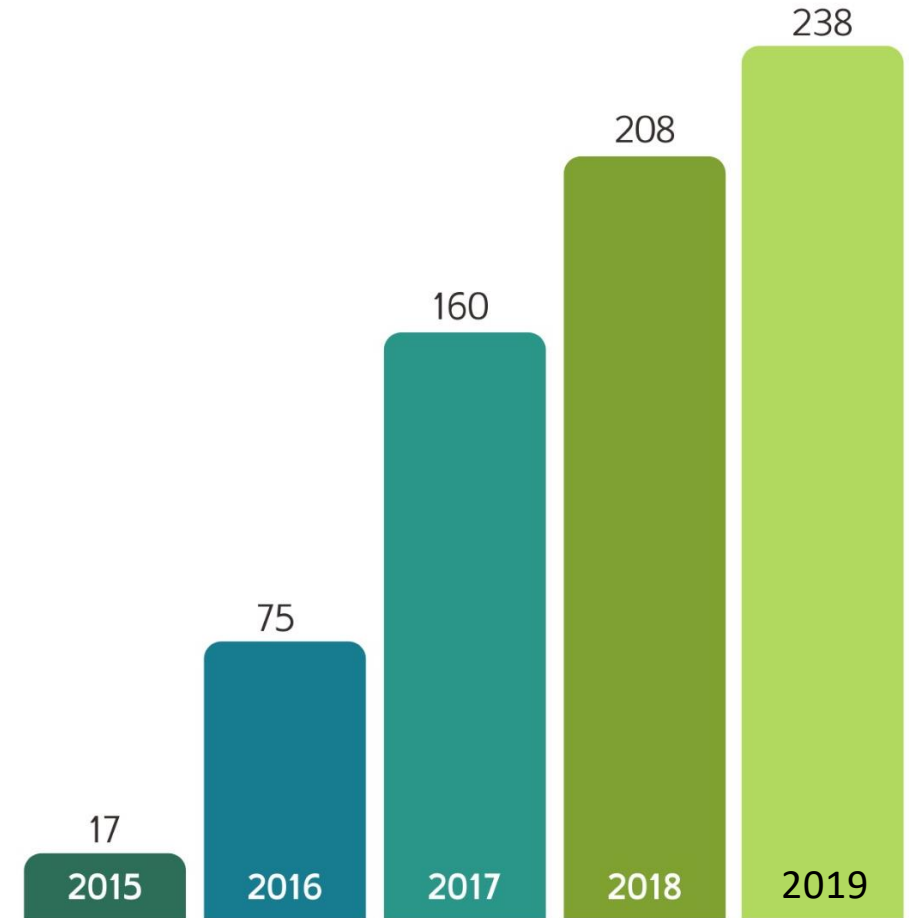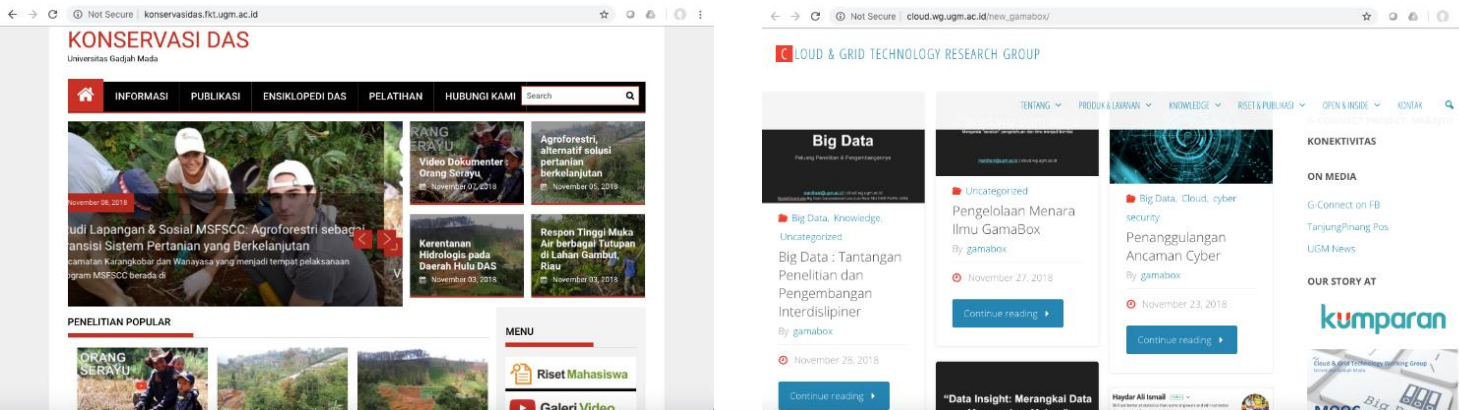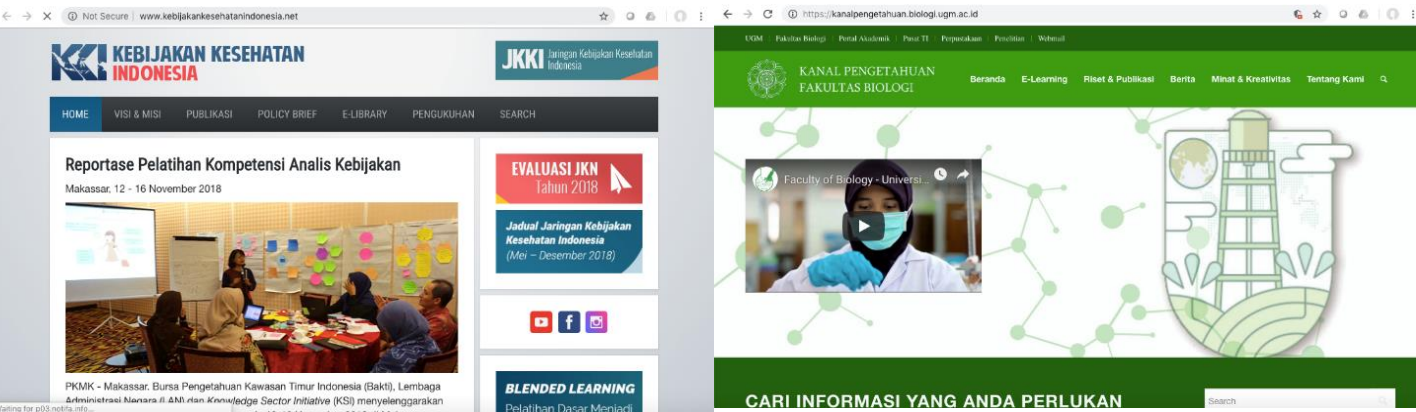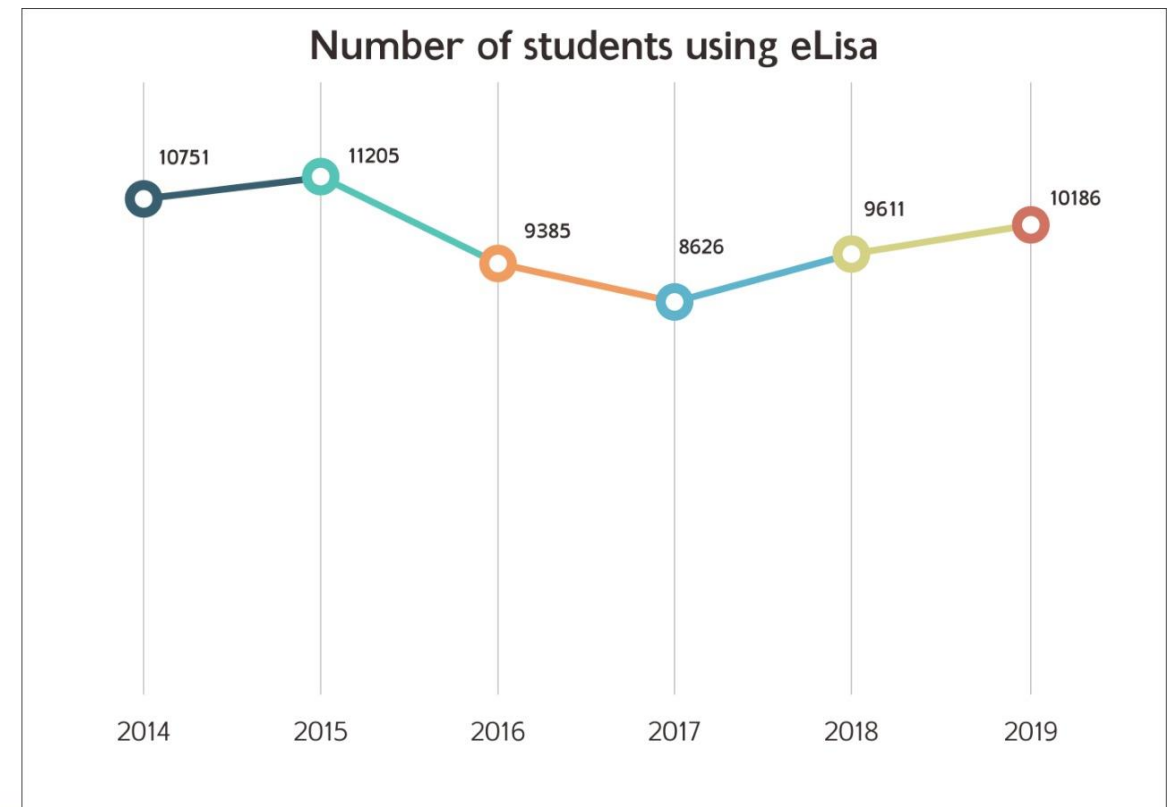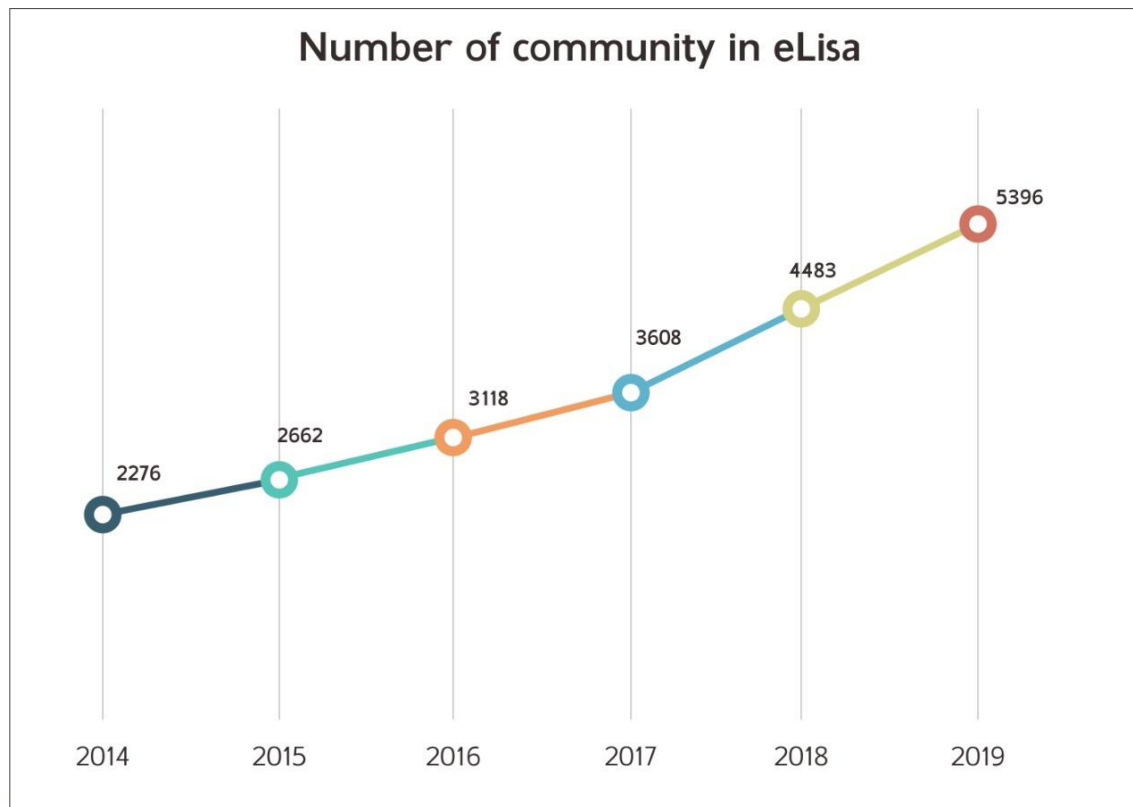

Science Channel by years

b. *Learning Management System*

eLisa (*eLearning System for Academic Community*) is a learning management system (LMS) developed by UGM to facilitate the learning process both in the context of lectures and online learning since 2004.

http://elisa.ugm.ac.id

Number of community in eLisa

2014: 2276
2015: 2662
2016: 3118
2017: 3608
2018: 4483
2019: 5396

Number of students using eLisa

2014: 10751
2015: 11205
2016: 9385
2017: 8626
2018: 9611
2019: 10186

b. *Learning Management System*

eLOK is an e-Learning system that supports for MOOC (Massive Open Online Course) at UGM. eLOK is part of an effort to educate the nation's life by utilizing technology.
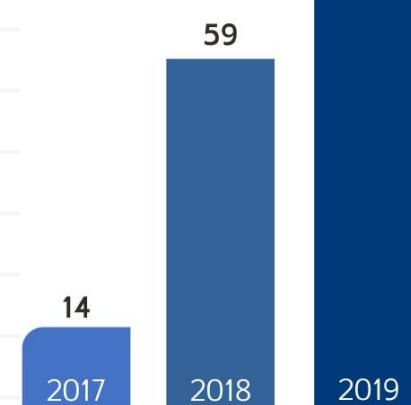
http://elok.ugm.ac.id

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Course categories: MOOC

Page: 1 2 3 4 (Next)

- Konsep Dasar Rekam Medis dan Informasi Kesehatan
- Imunologi Farmasi
- Proyek Sistem Informasi Manajemen Kesehatan
- 003-BDA1104-Percakapan Arab I
- 002-BIO30401-Genetika
- 004-KKU2212-Mikrobiologi
- 005-PTP3203-Teknologi Reproduksi Ternak
- 001-TIF216-Jaringan Komputer
- 011-Kecerdasan Buatan
- 007-MII-1202-Pemrograman 1
- 010-Konservasi Tanah dan Air

Courses in eLOK

144 — 2019
59 — 2018
14 — 2017

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https://elok.ugm.ac.id/course/view.php?id=256

eLOK
e-Learning: Open for Knowledge Sharing

Hatma Suryatmojo

BERANDA MATA KULIAH TENTANG KAMI FAQ KURSUS YANG SAYA IKUTI ▾

Cari kursus

Rumah saya > Kursus Yang Saya Ikuti > EPI2018

Materi Ekosistem Pembelajaran Inovatif terdiri atas:

1. Strategi Pendidikan 4.0 di UGM
2. Konsep, Prinsip, Perencanaan, dan Pelaksanaan OBE
3. Kurikulum Berbasis OBE dan Capaian Pembelajaran Lulusan
4. Penyusunan RPKPS, Metode Penilaian, dan Penyusunan Rubrik
5. Sumber Belajar: LMS (eLisa, eLOK) & Kanal Pengetahuan, dan Pelaksanaan *Blended Learning*
6. *Learning Space* dan Sumber Belajar Eksternal
7. STAR
8. *Flipped Learning*
9. Berbagai Metode Pembelajaran
10. Simulasi Implementasi SCL dalam Pembelajaran

Navigasi

Rumah saya
- Beranda situs
▸ Halaman situs
▾ Kursus Yang Saya Ikuti
  ▸ HHT
  ▾ EPI2018
    ▸ Peserta
    🏆 Badges
    ⚖ Competencies
    ▦ Nilai

c. Knowledge Dissemination

PIKA facilitates regular training for the faculty staff to produce learning contents in the scientific documentary. Academic activities of the education, research, and community service are disseminated as scientific documentary.
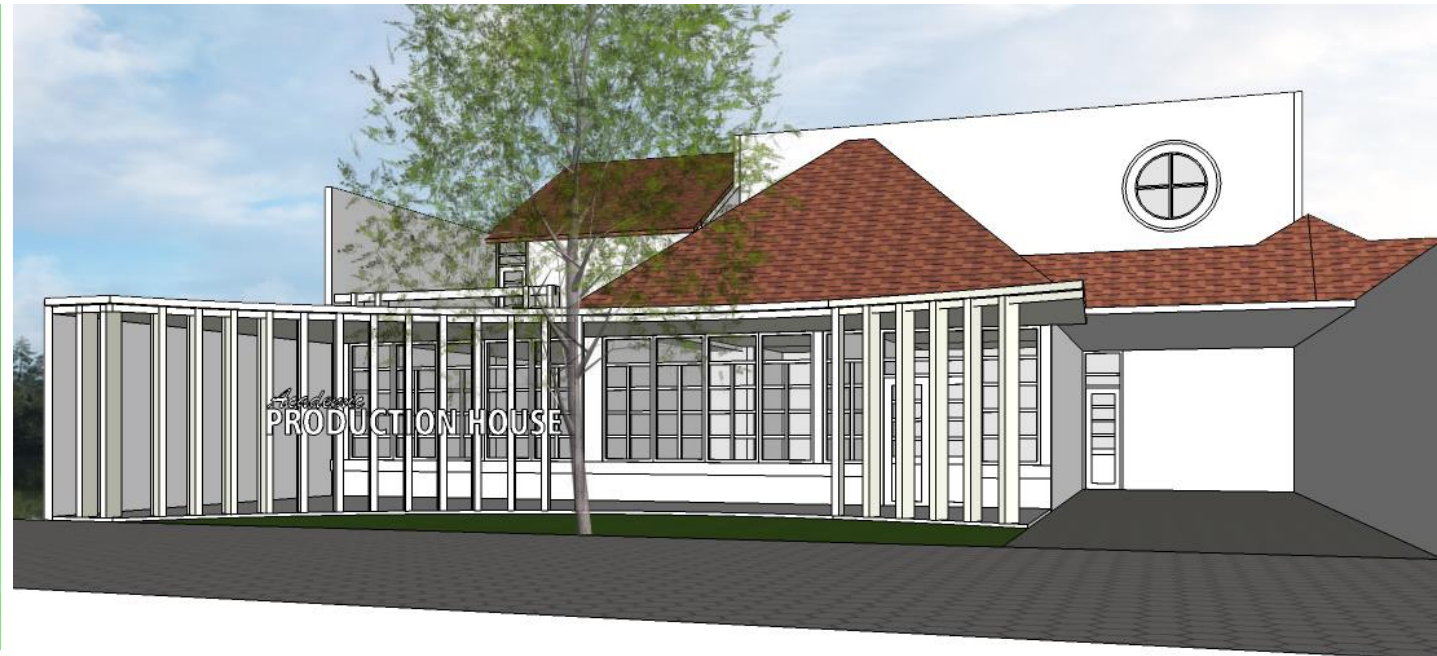

Number of Documentary Videos
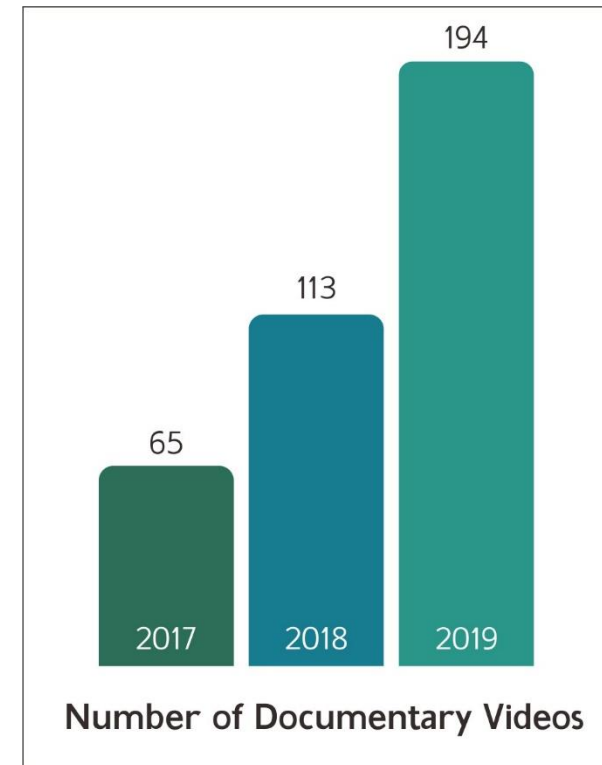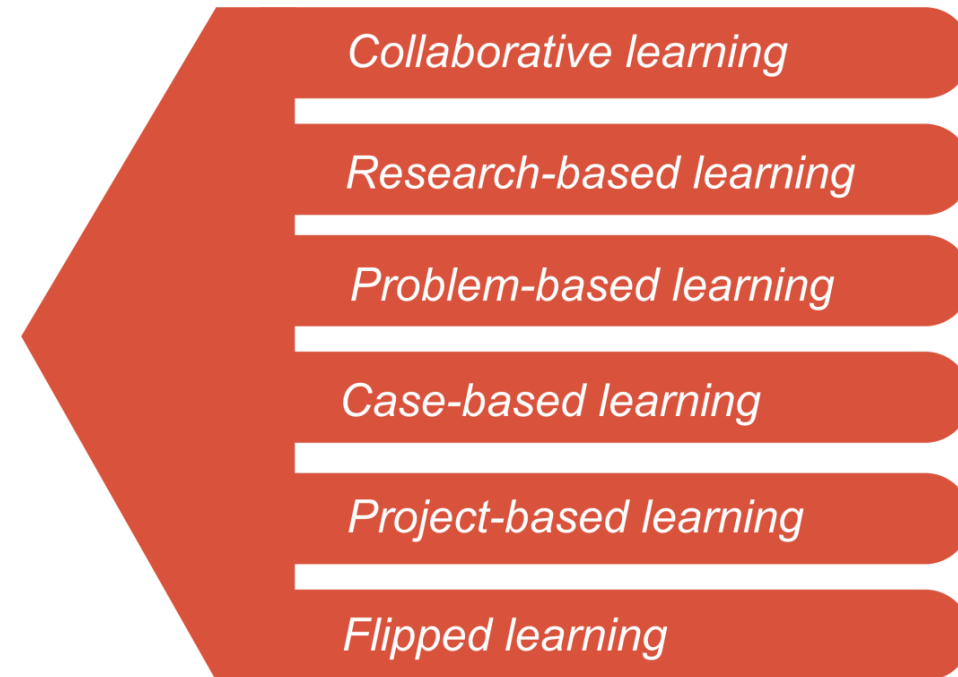
c. Academic Production House

Academic Production House (APH) dedicated to develop learning contents based on multimedia.

APH is supported with 10 mini studios in the faculties.

d. Innovative Learning Ecosystem

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Ekosistem Pembelajaran Inovatif

- Penyusunan RPKPS, metode penilaian, dan penyusunan rubrik
- Bahan Ajar dan Sumber Belajar Eksternal
- Kurikulum berbasis luaran dan capaian pembelajaran lulusan
- *Shifting Paradigm* STAR
- Konsep, prinsip, perencanaan, dan pelaksanaan pendidikan berbasis luaran.
- Metode Pembelajaran
- Arah kebijakan pendidikan dan pembelajaran berbasis KKNI di UGM
- eLisa, eLOK, dan *Blended Learning*
- *Learning space* pendukung pembelajaran inovatif
- Kanal pengetahuan dan pemanfaatannya dalam pembelajaran

Collaborative learning

Research-based learning

Problem-based learning

Case-based learning

Project-based learning

Flipped learning

e. Co-Learning Space

Co-learning space is a need of millennial and post-millennial generation.
Co-learning space produces creativity, network, collaboration and idea factory.
UGM's Library has developed its function to facilitate the co-learning space.

f. Blended Learning

Learning process that combined face to face interaction in the class with online learning interaction and keep control the quality of learning process.

Students conduct online learning interaction by synchronous or asynchronous.

Interactions based on the designed of learning outcome and quality assurance.

Students also conduct face to face learning in class or laboratory

Spectrum Learning based on ICT

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| face-to face learning	Blended/hybrid learning	Distributed learning	teleconference	e-learning
Podcasting Webcasting	web-based learning	distance education	Distance Learning	Flexible learning
Open Learning	Open and distance learning	(fully) online learning	Technology-based learning	Technology-based training
Web-based training	Virtual learning	Mobile learning	Off campus learning	mobile learning
palm learning	ubiquitous learning	Open Educational Resources	Massive Open Online Courses	…

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LOCALLY ROOTED, GLOBALLY RESPECTED
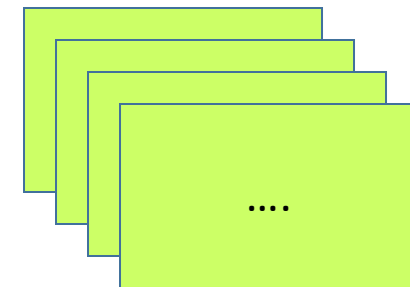
PENGARUH CC DAN ANTROPOGENIK TERHADAP PERUBAHAN TREND DEBIT SUNGAI DI BENGAWAN SOLO

1981 beroperasi Waduk Wonogiri Kap. 730 juta m3 4.000 m3/dt → 4.00 m3/dt
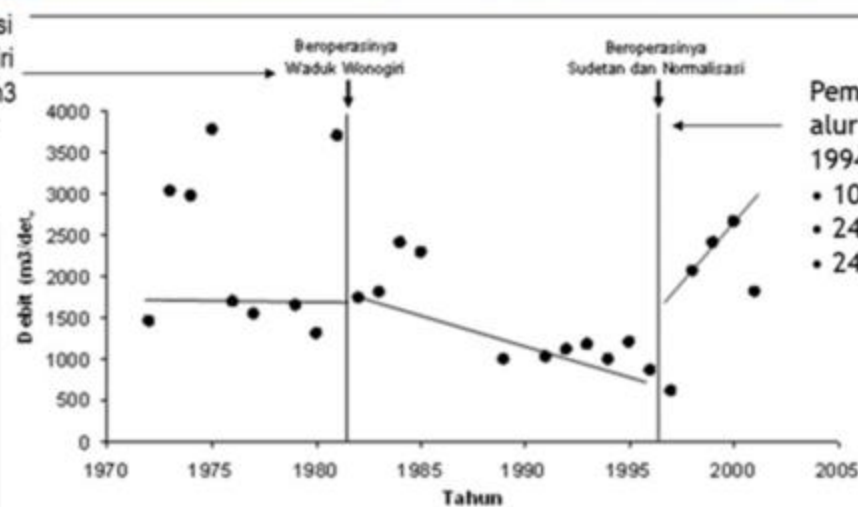
Pembangunan alur sungai 1994-1996:
- 10,6 km pelurusan
- 24,2 km normalisasi
- 24,2 km tanggul

Pengaruh antropogenik lebih dominan sebagai penyebab banjir, dibandingkan Dengan pengaruh perubahan iklim di Bengawan Solo (Pawitan et al, 2009)
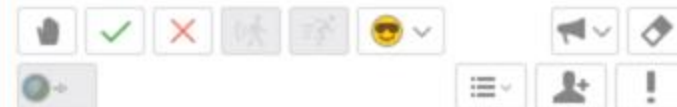
You only have to know one thing:
"You can learn anything"
(Khan Academy)