21ST CENTURY LEARNING & SKILLS IN HIGHER EDUCATION

FAIZAH ABD MAJID (PhD)
FACULTY OF EDUCATION, UiTM

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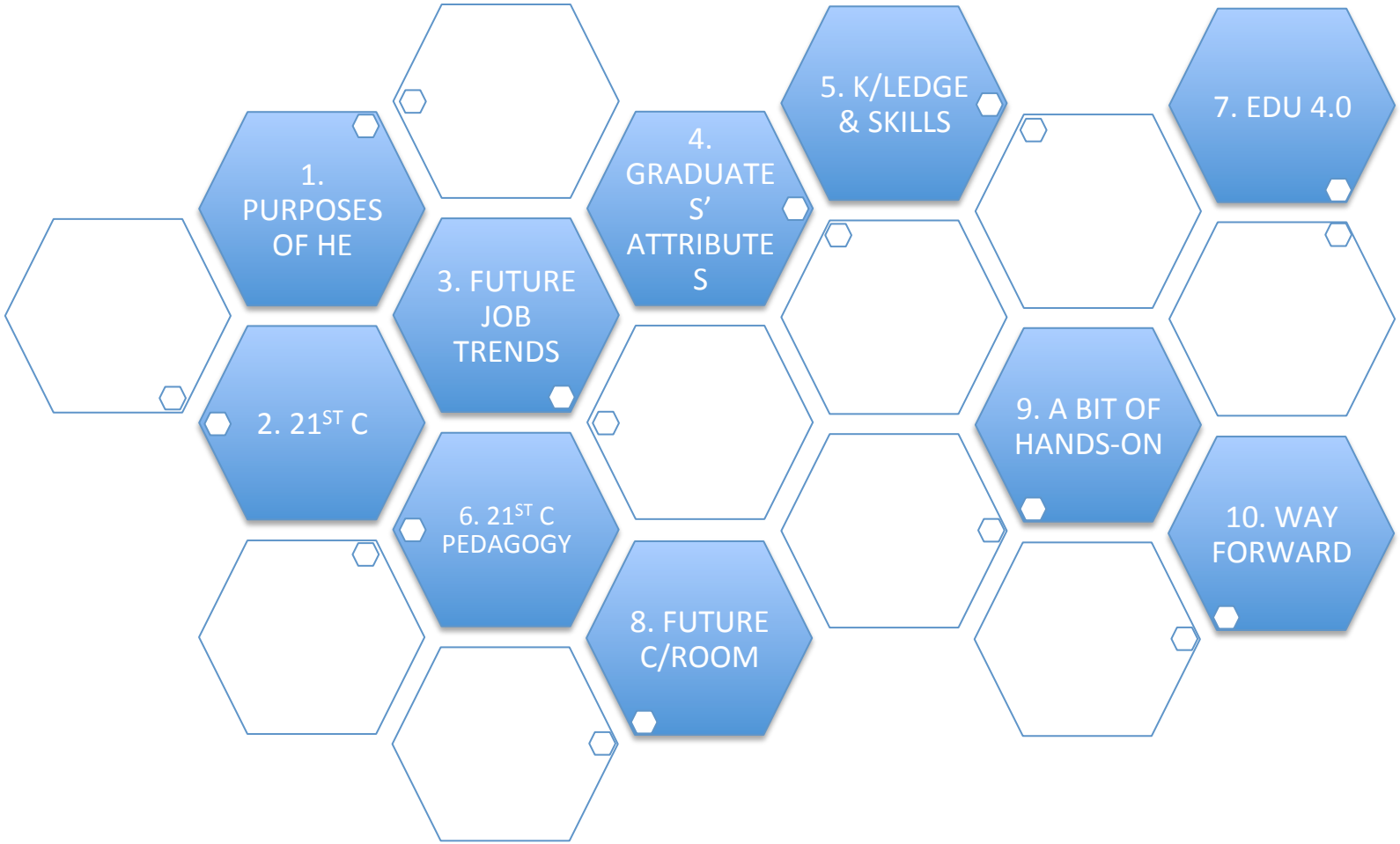


PURPOSES OF HIGHER EDUCATION

1. Learning to communicate
2. Learning to think
3. Building character
4. Preparation for citizenship
5. Living with diversity
6. Preparing for a global society
7. Acquiring broader interests
8. Preparing for a career

Is the purpose of HE still the same?

Will the role of university and industry be the same?

Uberisation of HE?

What if the role of HE is not the same?

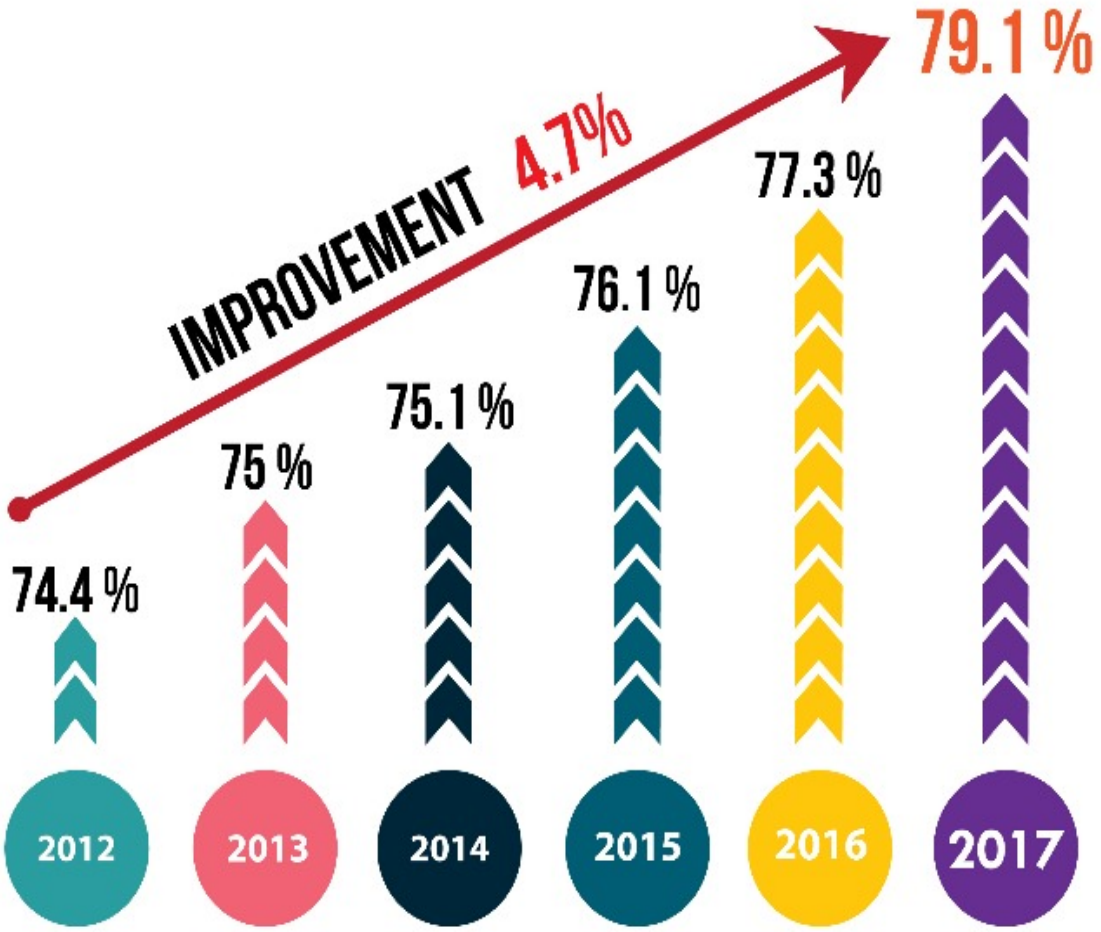
Open flexible learning?

Virtual University

Our Underachieving Colleges
By Derek Bok
President of Harvard University
(1971-1991)

MINISTRY OF HIGHER EDUCATION

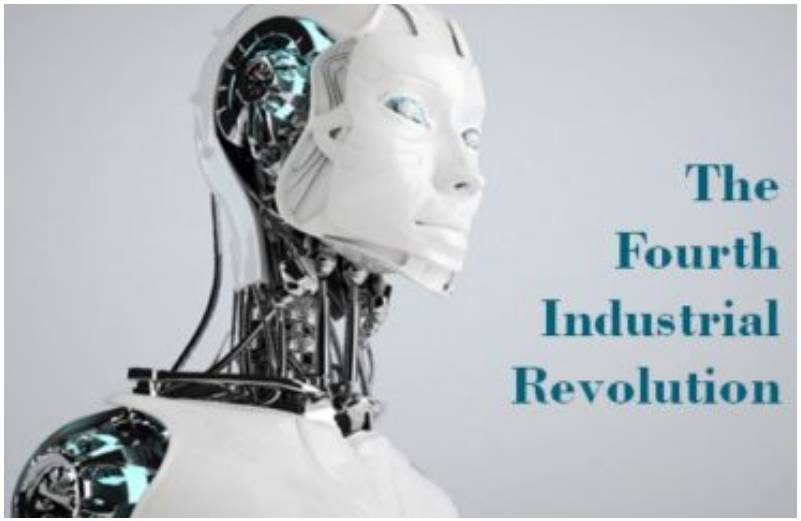
SOARING UPWARDS



GRADUATE EMPLOYABILITY

HIGHER EDUCATON INSTITUTIONS

Source : Ministry Of Higher Education (MoHE) Tracer Study



First Industrial Revolution

through the introduction of mechanical production facilities with the help of water and steam power

First mechanical loom, 1784

Second Industrial Revolution

through the introduction of a division of labor and mass production with the help of electrical energy

First assembly line Cincinnati slaughter houses,1870

Third Industrial Revolution

through the use of electronic and IT systems that further automate production

First programmable logic controller (PLC), Modicon 084, 1969

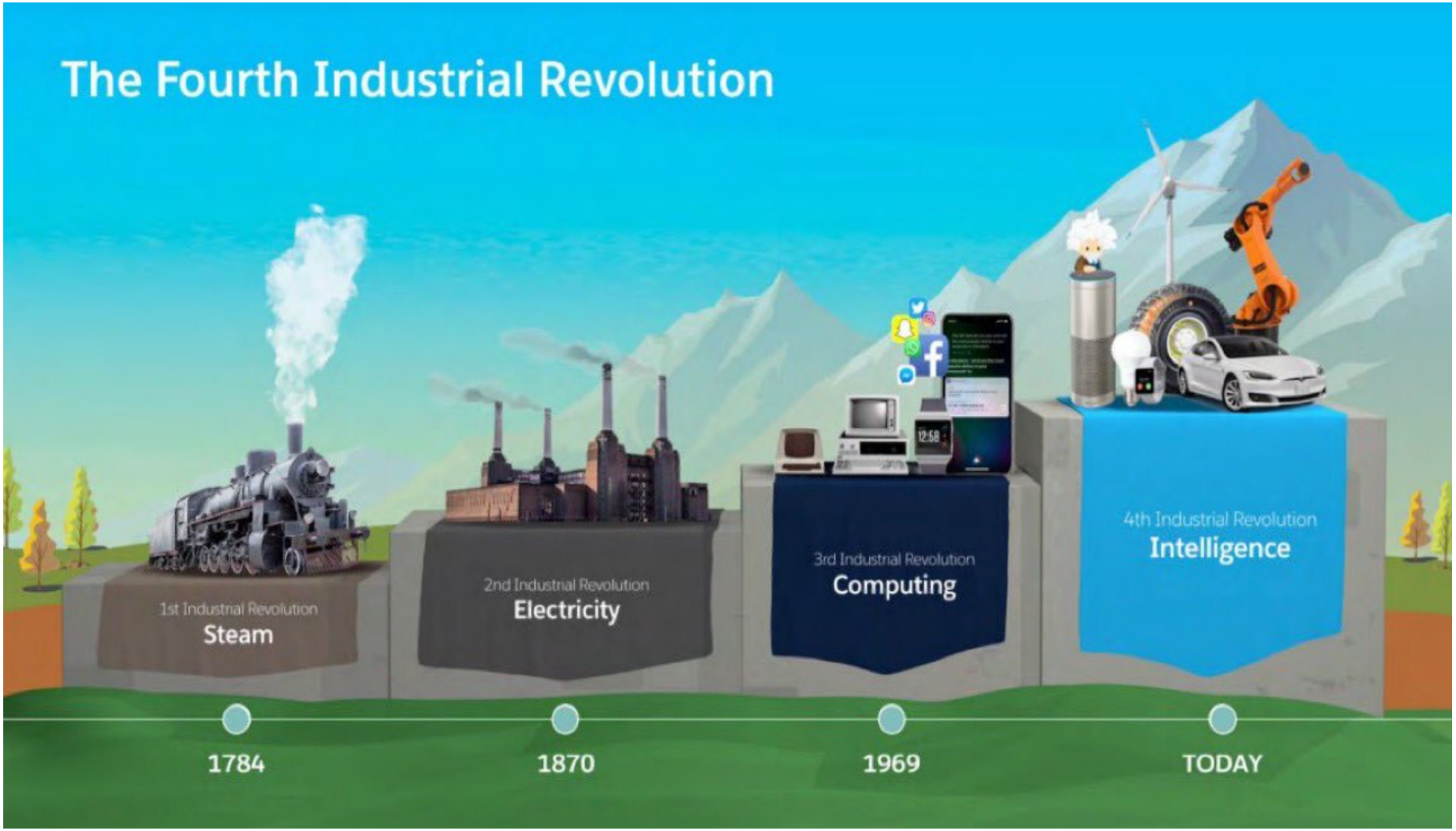
Fourth Industrial Revolution

through the use of cyber-physical systems

Degree of complexity

Time

1800 1900 2000 Today


The Fourth Industrial Revolution
1st Industrial Revolution
Steam
2nd Industrial Revolution
Electricity
3rd Industrial Revolution
Computing
4th Industrial Revolution
Intelligence
1784
1870
1969
TODAY

4IR


Simulation & Augmented Reality
Horizon & Vertical Integration
Industrial Internet of Things
Cybersecurity
Artificial Intelligence
New Business Models
Cloud
Additive Manufacturing
Supply Chain
Big Data Analytics
Autonomous Robot
11 PILLARS OF TECHNOLOGICAL ADVANCEMENT

FUTURE JOB TRENDS

Mental Health related

Freelance jobs – multi-dimensional

Robots Antithesis: creative, high EQ, innovative & compassionate

60% of jobs will be obsolete but others will grow

Massive automation & digitization.

More in creative disciplines (music, Arts)

Multi-intelligence

The best talent is not the machines but combination of both human and machines

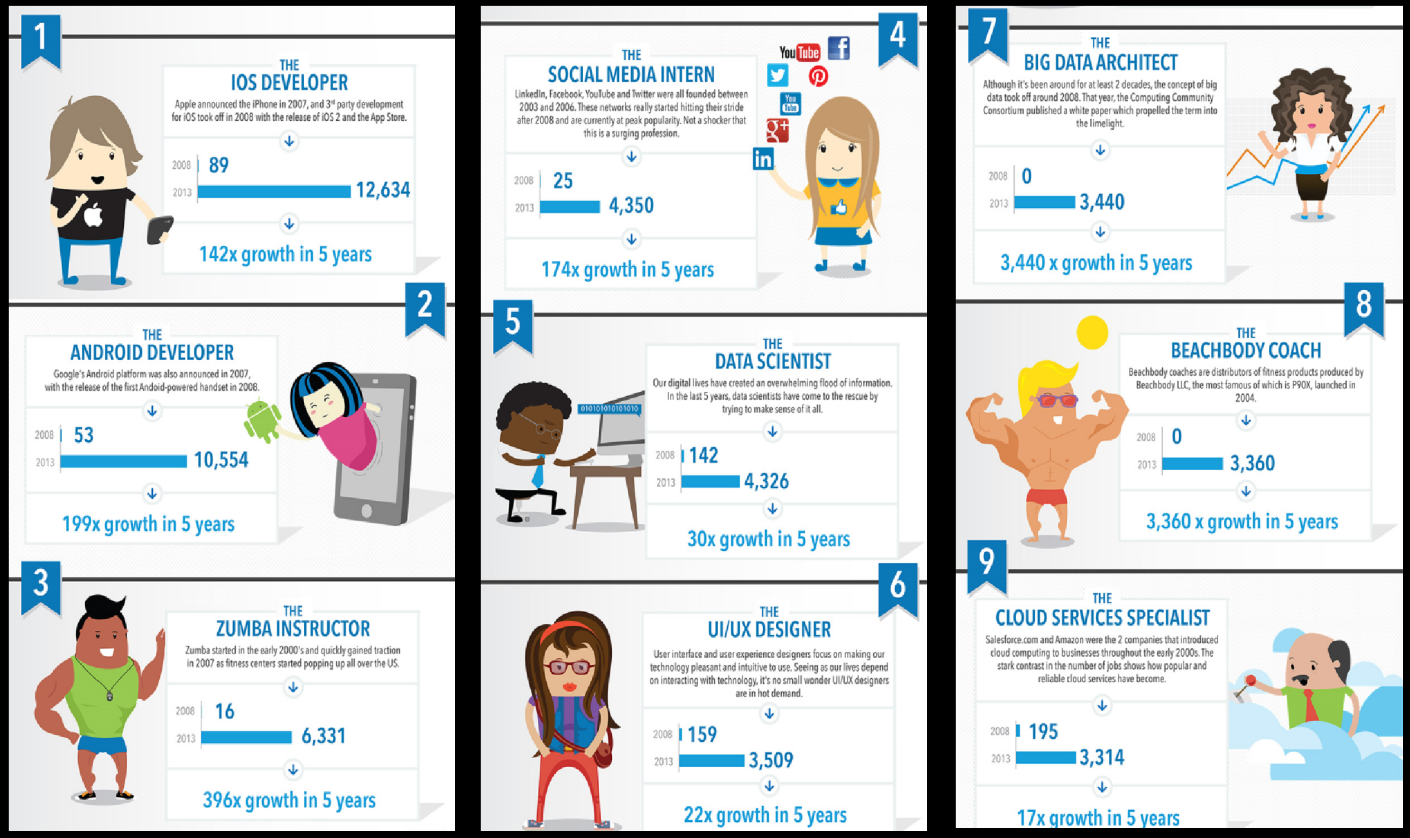
FUTURE JOBS

1. **Data Analytics– to help companies make sense and derive insights from the data generated by technological disruptions.**

2. **Social skills such as persuasion, emotional intelligence & teaching others - higher demand across industries than narrow technical skills (programming or equipment operation and control)**

In essence, technical skills will need to be supplemented with strong social and collaborative skills.

One Job Gone, Others Created.

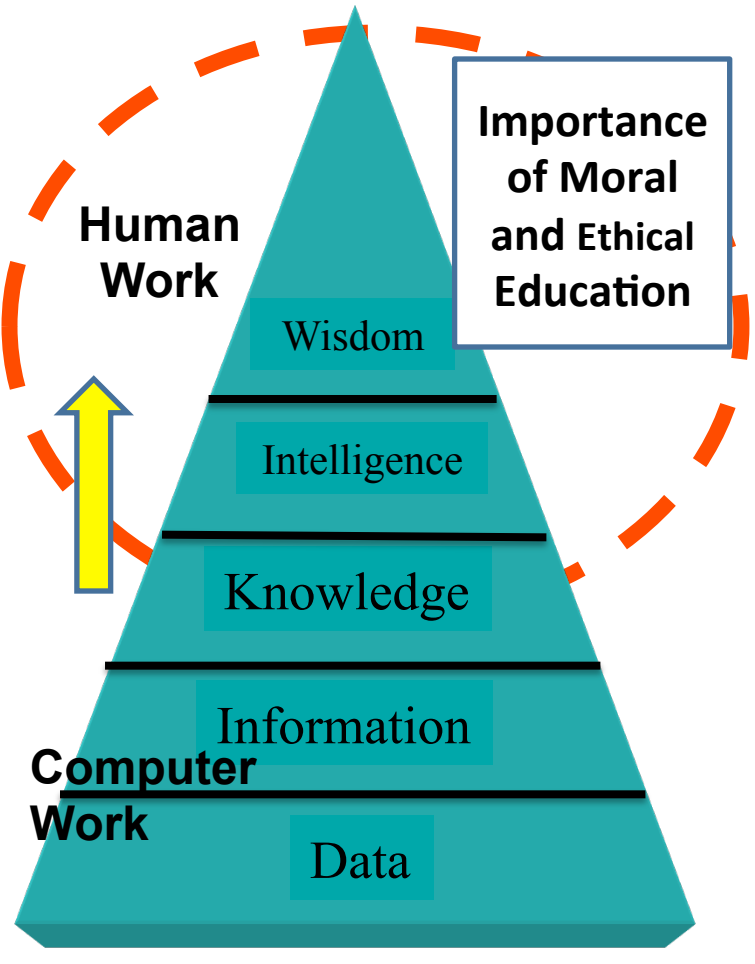


GRADUATES' ATTRIBUTES IN 4IR

WHAT KNOWLEDGE & SKILLS DO THEY LEARN?

21st Century Attributes

Towards Knowledge Economy



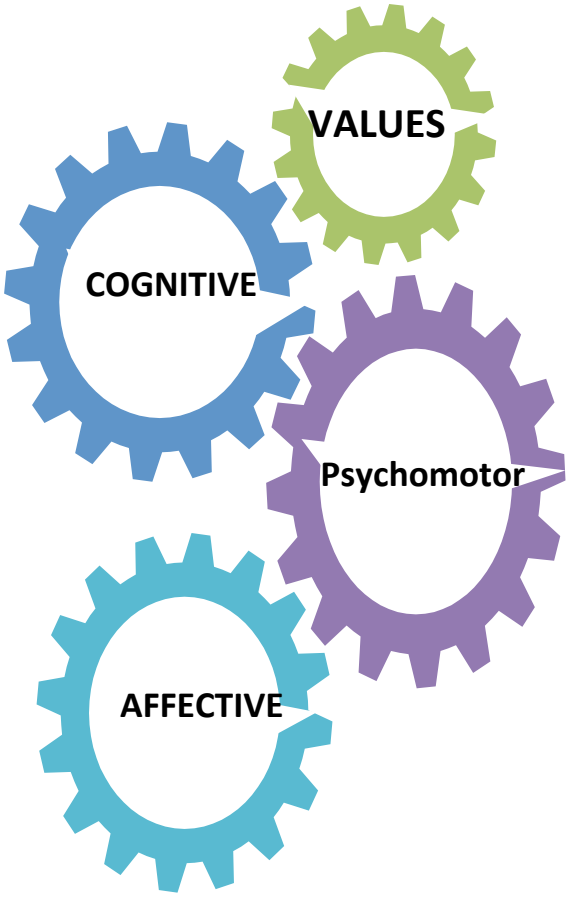
Importance of Moral and Ethical Education

21st Century Learning Framework – Student Outcomes

High Order Thinking and Multiple Intelligences

- Learning and Innovation Skills (4Cs: Critical Thinking, Communication, Collaboration and Creativity)
- Content Knowledge and 21st Century Themes
- Information, Media and Technology Skills
- Life and Career Skills:

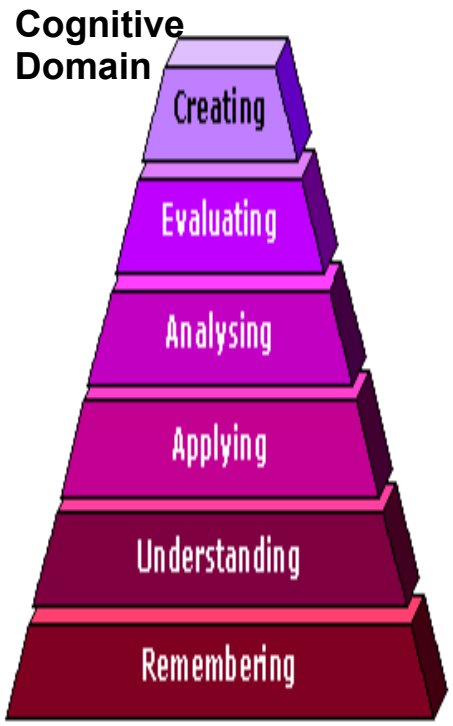
Balanced Development Needed



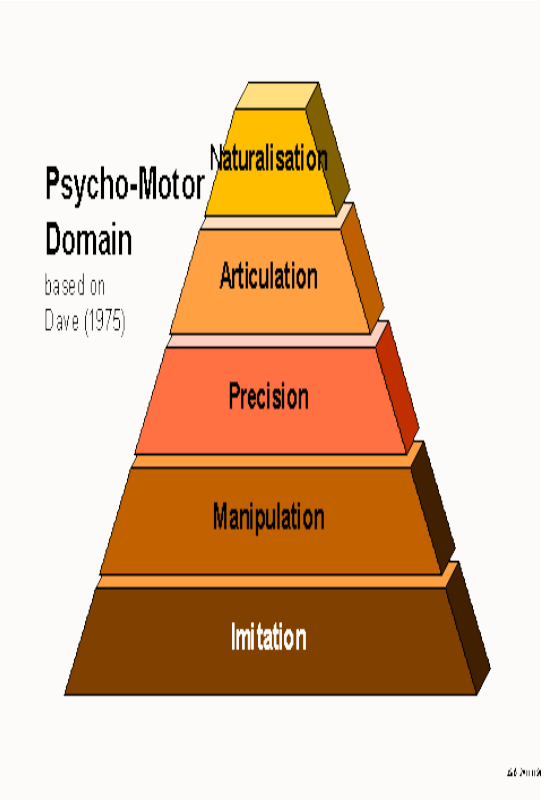
http://www.p21.org/our-work/p21-framework

WHAT KNOWLEDGE & SKILLS DO THEY LEARN?

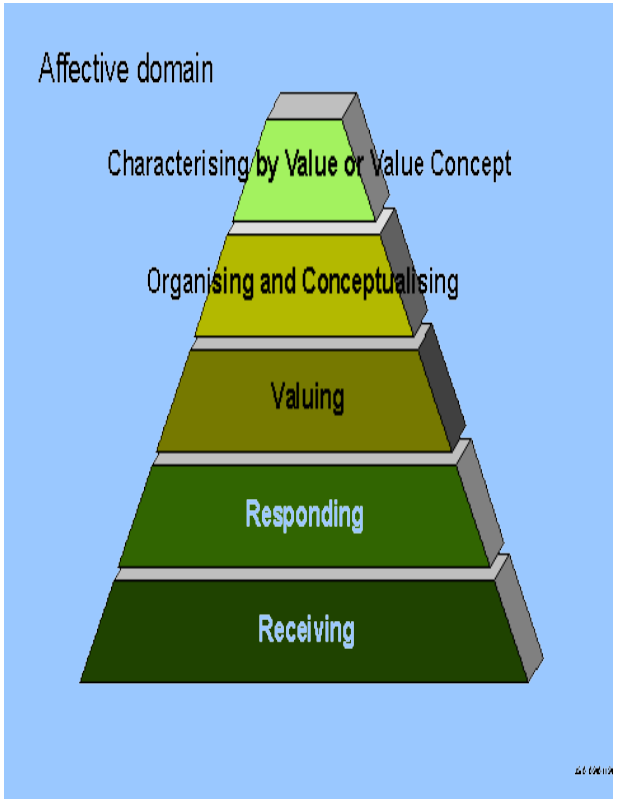
Higher Order Development



Nowadays, everyone carries a walking encyclopedia (smartphone) all the time. Accessing info is easy but determining right info requires cognitive skill.

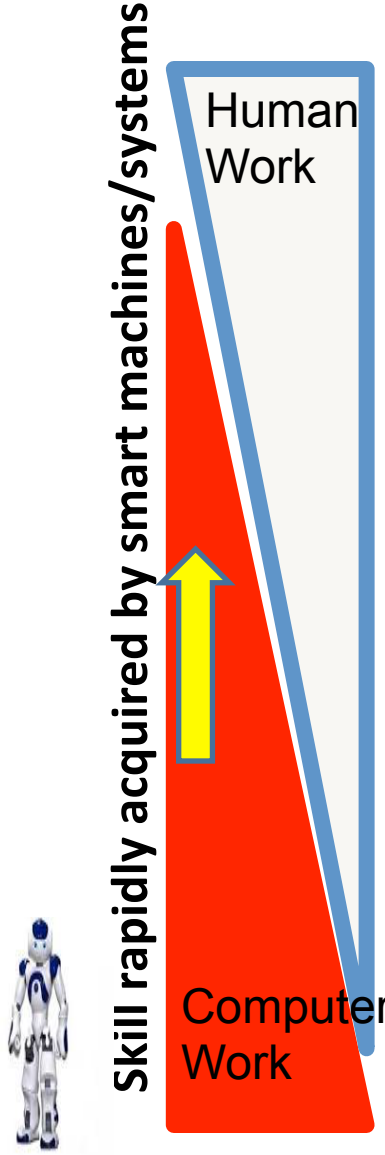


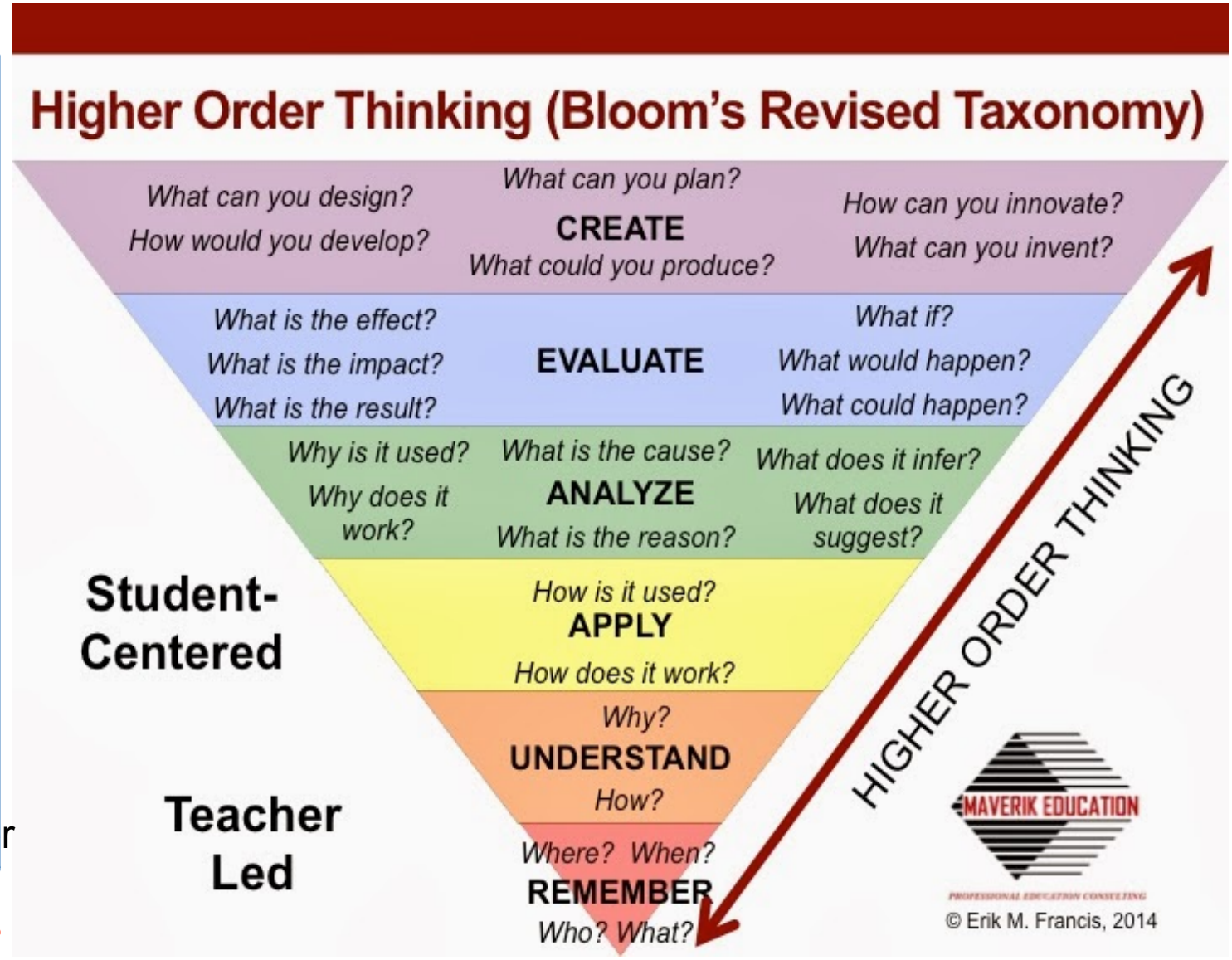
Automation and robotics are catching up, but human skilled and creative works are still required.



Human touch and caring work cannot be replaced by intelligent machines.

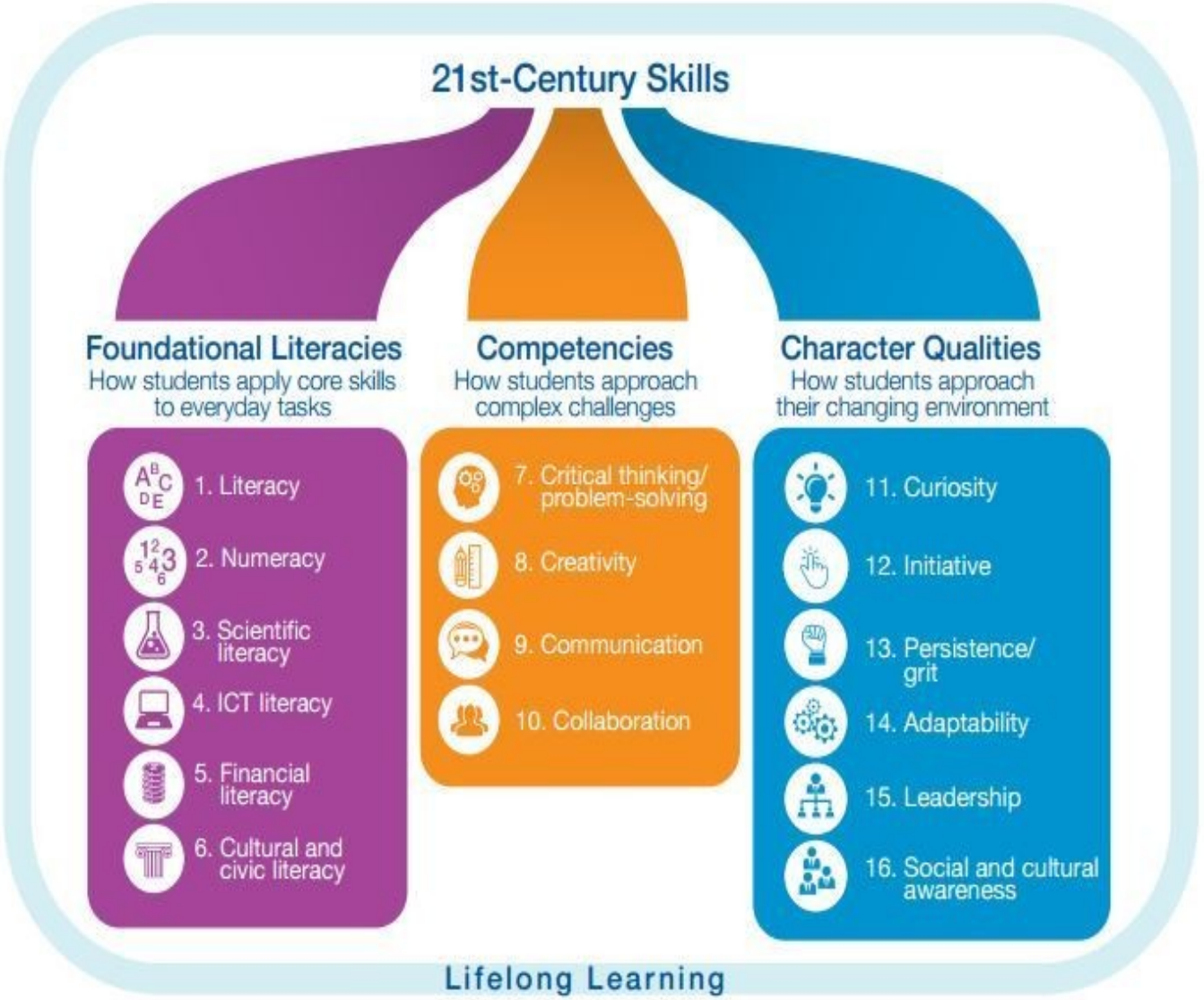
Higher Order Thinking





21st Century Skills

To succeed in the evolving digital economy, students require 16 skills



Source: Soffel (2016)

UiTM scenario: FRESH FROM THE TOAST!

MY3S (MALAYSIAN SOFT SKILL SCALE)

ELEMEN KEMAHIRAN INSANIAH

Tujuh elemen Kemahiran Insaniah yang diukur untuk Soal Selidik My3S ini adalah seperti berikut:

- Kemahiran Komunikasi (CS)
- Pemikiran Kritis dan Kemahiran Menyelesaikan Masalah (CTPS)
- Kemahiran Kerja Berpasukan(TS)
- Moral dan Etika Profesional (EM)
- Kemahiran Kepemimpinan (LS)
- Pembelajaran Berterusan dan Pengurusan Maklumat (LL)
- Kemahiran Keusahawanan (KK)

Turut mengukur kemahiran Bahasa Melayu dan Bahasa Inggeris.

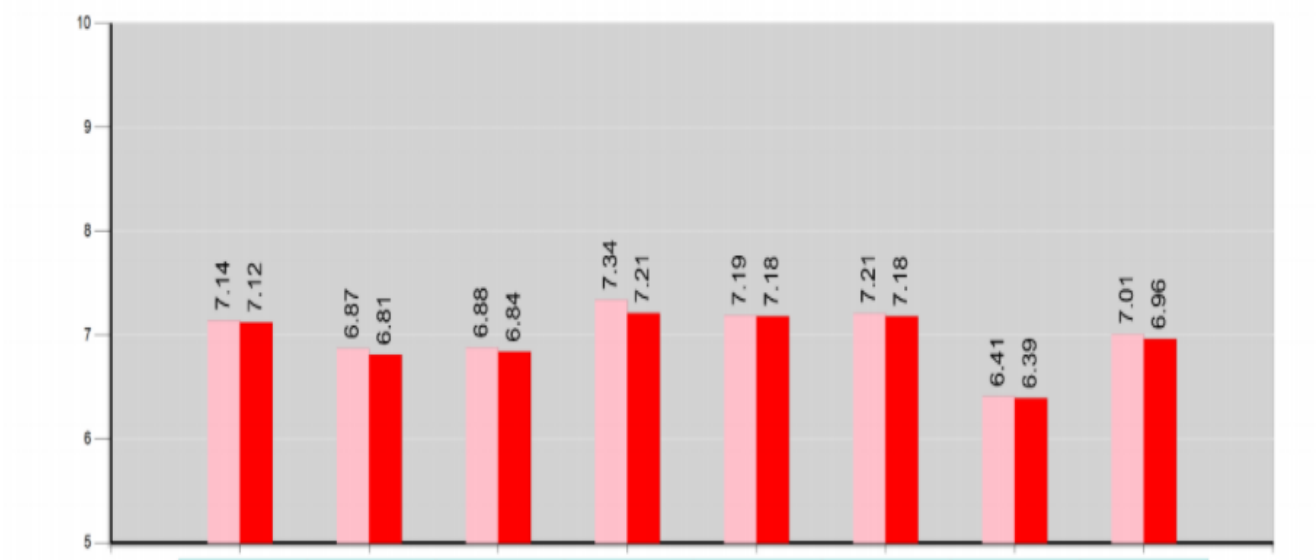
KEPUTUSAN PURATA SKOR "EXIT" MY3S FASA 1 KOHORT PELAJAR 2012/2013

YANG DILAPORKAN OLEH KPT PADA 2015

KEMENTERIAN PENDIDIKAN TINGGI

LAPORAN PENILAIAN KEMAHIRAN INSANIAH

Universiti Teknologi MARA



	CS	CTPS	TS	EM	LS	LL	KK	KI
Universiti Teknologi MARA	7.14	6.87	6.88	7.34	7.19	7.21	6.41	7.01
NASIONAL	7.12	6.81	6.84	7.21	7.18	7.18	6.39	6.96

Dapatan pelajar tahun akhir 2012/2013 menunjukkan purata skor semua 7 KI melebihi dari purata skor nasional dan mencapai tahap dan baik.

HOW WILL 4IR IMPACT HIGHER EDUCATION?

"A generation ago, teachers expect that what they taught would last their students a lifetime. Today, because of rapid economic and social change, schools have to prepare students for:

– *jobs that have not yet been created,*

– *technologies that have not yet been invented and*

– *problems that we don't yet know will arise.*"

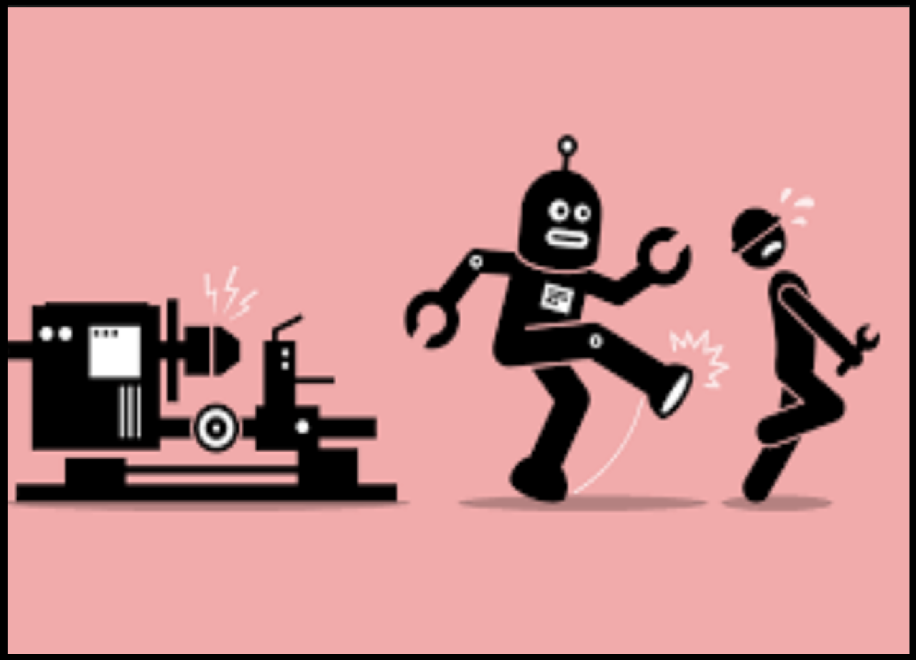
(Andreas Schleicher - OECD Education Directorate: 2011)

END OF PART 1

THANK YOU

21ST CENTURY PEDAGOGY

So, the question is: **How will higher education be impacted?**



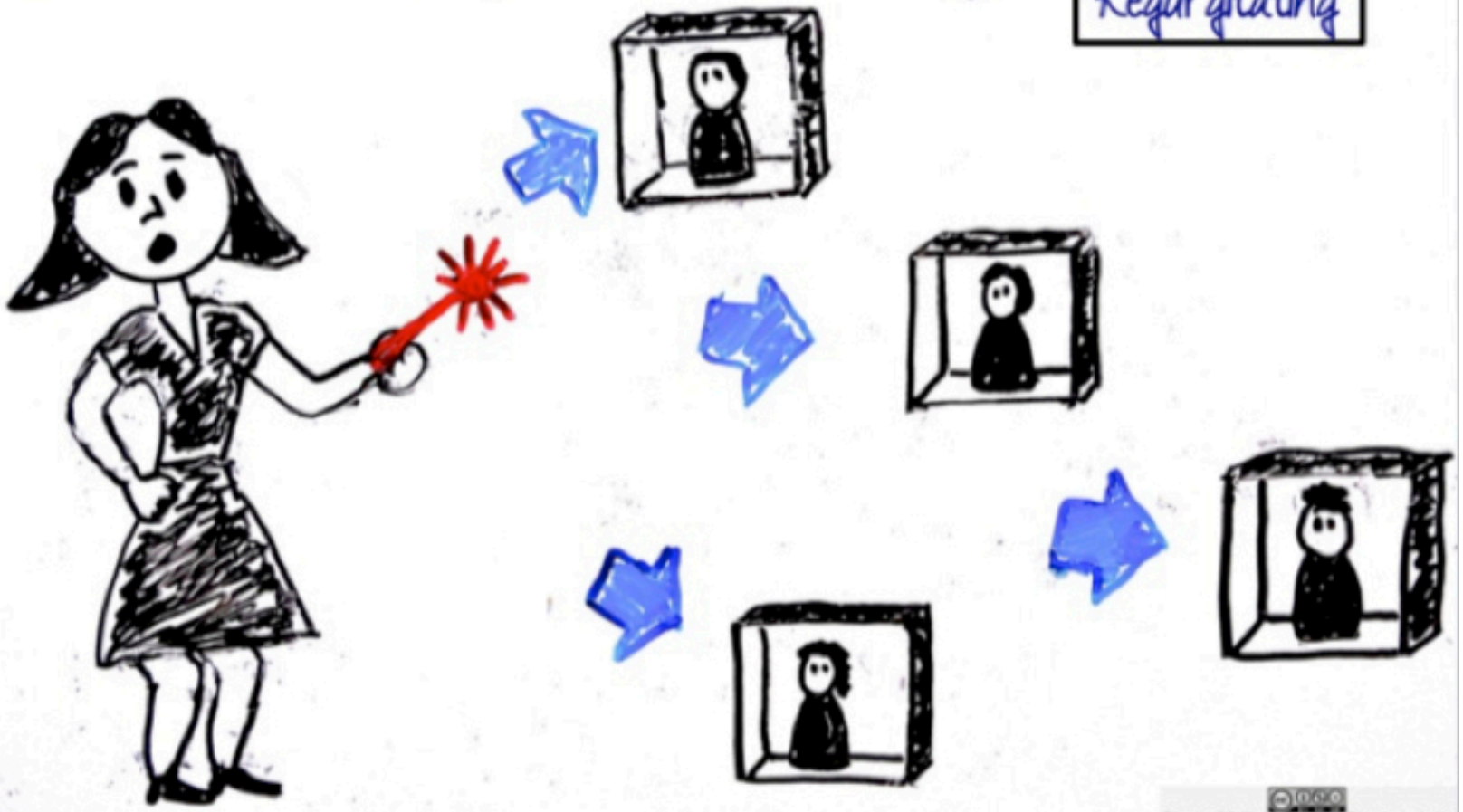
EDUCATION 4.0

- Education 1.0 = Lectures and memorization
- Education 2.0 = Internet-enabled learning (open sourcing)
- Education 3.0 = Knowledge-producing education
- Education 4.0 = Innovation-producing education

Education 1.0:

Learners as receptacles of knowledge

Receiving
Responding
Regurgitating



Collaboration

Social Networking

Project and Inquiry Based Learning

PBL

Education 2.0

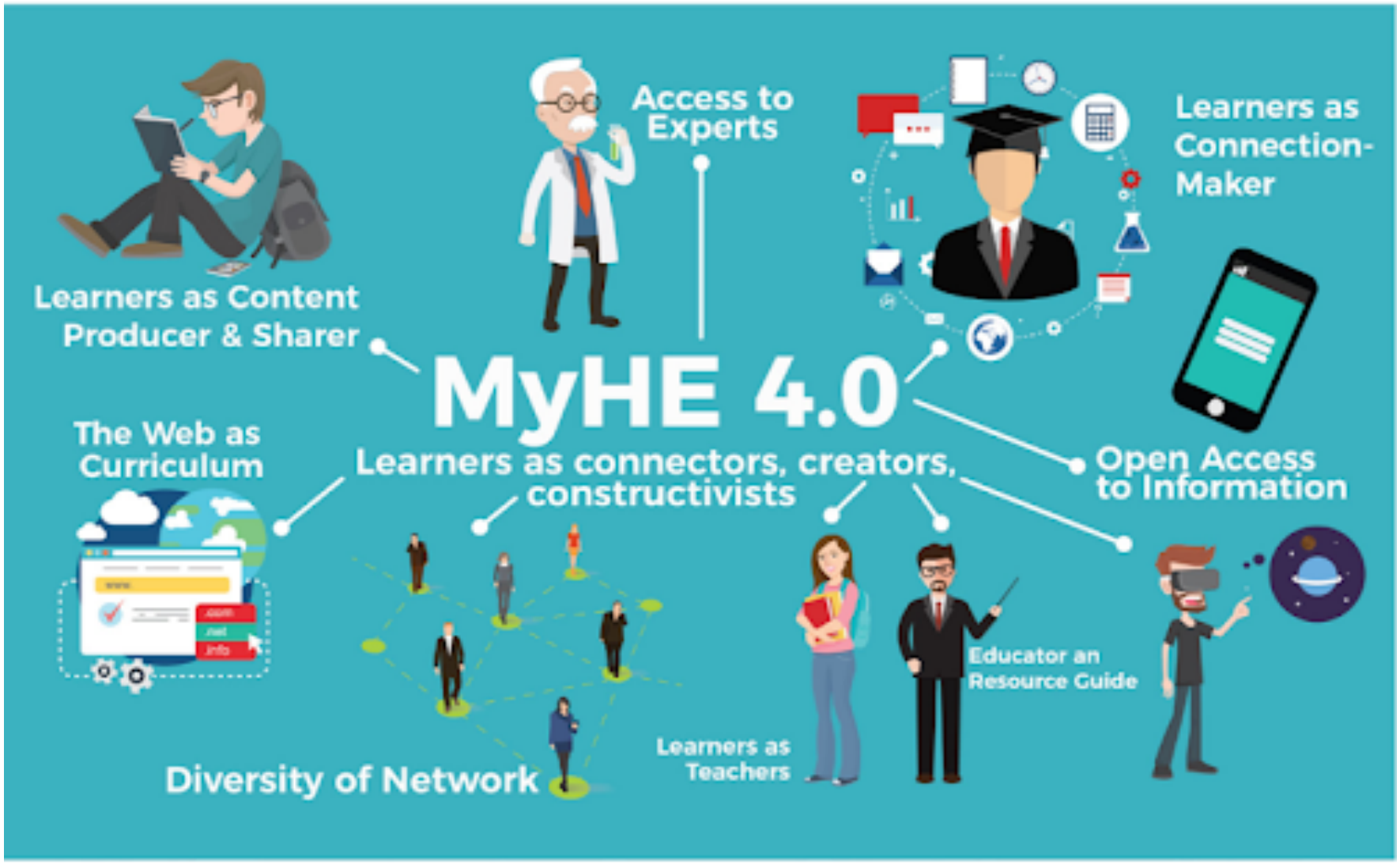
Accessing Global Expertise

Teacher as Orchestrator

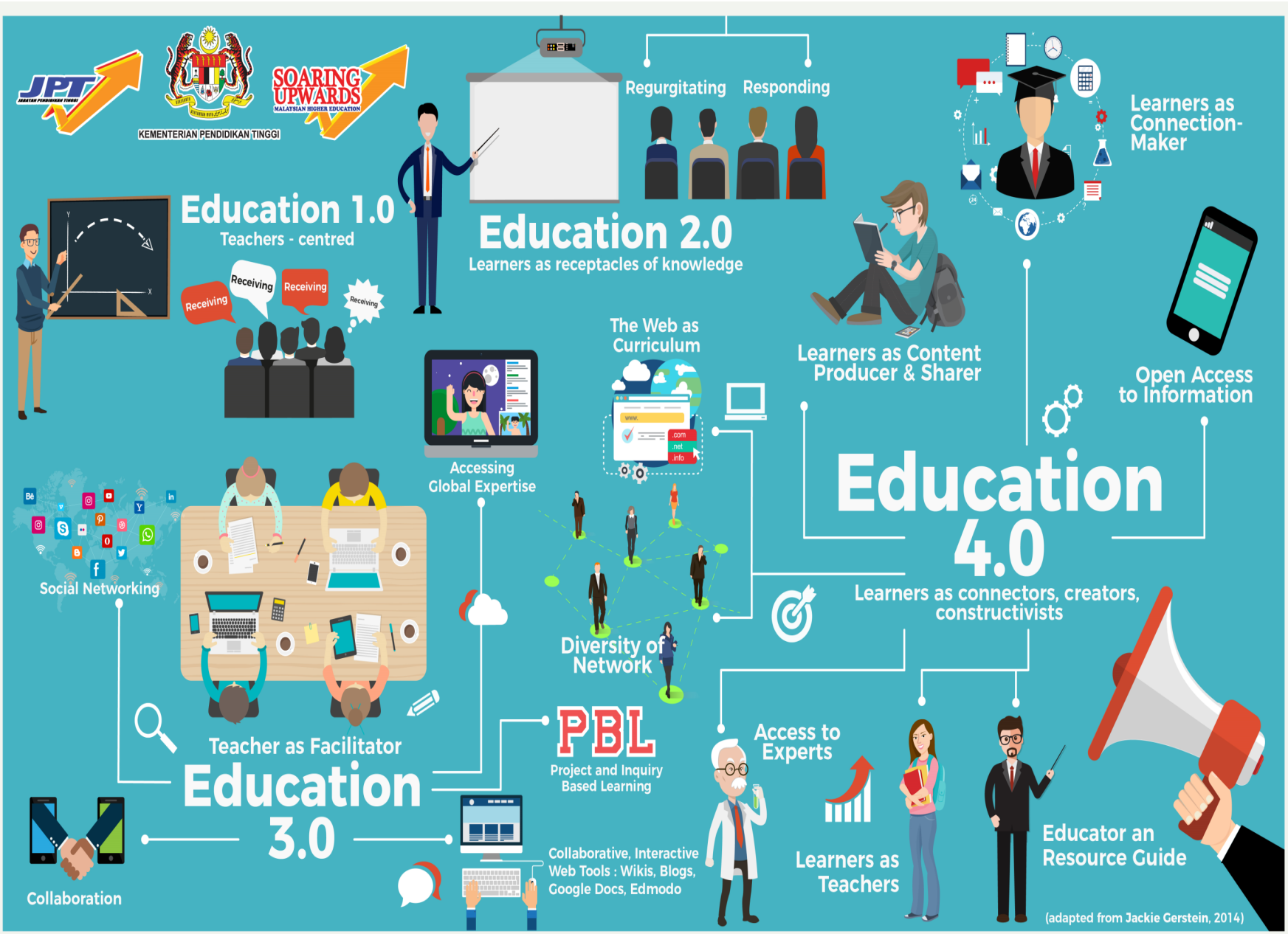
WIKI

Collaborative, Interactive Web Tools: Wikis, Blogs, Google Docs, Edmodo

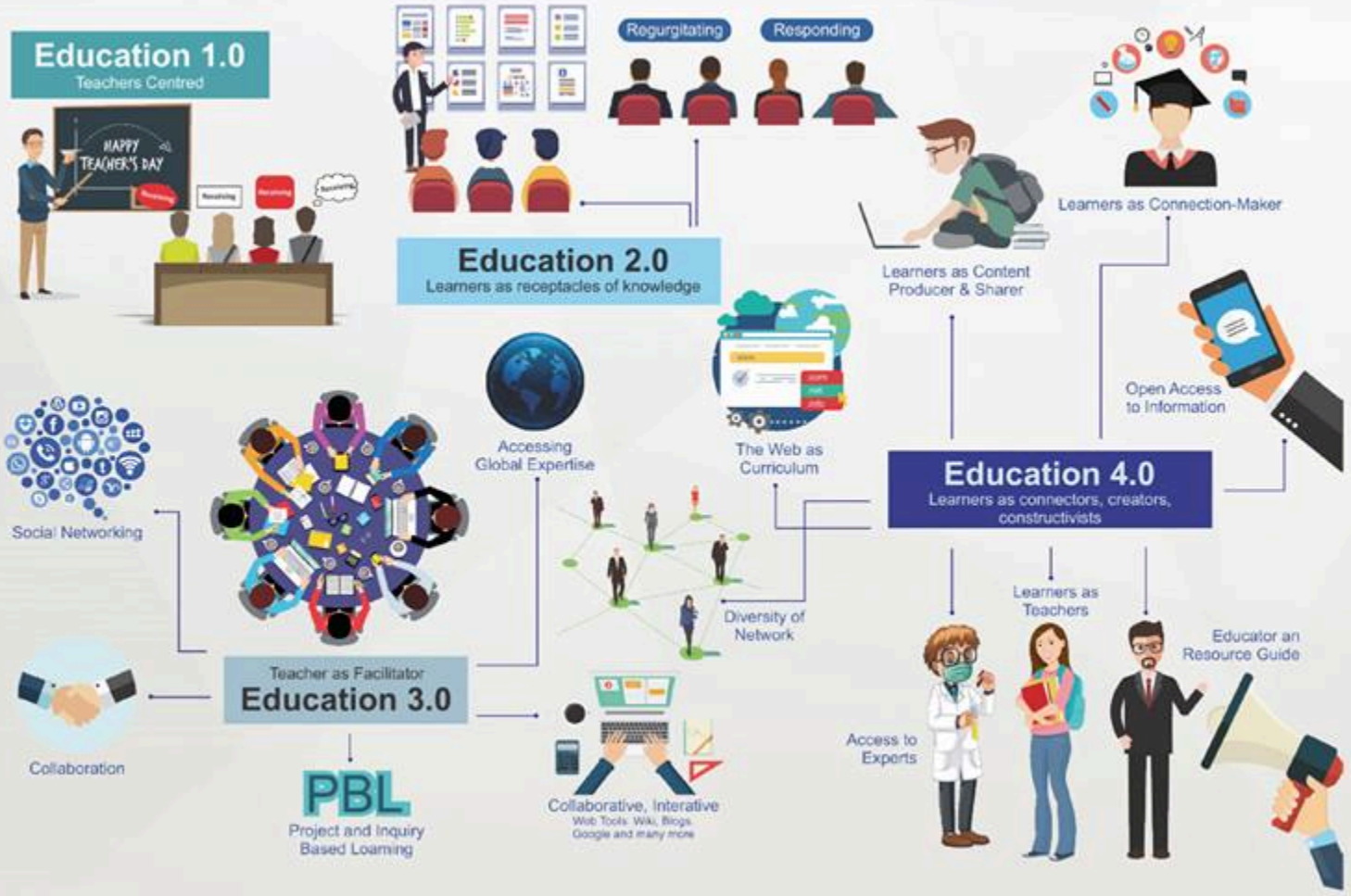

Learners as Content Producer & Sharer
E=mc²
Learner as Connection-Maker
Open Access to Information
Social Networks for Connecting
Education 3.0:
Learners as connectors, creators, constructivists
Diversity of Network
The Web as Curriculum
Access to Experts
Learners as Teachers
Educator on Resource Guide


Learners as Content Producer & Sharer
Access to Experts
Learners as Connection-Maker
MyHE 4.0
Learners as connectors, creators, constructivists
The Web as Curriculum
Open Access to Information
Diversity of Network
Learners as Teachers
Educator an Resource Guide

Education of the Future



Malaysia Education 4.0: Connectors, Creators, Constructivists...



Source: Abdul Rahim Hashim. (2017). *Preparing graduates for the 4th Industrial Revolution.* Plenary forum presented at the 7th World Engineering Education Forum 2017, Kuala Lumpur, Malaysia.


MINISTER OF HIGHER EDUCATION MANDATE 2018
HIGHER EDUCATION 4.0
KNOWLEDGE
INDUSTRY
HUMANITY

HIGHER EDUCATION 4.0

✓**Learning & Teaching 4.0**
- **Fluid & Organic Curriculum 30%**
- **Learning Spaces**
- **Latest Technologies**

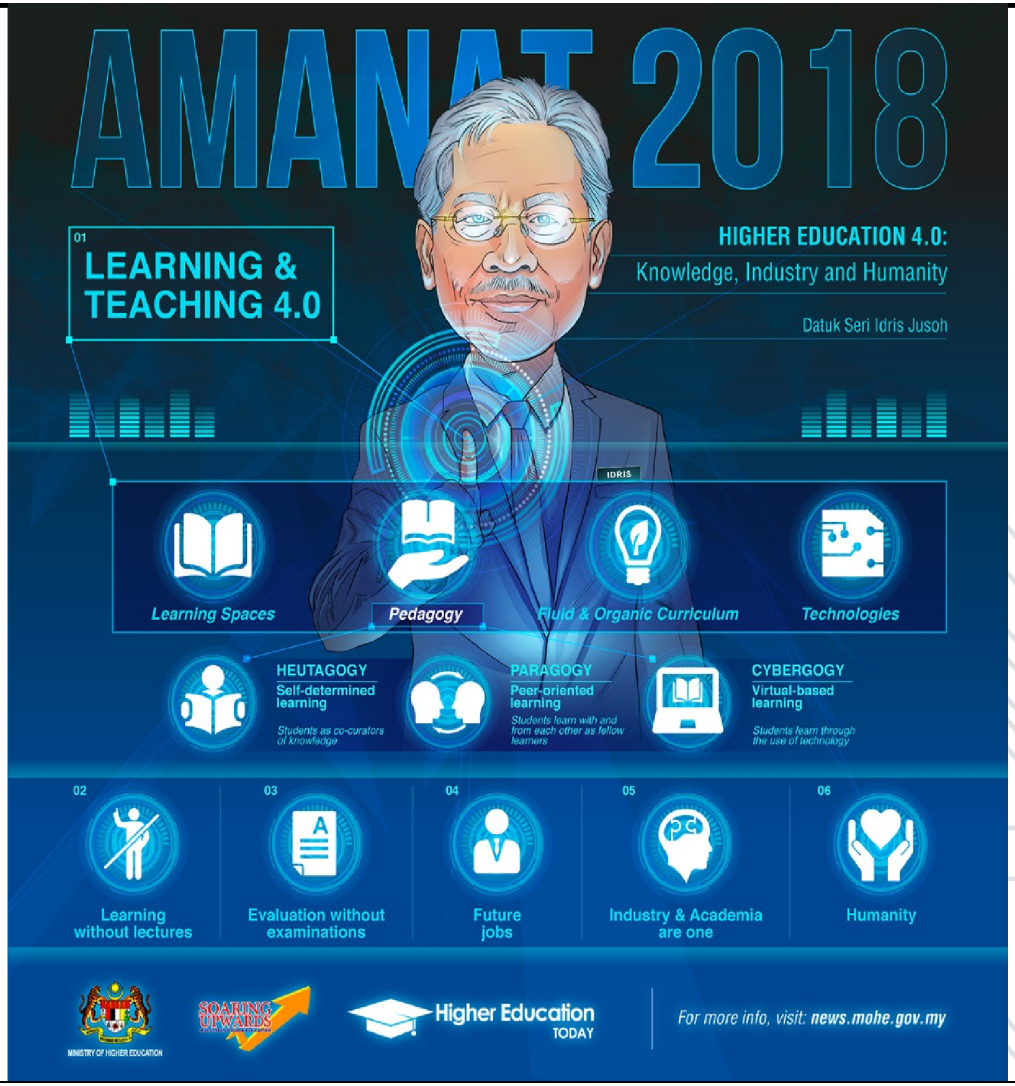
✓**Pedagogy** :
- **Heutagogy**
- **Paragogy**
- **Cybergogy**

✓**Learning without Lectures**

✓**Evaluation without Exam**

✓**Industry & Academia are One**

✓**Humanising**



REDESIGNING LEARNING SPACES

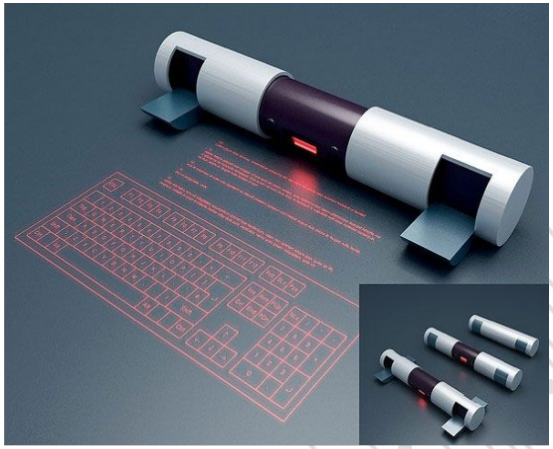
Lecture hall with multi-tiered collaborative tables

Maker Space in Shenzhen, China

FLUID & ORGANIC CURRICULUM

Cryptocurrencies

Foldable displays



Tactile Projection

02

Learning
without lectures

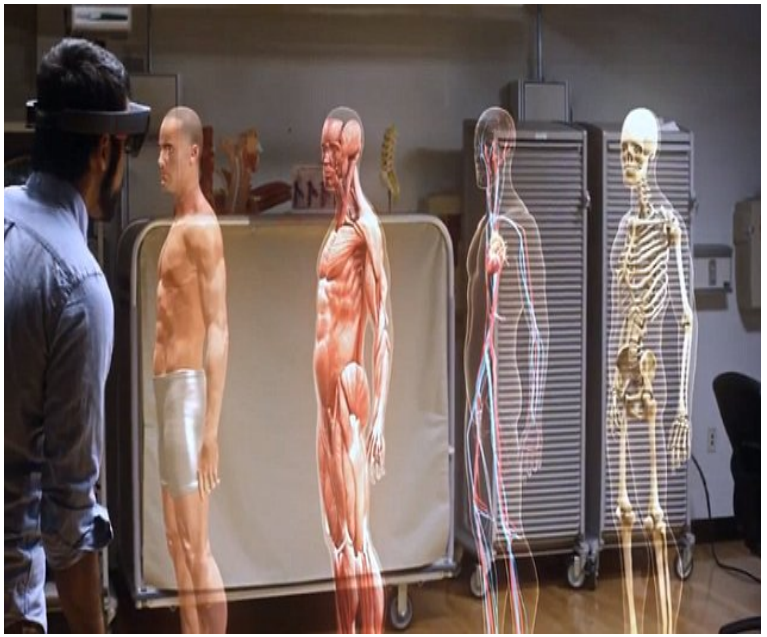
03

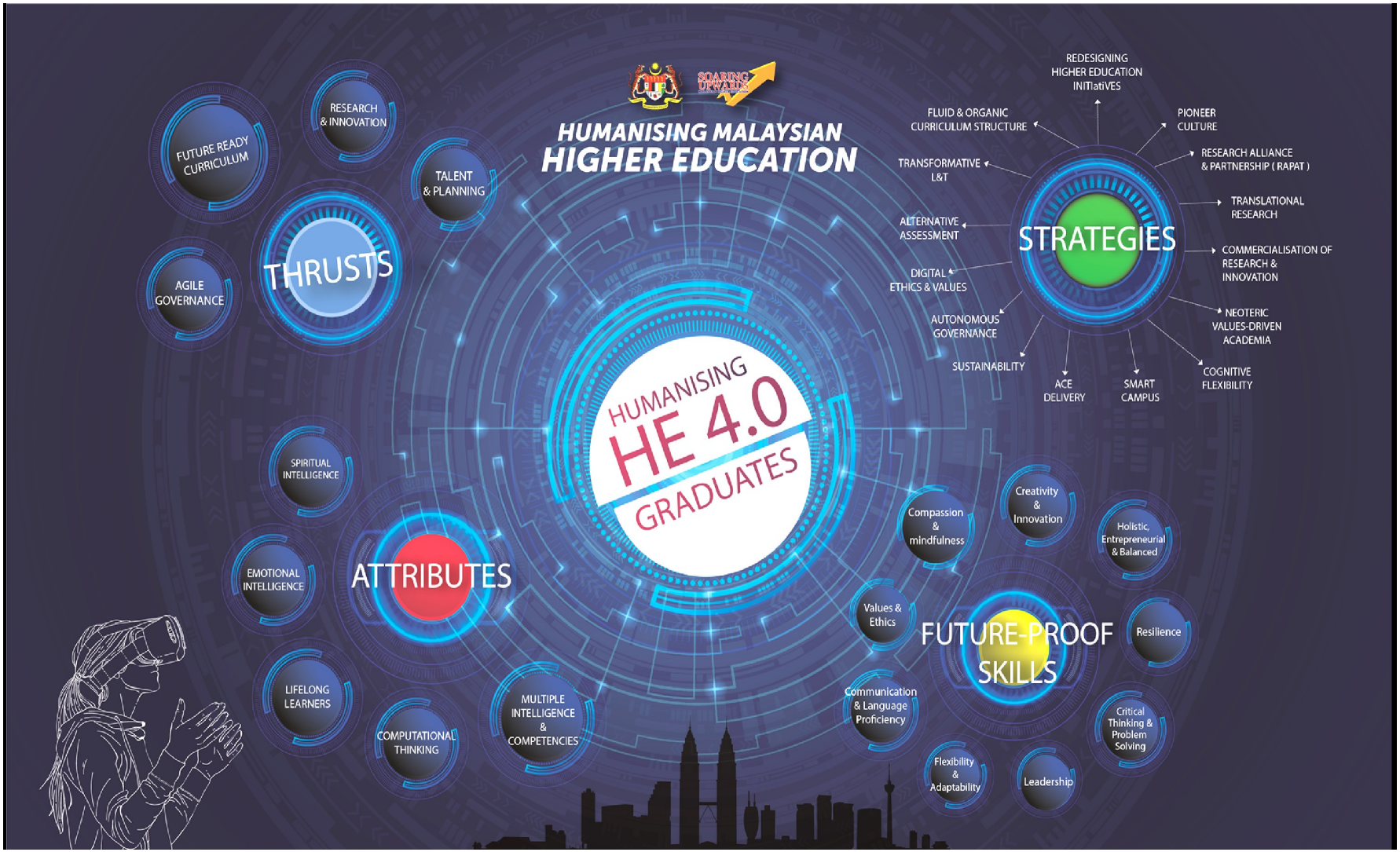
Evaluation without
examinations

Proposed classroom of the future

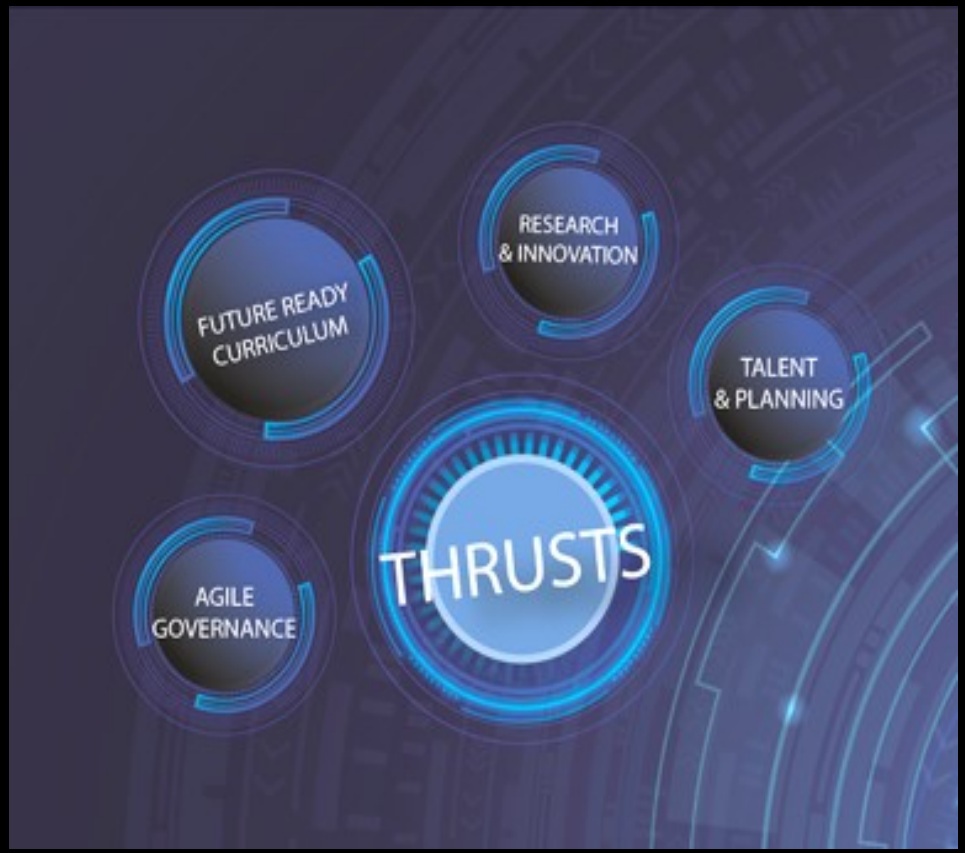
1) Digital Content
   - Gamified the existing selected curriculum
2) Software
   - AR/VR
   - Mobile apps
3) Hardware
   - Internet of Thing

Uni-Industry Collaborative Inventions




HUMANISING MALAYSIAN
HIGHER EDUCATION
SOARING UPWARDS
HUMANISING
HE 4.0
GRADUATES
THRUSTS
FUTURE READY CURRICULUM
RESEARCH & INNOVATION
TALENT & PLANNING
AGILE GOVERNANCE
STRATEGIES
REDESIGNING HIGHER EDUCATION INITIatiVES
FLUID & ORGANIC CURRICULUM STRUCTURE
PIONEER CULTURE
TRANSFORMATIVE L&T
RESEARCH ALLIANCE & PARTNERSHIP (RAPAT)
TRANSLATIONAL RESEARCH
ALTERNATIVE ASSESSMENT
COMMERCIALISATION OF RESEARCH & INNOVATION
DIGITAL ETHICS & VALUES
NEOTERIC VALUES-DRIVEN ACADEMIA
AUTONOMOUS GOVERNANCE
SUSTAINABILITY
ACE DELIVERY
SMART CAMPUS
COGNITIVE FLEXIBILITY
ATTRIBUTES
SPIRITUAL INTELLIGENCE
EMOTIONAL INTELLIGENCE
LIFELONG LEARNERS
COMPUTATIONAL THINKING
MULTIPLE INTELLIGENCE & COMPETENCIES
FUTURE-PROOF SKILLS
Compassion & mindfulness
Creativity & Innovation
Holistic, Entrepreneurial & Balanced
Values & Ethics
Resilience
Communication & Language Proficiency
Critical Thinking & Problem Solving
Flexibility & Adaptability
Leadership


FRAMING MALAYSIAN
HIGHER EDUCATION 4.0
FUTURE-PROOF TALENTS


FUTURE READY CURRICULUM
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FRAMING MALAYSIAN
HIGHER EDUCATION 4.0
FUTURE-PROOF TALENTS


REDESIGNING
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FUTURE-PROOF TALENTS


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SPIRITUAL INTELLIGENCE
EMOTIONAL INTELLIGENCE
ATTRIBUTES
LIFELONG LEARNERS
COMPUTATIONAL THINKING
MULTIPLE INTELLIGENCE & COMPETENCIES

A BIT OF HANDS-ON

PLEASE WELCOME DR (to be) NOR SHAMSHIDA BINTI SHAMSUDIN

WAY FORWARD

Malaysian higher education & the 4IR

REDESIGNING HIGHER EDUCATION

SOARING UPWARDS
MALAYSIAN HIGHER EDUCATION

RECOGNITION

LEARNING NEVER STOPS
APEL

MALAYSIA MOOC
MASSIVE OPEN ONLINE LEARNING

UNIVERSITI MALAYSIA KELANTAN
YEAR 1 & 2 — UNIVERSITY
YEAR 3 — INDUSTRY
YEAR 4 — START-UP BUSINESS

UPM
YEAR 1 & 2 — UNIVERSITY
YEAR 3 & 4 — INDUSTRY (AGRICULTURE)

2u2i
Work-based learning degree programmes

@ FACULTY PROGRAMME

Modular Stackable
TVET
Technical & Vocational Education & Training

iCGPA
Holistic Graduates : Integrated Cumulative Grade Point Average

UNIVERSITY OF MALAYA
133rd in the World

2013	2014	2015	2016
167	151	146	133

TOP 1% in the World
Malaysian Research Universities
*There are approximately 30,000 universities worldwide

1	Massachusetts Institute of Technology (MIT)	
6	University of Oxford	
12	National University of Singapore (NUS)	
75	The University of Nottingham	
133	Universiti Malaya	
135	Kyushu University	
140	Cardiff University	
214	Georgetown University	
252	Chulalongkorn University	
252	RMIT University	
270	Universiti Putra Malaysia	
276	Queensland University of Technology (QUT)	
288	University of South Australia	
288	Universiti Teknologi Malaysia	
291	University of Ottawa	
296	University of California, Santa Cruz	
302	Universiti Kebangsaan Malaysia	
325	Universitas Indonesia	
327	Heriot Watt University	
330	Universiti Sains Malaysia	
363	George Washington University	

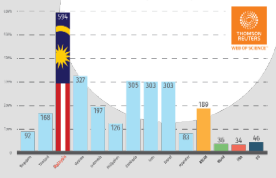
TOP 100 Subjects in the World

SUBJECT	2015	2016
DEVELOPMENT STUDIES	32	30
ENGINEERING (ELECTRICAL & ELECTRONIC)	51-100	37
ENGINEERING (CHEMICAL)	51-100	46

TOP 51-100

KUALA LUMPUR
MOST AFFORDABLE CITY IN THE WORLD FOR STUDENTS
QS BEST STUDENT CITIES SURVEY 2013/14 & 2015/16

RESEARCH
Growth in Research Output - last 10 years.



THOMSON REUTERS
THE WORLD'S MOST INFLUENTIAL SCIENTIFIC MINDS
2014 - 2016

Cambridge Intervarsity Debate Champion

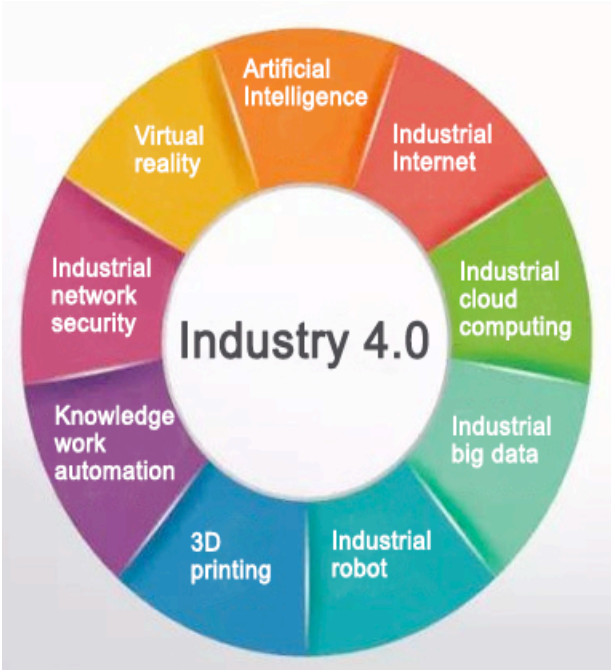
11 International University Branches in Malaysia

HERIOT WATT UNIVERSITY
Raffles University
Newcastle University Medicine Malaysia
Southampton
Curtin University
The University of Nottingham
MONASH University
University of Reading MALAYSIA
SWINBURNE
ASIA School of Business
MITSloan MANAGEMENT

TOP 50 UNDER 50

UNIVERSITY	RANK
UNIVERSITI PUTRA MALAYSIA	17
UNIVERSITI TEKNOLOGI MALAYSIA	25
UNIVERSITI KEBANGSAAN MALAYSIA	26
UNIVERSITI SAINS MALAYSIA	33

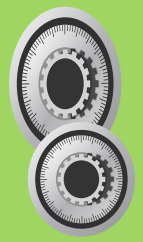
21st Century Curriculum for Malaysian Higher Education



1. LEARNING & INNOVATION SKILLS

21st Century Skills

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration



2. INFORMATION, MEDIA AND TECHNOLOGY SKILLS

- Information Literacy
- Media Literacy
- ICT Literacy

3. LIFE AND CAREER SKILLS

- Flexibility and Adaptability
- Initiative And Self-direction
- Social And Cross-cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

UiTM’s fresh from the oven

Week Without Walls @UiTM

A week free from the normal classroom on campus

Students may study online, go global, go for field experience, be involved in service learning, assist community activities, learn from industry experts or any subject matter experts from other universities, learn from peers, and much more without being confined to the four walls of the classroom.

No lectures in class !

Instructors design the learning activities based on stipulated learning outcomes, monitor and facilitate learning....and assess the achievement of the outcomes

Commencing March 2018..
Faculties and campuses plan for a **Week Without Walls** for all or some courses; students take responsibility and complete their learning tasks.

Please contact the UiTM Academic Affairs Division @55442009 for more information

UNIVERSITI TEKNOLOGI MARA

WISDOM WEDNESDAY (2 – 3 Credits of Electives)

- Aim to cultivate creativity, curiosity and critical thinking, while nurturing diverse knowledge understanding aimed at promoting adaptability and resilience.

WEDNESDAY

SCIENCE & TECHNOLOGY

MANAGEMENT & SOCIAL SCIENCE

HUMANITIES

Examples of Areas

1. Design Thinking
2. Human Nutrition
3. Community Leadersh
4. Scientific enquiry
5. Quantitative Reasonir
6. Analytics
7. History
8. Sociology & Anthropo
9. Religion, Ethics & Worldview
10. Technologies
11. Language & Cultural Diversity
12. Literature & Humanitie
13. Philosophy & Social Thoughts
14. Music Appreciation
15. Arts & Heritage

"ULTIMATELY TECHNOLOGY IS A **TOOL.**
PEOPLE COME FIRST.

ITS PURPOSE SHOULD BE CENTERED ON HUMANITY AND PUBLIC INTEREST.

WHERE TOLERANCE, RESPECT, CARE & COMPASSION COME INTO PLAY.

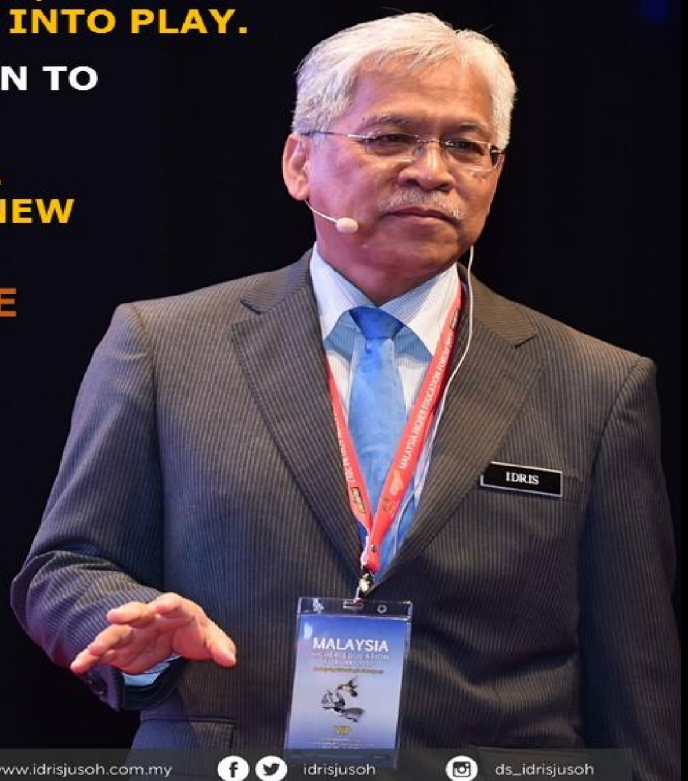
EVENTUALLY IT BOILS DOWN TO CULTURE & VALUES.

WITH THE 4TH INDUSTRIAL REVOLUTION USHERING A NEW CULTURAL RENAISSANCE.

IT NEEDS A COLLECTIVE WISDOM."

DATO' SERI IDRIS JUSOH, MINISTER OF HIGHER EDUCATION
at the opening of Malaysia Higher Education Forum 2017
23 November 2017 | Kuala Lumpur Convention Centre

SOARING UPWARDS
MALAYSIAN HIGHER EDUCATION



For more information, visit: news.mohe.gov.my www.idrisjusoh.com.my idrisjusoh ds_idrisjusoh

Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum

Fourth Industrial Revolution is within the control of all of us as long as we are able to collaborate across geographies, sectors and disciplines to grasp the opportunities it presents.

Schwab calls for leaders and citizens to:

"together shape a future that works for all by putting people first, empowering them and constantly reminding ourselves that all of these new technologies are first and foremost tools made by people for people."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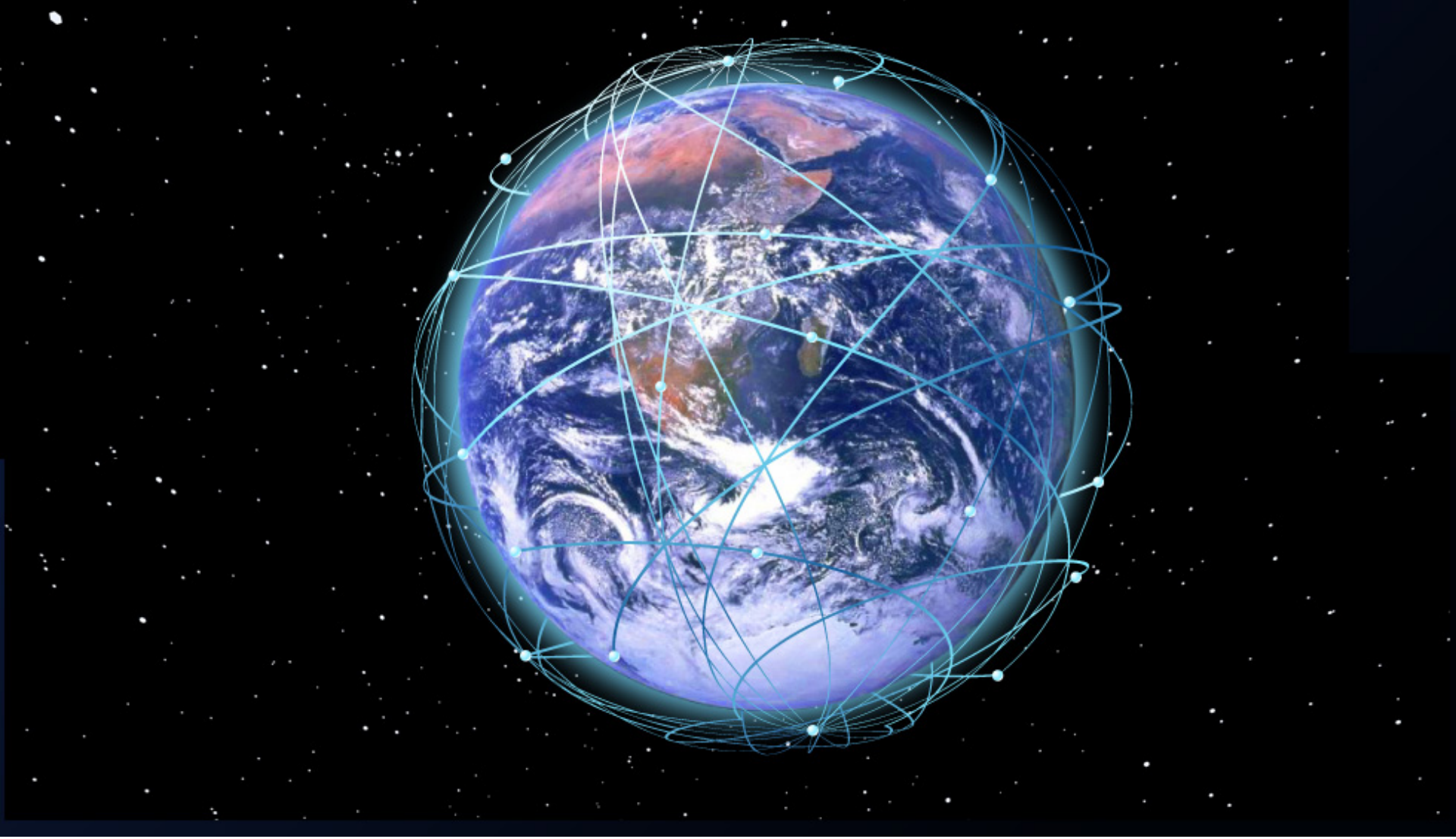

Thank You

REFERENCES

- MOHE
- MINISTER'S MANDATE, 2018
- MINISTER'S SPEECH AT MALAYSIAN EDUCATION SUMMIT 2018
- UHEK, UITM
- * some slides are taken from the listed references