

THE 4TH INDUSTRIAL REVOLUTION AND SUPER SKILLS FOR THE 21ST CENTURY

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- The super skills for the 21st Century
- Way forward

Malaysian Education & National Education Philosophy: a must REVISIT



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NATIONAL PHILOSOPHY OF EDUCATION

Education in Malaysia is an ongoing effort towards further developing the potential of individuals in a holistic and integrated manner so as to produce individuals who are intellectually, spiritually, emotionally, physically balanced and harmonious, based on a firm belief in and devotion to God. Such an effort is design to produce Malaysian citizens who are knowledgeable and competent, who possess high moral standards, and who are responsible and capable of achieving a high level of personal well-being as well as being able to contribute to the betterment of the family, the society and the nation at large.

Malaysia Education Blueprint
(Preschool to Post-Secondary Education)

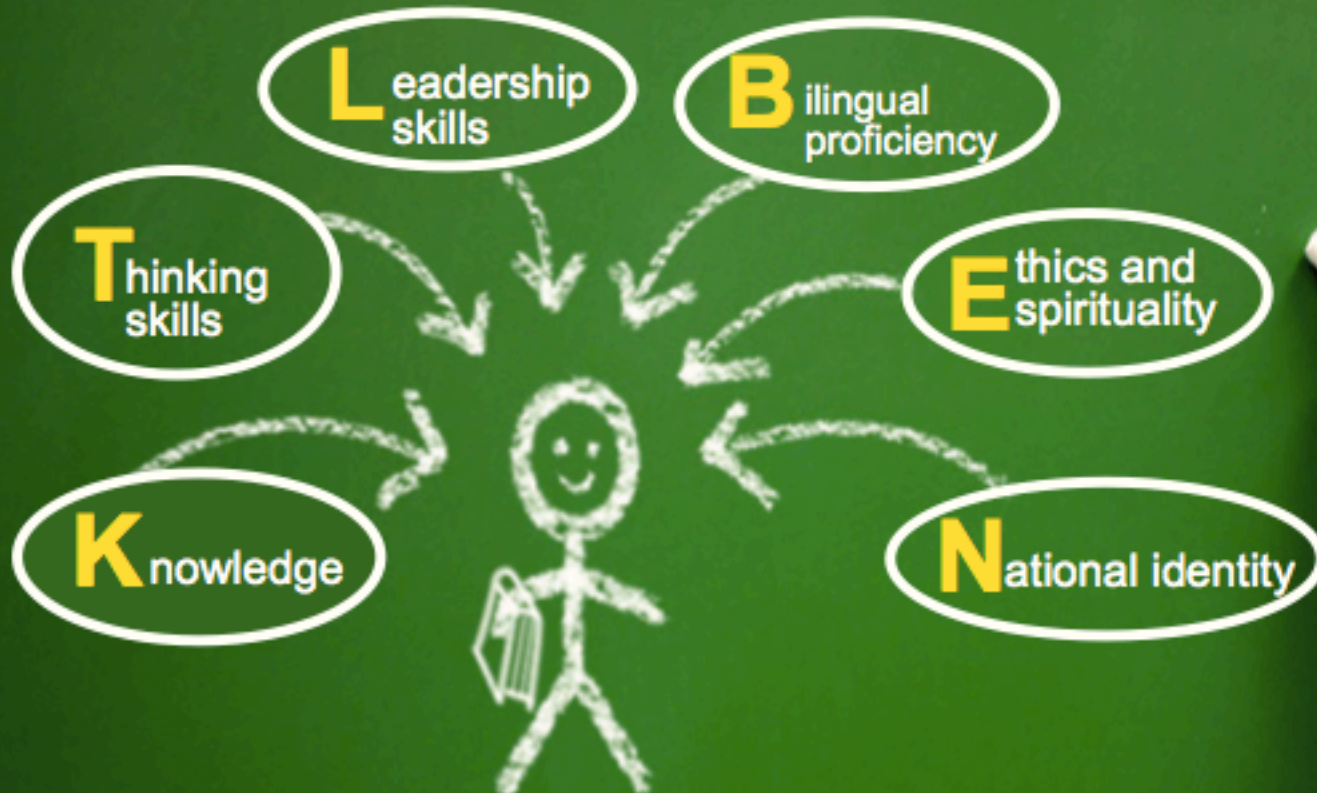


Malaysia Education Blueprint 2013-2025

(Preschool to Post-Secondary Education)

Six key attributes needed by every student to be globally competitive

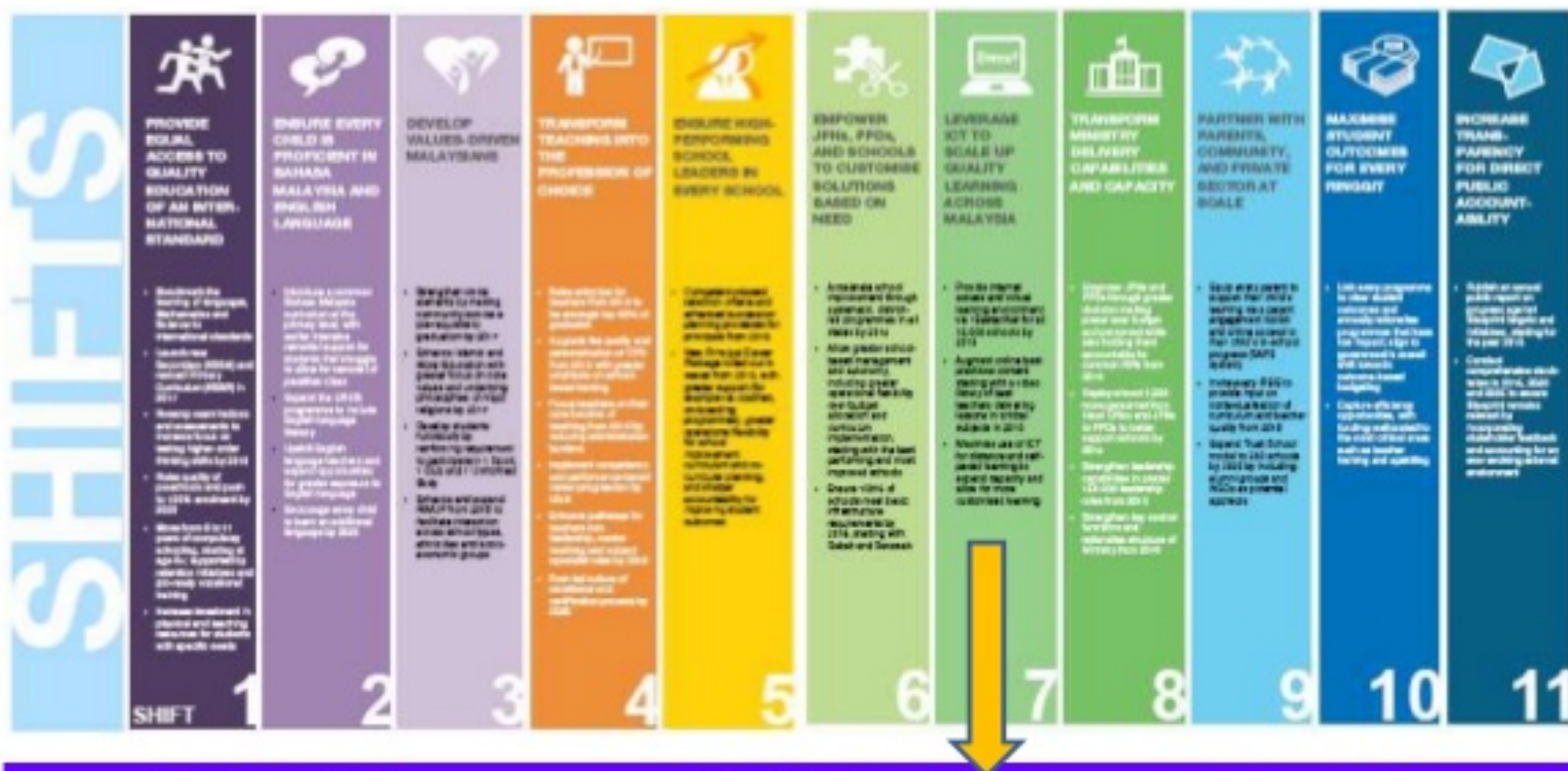
Every student will have ...



... aligned with the National Education Philosophy



11 Shifts to Transform the Education System



Shift 7: Leverage ICT to Scale up Quality Learning Across Malaysia

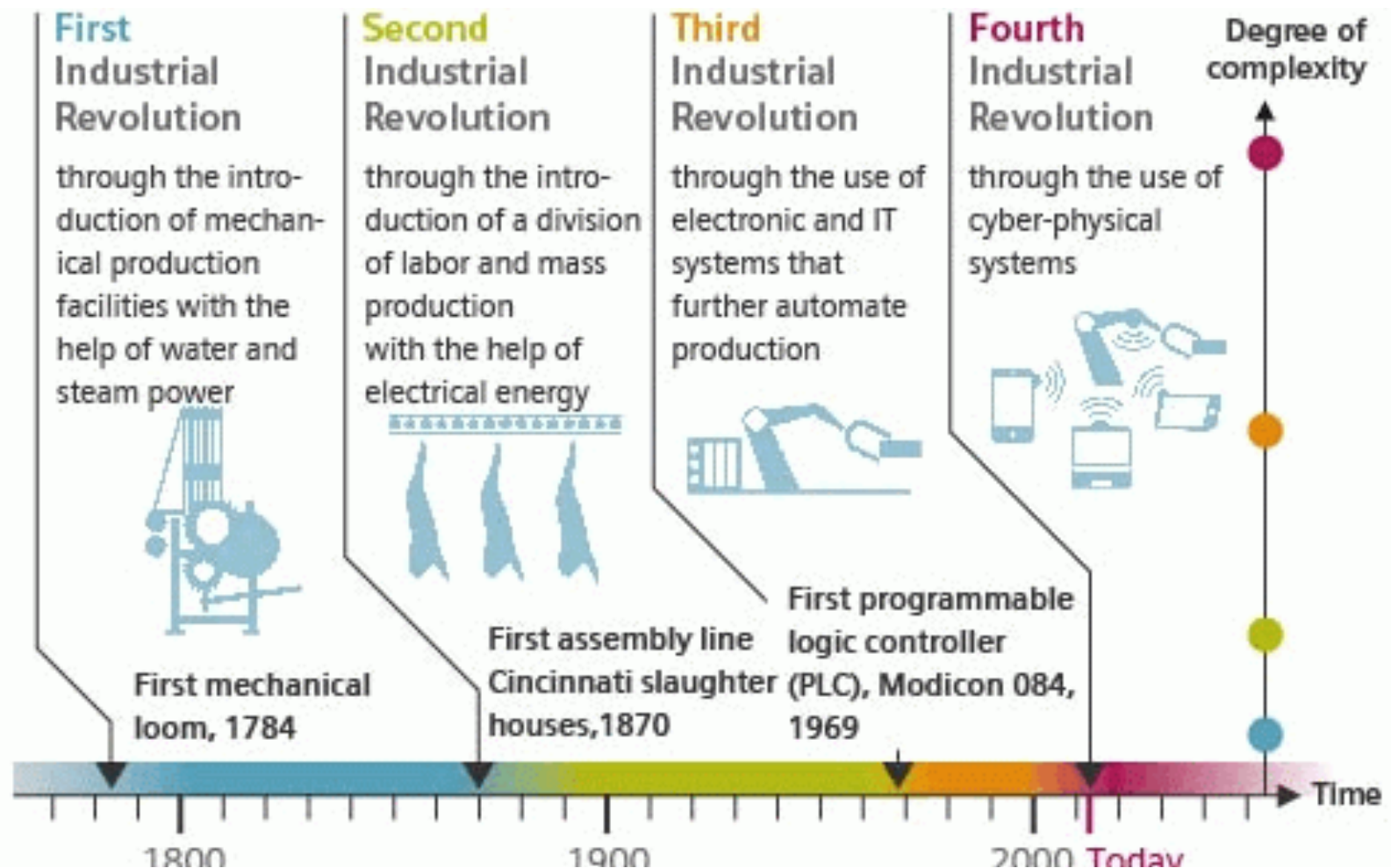
WORLD ECONOMIC FORUM, 2016

WHAT IS INDUSTRIAL REVOLUTION?

Collins' Definition of IR

- the change in social and economic organization resulting from the replacement of hand tools by machine and power tools and the development of large-scale industrial production

INDUSTRIAL REVOLUTION



4IR



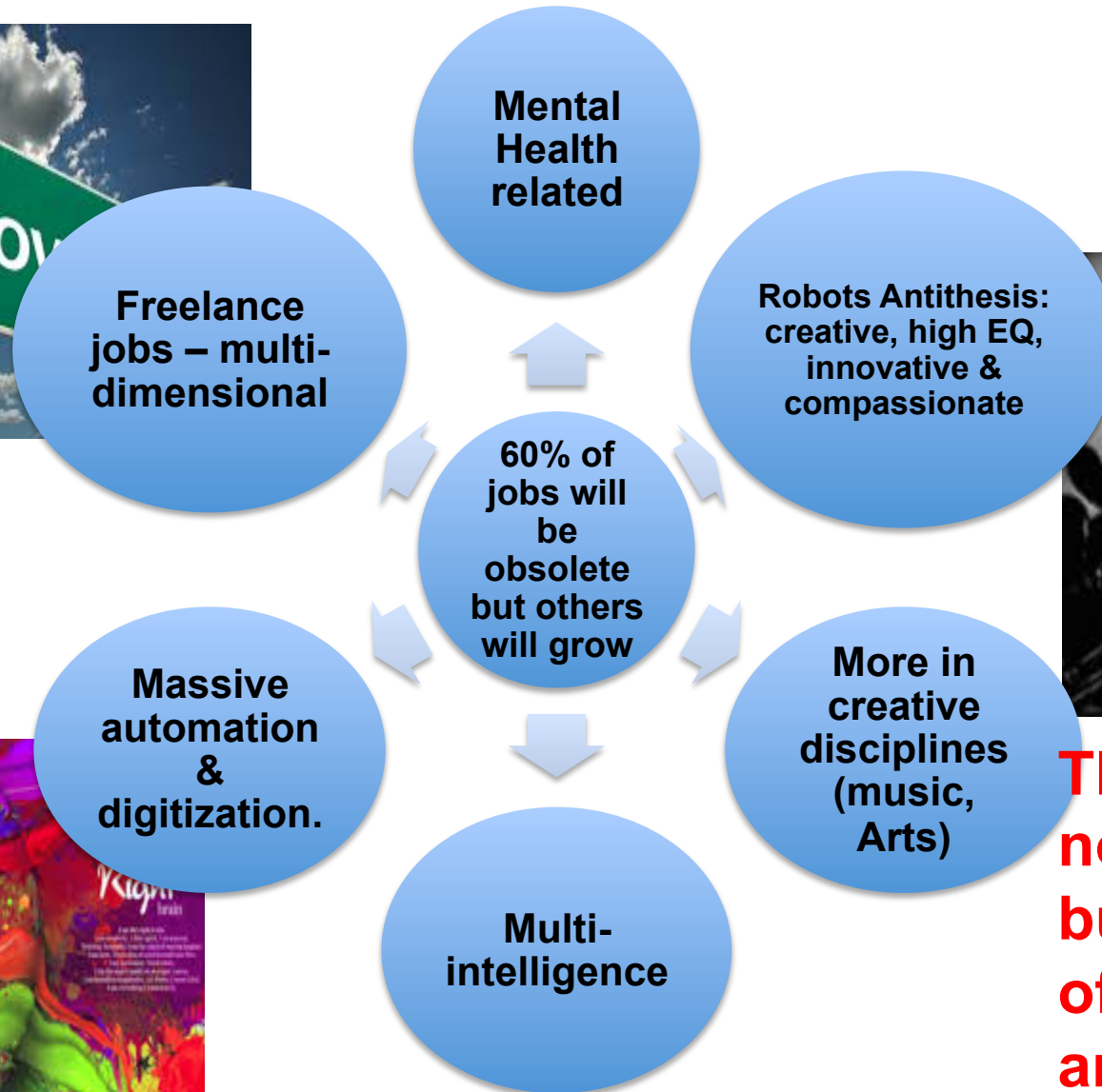
Professor Klaus Schwab, Founder and Executive Chairman of the World Economic Forum

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.”

FUTURE JOB TRENDS



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



FUTURE JOBS



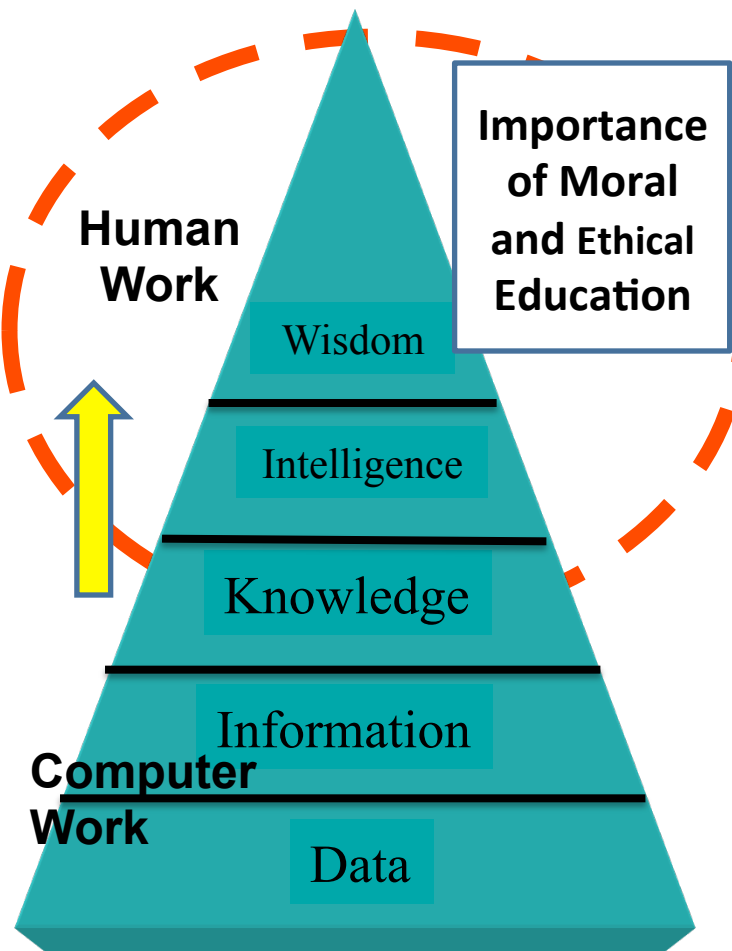
1. **Data Analytics**– to help companies make sense and derive insights from the data generated by technological disruptions.
2. **Social skills** such as persuasion, emotional intelligence & teaching others - higher demand across industries than narrow technical skills (programming or equipment operation and control)

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



21st Century Attributes

Towards Knowledge Economy



21st Century Learning Framework – Student Outcomes

High Order Thinking and Multiple Intelligences

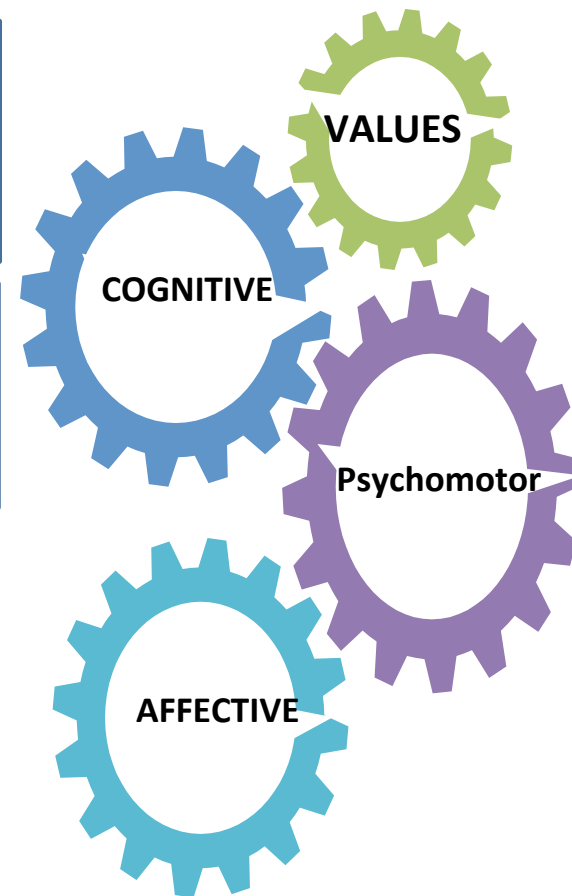
Learning and Innovation Skills
(4Cs: Critical Thinking, Communication, Collaboration and Creativity)

Content Knowledge and 21st Century Themes

Information, Media and Technology Skills

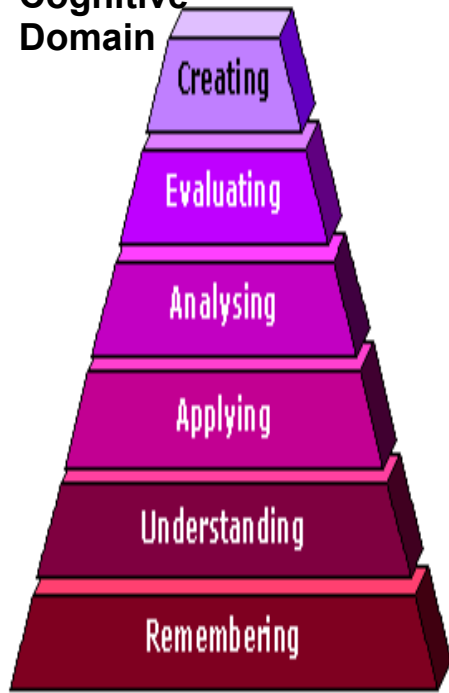
Life and Career Skills:

Balanced Development Needed



Higher Order Development

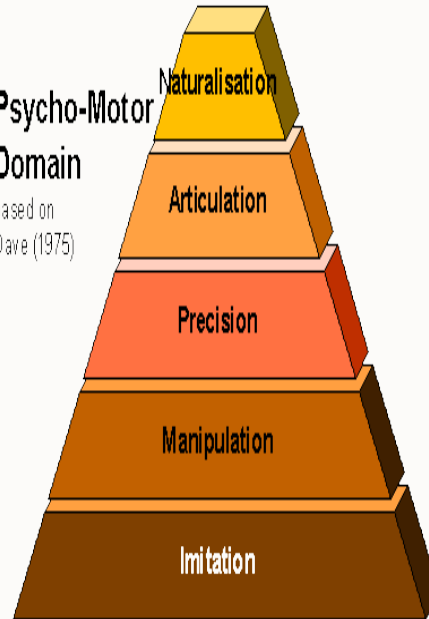
Cognitive Domain



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

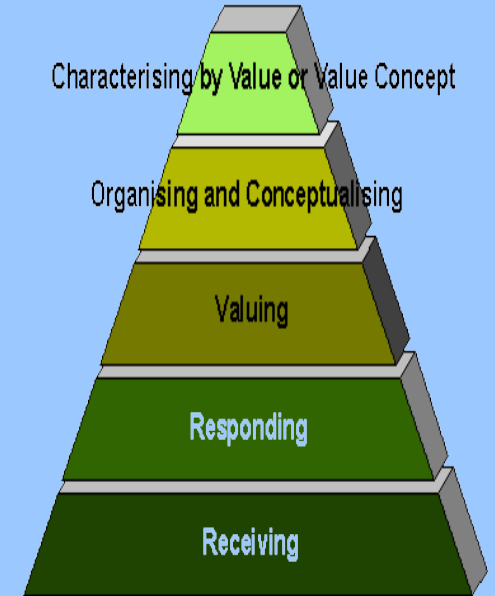
Psycho-Motor Domain

based on Dave (1975)



Automation and robotics are catching up, but human skilled and creative works are still required. Through theory and practical for higher cognitive and psychomotor skills.

Affective domain



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

Higher Order Thinking

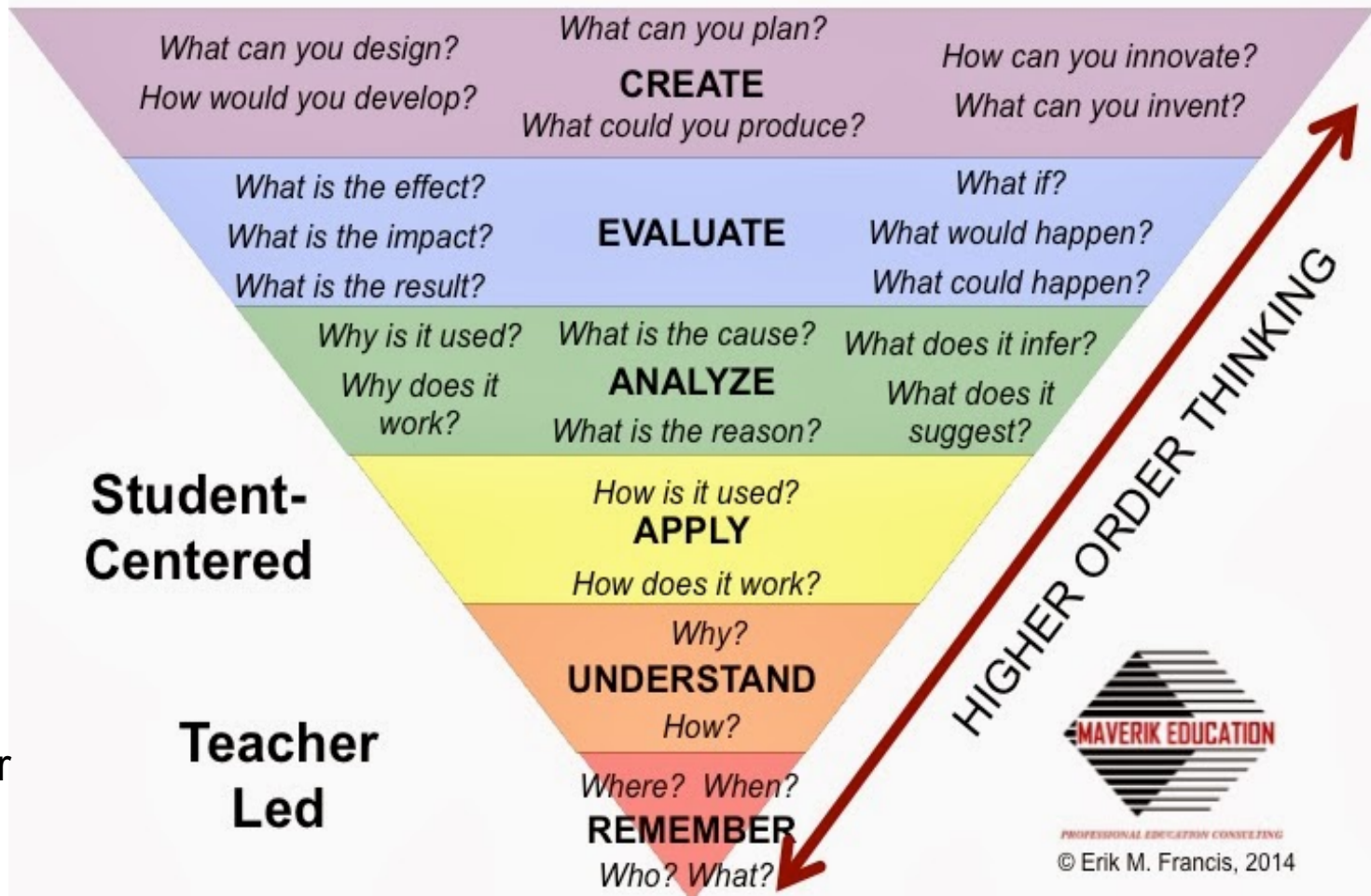


Skill rapidly acquired by smart machines/systems

Human Work

Computer Work

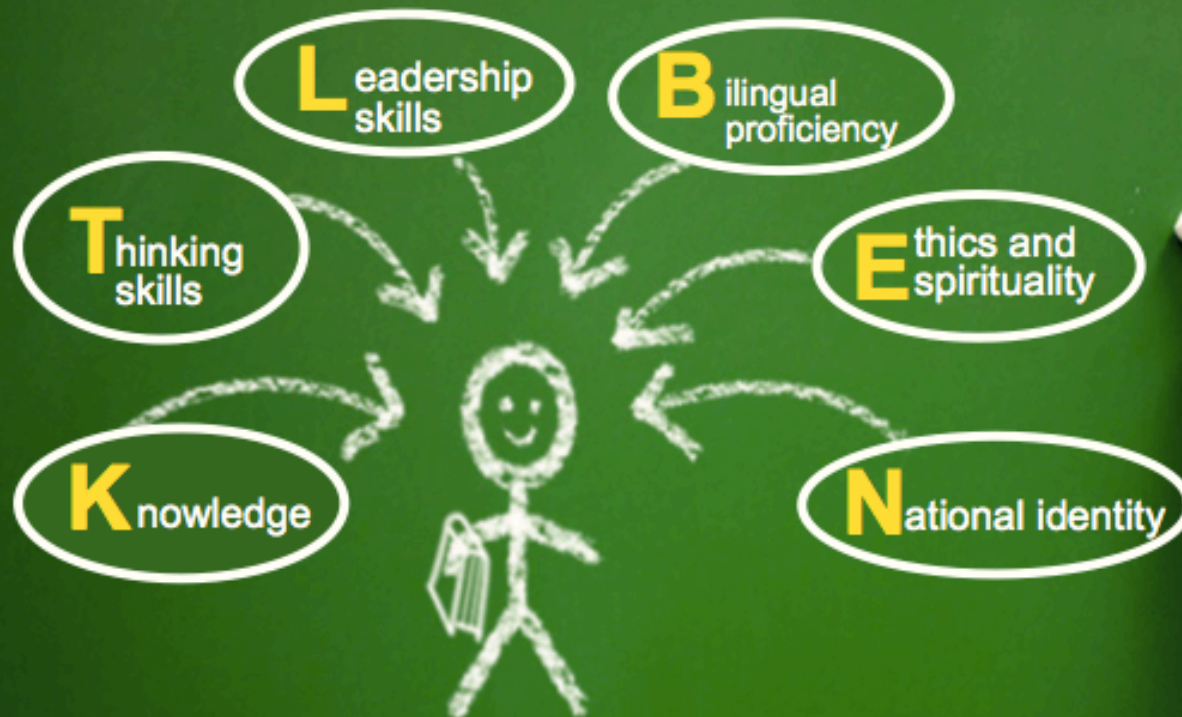
Higher Order Thinking (Bloom's Revised Taxonomy)



21st C ATTRIBUTES & MALAYSIAN STUDENTS' ATTRIBUTES

Six key attributes needed by every student to be globally competitive

Every student will have ...



... aligned with the National Education Philosophy

HOW WILL 4IR IMPACT 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)

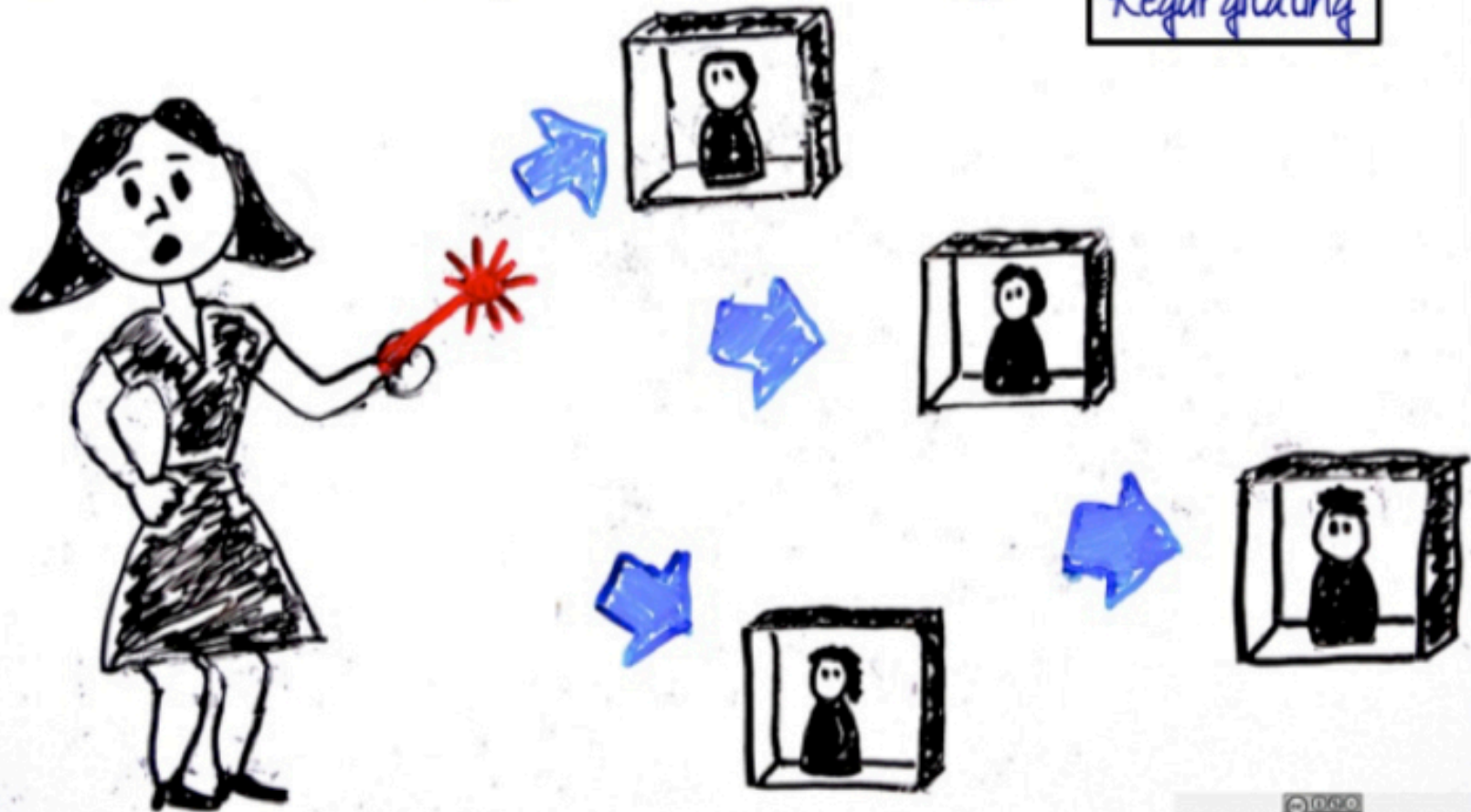
EDUCATION 4.0

- Education 1.0 = Lectures/Teacher talk 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





Social Networking



Project and Inquiry
Based Learning

PBL



Accessing Global
Expertise



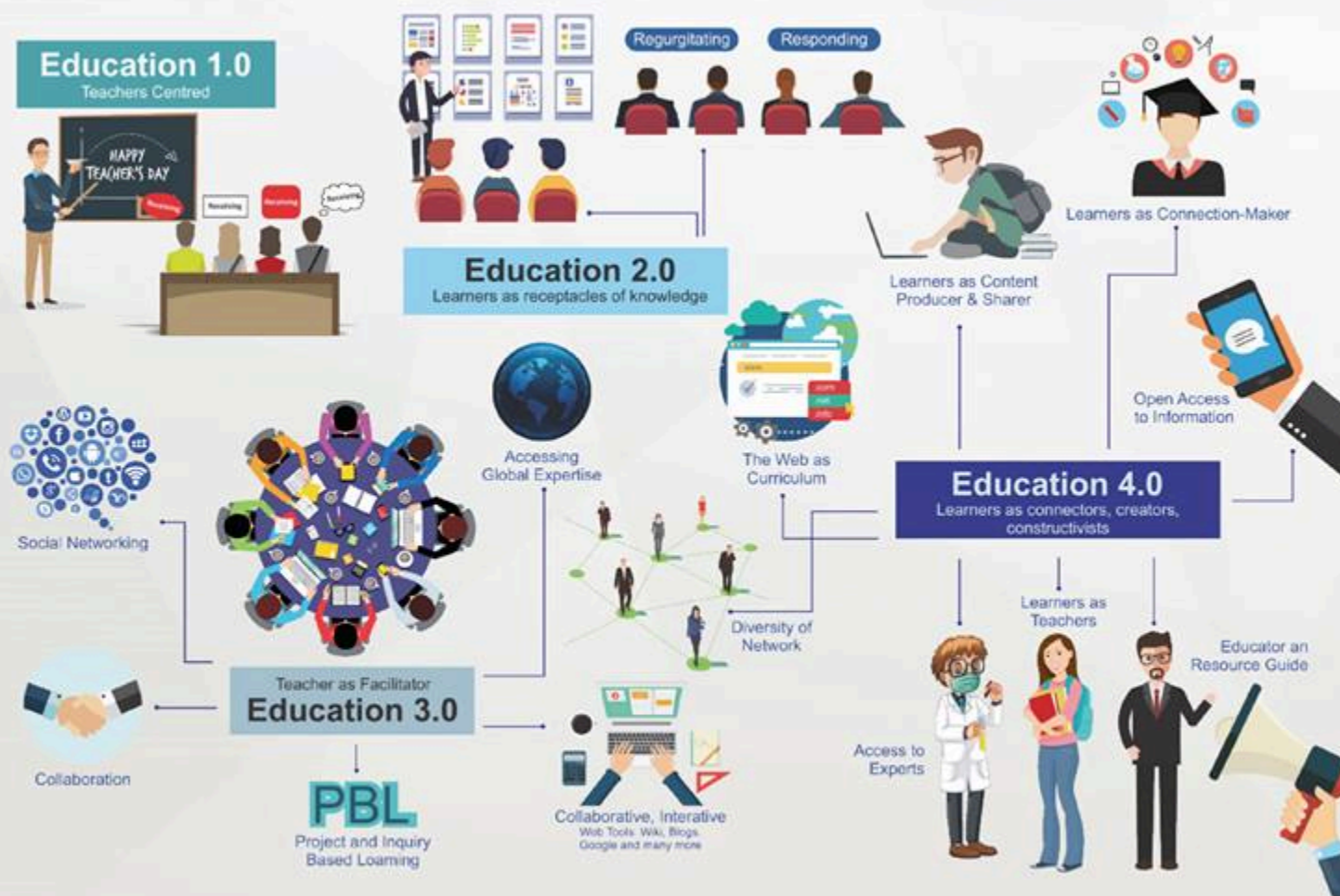
WIKI

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

Teacher as Orchestrator



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.

THE SUPER SKILLS FOR 21ST CENTURY



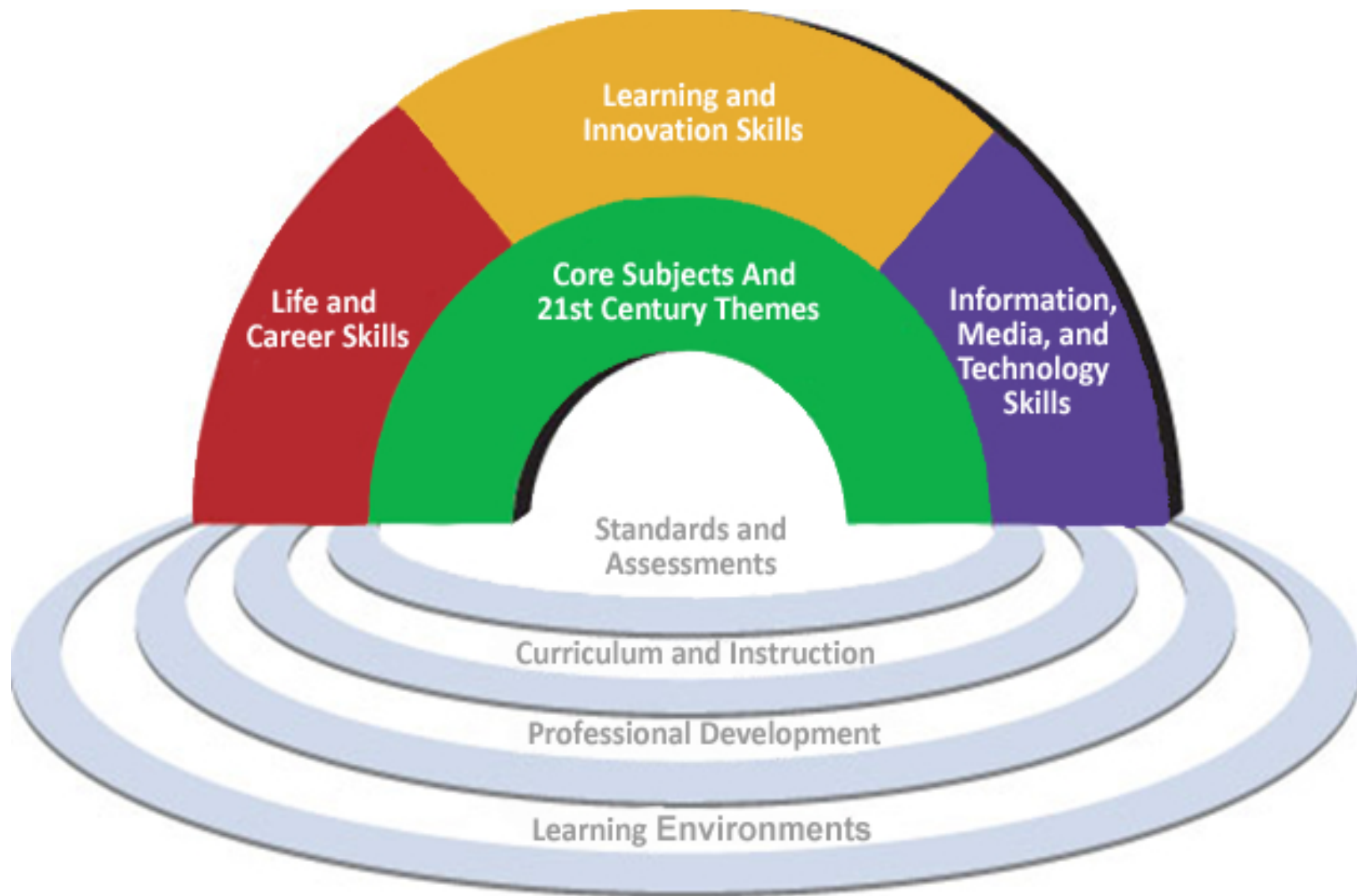
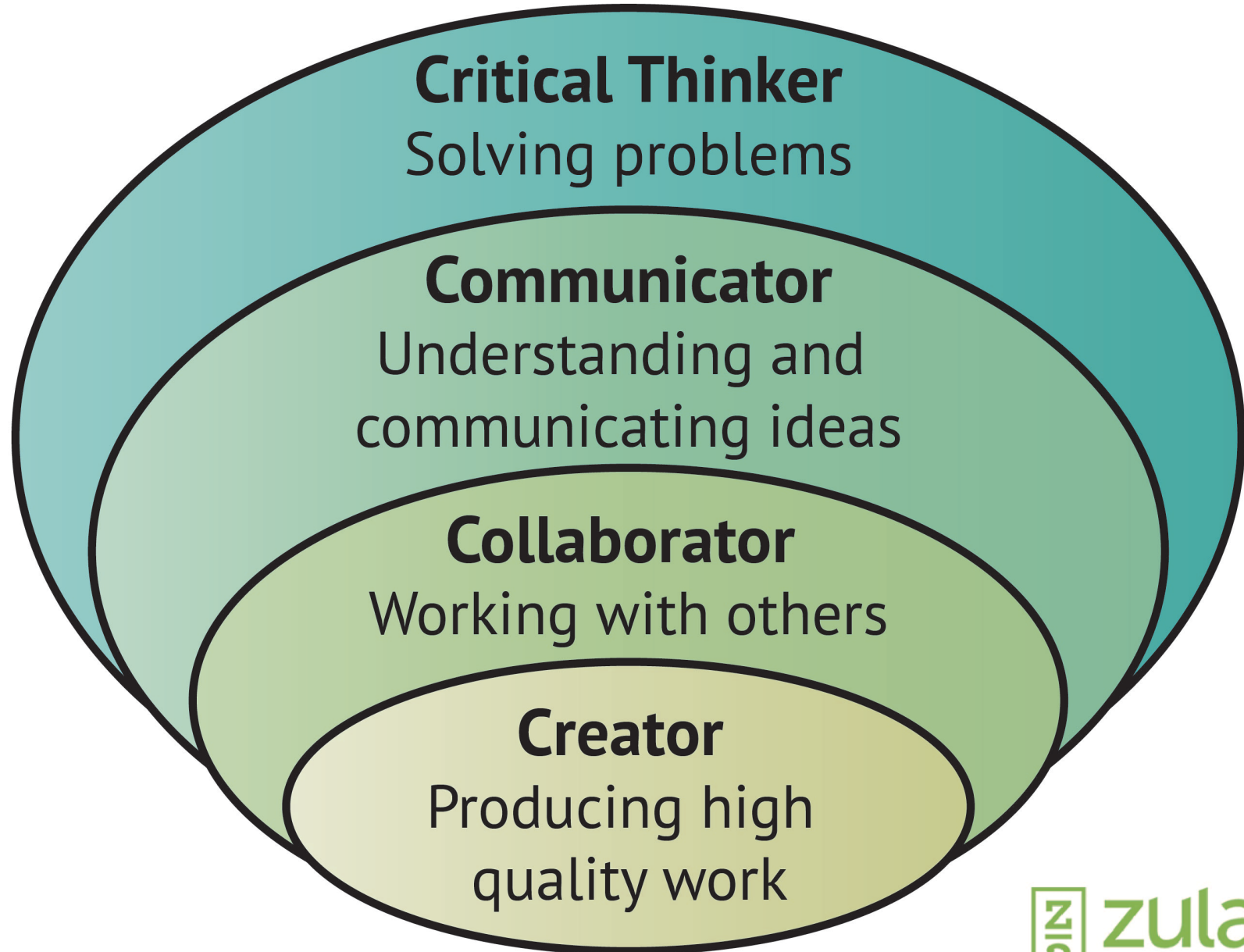


Figure 1 - P21 Framework for 21st Century Learning

Learning and Innovation "The 4 C's"	Digital Literacy	Career and Life
Critical thinking & problem solving	Information literacy	Flexibility & adaptability
Creativity and innovation	Media Literacy	Initiative & self-direction
Communication	ICT Literacy	Social & cross-cultural interaction
Collaboration		Productivity & Accountability
		Leadership & responsibility

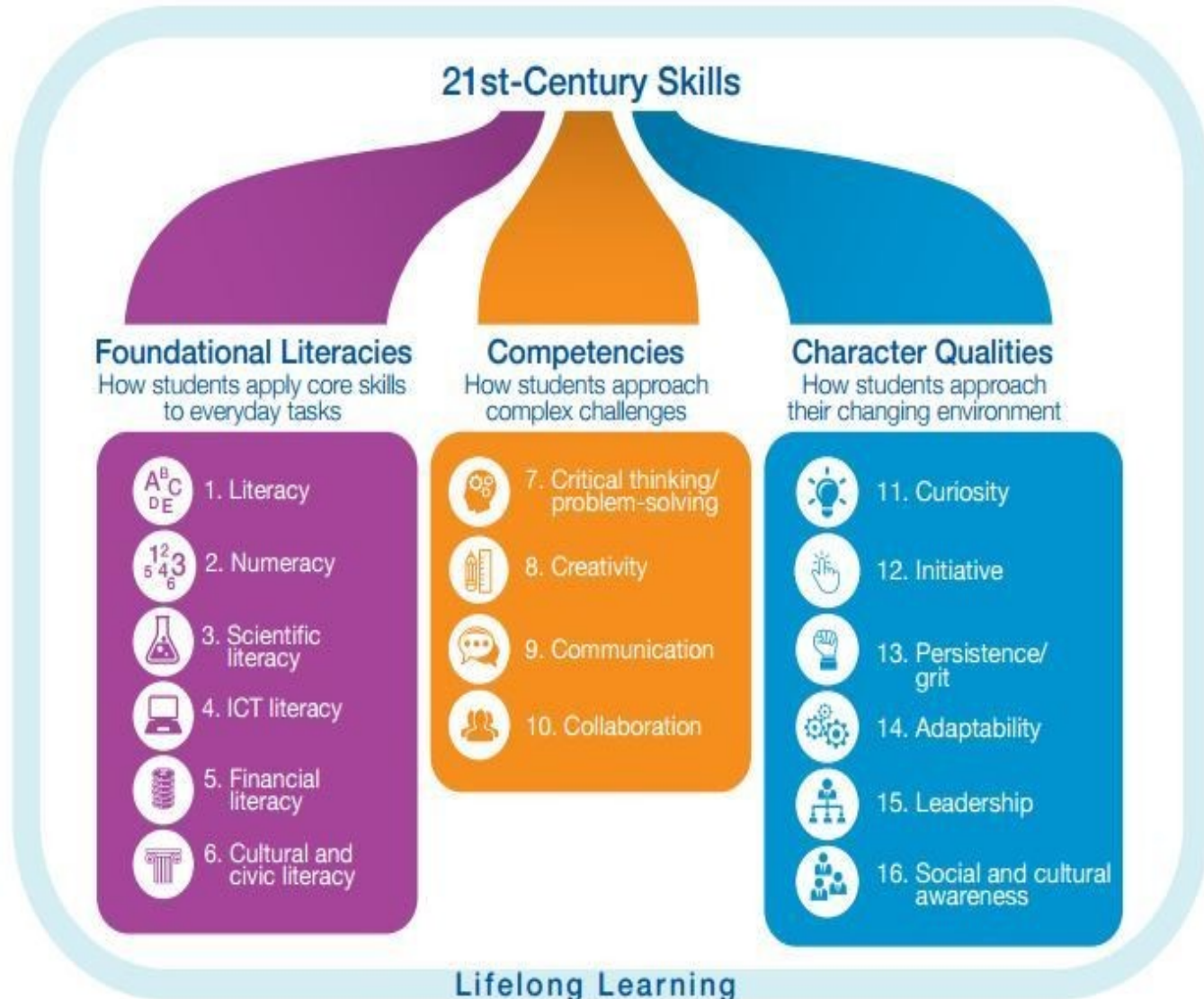
Table 1 - P21 Skills

The Four Cs of 21st Century Skills



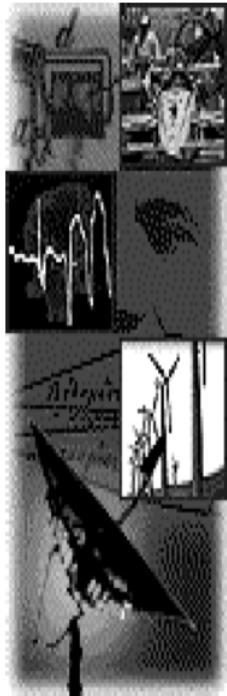
21st Century Skills

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



Source: Soffel (2016)

The Seven Cs – 21st Century Lifelong Skills



Seven Cs

Component Skills

Critical Thinking-and-Doing

Problem-solving, Research, Analysis, Project Management, etc.

Creativity

New Knowledge Creation, "Best Fit" Design Solutions, Artful Storytelling, etc.

Collaboration

Cooperation, Compromise, Consensus, Community-building, etc.

Cross-cultural Understanding

Across Diverse Ethnic, Knowledge and Organizational Cultures

Communication

Crafting Messages and Using Media Effectively

Computing

Effective Use of Electronic Information and Knowledge Tools

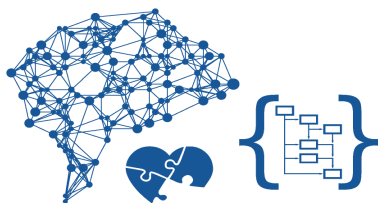
Career & Learning Self-reliance

Managing Change, Lifelong Learning and Career Redefinition

Top 10 skills

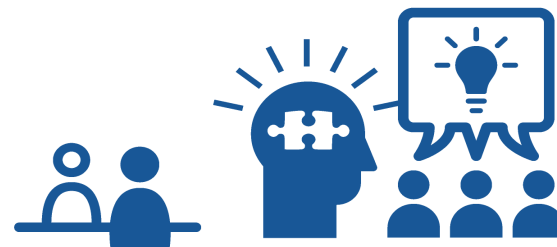
in 2020

1. Complex Problem Solving
2. Critical Thinking
3. Creativity
4. People Management
5. Coordinating with Others
6. Emotional Intelligence
7. Judgment and Decision Making
8. Service Orientation
9. Negotiation
10. Cognitive Flexibility

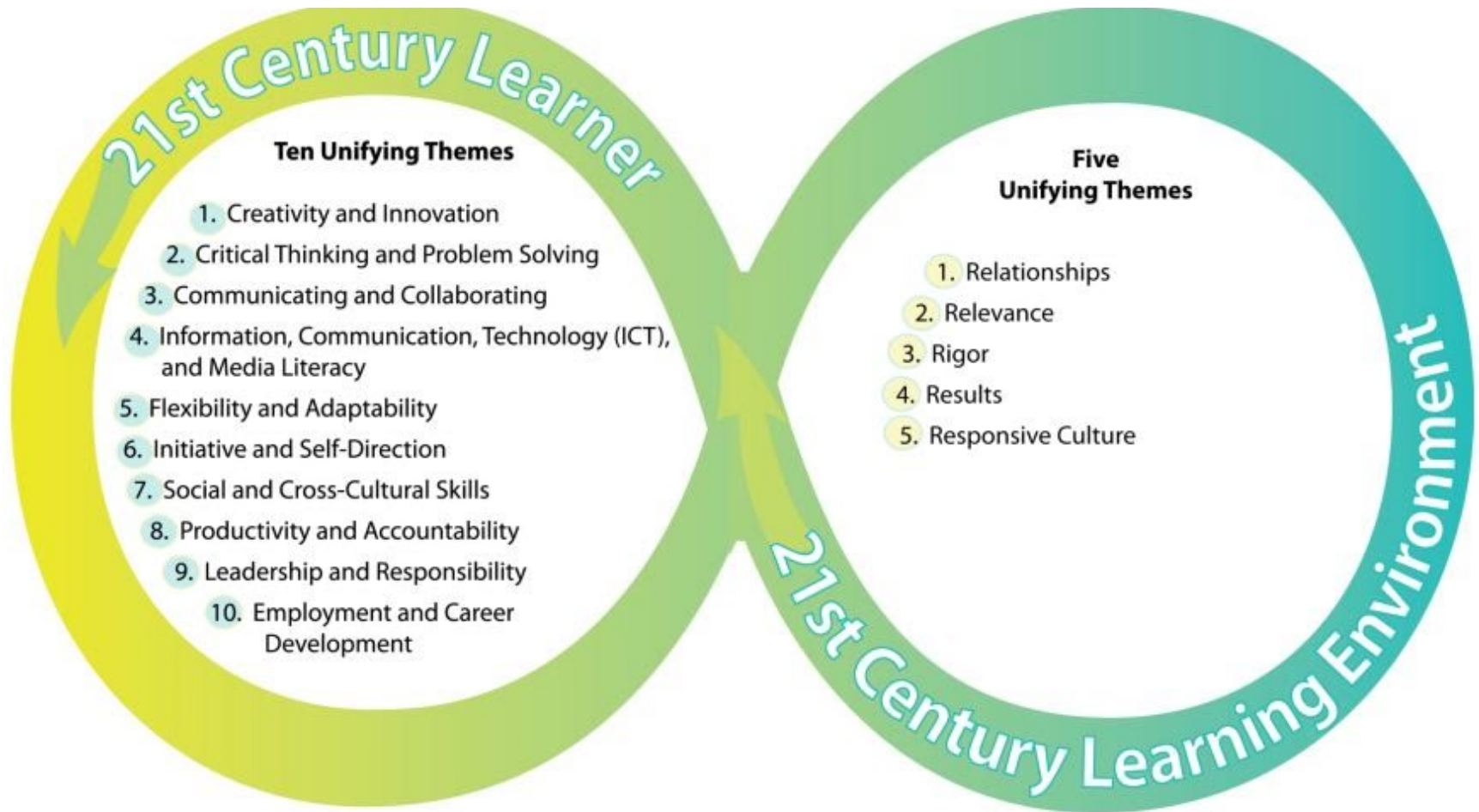


in 2015

1. Complex Problem Solving
2. Coordinating with Others
3. People Management
4. Critical Thinking
5. Negotiation
6. Quality Control
7. Service Orientation
8. Judgment and Decision Making
9. Active Listening
10. Creativity



WAY FORWARD



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)

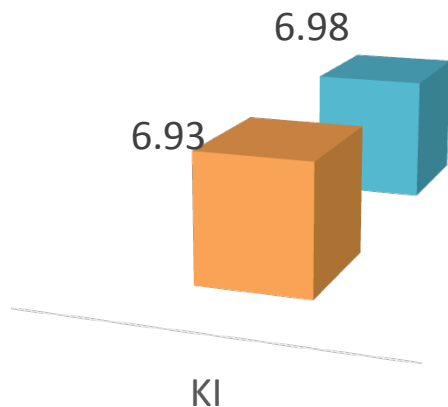
Turut mengukur kemahiran Bahasa Melayu dan Bahasa Inggeris.

LAPORAN PELAKSANAAN

My3S

Keputusan My3S Universiti Teknologi MARA (UiTM) sesi 2016/2017

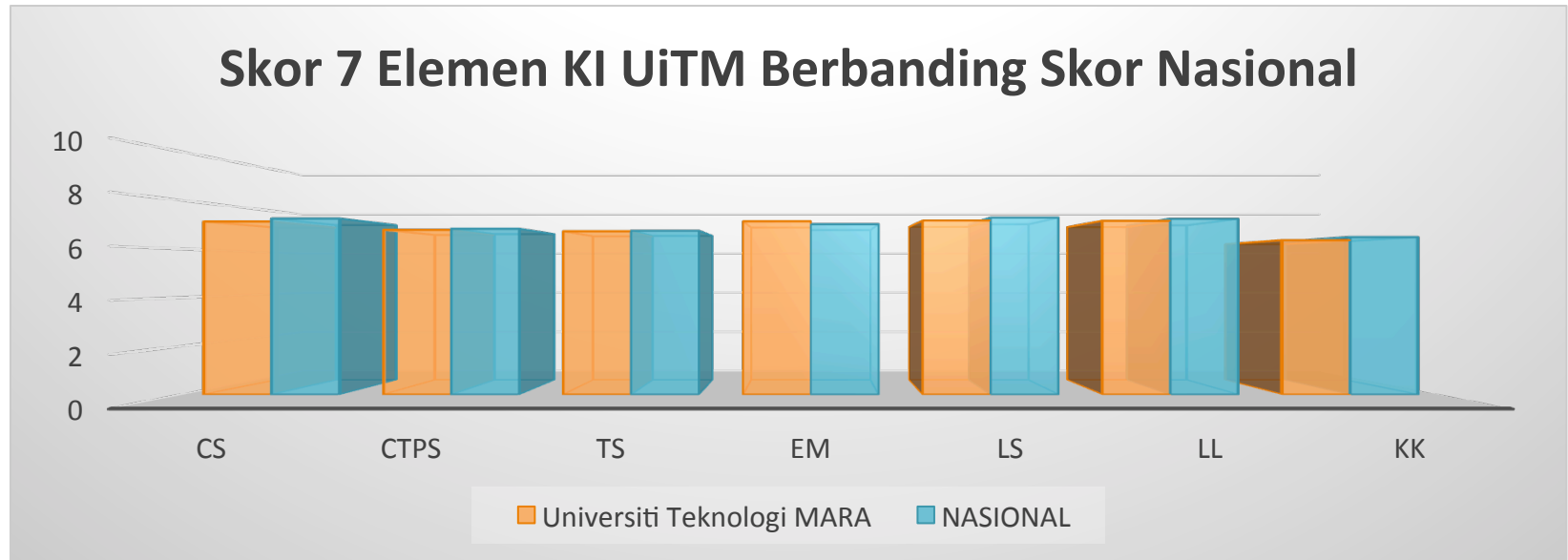
Rajah 1.0: Purata Skor KI UiTM
berbanding skor Nasional



■ Universiti Teknologi MARA ■ NASIONAL

- Jumlah pelajar Tahun 1, Semester 1 yang terlibat adalah seramai 15644.
- Pelajar yang mengisi kajian survey secara atas talian adalah 9635 (61.59%)
- Purata skor menunjukkan prestasi kemahiran insaniah pelajar UiTM boleh dikategorikan sebagai telah mencapai tahap dan baik.

KEPUTUSAN SKOR ELEMEN KEMAHIRAN INSANIAH



- Semua kemahiran menunjukkan skor di bawah paras Nasional.
- Tiga kemahiran yang mungkin perlu diberikan lebih perhatian adalah kemahiran pemikiran kritis dan kemahiran penyelesaian masalah, CTPS (6.79), kemahiran berpasukan, TS (6.73) dan kemahiran keusahawanan, KK (6.36).
- Dapatan ini boleh digunakan untuk merancang rekabentuk kurikulum dan ko-kurikulum atau aktiviti tambahan pelajar bagi membantu meningkatkan kemahiran pelajar sebelum pelajar bergraduasi.

THANK YOU

 **Wowza!** 

Just look at your skills!

REFERENCES

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