An abstract graphic consisting of several concentric circles in orange, purple, green, pink, and blue. Four large colored dots (pink, blue, green, purple) are positioned along the top arc of the circles. Three small black dots are positioned along the bottom arc of the circles.

# Challenges of Vocational Teachers Facing Revolution Industry 4.0

Prof. Dr. Nizwardi Jalinus, M.Ed.



# Prof. Dr. Nizwardi Jalinus, M.Ed.

*Postgraduate Coordinator of Universitas Negeri Padang*

S1

FKT IKIP Padang

Tahun 1978

S2

Sam Houston state University, USA

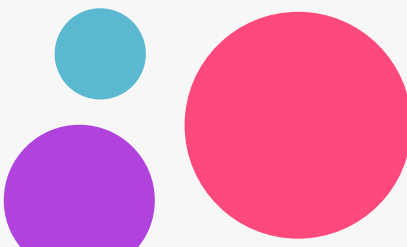
Tahun 1985

S3

University of Tasmania, Australia

Tahun 1998

Educational Background



Welcome

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A central graphic featuring a white circle with the text "Industry 4.0" inside. Above the text is a small, colorful upward-pointing arrow. The circle is surrounded by a ring of various colored segments (blue, orange, green, yellow, brown). The background is a blue gradient with diagonal lines and a grid pattern. There are also some abstract shapes and lines around the central circle, including a gear icon and a curved arrow.

Industry 4.0



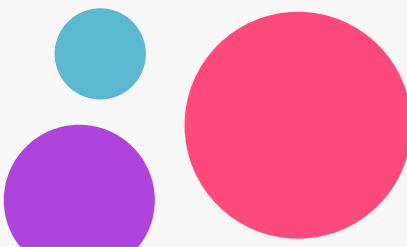
# Revolution Industry 4.0



## INTRODUCTION

Change of the world is entering revolution industry 4.0 era or 4<sup>th</sup> world industry revolutions, where information technology has been basic in human daily life. It was announced by German federal Government in 2011 as one key of much initiatives key of high tech strategy (Hermann, Pentek, & Otto, 2016).

Revolution industry 4.0 moving towards a socio-technology-digital era, everything becomes borderless with using computation and unlimited data, because it is influenced by internet development and the massive digital technology as backbone of movement and connectivity between human, machine and digital technologies (Vojtovič, Navickas, & Gruzauskas, 2016).



# Industry 4.0 Competency Model Structure

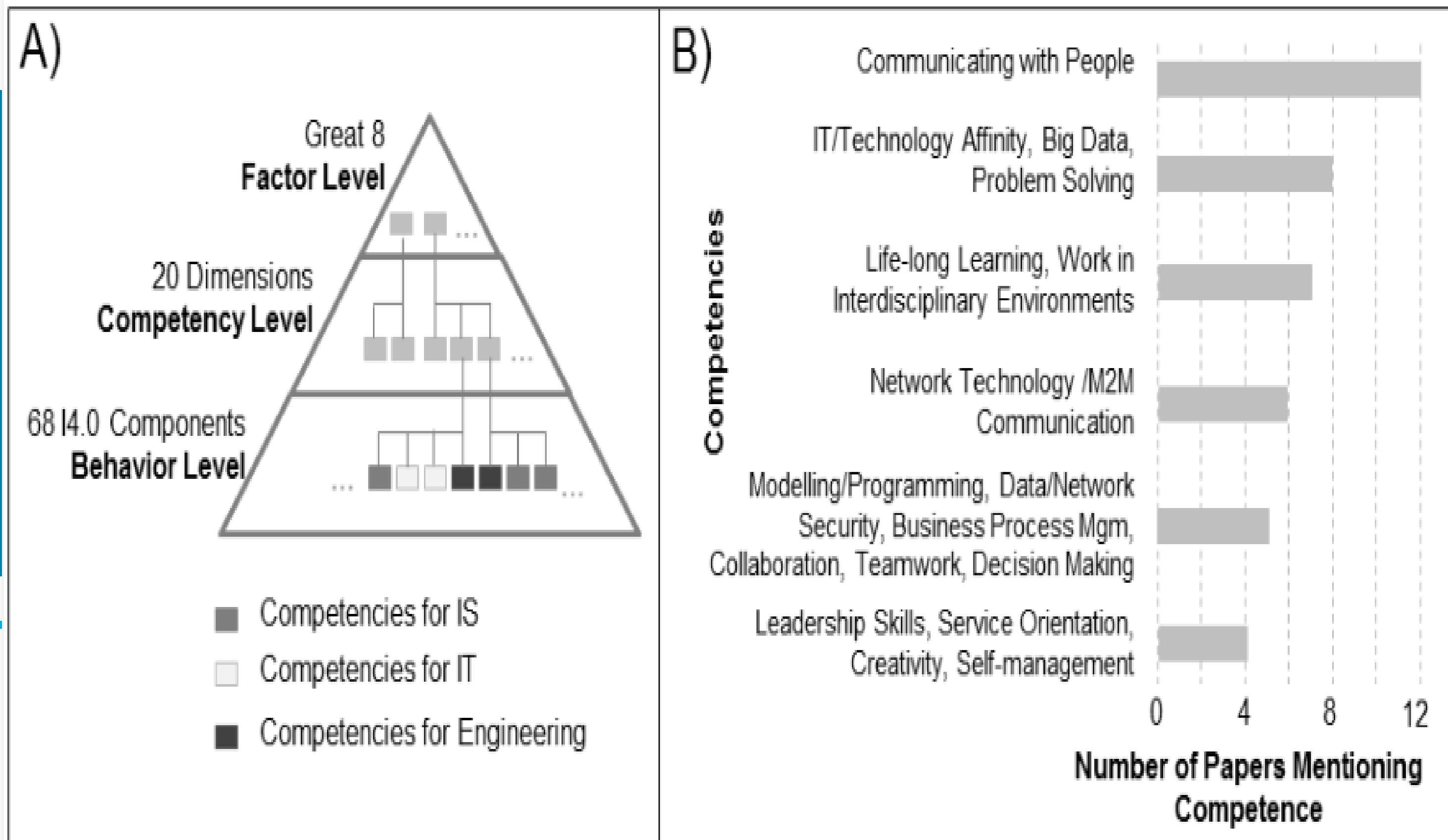


Figure 1. Industry 4.0 Competency Model Structure



# Challenges of TVET in Indonesia

## PENDIDIKAN VOKASI DALAM ERA GLOBAL

### Tantangan dan Peluang

#### PELUANG

Masyarakat  
Ekonomi ASEAN

- MEA tidak hanya membuka arus perdagangan barang dan jasa tetapi juga pasar tenaga kerja

ILO 2015 : kenaikan  
permintaan tenaga kerja

- Tenaga kerja profesional naik 41% (14 jt) \*
- Tenaga kerja kelas menengah 22% (12 jt) \*

Kebutuhan tenaga kerja  
yang berkualitas

- Kebutuhan pekerja dengan standar kualifikasi yang tinggi

#### TANTANGAN

GAP kebutuhan DUDI  
dan lulusan SMK

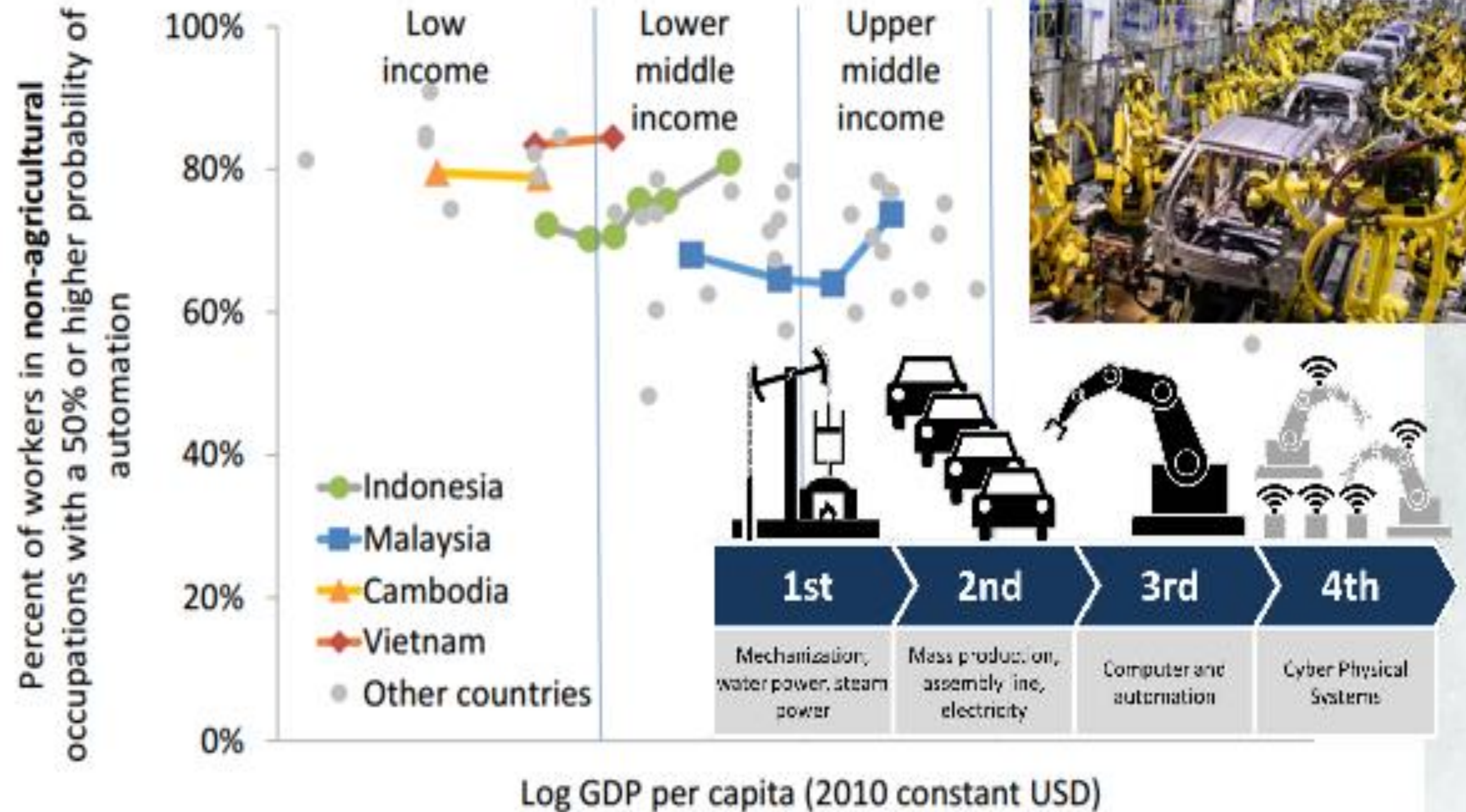
Rendahnya keterserapan  
tenaga kerja SMK

Tingginya tingkat  
pengangguran SMK

\* = Data ILO 2015

# Challenges of TVET in Indonesia

70-80% of middle to lower income jobs are threatened by automation

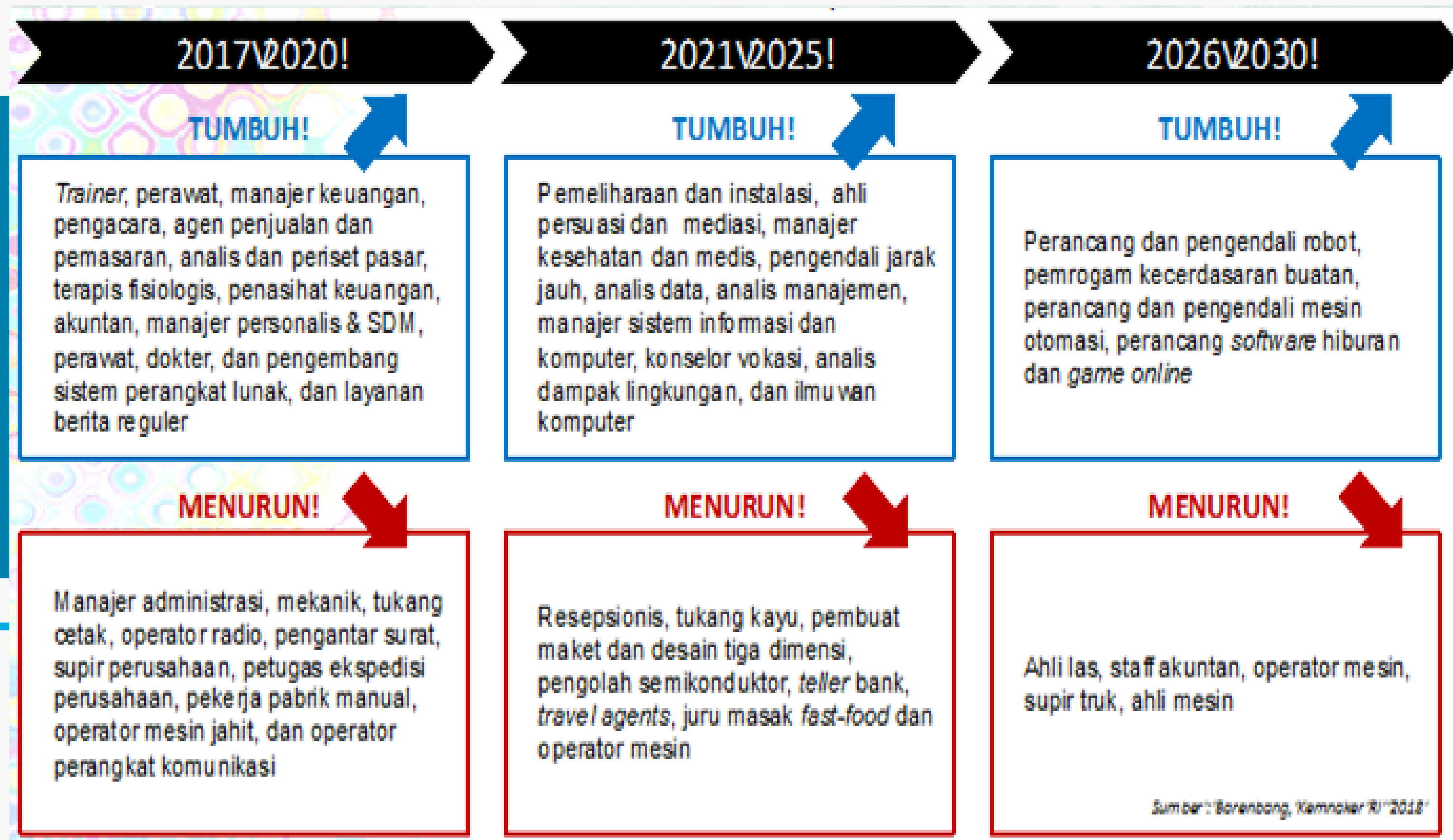


Patrinos (2014), "Automation and its implication for development countries", The World Bank. Mimeo.



# Challenges of TVET in Indonesia

Various jobs that previously promised, in the future will be reduced or no longer needed.







# Policy Challenges

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## The Challenges to the future of Vocational Education in Indonesia

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- 1 Negative Stigmatization
  - 2 Shortage of Funding
  - 3 Shortage of Quality Vocational Teachers and Lectures
  - 4 Lack of Incentives for Industry Involvement
  - 5 Poor Inter-Agency Coordination
- 

# REVITALISASI SMK



## INSTRUKSI PRESIDEN

Nomor: 9 Tahun 2016

### REVITALISASI SEKOLAH MENENGAH KEJURUAN DALAM RANGKA PENINGKATAN KUALITAS DAN DAYA SAING SUMBER DAYA MANUSIA INDONESIA

This INPRES is a manifestation of the Government's commitment to solve the problem of vocational education.

## Arah Revitalisasi Pendidikan Vokasi

**SEKARANG**  
*supply-driven*  
sekolah sebagai penghela



- Pendidikan vokasi hanya merujuk pada SMK saja.
- Penyelenggaraan SMK, Kursus, dan SMA-LB berjalan sendiri-sendiri.
- Lemah *link-and-match* dengan pasar kerja (DUDI).



**KE DEPAN**  
*demand-driven*  
industri sebagai penghela



- Penyelenggaraan SMK, Kursus, dan SMA-LB secara terintegrasi.
- Kuat *link-and-match* dengan DUDI (kurikulum, praktek, pengujian, sertifikasi) → Sistem Ganda (siswa belajar: 30% teori di Sekolah – 670%praktek & pendidikan karakter di DUDI).
- **Keuntungan DUDI:** mendapatkan tenaga kerja terbaik sesuai kebutuhan, lebih loyal, lebih efisien (tidak perlu *training* lagi).
- **Keuntungan SISWA:** mendapat kemahiran kerja mutakhir (*occupational proficiency*), pendidikan karakter (etos dan budaya kerja), sertifikat kompetensi.
- **Keuntungan SEKOLAH:** efisiensi sumberdaya (guru/instruktur, alat/bahan, bengkel praktek).

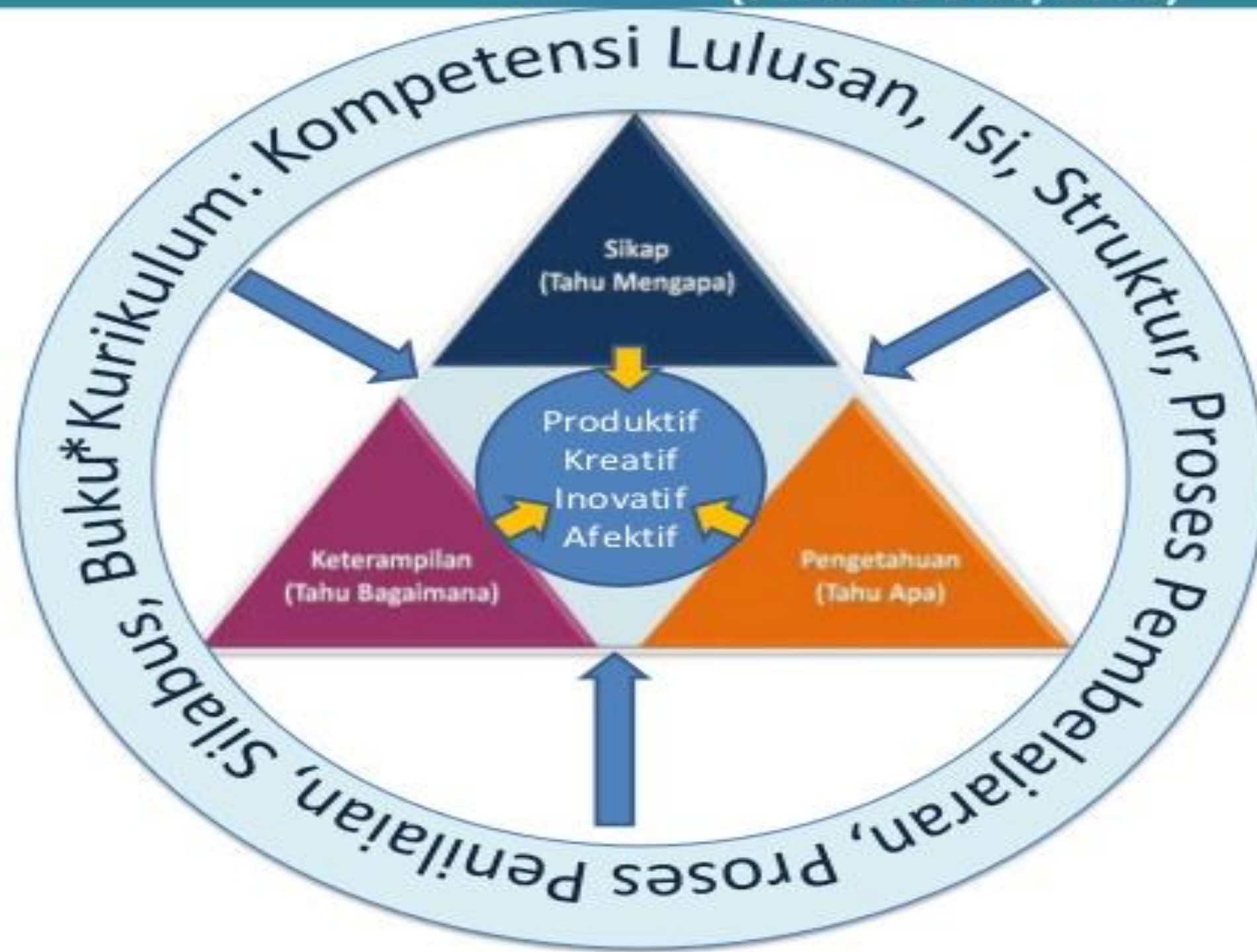
als@kemendikbud



# Kurikulum 13

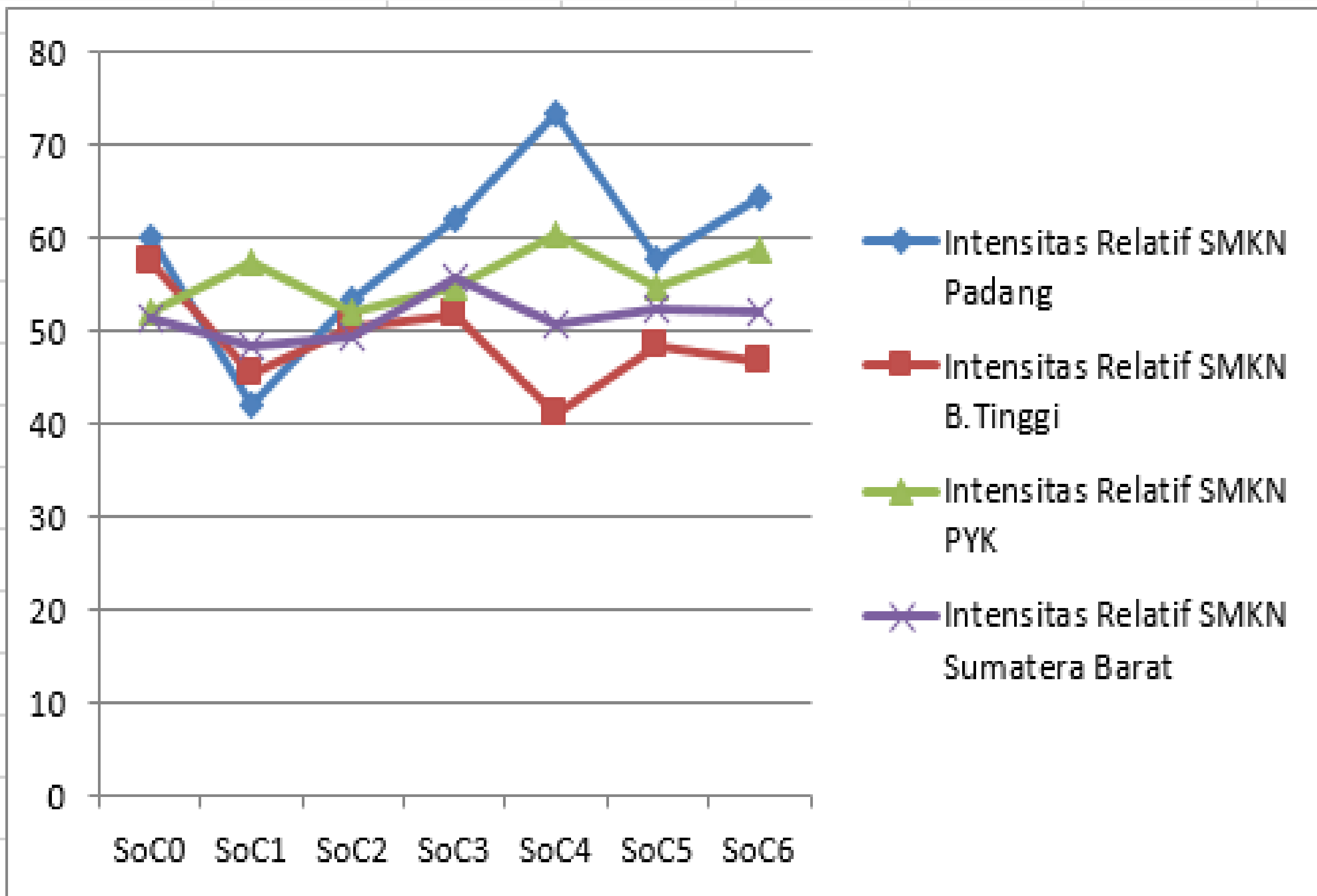
## Tema Pengembangan Kurikulum 2013

(Sesuai UU 20/2003)



Kurikulum yang dapat menghasilkan insan indonesia yang:  
**Produktif, Kreatif, Inovatif, Afektif**  
melalui penguatan  
**Sikap, Keterampilan, dan Pengetahuan**  
yang terintegrasi

## The SoC Profile



SoC0 = Awareness  
SoC1 = informational  
SoC2 = Personal  
SoC3 = Management  
SoC4 = Konsekwensi  
SoC5 = Kolaborasi  
SoC6 = Refokus

The SoC Profile Comparison of Vocational Teachers on K-13 Implementation between 3 cities in Sumbar



# INTERVENTION

|                        |  |
|------------------------|--|
| Stage 6, Refocusing    | <ul style="list-style-type: none"><li>■ Respect and encourage teacher interests</li><li>■ Channel their ideas and energies; act on their concerns.</li></ul>                     |
| Stage 5, Collaboration | <ul style="list-style-type: none"><li>■ Provide opportunities to develop skills needed to work collaboratively</li><li>■ Rearrange schedules so people can collaborate</li></ul> |
| Stage 4, Consequence   | <ul style="list-style-type: none"><li>■ Provide positive feedback and needed support</li><li>■ Provide opportunities for teachers to share knowledge and skills</li></ul>        |
| Stage 3, Management    | <ul style="list-style-type: none"><li>■ Answer specific "how to" questions</li><li>■ Avoid considering future impact at this time</li></ul>                                      |
| Stage 2, Personal      | <ul style="list-style-type: none"><li>■ Address potential personal concerns directly</li><li>■ Implement changes progressively over time</li></ul>                               |
| Stage 1, Informational | <ul style="list-style-type: none"><li>■ Provide clear and accurate information</li><li>■ Relate changes to current practices</li></ul>   |
| Stage 0, Awareness     | <ul style="list-style-type: none"><li>■ Involve teachers in discussion and decisions</li><li>■ Give permission not to know</li></ul>   |

# Comparison TVET in Indonesia and Malaysia

## Current TVET policies and practices

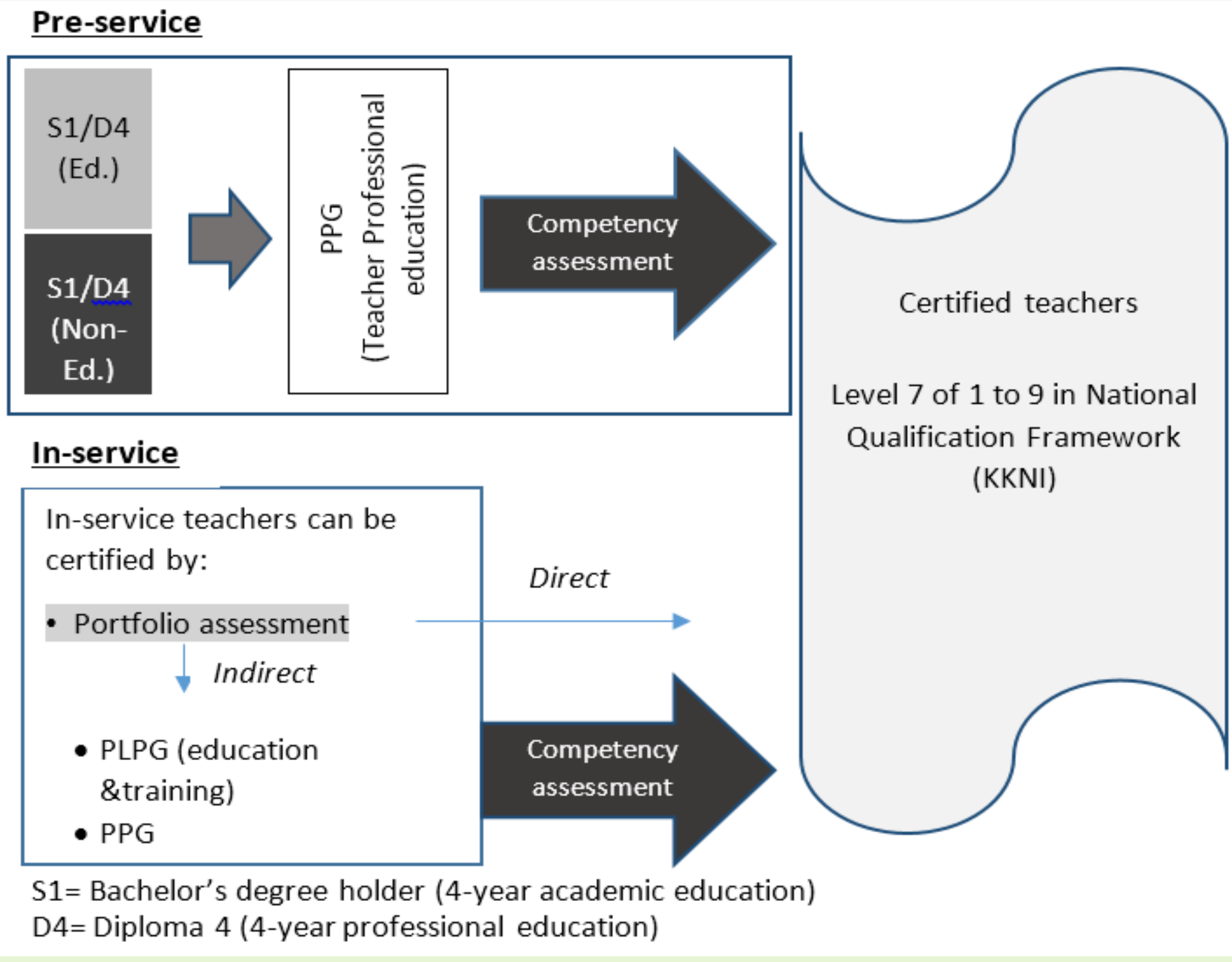
| Indonesia  | Malaysia  |
|--|---|
| <ul style="list-style-type: none"><li>• Teacher certification program for In Service Teachers, including vocational teachers.</li><li>• Establishment of the Teacher Certification Consortium.</li><li>• National Education Standards.</li><li>• Competency Standards and Teacher Competencies are legal instruments used as a basis for implementing teacher certification.</li><li>• A teacher will be required to have a DIV or Bachelor academic qualification for secondary TVET or Masters or Doctorate for HE lecturers taken from high-accredited institutions in education or relevant subjects and to meet the requirements of adequate teaching experience.</li></ul> | <ul style="list-style-type: none"><li>• Ministry of Education (<u>MoE</u>) identifies teacher competence as one of the most important factors in TVET transformation.</li><li>• TVE teachers must be trained and educated with knowledge and skills related to industry needs</li><li>• MoE has an 'open' policy to recruit only the best skilled vocational teachers.</li><li>• Policies to develop instructors that are very effective, including to establish an Instructor Training Center and new Advanced Skills Training</li></ul> |

(Hasan, 2012; Hanafi, 2012)

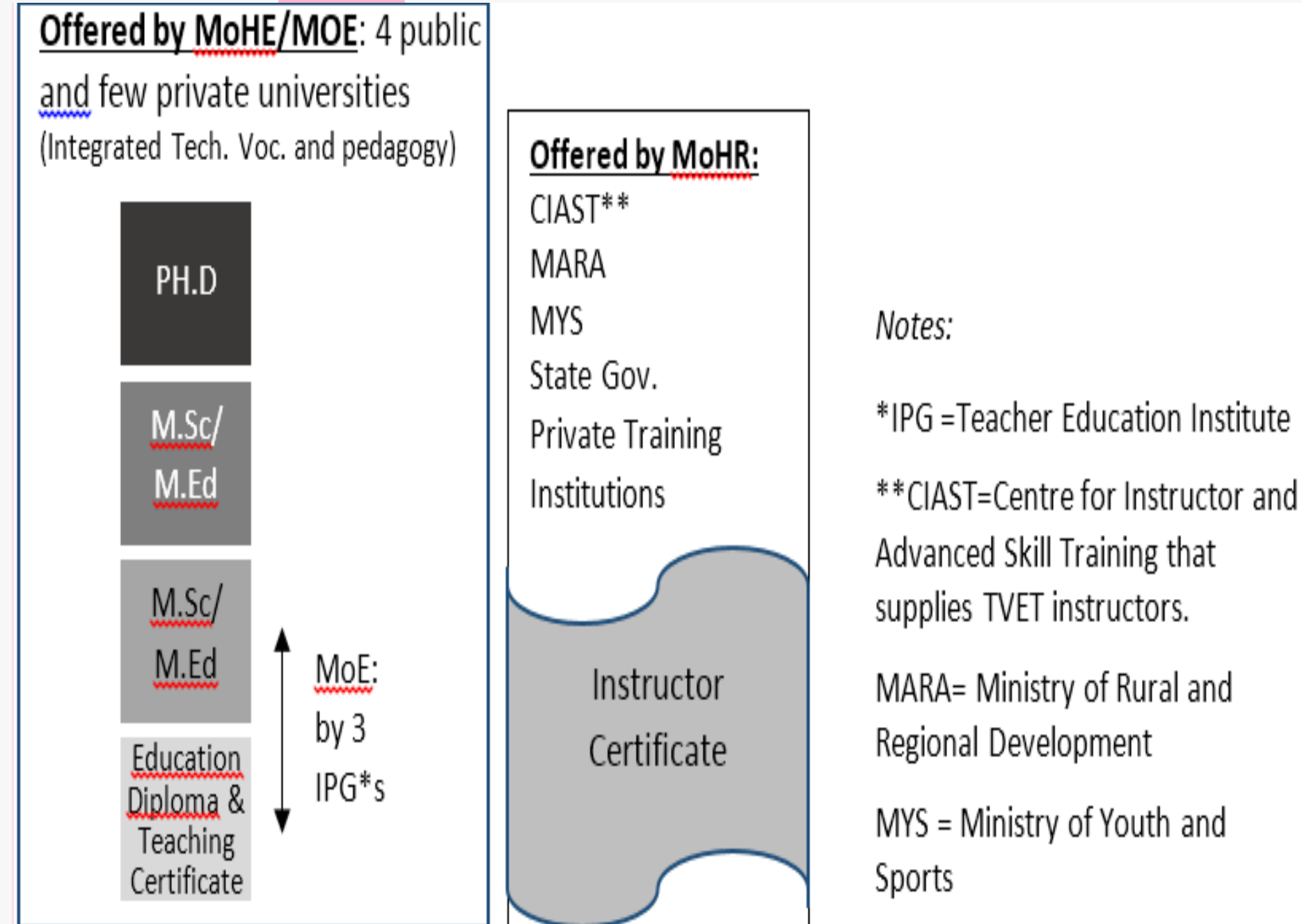
# Comparison TVET in Indonesia and Malaysia

(Hanafi, 2012; Nurlaela, 2014)

## TVET Teacher in Malaysia

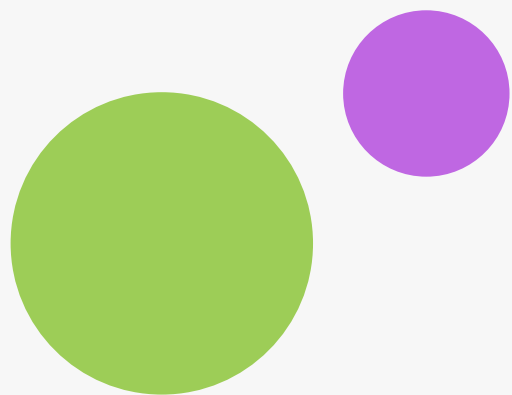


## TVET Teachers in Indonesia

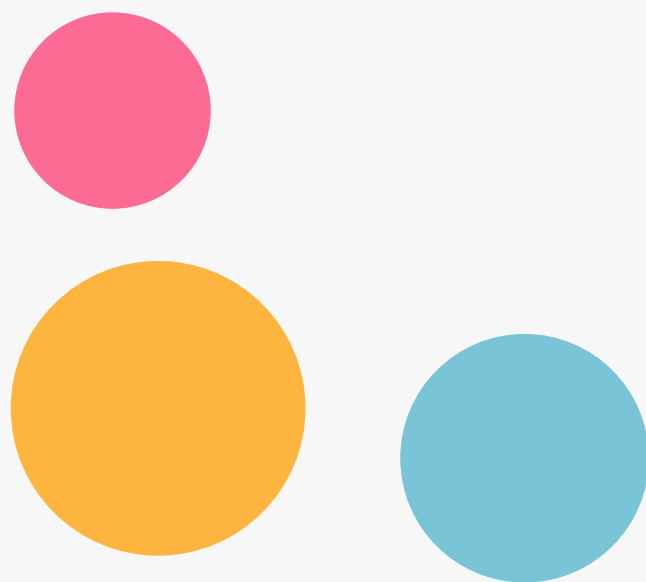


(Hassan, 2012)

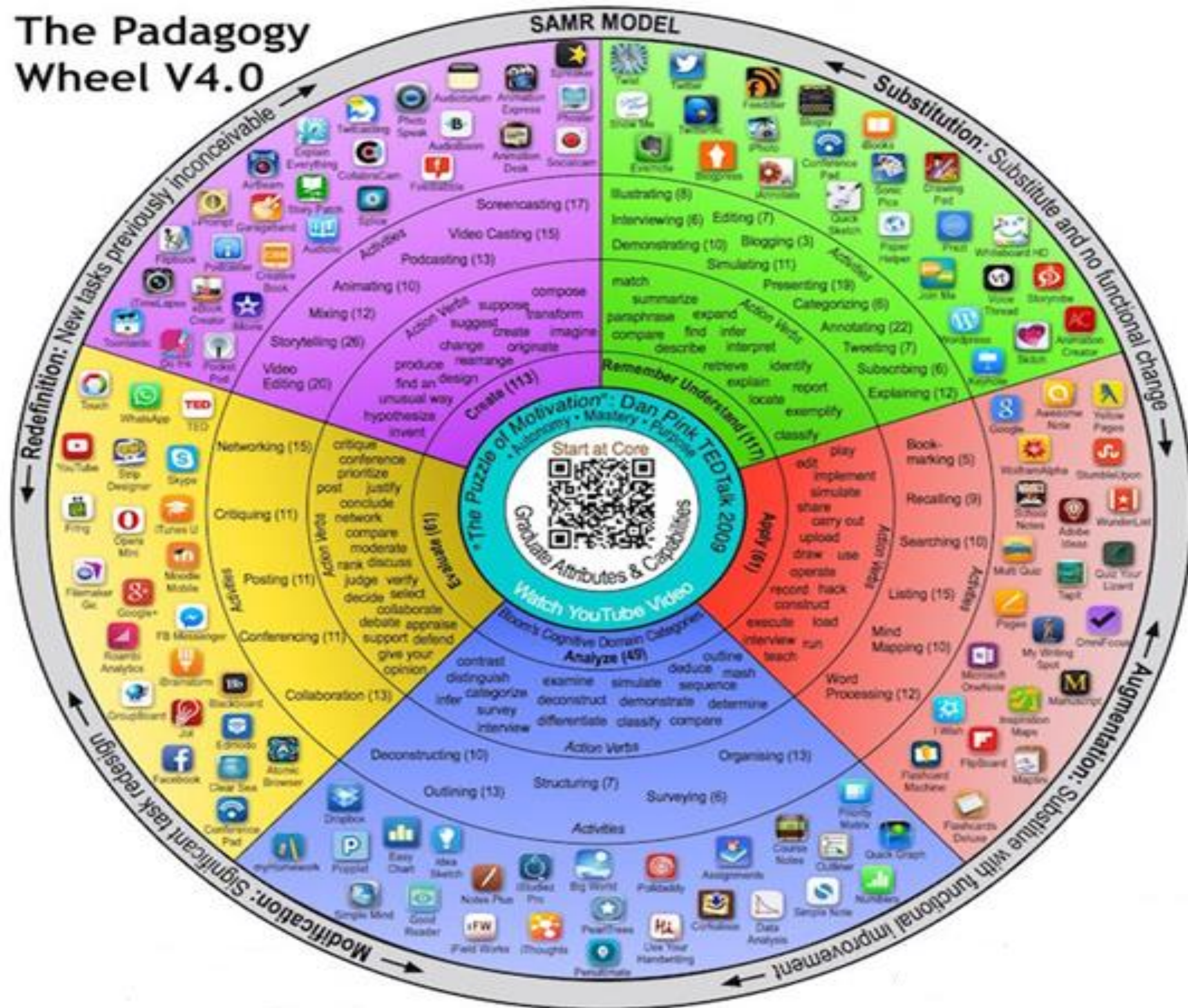




## Cycle of Pedagogy (UNEVOC 2014)



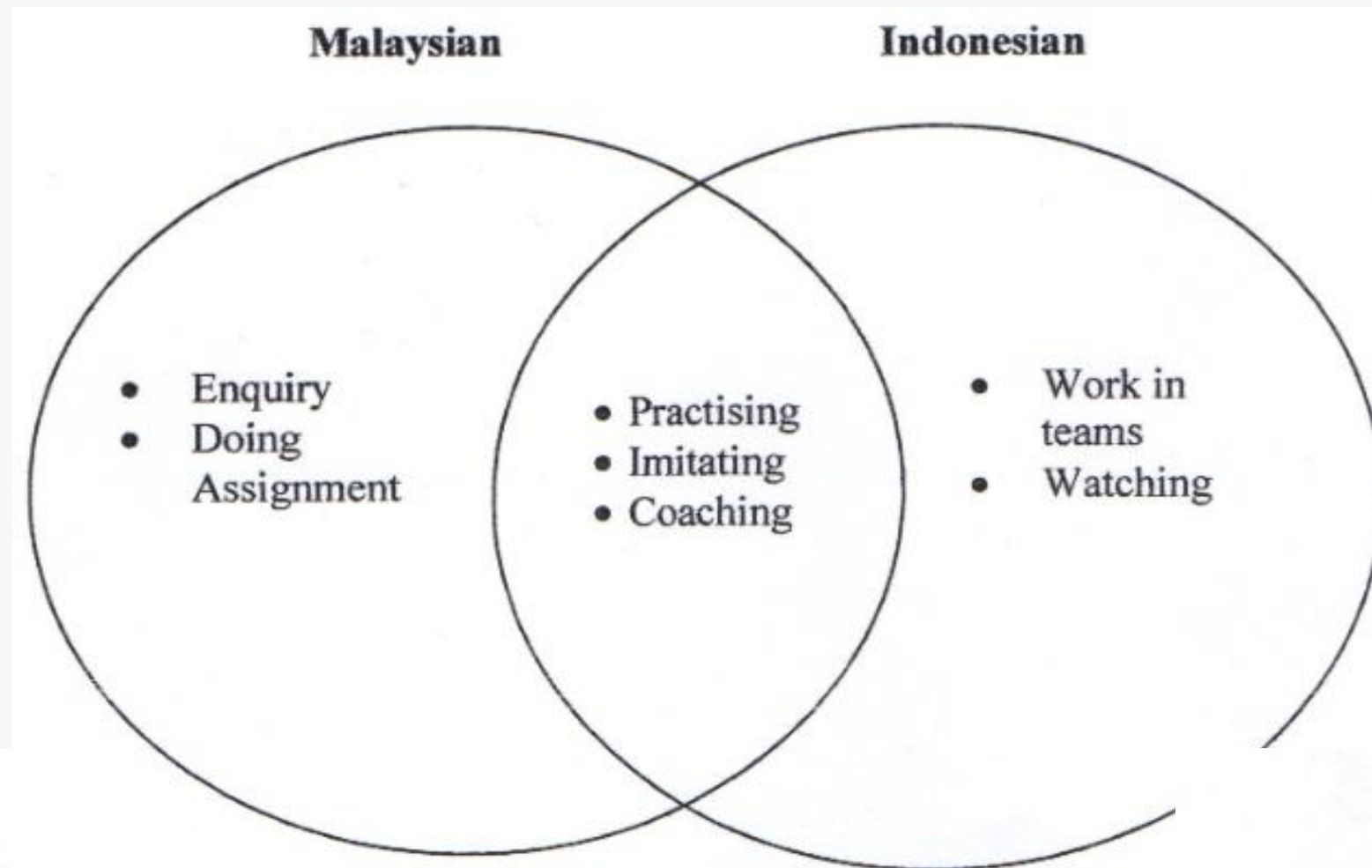
## The Pedagogy Wheel V4.0



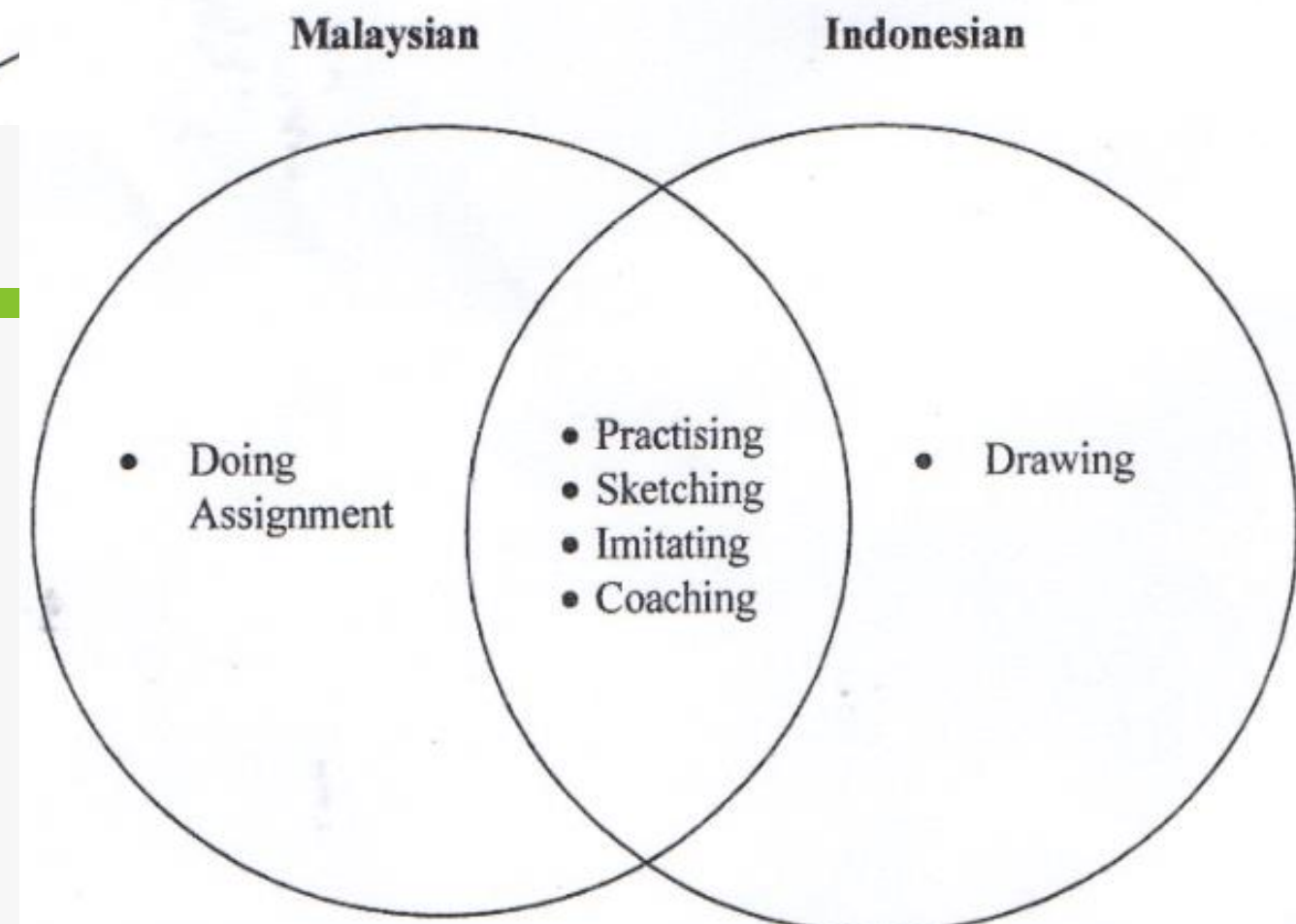


# Comparison of Teaching and Learning Used by TVET Teachers in Indonesia and Malaysia

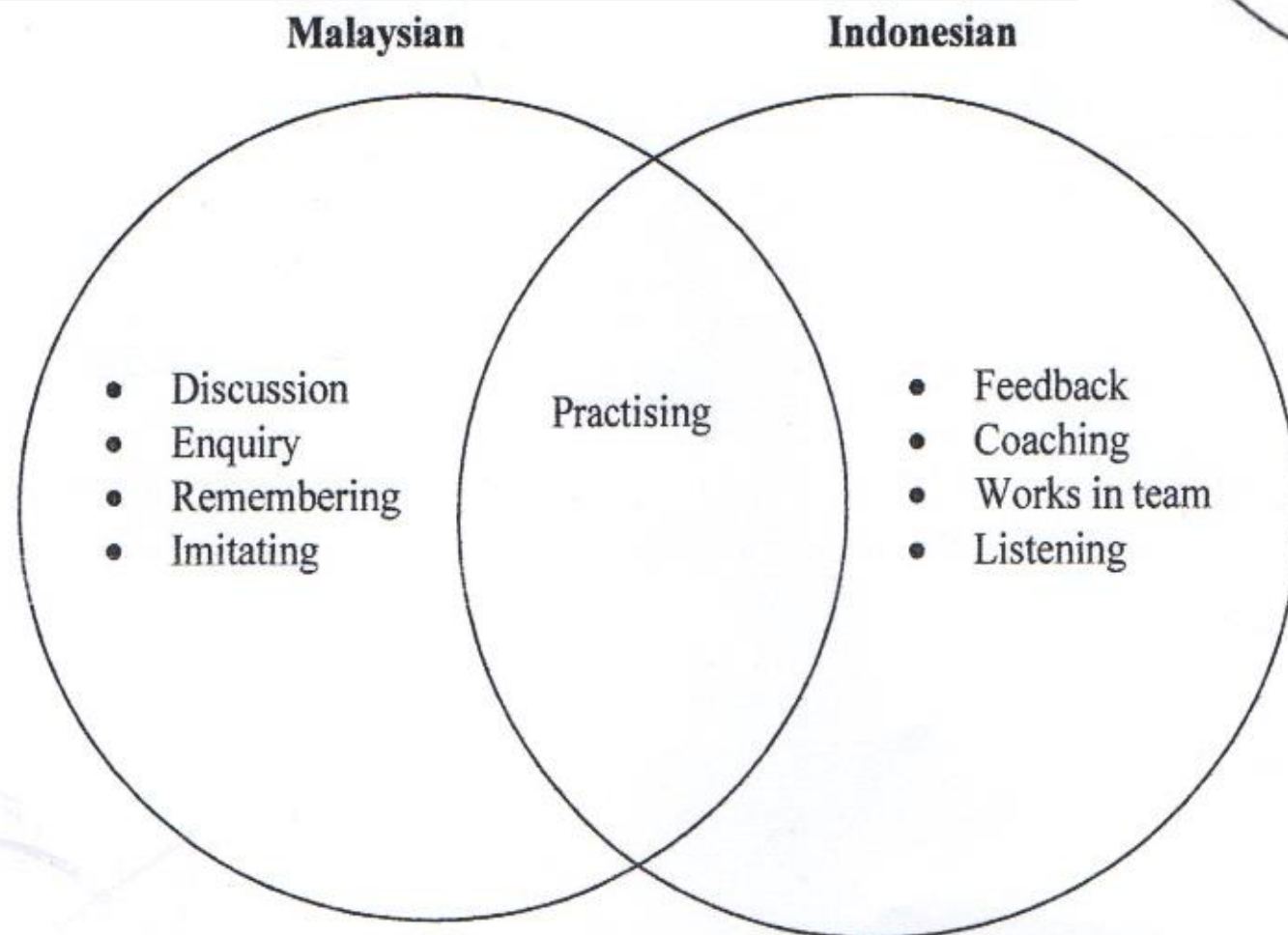
## THEORY



## TECHNICAL DRAWING



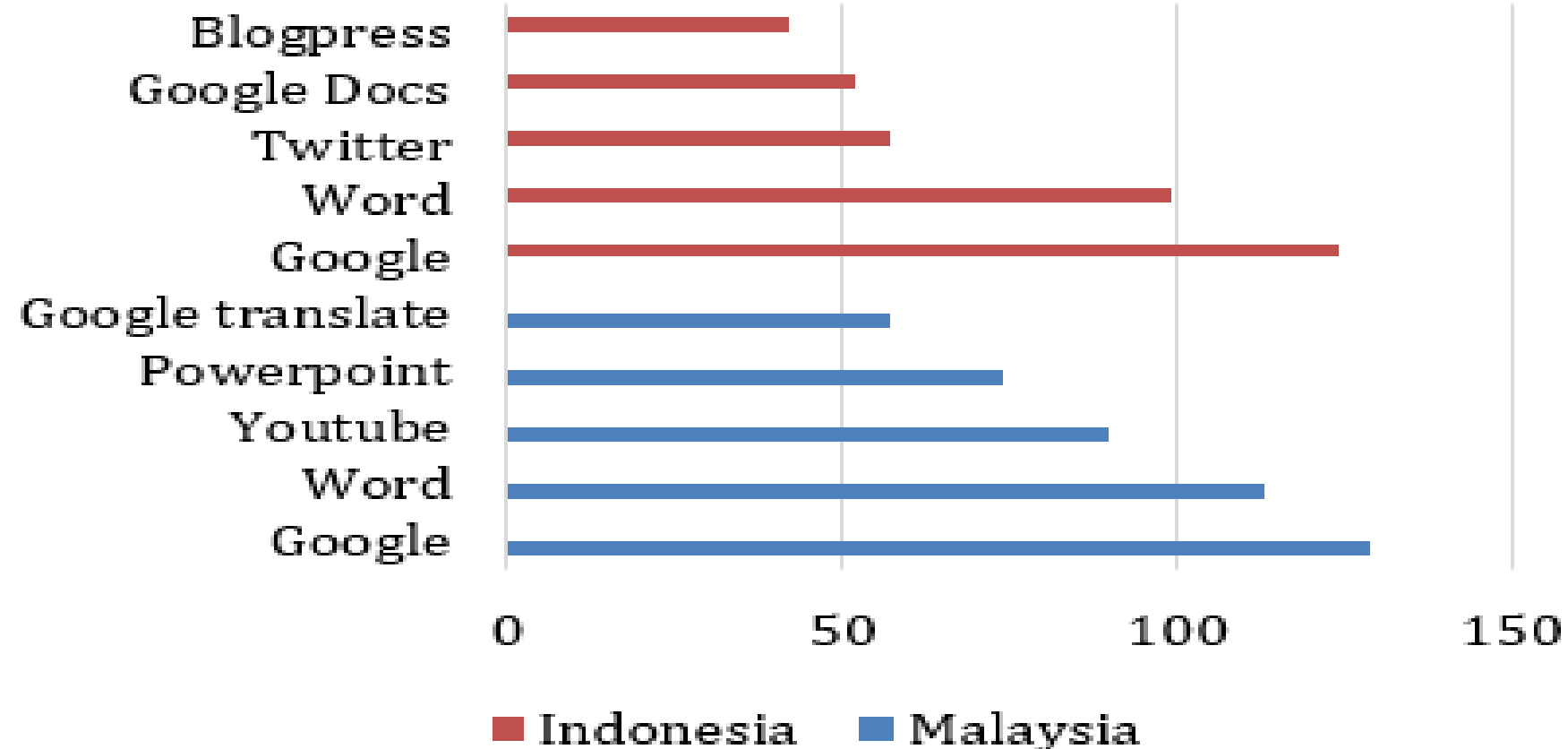
## PRACTICE



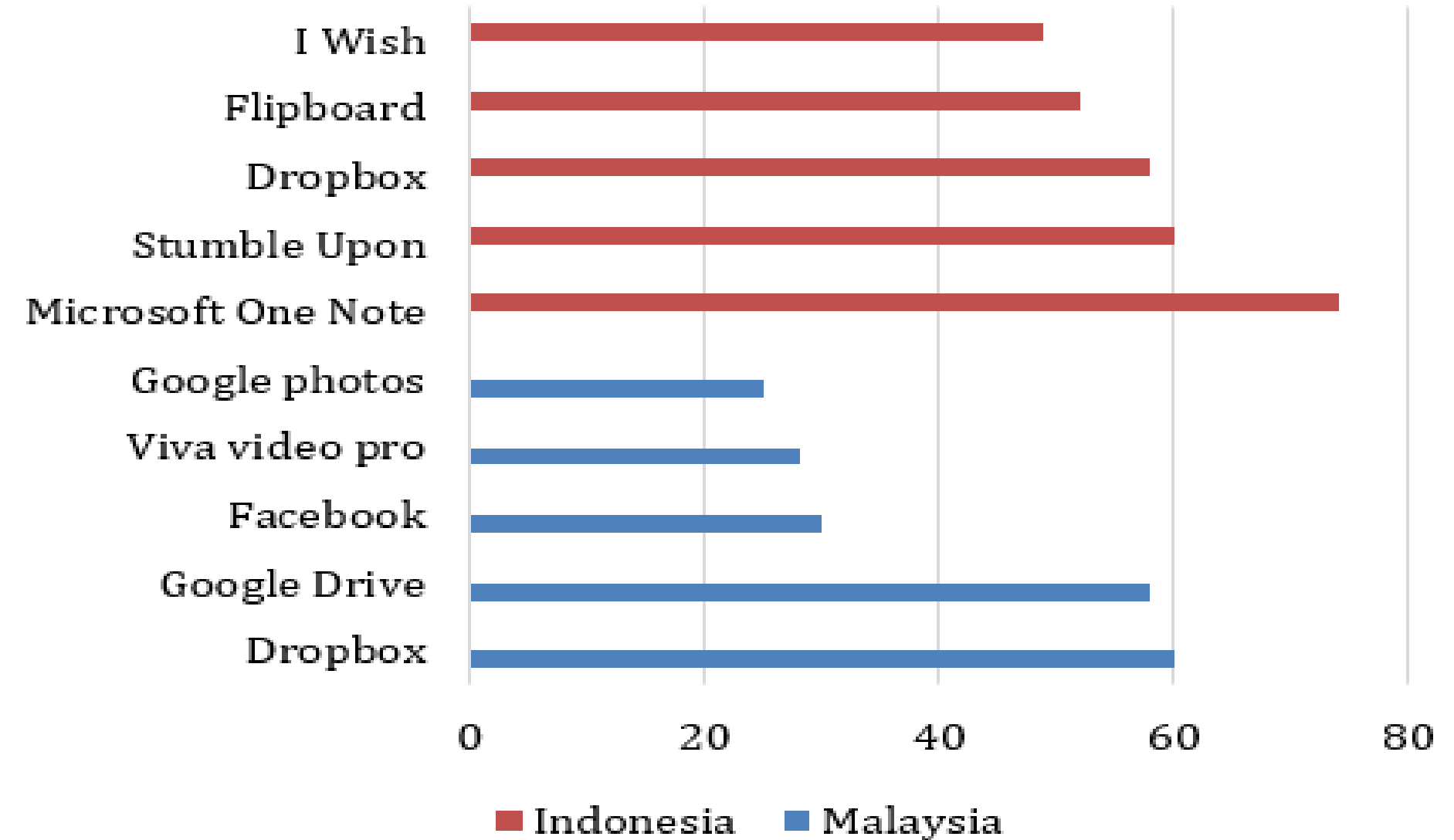
# Comparison of ICT Using in Learning Between Indonesia and Malaysia

There are five indicators on comparison of ICT using in learning used by TVET teachers between Indonesia and Malaysia, are follows: Understand and remember, apply, analyze, evaluate and create.

## Remember & Understand

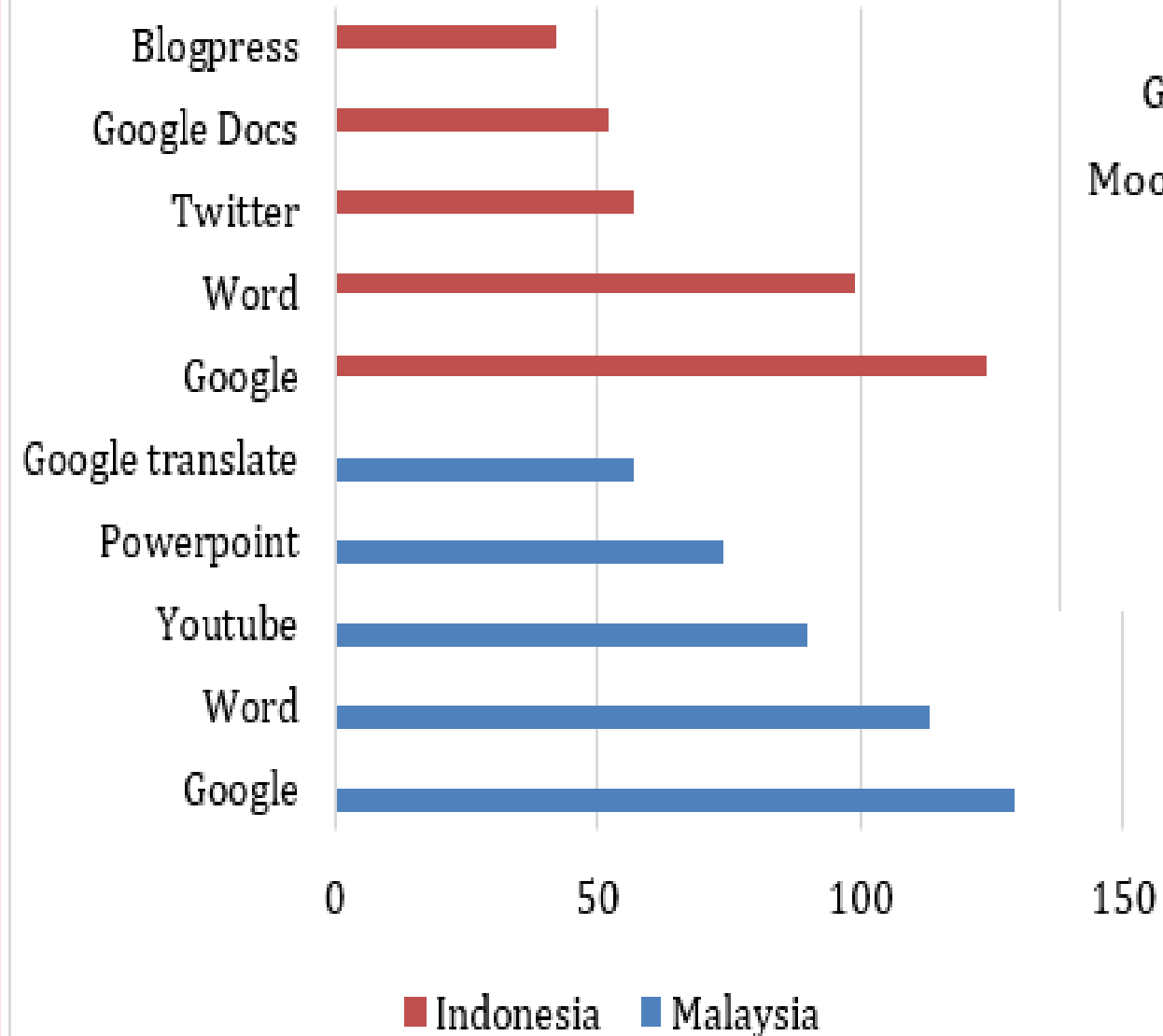


## Apply

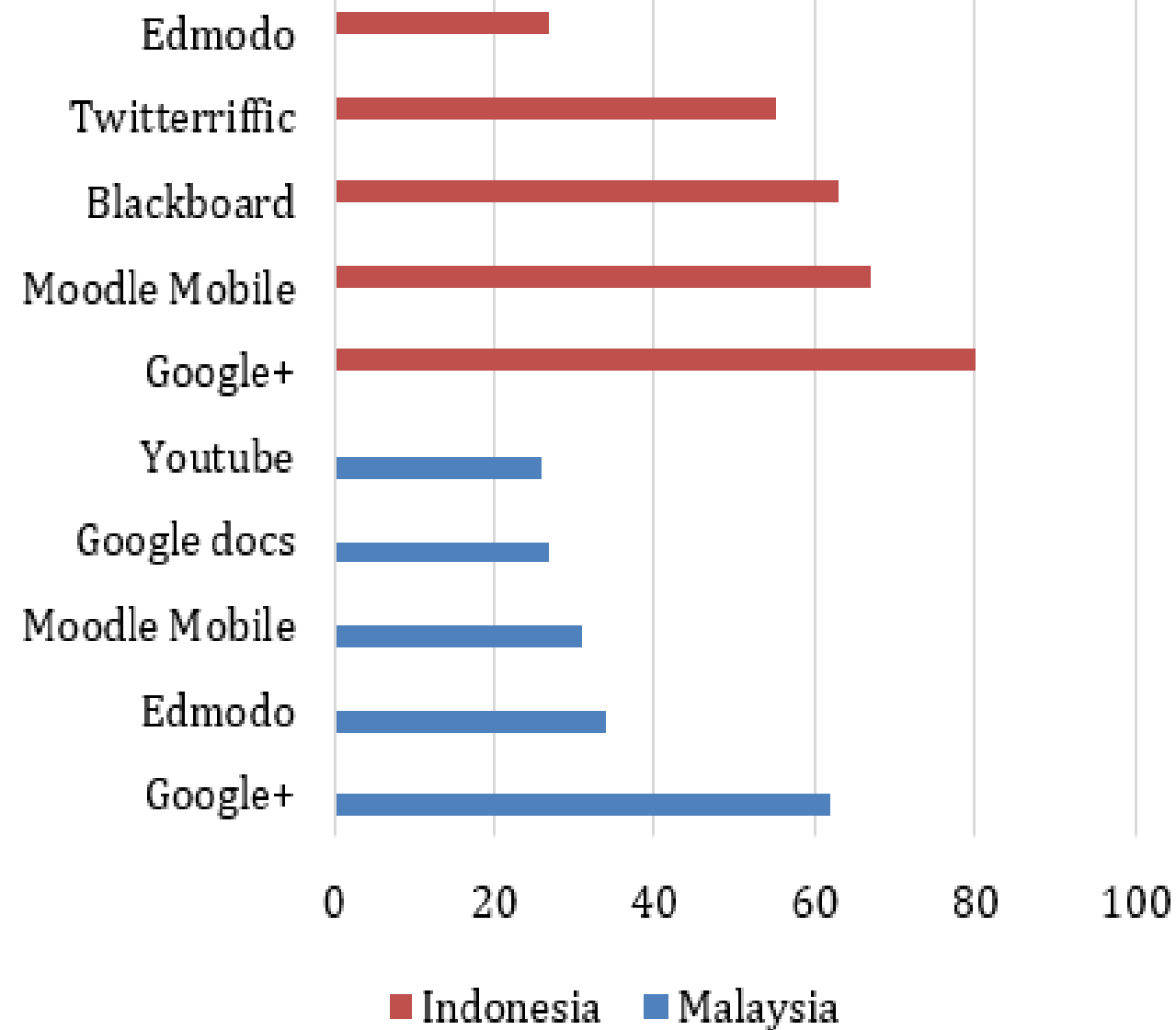


# Comparison of ICT Using in Learning Between Indonesia and Malaysia

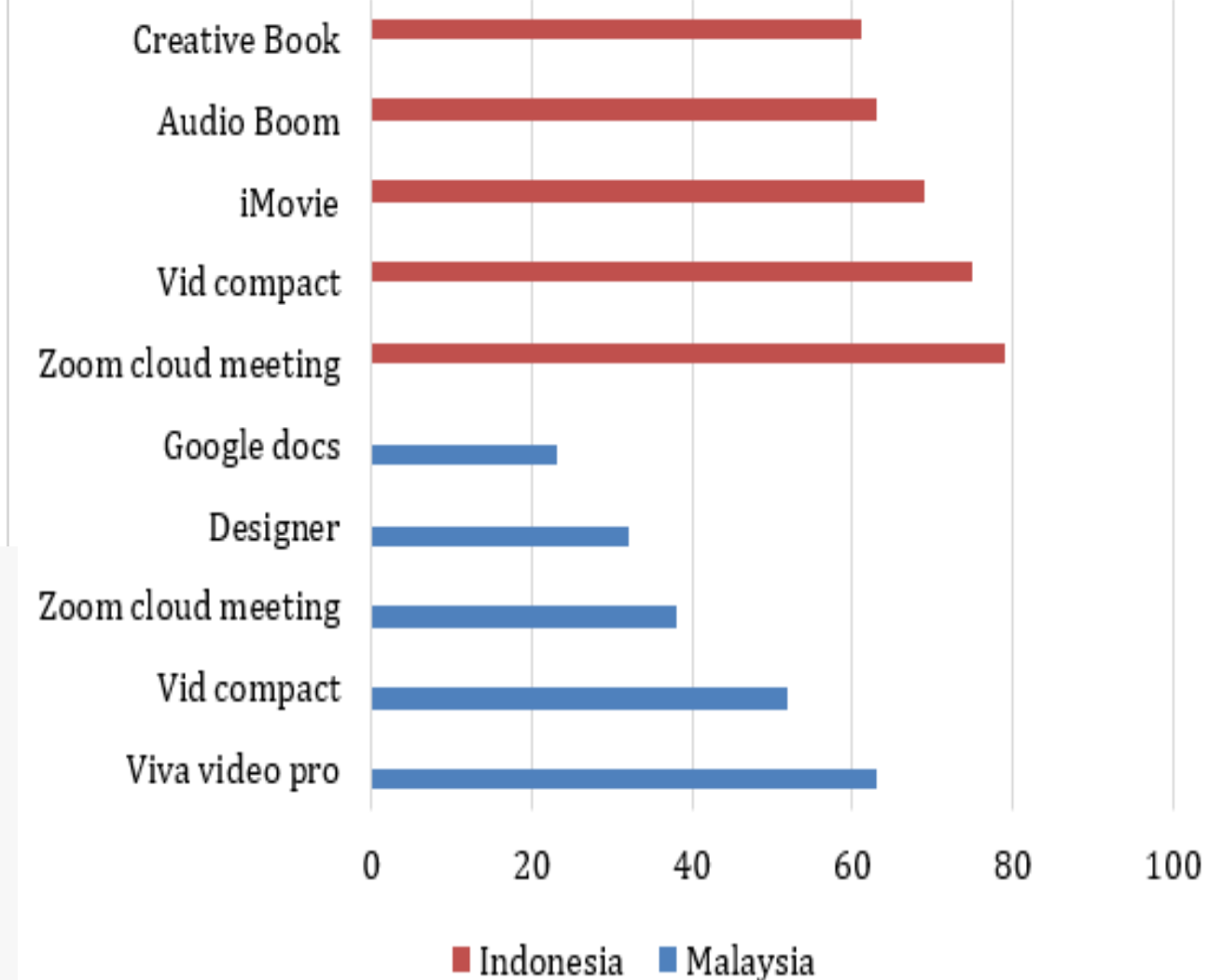
## Analyze



## Evaluate



## Create





# Conclusions



## TVET Teachers' Challenges in RI 4.0

Challenges and responsibilities TVET become very important, because can produce employee who have skill that correspond with industry needs. TVET teachers must play a role to prepare students who ready to compete, and have competence to face revolution industry 4.0.



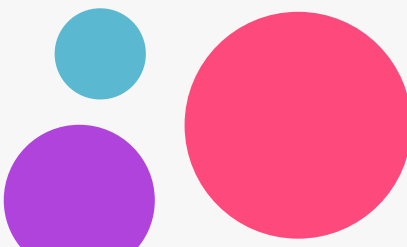
## Learning and teaching method that is used by TVET Teachers in Indonesia and Malaysia.

Malaysia perspective, teaching and learning methods that usually used by TVET teachers are discussing, investigating, remembering and imitating. On the other hand, TVET teachers in Indonesia usually use feedback, coaching, work in team dan listening as teaching and learning method



## ICT Using in Learning Between Indonesia and Malaysia

Learning in Malaysia and Indonesia has begun to integrate with ICT. Teachers have begun to use ICT in the classroom to create an effective learning environment so that the goals of education can be achieved. However, Vocational teachers are still on the way to change to be in RI 4.0





# Thank You.

Love children is a key to be the inspiring educator

Alam takambang jadi guru

Perfect design of Learning is needed , but The effective implementation is more important

