



The Industry 4.0 Seminar with Government Officials



The Development of Holistic Manpower for Industry 4.0 Readiness:
The German-Malaysian Institute Perspective



Presentation Outline

- Situation Analysis 1-Industry 4.0: Where are we?
- Situation Analysis 2 – Why Empowering Learning
- Student Centered Learning
- The German-Malaysian Institute
 - Training Philosophy and Approach
 - Problem-Project-Production Based Learning
 - Learning Environment
 - Outcome Based Education – The Final Year Project
- Industry 4.0 Linkages
 - iFactory Innovation Center
 - Vision System
 - Modular Production System
 - Mini iFactory

Situation Analysis 1

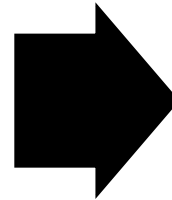
Industry 4.0: Where are we?



smerobotics.org

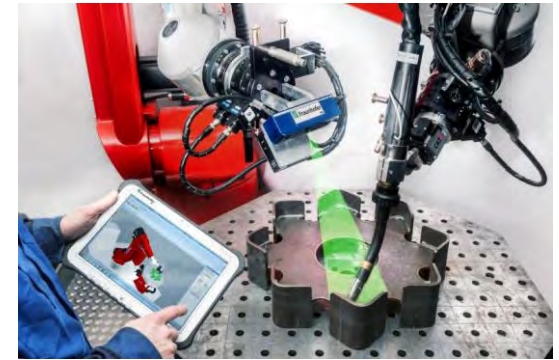
A map of Europe with various countries highlighted in different colors (blue for Scandinavia, red for Germany, France, Italy, Spain, and Turkey, green for Switzerland, and yellow for the UK). A large blue circle with the number '8' is centered over the map. Surrounding the map are logos of partner institutions and companies:

- Top Left:** SME robotics
- Left Side:** DANISH TECHNOLOGICAL INSTITUTE, BILA, Danfoss, IK4 TEKNIKER, dmp, INESCID, SARKKIS robotics, NORFER
- Bottom Left:** COMALI, BUCHER HYDRAULICS, DEMOCENTER
- Top Right:** LUND UNIVERSITY
- Right Side:** Fraunhofer IPA, DLR, GPS Gesellschaft für Produktionssysteme, KUKA, REIS ROBOTICS, fortiss, WEBER STAHL, b-tu
- Bottom Right:** TOFAŞ, GÜDEL, Mivelez Techniqze Bois 3l
- Bottom Center:** European Union flag and text: "Funded by the European Union 7th Framework Programme (6237723) Runtime: 01.01.2012 - 31.12.2015"

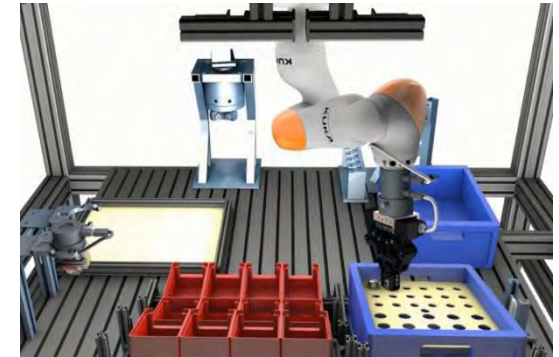


AUTOMATICA

OPTIMIZE YOUR PRODUCTION



Cognitive welding robot assistant for small lot sizes



Automated and Precise Assembly for varying products



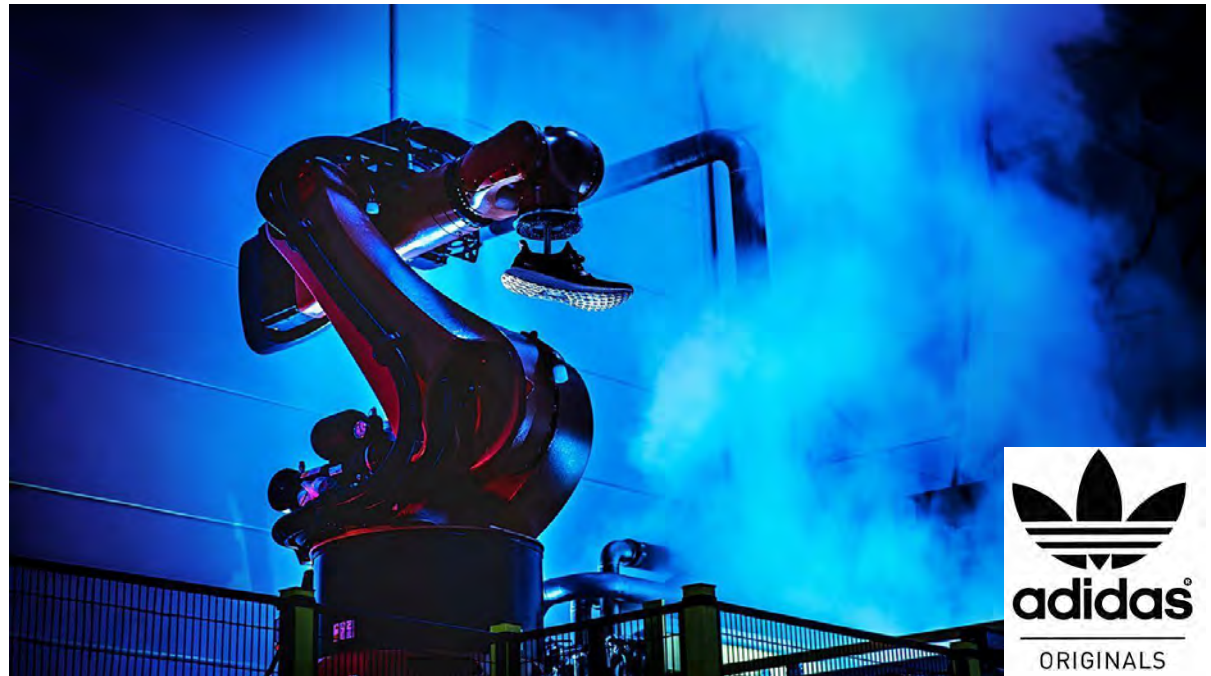
Mobile and Multipurpose CoWorker



Runtime: 01.01.2012-30.06.2016

Adidas to make shoes in Germany again – but using robots to make shoes instead of humans in Asia

- 300 million shoes per year (mostly produced with hands)
- 15% more productivity and faster
- 3,000 Adidas Stores in the next 4 years in China



The Increasing Complexity at the Workplace

The Total Number of Pages of the Repair Manuals of Opel Cars

1933 202 pages



1951 255 pages



1966 1,175 pages



1983 4,526 pages



COMPACT
disc
CD-ROM





1998 13,866 pages

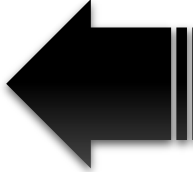


2012 # pages?



Navigating the next industrial revolution

	<u>Revolution</u>	<u>Year</u>	
Humans As Robots		1 1784	Steam, water, mechanical production equipment
		2 1870	Division of labour, electricity, mass production
Humans As Innovators		3 1969	Electronics, IT, automated production
		4 ?	Cyber-physical systems

 We are HERE

Source: World Economic Forum 2015

Asia's Millennials Predict Their Future Careers

Large majority of youth
in Asia say technology
'important'
for future careers.

-  SINGAPORE 72%
-  MALAYSIA 70%
-  PAKISTAN 65%
-  MYANMAR 53%
-  INDIA 57%
-  BANGLADESH 59%

Findings based on Telenor Group
Facebook Survey of

4,200
respondents



How Asia's youth feel about their digital future:



"It's important to understand all
kinds of technology – I want to
know as much as I can!"

Myanmar 34%, Pakistan 33%, India 32%, Bangladesh 30%

"The Internet connects us to all
kinds of people and ideas."

Singapore 31%, Malaysia 28%

[The highest number of respondents in each country chose these statements]

an average of 63% of youths
said that mobile/internet technology
will be 'important' in their career by
2020

Source: <http://www.humanresourcesonline.net> 27/09/2016

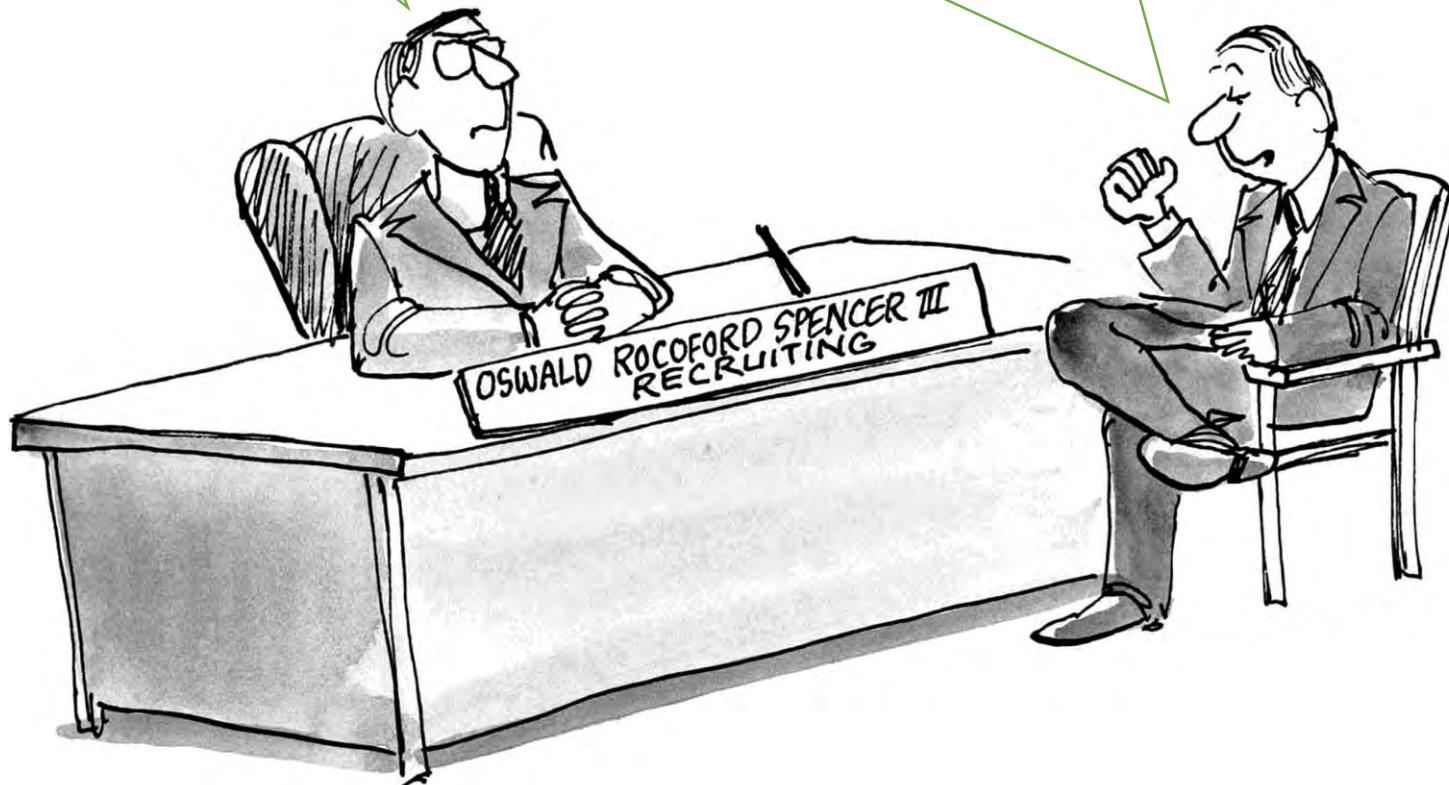
Situation Analysis 2

Empowering Learning



Yes... but what
can you DO?

I have a Degree in
Molecular Biometrics from
Cambridge; a PhD in
Quantum Physics
Cambridge; gold medal
in....



21st Century Student

“How do you know I have a **learning** disability?”

- May be you have a **teaching** disability”-



20th Century **Teacher**

Bala

Source: www.cartoonstock.com



19th Century **Classroom**

GMI

GERMAN-MALAYSIAN INSTITUTE

Attributes employers seek on a candidate's resume (2015)



4 C's

- Ability to work in a team
- Communication skills
- Problem Solving Skills
- Creativity

The 4 C's Education Outcomes

WHAT ARE 21ST CENTURY SKILLS? THESE 4 C's:

C

COMMUNICATION

Sharing thoughts,
questions, ideas &
solutions

C

COLLABORATION

Working together to
reach a goal. Putting
talent, expertise,
and smarts to work

C

CRITICAL
THINKING

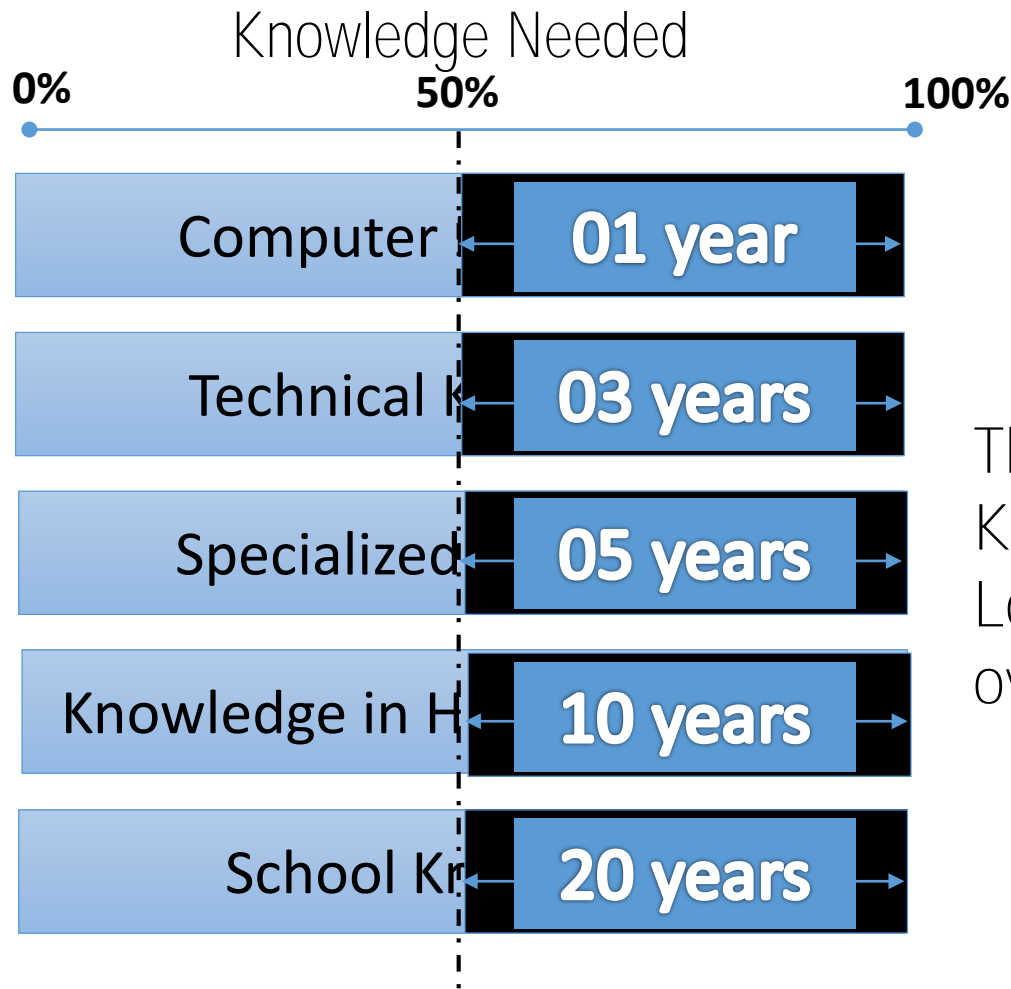
Looking at problems in
a new way and linking
learning across
subjects & disciplines

C

CREATIVITY

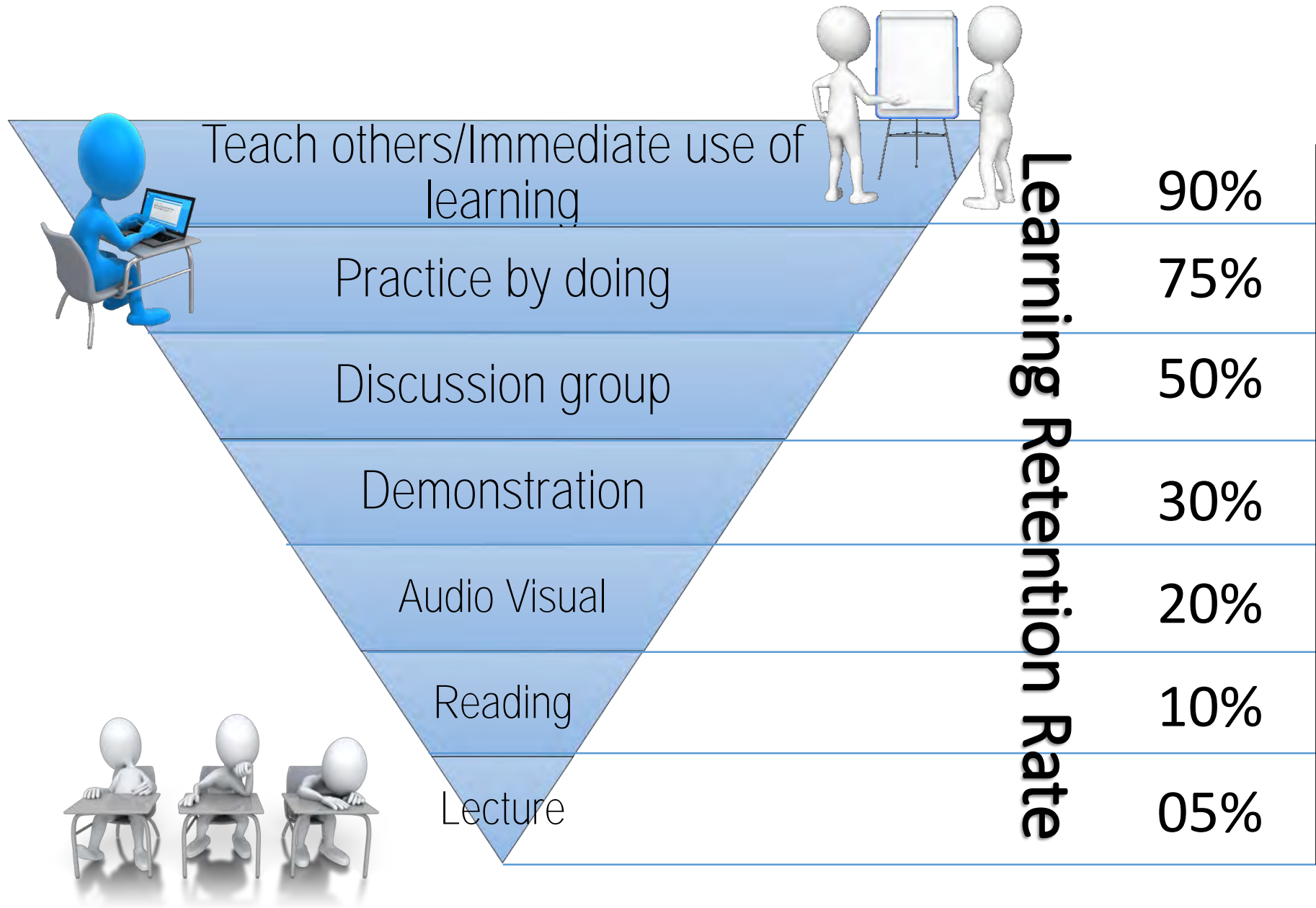
Trying new approaches
to get things done equals
innovation & invention

The Excessive Pace of Technological Change



The Half Life of Knowledge: The Loss of Relevance over Time

Source: IBM, 1994



Competency Based Training

Most Dominant?



Knowledge

Attitude

Reflection



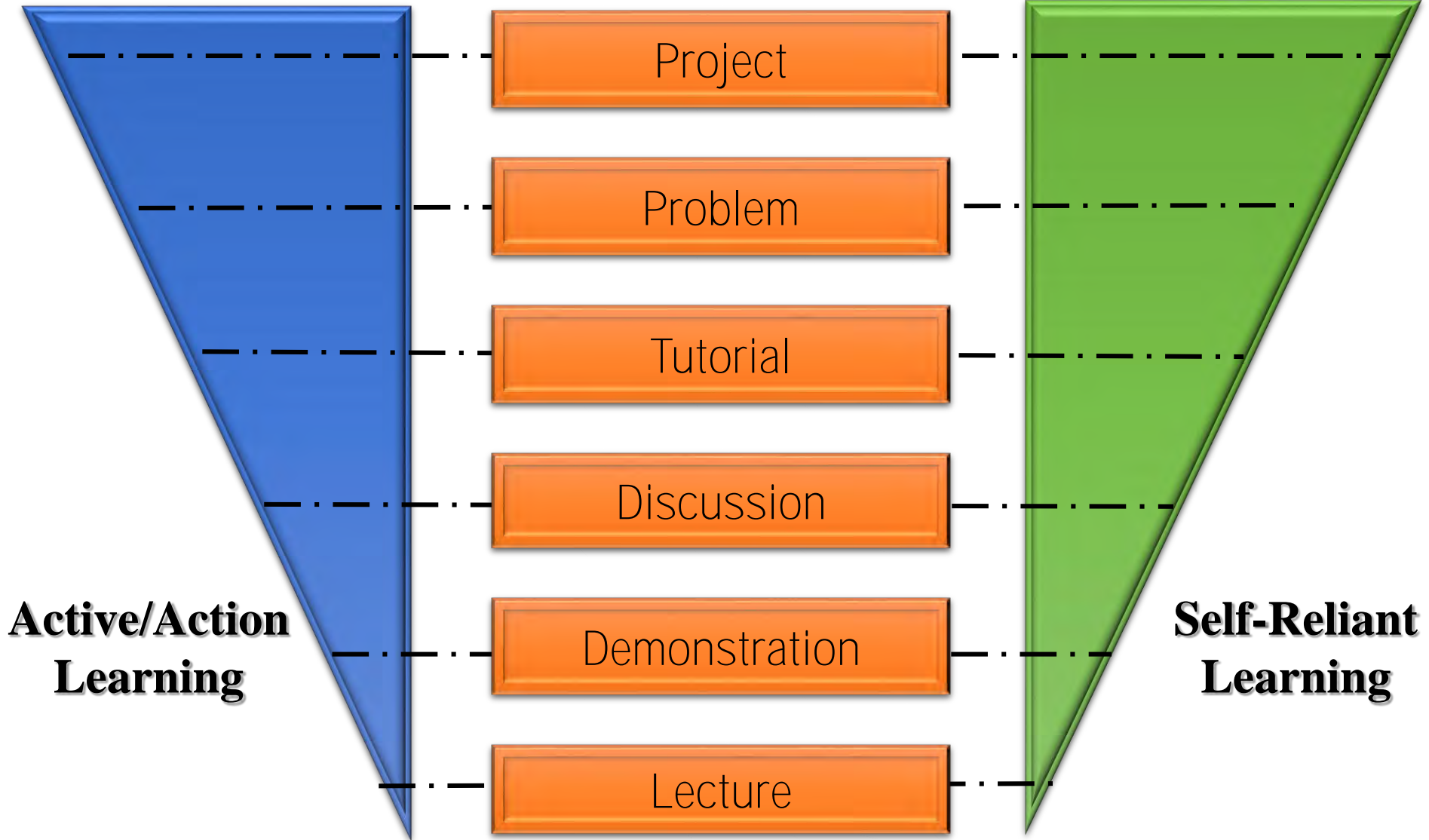
Teacher Centred Learning

Yawn!

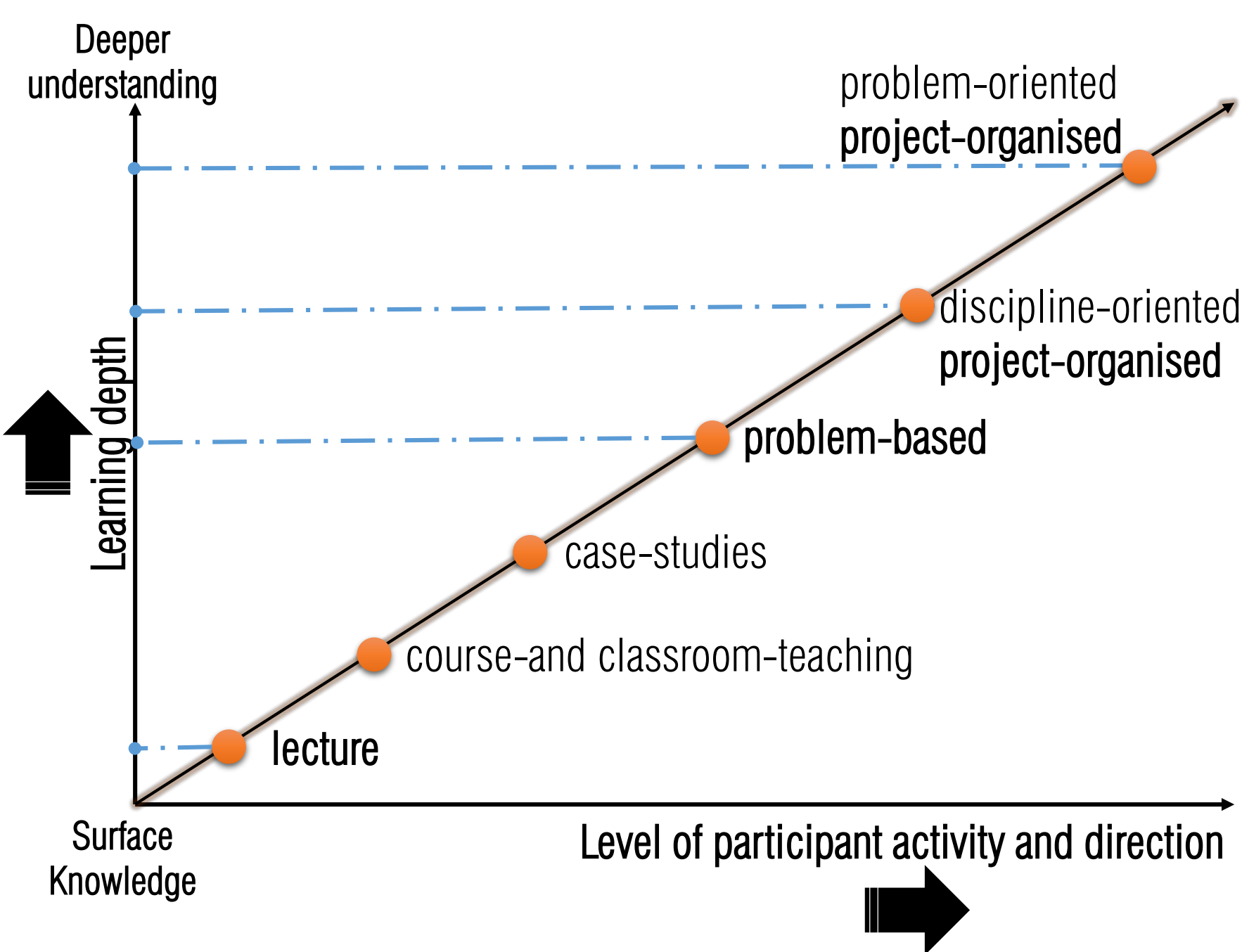


These kids look bored... and you have to blame the method of teaching

Student Centred Approach



Teacher Centred Approach



Source: University of Aalborg, Denmark



The Experience of Self Reliant Learning



The Learning never stops... Google™



Instinct



Inquisitive



Independent



Driven,
to finish work

“**Learning** Comes First, **Teaching** Comes Second”



“Stop **Memorizing** and Start **Thinking,**”

Learning comes
1st

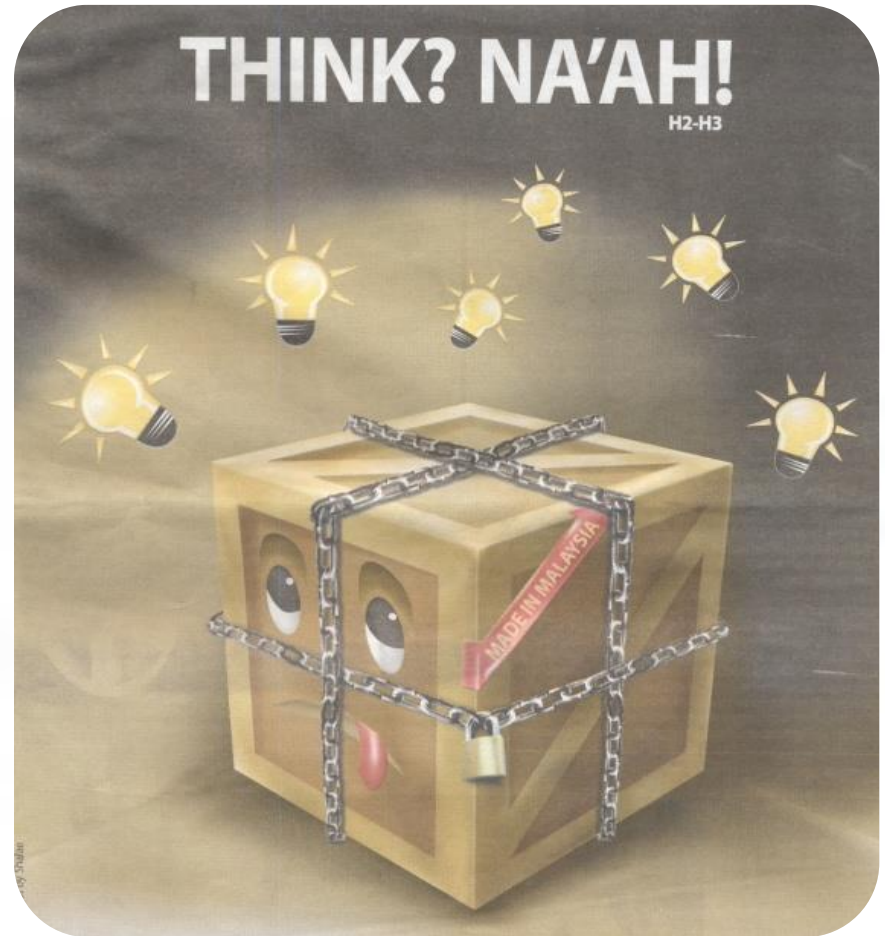
Teaching comes
2nd

Create learning
opportunities through
which people can develop
their ability to learn
AUTONOMOUSLY

Learner steps into
the centre of
education process
**(from listening to
doing)**

Teacher steps
aside
**(organiser, advisor, coach,
moderator & facilitator)**

thinking





GMI

GERMAN-MALAYSIAN INSTITUTE

Training for Advanced Technology

The German Malaysian Institute

Sep 1992- July 2008



Date Incorporated : 1 Sep 1992

Land Size: 6,000 m²

Built-up area: 12,000 m²

Capacity: 1,200 max

Staff: 210 - 230

No 119 Jalan 7/91,
Taman Shamelin Perkasa
56100 Kuala Lumpur, Malaysia

The German Malaysian Institute 2008



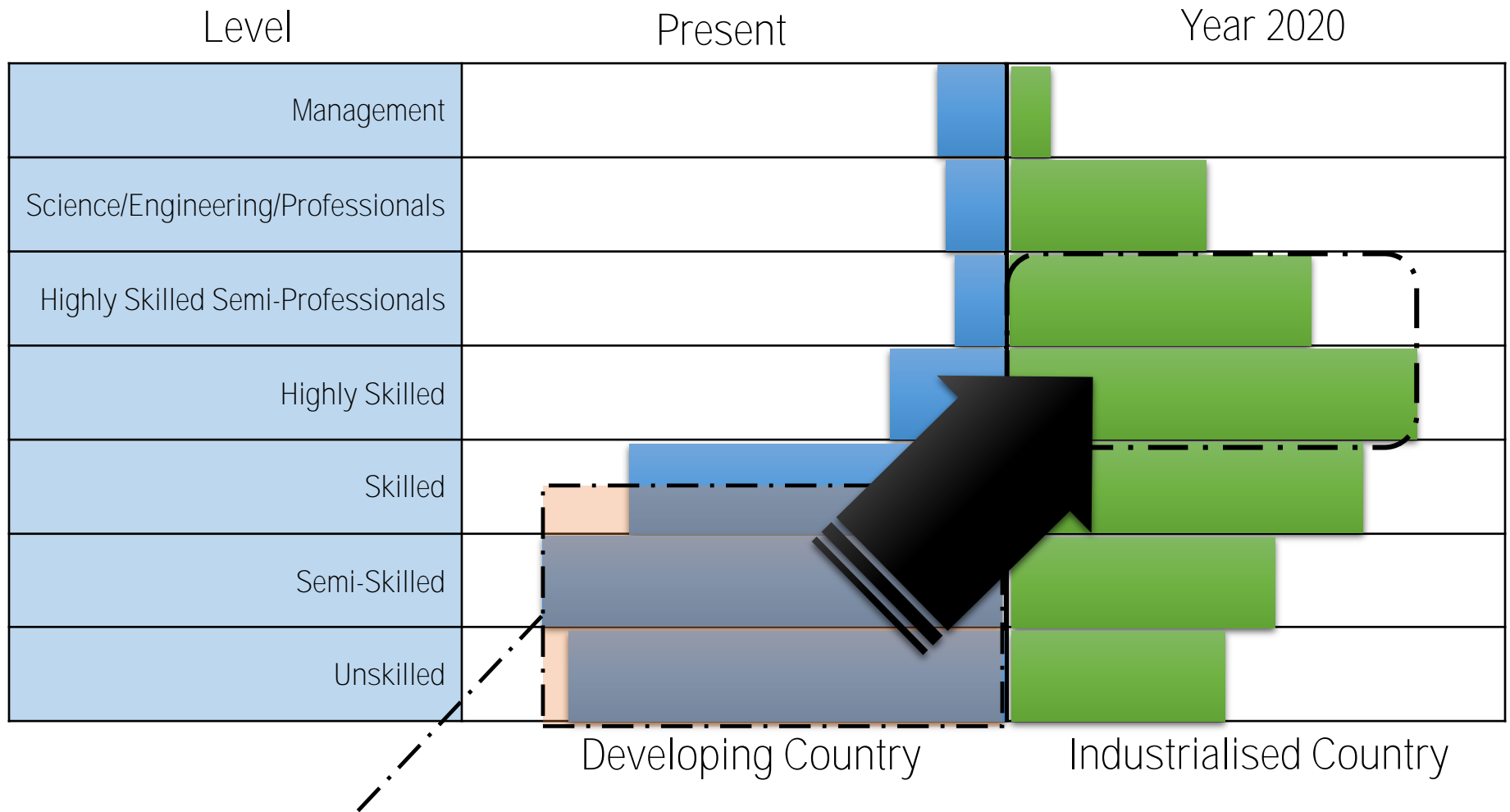
Land Size: **75 acres or
303,514 m²**

Built-up area: **181,000 m²**

Students Capacity: **6,000**

Staff: **750 - 1000**

Talent Development in Malaysia



...task or work activity that
will be automated

Learning & Training Approach





Training Philosophy

Theory
30 - 40%

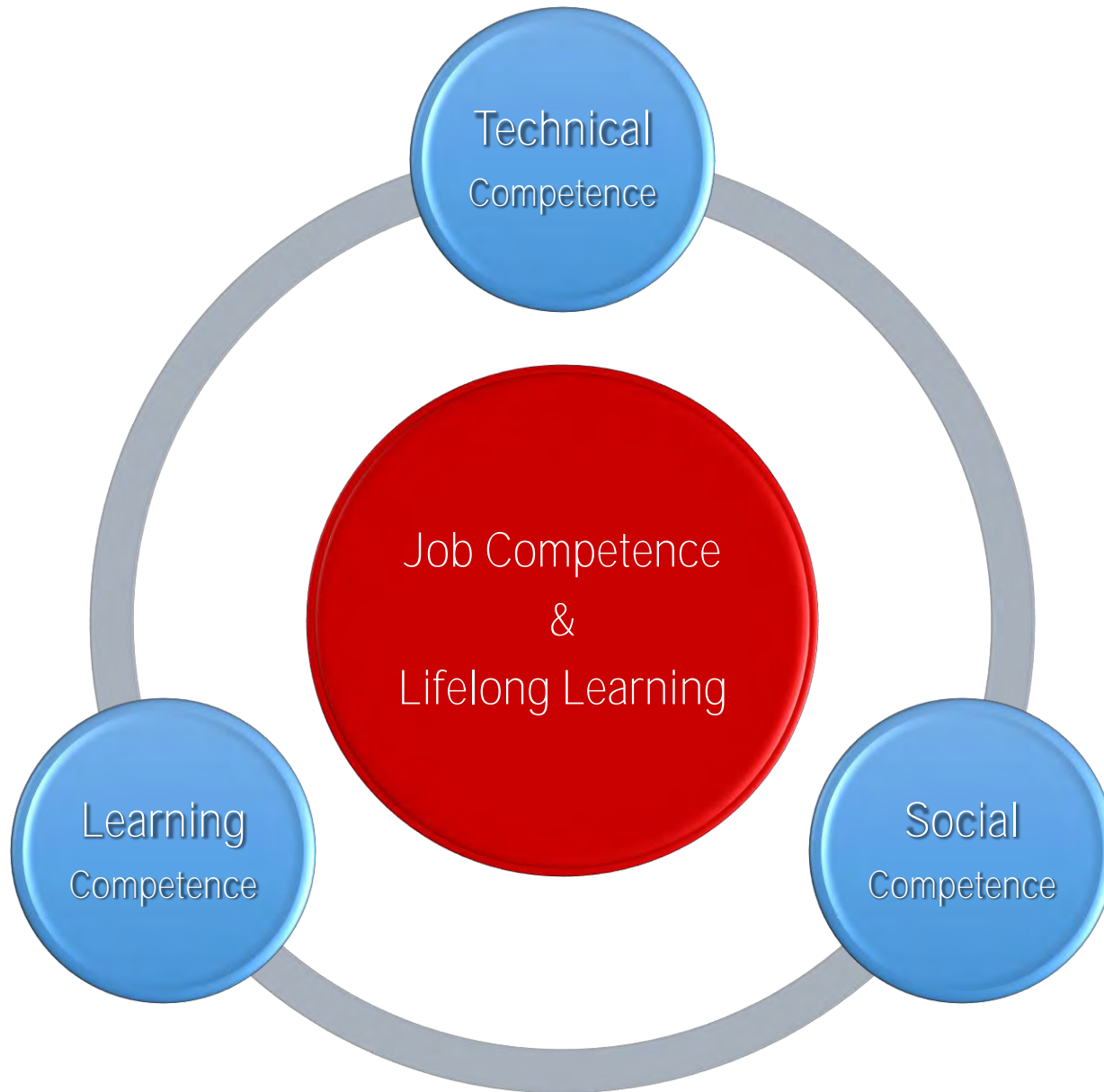
+

Practical
60 - 70%

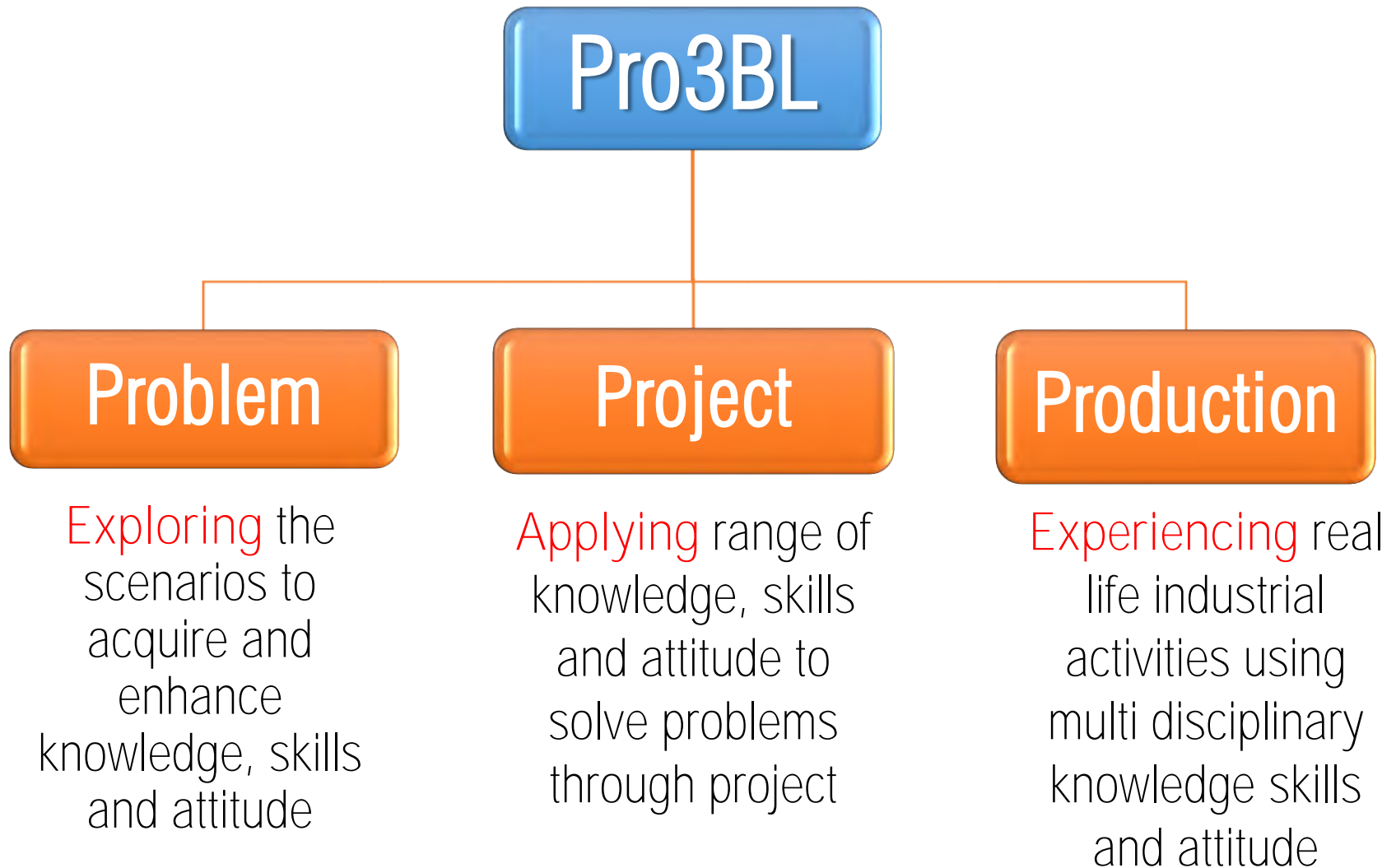


Training Concept

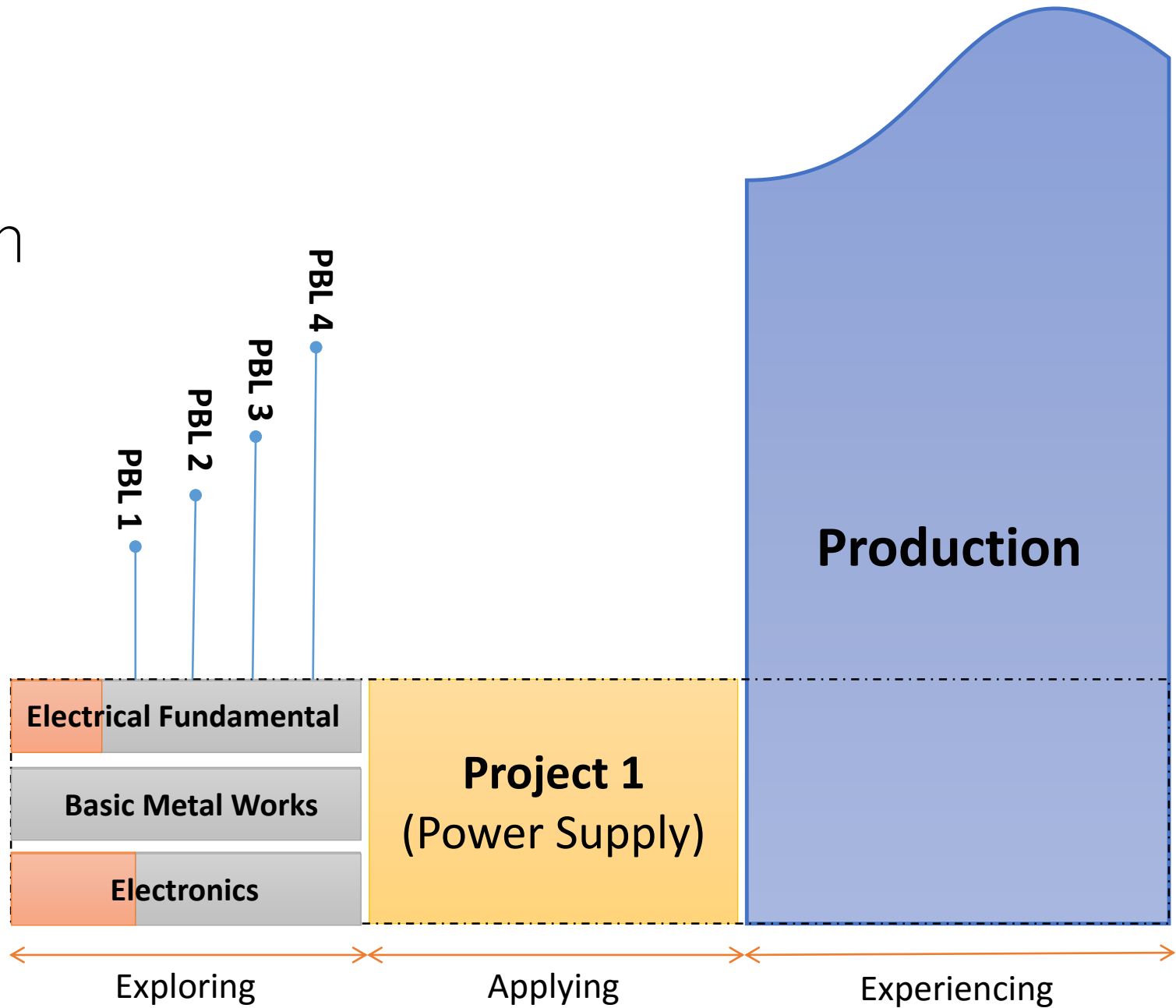
Student Centered Learning



Problem-Project-Production Based Learning



Problem
Project
Production
Based
Learning





Problem Based Learning

1st Year

Project Based
Learning

2nd Year

3rd Year

Production Based Learning (OBE)



Learning Environment



Learning Environment – Industrial Electronics



Learning Environment – Industrial Electronics



Learning Environment – Industrial Electronics



Learning Environment – Production Technology



Learning Environment – Production Technology



Learning Environment – Production Technology



Outcome Based Education Final Year Project



Technical
Competence

Social
Competence

Learning
Competence



Final Year Project

21st Century Skills

C
COMMUNICATION

C
COLLABORATION

C
CRITICAL
THINKING

C
CREATIVITY

Final Year Project



Final Year Project



Fully Automated Button Badge Assembly

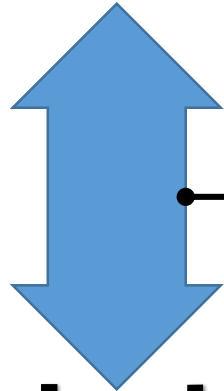
Industry 4.0 Linkages





GMI

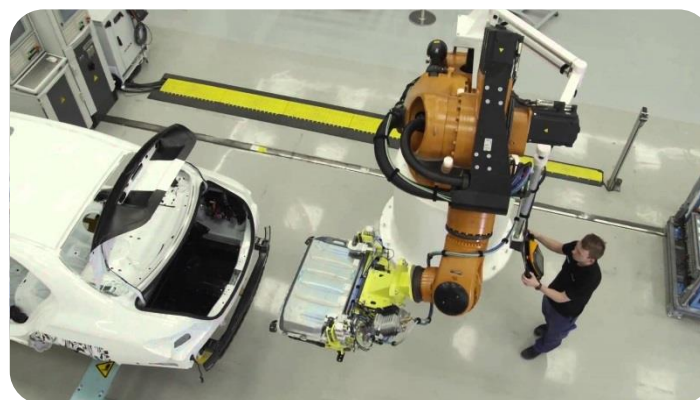
Institution



Industry

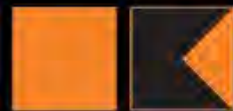


**A project where
Learning meets Industry**



ifactory 4.0 Innovation Centre

The Leading Learning Factory



schulungszentrum
für spritzgießtechnik



ifactory 4.0 ®
powered by i4.0sg

GMI
GERMAN-MALAYSIAN INSTITUTE
Training for Advanced Technology

LEARNING
4.0
ready



INDUSTRY
4.0
ready

iFactory Innovation Center



SmartData



SmartData
Operator Tools



SmartData
Office Tools



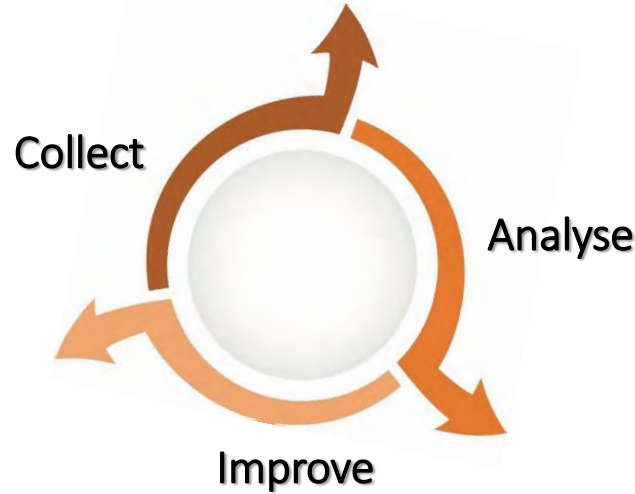
SmartData
Mobile



Machine

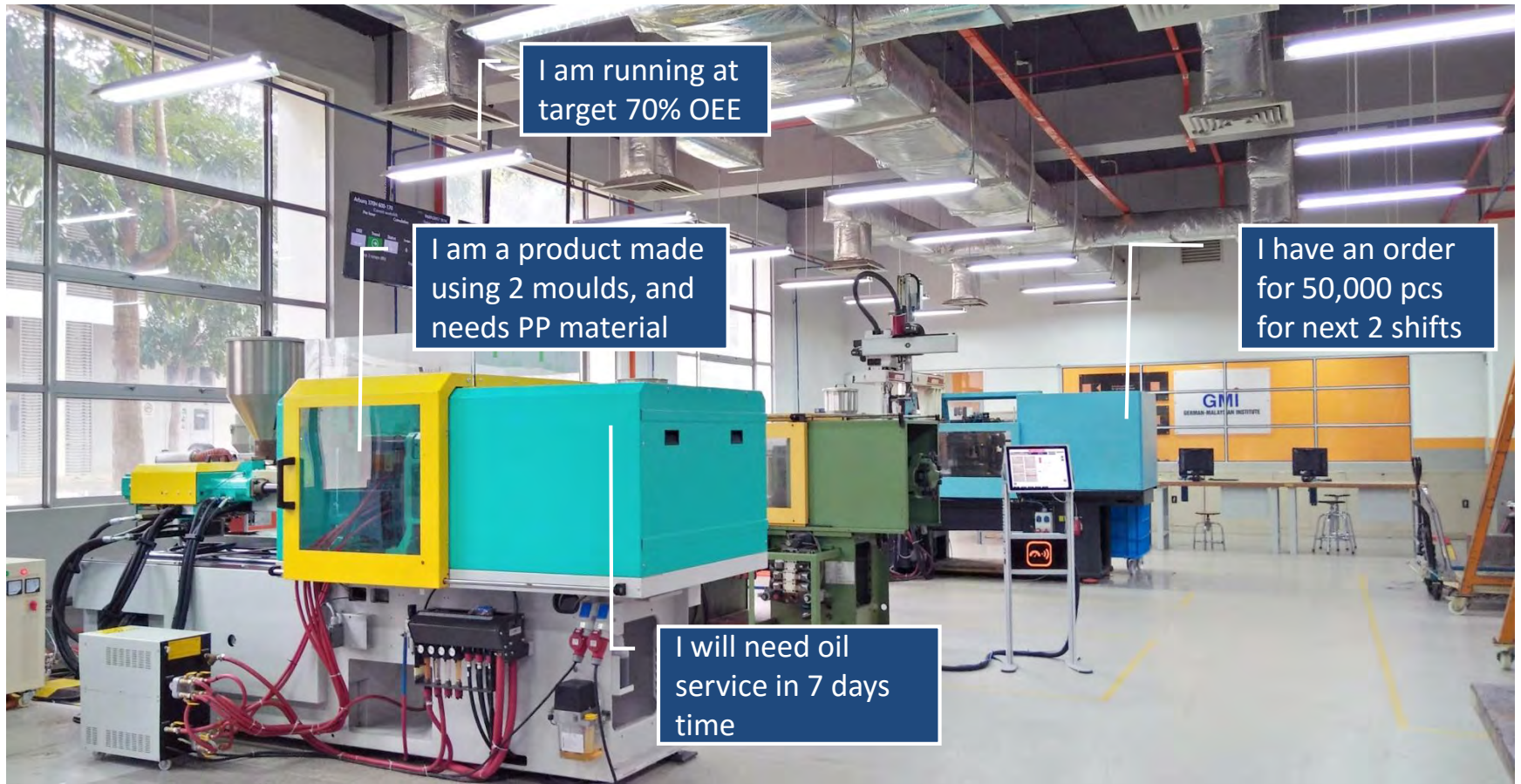


Assembly line



SmartData
Info Screen

Smart Manufacturing



Production Control Tower



LH PLUS SDN BHD

iPlast4.0 Learning Factory 1



PLASFORM
SDN. BHD.

iPlast4.0 Learning Factory 2



MAH SING

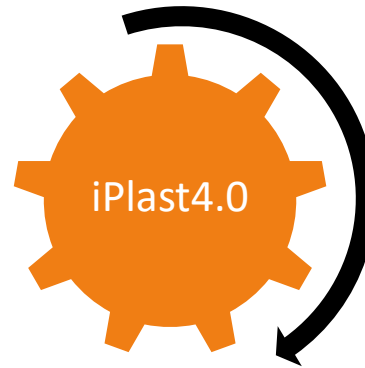
iPlast4.0 Learning Factory 3

SmartData

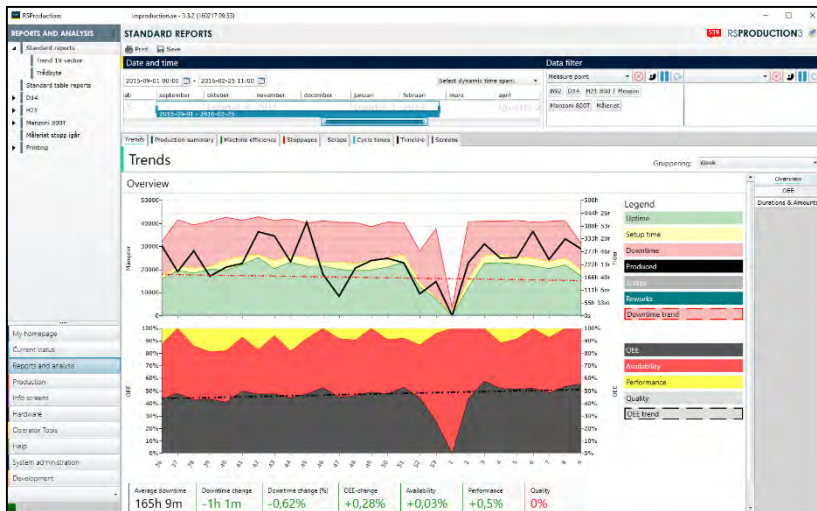


GERMAN-MALAYSIAN INSTITUTE

Empowering future talents



SmartData



SmartMaintenance

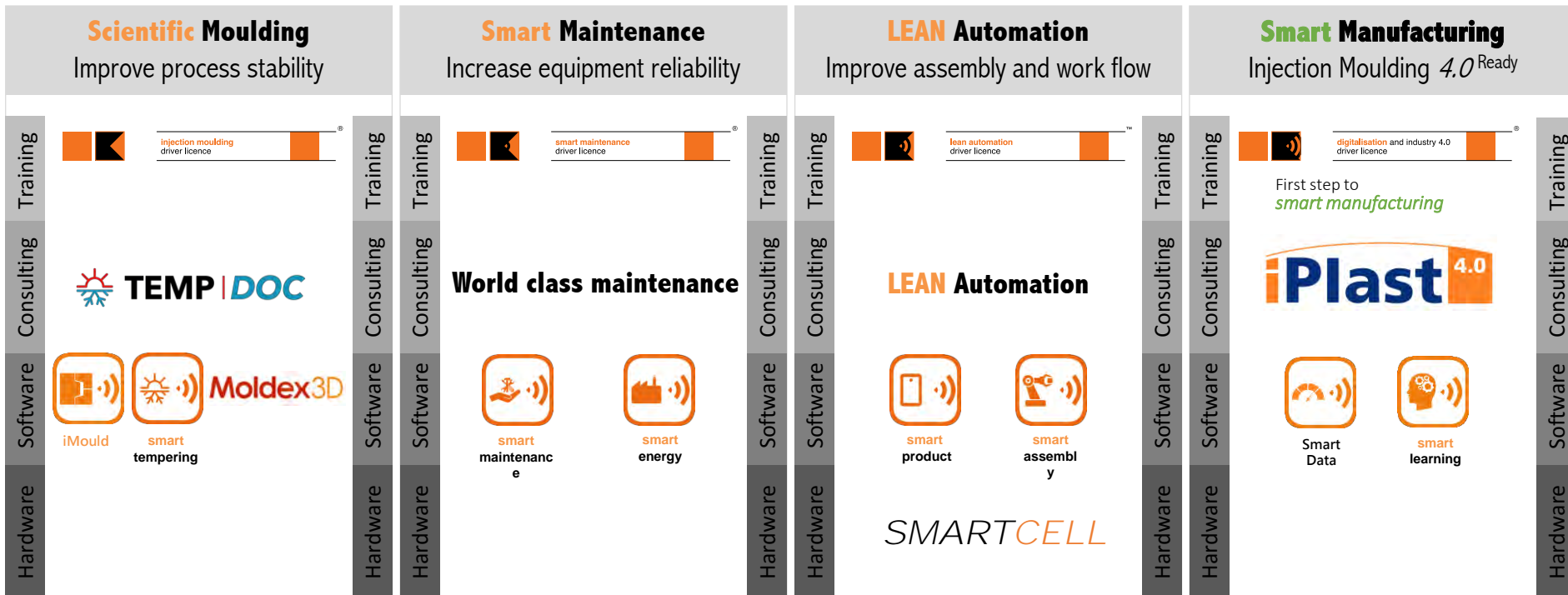
The screenshot displays a maintenance checklist for a 'Babyplast 610P' machine. The checklist includes several steps with corresponding colored boxes: green for 'Ensure machine is stopped properly with safety engaged.', 'Display 'Under Maintenance' sign prominently.', and 'Remove the filter from its housing.'; black for 'Vacuum/wipe away dust.'; and a grey box for 'Re-install the filter securely.' A video player on the right shows a technician performing the maintenance. A 'Completed' button is visible at the bottom of the checklist.

- Ensure machine is stopped properly with safety engaged.
- Display 'Under Maintenance' sign prominently.
- Remove the filter from its housing.
- Vacuum/wipe away dust.
- Re-install the filter securely.

Completed

Our products and services

To implement smart manufacturing for the many companies



Integrated Learning



Industrial Electronics

- Mechatronics
- Industrial Communication
- Network Security
- Creative Multimedia

Production Technology

- Manufacturing System
- Mould Technology
- Industrial Design

Integration

- Industry Personnel Upskilling/Upgrading
- Final Year Project
- Internship
- Train-The-Trainer Program

Modular Production System

Distributing
Station



Sorting Station



Processing
Station



Storing Station



Separating
Station



Pick & Place
Station



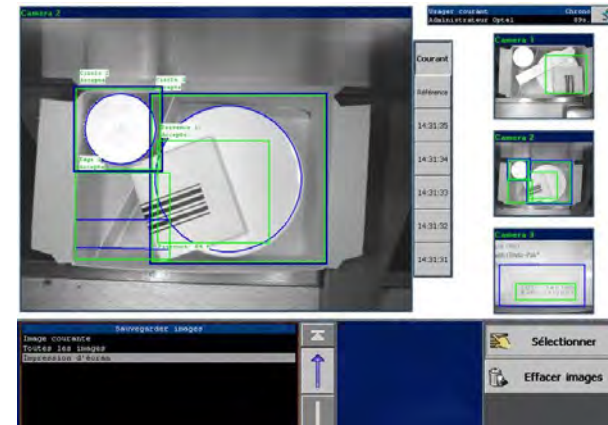
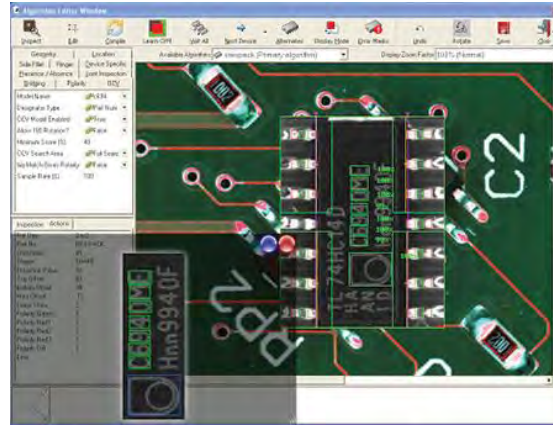
Buffer Station



Testing
Station



Inspection System



Smart Manufacturing





Terima Kasih . Thank you . Danke

