# International Conference on Active Learning in Engineering Education

**SCAN ME**

**Hybrid Platform**

*"Striving Engineering Education Towards Student Competence Development"*

26 – 28 August 2020
Asian Institute of Technology and Pinehurst Golf Club & Hotel,
Pathumthani, Thailand

www.paeeale.ait.ac.th

20 ALE PAEE 20

# Welcome to PAEE/ALE' 2020

Dear Participants,

Welcome to the International Conference on Active Learning in Engineering Education (PAEE/ALE' 2020). This is the fifth collaboration of the International Symposium on Project Approaches in Engineering Education (PAEE) and Active Learning in Engineering Education Workshop (ALE), and is the first time in Asia. The theme for the conference is Striving Engineering Education Towards Student Competence Development.

As we are experiencing, technological advancement has created a new landscape for how business functions. All industry sectors at all sizes have been forced to adjust to remain competitive in the circumstance, and this change is reshaping job functions prompting companies to revisit their human capacity building to ensure appropriateness to support the business functions. More importantly, the unprecedented COVID-19 pandemic has expedited the change at a pace that we cannot imagine. Several companies that have not been able to adjust or have resisted this change start disappearing from the picture.

This chain effect ripples back to all academic institutes. As a key supplier, it is inevitable for the academic institutes to adjust how they train their graduates to match the need for a human resource with competence. The conventional lecture style will not be sufficient to build graduate competence. The change urges the academic institutes to not only keep their curricula up-to-date but also equip their instructors with various teaching and learning methods.

As aforementioned, we are in a challenging period. Many other similar events have been disrupted by the COVID 19 pandemic. They have been postponed or canceled. But our community has shown a strong determination all along to make this event possible. The organizing committee has not only introduced a hybrid format for the conference to alleviate hurdles caused by the travel restriction but has also tried to create a good conference atmosphere for the participants to enjoy. Our participants, in return, show a passion and a strong commitment to keeping engineering education up with the change.

We want to express our sincere gratitude to our participants for their strong support. Despite the pandemic, a reasonable number of academic people from different parts of the world have submitted papers and registered for PAEE/ALE' 2020 for both onsite and online participation to exchange their knowledge and ideas on Engineering Education. Furthermore, prominent keynote speakers have accepted to share their visions on education to inspire and to expand the horizon of our participants. Contributions in all aspects from all parties make this PAEE/ALE' 2020 successful. Together we can make our education stronger.


Pisut Koomsap

(Chair of the PAEE/ALE' 2020)

| Bangkok (GMT +7) | Lisbon (GMT +1) | Brasília (GMT -3) | August 26, 2020 AIT Conference Center | | August 27, 2020 AIT Conference Center | | August 28, 2020 Pinehurst Hotel, 8th floor, Golf View Bollroom | |
|---|---|---|---|---|---|---|---|---|
| 10.00 am -11.30 am | | | | | Learning Future Factory Laboratory Visit (ISE Building) | | Workshop on LEF-CDD: The Art of Teaching I | |
| 11.30 am -1.00 pm | | | Lunch (Dining Room) | | Lunch (Dining Room) | | Lunch | |
| 1.00 pm - 2.30 pm | 7.00 am - 8.30 am | | MSIE 4.0 Curriculum Development (*) | | P3-1: Research on PBL and Active Learning I (*) | | Workshop on LEF-CDD: The Art of Teaching II | |
| 2.30 pm - 3.00 pm | 8.30 am - 9.00 am | | Coffee Break | | Coffee Break | | Coffee Break | |
| 3.00 pm - 4.30 pm | 9.00 am - 10.30 am | 5.00 am - 6.30 am | P1-1: Innovative Experiences in Engineering Education I (*) | P1-2: Interdisciplinarity (**) | P4-1: Student Engagement in Learning (*) | P4-2: Curriculum Design (**) | P6-1: Education for Sustainability I | P6-2: Student Session I |
| 4.30 pm - 4.45 pm | 10.30 am - 10.45 am | 6.30 am - 6.45 am | Break | | Break | | Break | |
| 4.45 pm - 6.15 pm | 10.45 am - 12.15 am | 6.45 am - 8.15 am | Workshop 1-1: Agile Project Management: An Online Scrum Workshop (*) | Workshop 1-2: Creating Value for Society by Providing Lean Competencies (**) | Workshop 2-1: Application of Two Modules of a Digital Platform for PBL Support & Automation (*) | Workshop 2-2: Learning Outcomes and the Revised Bloom's Taxonomy (**) | P7-1: Education for Sustainability II | P7-2: Student Session II |
| 6.15 pm - 6.30 pm | 12.15 pm - 12.30 pm | 8.15am - 8.30 am | Dinner (Dining Room) | | Dinner (Dining Room) | | Break | |
| 6.30 pm - 7.15 pm | 12.30 pm - 1.15 pm | 8.30 am - 9.15 am | | | | | Cultural Session and Closing Remark | |
| 7.15 pm - 7.30 pm | 1.15 pm - 1.30 pm | 9.15 am - 9.30 am | Welcome Remark (*) | | | | | |
| 7.30 pm - 8.30 pm | 1.30 pm - 2.30 pm | 9.30 am - 10.30 am | Keynote 1: Hon. Abhisit Vejjajiva (*) | | Keynote 3: Dr. Sampan Silapanad (*) | | Gala Dinner | |
| 8.30 pm - 9.30 pm | 2.30 pm - 3.30 pm | 10.30 am - 11.30 am | Keynote2: Prof. David W. Rosen (*) | | Keynote 4: Prof. Cynthia J. Finelli (*) | | | |
| 9.30 pm - 10.00 pm | 3.30 pm - 4.00 pm | 11.30 am - 12.00 pm | Break | | Break | | | |
| 10.00 pm - 11.50 pm | 4.00 pm - 5.50 pm | 12.00 pm - 1.50 pm | P2-1: Innovative Experiences in Engineering Education II | P2-2: Active Learning and ICT Support | P5-1: Research on PBL and Active Learning II | P5-2: Student Assessment in PBL and Active Learning | | |

Onsite Activities
Hybrid Activities
Online Activities

(*)  AIT Auditorium, Ground Floor
(**) B108, Ground Floor

| Bangkok (GMT +7) | Lisbon (GMT +1) | Brasília (GMT -3) | August 26, 2020 — AIT Conference Center | |
|---|---|---|---|---|
| 10.00 am -11.30 am | | | | |
| 11.30 am -1.00 pm | | | Lunch (Dining Room) | |
| 1.00 pm - 2.30 pm | 7.00 am - 8.30 am | | **MSIE 4.0 Curriculum Development (*)** | |
| 2.30 pm - 3.00 pm | 8.30 am - 9.00 am | | Coffee Break | |
| 3.00 pm - 4.30 pm | 9.00 am - 10.30 am | 5.00 am - 6.30 am | **P1-1: Innovative Experiences in Engineering Education I (*)**<br><br>**Session Chair: Prof. Huynh Trung Luong**<br><br>Experience with the Accreditation of Technical Studies in Poland and Thailand's (ID 23)<br><br>Developing Lean Competencies Through Serious Games (ID 29)<br><br>A Service Leaning Experience with Engineering Students (ID 37)<br><br>Adapting Problem Based Learning for Human-Centric Design Course (ID 60)<br><br>Success Factor of Activity-Based Learning Experiences for I4.0 SMART OPERATION Course Design and Implementation (ID 85) | **P1-2: Interdisciplinarity (**)**<br><br>**Session Chair: Prof. Rui M. Sousa**<br><br>Interdisciplinary Contents Integration and Key Competences Developed in a Project Work of Industrial Engineering and Management Third Year (ID 4)<br><br>Design of a New Workstation in a Productive Process: Importance of Multidisciplinary Integration (ID 12)<br><br>Global PBL: Cross-Cultural Educational Project for Engineering Students (ID 55)<br><br>Students Feedback on the Forced Transition to Online Classroom During Covid-19 (ID 63)<br><br>International Student Projects and Sustainable Development Goals: A Perfect Match (ID 70) |
| 4.30 pm - 4.45 pm | 10.30 am - 10.45 am | 6.30 am - 6.45 am | Break | |
| 4.45 pm - 6.15 pm | 10.45 am - 12.15 pm | 6.45 am - 8.15 am | **Workshop 1-1: Agile Project Management: An Online Scrum Workshop (*)** | **Workshop 1-2: Creating Value for Society by Providing Lean Competencies (**)** |
| 6.15 pm - 7.15 pm | 12.15 pm - 1.15 pm | 8.15am - 9.15 am | Lunch (Dining Room) | |
| 7.15 pm - 7.30 pm | 1.15 pm - 1.30 pm | 9.15 am - 9.30 am | **Welcome Remark (*)**<br><br>**Dr. Eden Y. Woon**<br>**President, Asian Institute of Technology** | |
| 7.30 pm - 8.30 pm | 1.30 pm - 2.30 pm | 9.30 am - 10.30 am | **Keynote 1: Future, We Hear You: Reforming Education for Lifelong Learning (*)**<br><br>**Hon. Abhisit Vejjajiva,**<br>**Former Thai Prime Minister**<br><br>**Session Chair: Prof. Kanchana Sethanan** | |
| 8.30 pm - 9.30 pm | 2.30 pm - 3.30 pm | 10.30 am - 11.30 am | **Keynote2: Active Transdisciplinary Engineering Education for Competence Development in An Intelligent Manufacturing Era (*)**<br><br>**Prof. David W. Rosen**<br>**Georgia Institute of Technology, USA**<br><br>**Session Chair: Dr. Pisut Koomsap** | |
| 9.30 pm - 10.00 pm | 3.30 pm - 4.00 pm | 11.30 am - 12.00 pm | Break | |
| 10.00 pm - 11.50 pm | 4.00 pm - 5.50 pm | 12.00 pm - 1.50 pm | **P2-1: Innovative Experiences in Engineering Education II**<br><br>**Session Chair: Prof. Valquíria Villas-Boas**<br><br>360º Educational Robotics Project Management with High Abilities and Gifted Students (ID 15)<br><br>Application of Educational Games in Professional Training and Its Influence on Productivity in the Sugar-Energy Sector: A Case Study (ID 17)<br><br>University-Business Cooperation on SMEs: An Intervention Program on Creativity, Critical Thinking and Trust (ID 50)<br><br>The Role of Partnership in Launching PBL Approach in Cooperation with Network of Social Enterprises – Research Case of Częstochowa University of Technology (ID 51)<br><br>Curricular and Pedagogic Innovation in a Social Education Programme: Findings From the Implementation of PBL (ID 64)<br><br>Structuring a Course Based on the Global Engineer (ID 65) | **P2-2: Active Learning and ICT Support**<br><br>**Session Chair: Prof. Marietjie Havenga**<br><br>Design and Development of Automated Guided Vehicles for Active Learning in Material Handling Management for Smart Manufacturing Operation (ID 19)<br><br>Double Degree M.Sc Program on Industrial Safety Engineering with Aerospace Application: A Case Study (ID 36)<br><br>Peer-Assessment for Holistic Student Development (PAHSD): Implementing a Digital Application on a PBL Platform (ID 43)<br><br>Team Building through Student's Preferences and Competences (TBSPC): implementation on a PBL platform (ID 44)<br><br>COVID-19: Transition to Online Problem-based Learning in Robotics – Challenges, Opportunities and Insights (ID 58)<br><br>The Use of Games as A Support Tool for Active Learning in The Context Of 4.0 Industry (ID 74) |

Onsite Activities
Hybrid Activities
Online Activities

(*) AIT Auditorium, Ground Floor
(**) B108, Ground Floor

| Bangkok (GMT +7) | Lisbon (GMT +1) | Brasilia (GMT -3) | August 27, 2020<br>AIT Conference Center | |
|---|---|---|---|---|
| 10.00 am -11.30 am | | | **Learning Future Factory Laboratory Visit**<br>**(ISE Building)** | |
| 11.30 am -1.00 pm | | | Lunch<br>(Dining Room) | |
| 1.00 pm - 2.30 pm | 7.00 am - 8.30 am | | **P3-1: Research on PBL and Active Learning I (*)**<br><br>**Session Chair: Prof. Athakorn Kengpol**<br><br>Bringing PBL to Philippines's Higher Education: How Much Are Teachers Geared for the Transition from Traditional to PBL Approach? (ID 13)<br><br>Problem-based learning (PBL) Implemented in Manufacturing Processes (ID 27)<br><br>Collaborative Manufacturing Systems: Active Learning from Its Name (ID 35)<br><br>Implementing Problem-Based Learning Model for Elevator Spare Part Procurement Planning in a Group of Airport Buildings (ID 61)<br><br>Community Learning and Engagement of OTOP Product Design (ID84) | |
| 2.30 pm - 3.00 pm | 8.30 am - 9.00 am | | Coffee Break | |
| 3.00 pm - 4.30 pm | 9.00 am - 10.30 am | 5.00 am - 6.30 am | **P4-1: Student Engagement in Learning (*)**<br><br>**Session Chair: Prof. Anabela C. Alves**<br><br>Make Product Design and Development Beyond Active Learning with 'LOVE' (ID 8)<br><br>Students' Participation in the Internal Quality Assurance System and Their Role in Enhancing Learning (ID 9)<br><br>Analyzing Online Learning Behavior and Effectiveness of Blended Learning Using Students' Accessing Timeline (ID10)<br><br>NPS Better Predict Online Classroom (ID 54)<br><br>Experiential Learning Through Students Non-Profit Organizations: ESTIEM Case Study (ID 83) | **P4-2: Curriculum Design (**)**<br><br>**Session Chair: Prof. Tomasz Nitkiewicz**<br><br>Building a Needs-Based Curriculum in Data Science and Artificial Intelligence: Case Studies in Indonesia, Sri Lanka, and Thailand (ID 14)<br><br>Design, Implementation, and Improvement of the Course for Master's Degree Program in Industry 4.0: A Case Study in Digital Factory Subject (ID 20)<br><br>LOVE Model-Based Assessment of Teaching Practices Within Industrial Engineering Master Programs in Poland and Thailand (ID 25)<br><br>An OBE Curriculum Design for a Manufacturing Engineering Program, from Thai Traditional to Outcome Based Education (ID 52)<br><br>A Gap Analysis Between the Expectation of Industry 4.0 and the Ability of the Current Industrial Engineering Graduates in Khon Kaen University (ID 81) |
| 4.30 pm - 4.45 pm | 10.30 am - 10.45 am | 6.30 am - 6.45 am | Break | |
| 4.45 pm - 6.15 pm | 10.45 am - 12.15 pm | 6.45 am - 8.15 am | **Workshop 2-1: Application of Two Modules of a Digital Platform for PBL Support & Automation (*)** | **Workshop 2-2: Learning Outcomes and the Revised Bloom's Taxonomy (**)** |
| 6.15 pm - 7.30 pm | 12.15 pm - 1.30 pm | 8.15 am - 9.30 am | Lunch<br>(Dining Room) | |
| 7.30 pm - 8.30 pm | 1.30 pm - 2.30 pm | 9.30 am - 10.30 am | **Keynote 3: Be Comfortable in Uncomfortable Zone: Workforce 4.0 Will Never Be the Same (*)**<br>**Dr. Sampan Silapanad**<br>**Western Digital (Thailand) Company Limited**<br>**Session Chair: Prof. Kanchana Sethanan** | |
| 8.30 pm - 9.30 pm | 2.30 pm - 3.30 pm | 10.30 am - 11.30 am | **Keynote 4: In Pursuit of Active Learning: Challenges, Insights, and Opportunities (*)**<br>**Prof. Cynthia J. Finelli**<br>**University of Michigan, USA**<br>**Session Chair: Prof. Valquíria Villas-Boas** | |
| 9.30 pm - 10.00 pm | 3.30 pm - 4.00 pm | 11.30 am - 12.00 pm | Break | |
| 10.00 pm - 11.50 pm | 4.00 pm - 5.50 pm | 12.00 pm - 1.50 pm | **P5-1: Research on PBL and Active Learning II**<br><br>**Session Chair: Prof. José Dinis-Carvalho**<br><br>Learning Experiences from Digital Factory Subject and Communications and People Skills Development for Engineering Leaders Subject (ID 40)<br><br>Helping Students to Avoid Critical Mistakes/Misunderstands When Using Active Learning/Project-Based Learning Approaches in Teaching Statistical Analysis (ID 7)<br><br>Do Student Initial Expectations About PBL Match Their Final Perceptions? (ID 5)<br><br>Science Clubs and Scientific and Technological Fairs: Encouraging Girls in Exact Sciences, Engineering and Information Technology (ID 59)<br><br>Development of Transversal Skills in an Extracurricular Academic Research Project Through Active Learning in Healthcare - A Case Study (ID 76) | **P5-2: Student Assessment in PBL and Active Learning**<br><br>**Session Chair: Prof. Joao Mello da Silva**<br><br>The Impact of the Self- Assessment and Peer-Assessment on an Integrated Project (ID 3)<br><br>Evaluation of Projects Carried Out in Companies by Second-Year Engineering Students (ID 11)<br><br>Evaluation of a Pilot Course of Project Management for Industry 4.0 (ID 45)<br><br>Class Dissatisfaction and Intelligibility of PBL (ID 66)<br><br>Evaluation Process in the Application of Case Teaching Method in Management Education: A Study in the Perception of Professors from Brazilian Universities (ID 68)<br><br>Assessment of Student Performance in the Context of Active Learning (ID 75) |

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|---|---|---|---|---|
| 10.00 am -11.30 am | | | **Workshop on LEF-CDD: The Art of Teaching I** | |
| 11.30 am -1.00 pm | | | Lunch | |
| 1.00 pm - 2.30 pm | 7.00 am - 8.30 am | | **Workshop on LEF-CDD: The Art of Teaching II** | |
| 2.30 pm - 3.00 pm | 8.30 am - 9.00 am | | Coffee Break | |
| 3.00 pm - 4.30 pm | 9.00 am - 10.30 am | 5.00 am - 6.30 am | **P6-1: Education for Sustainability I**<br><br>**Session Chair: Prof. Thanate Ratanawilai**<br><br>A Survey of Requirements for Thailand's Industry 4.0: The Perspectives from Academics and Entrepreneurs (ID 21)<br><br>Standards of Developing Study Program. An Example of Polish legislation in Higher Education (ID 24)<br><br>International Dual-Degree Programs: Learning Experience in Student's Perspective (ID 32)<br><br>How to Create Sustainable Future Through Curriculum in Higher Education (ID 33)<br><br>COVID 19 and Academia Community Cooperation: Skills Development Fostering Diversity, Inclusion and Equal Opportunities (ID 57) | **P6-2:  Student Session I**<br><br>**Session Chair: Prof. Jens Myrup Pedersen**<br><br>Awareness and Expectation of Industrial Engineering Students on Competences Required Toward Industrial Revolution 4.0 (ID 62)<br><br>Fully 3D Printed Spring Powered Car: A Project-Based Learning Experience (ID 42)<br><br>Development of Automated Guided Vehicles for a Smart Factory: A Project-Based Learning Experience (ID 56)<br><br>A Student Perspective on the Blended Learning Experience in a Project Based Context (ID 22) |
| 4.30 pm - 4.45 pm | 10.30 am - 10.45 am | 6.30 am - 6.45 am | Break | |
| 4.45 pm - 6.15 pm | 10.45 am - 12.15 pm | 6.45 am - 8.15 am | **P7-1: Education for Sustainability II**<br><br>**Session Chair: Prof. Chutiporn Anutariya**<br><br>Ethics in Engineering - Involving Students and Assessing Institutions (ID 2)<br><br>"EXTEND" to the "NEXT LEVEL" (ID 86)<br><br>PBL Student Projects and Sustainable Development Goals: A Case Study (ID 67)<br><br>Lessons Learned from the Dissemination, Exploitation and Sustainability of the Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry (MSIE4.0) (ID 82)<br><br>A-Cube Way for Research Learning Experience: View of Students (ID 31) | **P7-2:  Student Session II**<br><br>**Session Chair: Dr. Diana Mesquita**<br><br>Application of Scrum and PM Canvas in a Project-based Learning Approach (ID 47)<br><br>Communication Tools Used by Distributed Teams in a BIM Learning Project (ID 72)<br><br>An Overview of Assessment of Competences Based on Publications in Journals (ID 18)<br><br>Active Learning Workshops Production: Impacts and Benefits for Engineering Students (ID 34) |
| 6.15 pm - 6.30 pm | 12.15 pm - 12.30 pm | 8.15 am - 8.30 am | Break | |
| 6.30 pm - 7.30 pm | 12.30 pm - 1.30 pm | 8.30 am - 9.30 am | **Cultural Session and Closing Remark** | |
| 7.30 pm - 10.30 pm | | | **Gala Dinner**<br>**sponsored by Faculty of Engineering, Khon Kaen University** | |

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(**) B108, Ground Floor

## Hon. Abhisit Vejjajiva
### Former Thai Prime Minister

**Keynote Title:**

**"Future, We Hear You:
Reforming Education for Lifelong Learning"**

**Short bio:** Hon. Abhisit Vejjajiva was Thailand's 27th Prime Minister, holding the post from December 2008 to August 2011. He was first elected to Parliament in 1992 and has been reelected eight times. He had served as Government Spokesperson (1992-1994) and as a Minister Attached to the Prime Minister's Office (1997). Over two and a half decades, he has assumed many responsibilities including Deputy Secretary General to the Prime Minister for Political Affairs; Chairman of the House Committee for Education; and as Leader of the Opposition in the House of Representatives for three terms. Within the Democrat Party, he has also assumed many positions: Party Spokesman, Deputy Party Leader; and from 2005-2019, Party Leader. He also served as Chairman of the Council of Asian Liberals and Democrats in 2017-2018. Born in Newcastle-upon-Tyne in the United Kingdom in 1964, after completing his primary education in Thailand, he returned to the United Kingdom to study at Eton College. He later graduated with a Bachelor's Degree in Philosophy, Politics, and Economics (PPE) with 1st class Honours from Oxford University, where he also earned a Master's Degree in Economics. Before entering politics he taught at the Chulachomklao Royal Military Academy from 1987 to 1988 and at the Faculty of Economics, Thammasat University from 1990 to 1991.

## Prof. David W. Rosen
### Georgia Institute of Technology

**Keynote Title:**

**"Active Transdisciplinary Engineering Education for Competence Development in an Intelligent Manufacturing Era"**

**Short bio:** David Rosen is a Professor in the School of Mechanical Engineering at the Georgia Institute of Technology. He is Director of the Rapid Prototyping & Manufacturing Institute at Georgia Tech. Additionally, he is the Research Director of the Digital Manufacturing & Design Centre at the Singapore University of Technology & Design. He received his Ph.D. at the University of Massachusetts in mechanical engineering. His research interests include computer-aided design, additive manufacturing (AM), and design methodology. Most of his research is focused on design for additive manufacturing, including conceptual design methods, lattice structure design, and topology optimization methods. He has industry experience, working as a software engineer at Computervision Corp. and a Visiting Research Scientist at Ford Research Laboratories. He is a Fellow of ASME and has served on the ASME Computers and Information in Engineering Division Executive Committee. He chairs the ASTM F42 subcommittee on design for additive manufacturing. He is the recipient of the 2013 Solid Freeform Fabrication Symposium, International Freeform and Additive Manufacturing Excellence (FAME) Award and is a co-author of a leading textbook on AM.

## Dr. Sampan Silapanad
### Vice President and General Manager
### Western Digital

**Keynote Title:**

## "Be Comfortable in Uncomfortable Zone:
## Workforce 4.0 will never be the same"

**Short bio:** Sampan Silapanad is Vice President and General Manager of Western Digital, the worldwide leader in Digital Data Storage Device manufacturing. Western Digital had revenues of US$ 19 billion for the fiscal year ending June 2017 and employs more than 70,000 employees worldwide. Sampan graduated with a Bachelor degree in Mechanical Engineering from Kasetsart University, Thailand, a Master degree in Management from Sasin Graduate Institute of Business Administration of Chulalongkorn University, Thailand, and was bestowed an Honorary Doctorate degree in Industrial Engineering by Suranaree University of Technology, Thailand.

Sampan has more than 35 years of experience in executive positions of large firms, mainly in Electronics and Digital Storage industry, including National Semiconductor, Seagate Technology, Hitachi Global Storage Technology, and Western Digital Corporation. Besides, he has a special and keen interest in improvement of Thailand's education and has been working with many governments and international organizations and educational institutions both in Thailand and all over the world on many impactful programs, such as Cooperative Education and Talent Mobility, for the manpower development for Thailand and other countries.

## Prof. Cynthia J. Finelli
### University of Michigan

**Keynote Title:**

## "In Pursuit of Active Learning:
## Challenges, Insights, and Opportunities"

**Short bio:** Dr. Cynthia Finelli is Professor of Electrical Engineering and Computer Science, Professor of Education, and Director of Engineering Education Research at University of Michigan. In her research she focuses on increasing faculty adoption of evidence-based instruction. Dr. Finelli is a Fellow of the American Society of Engineering Education, Deputy Editor for the Journal of Engineering Education, Associate Editor for the IEEE Transactions on Education, and member of the Governing Board of the Research in Engineering Education Network. She founded the Center for Research on Learning and Teaching in Engineering at University of Michigan in 2003 and served as its Director for 12 years. Dr. Finelli earned the B.S.E., M.S.E., and Ph.D. degrees in Electrical Engineering from University of Michigan.
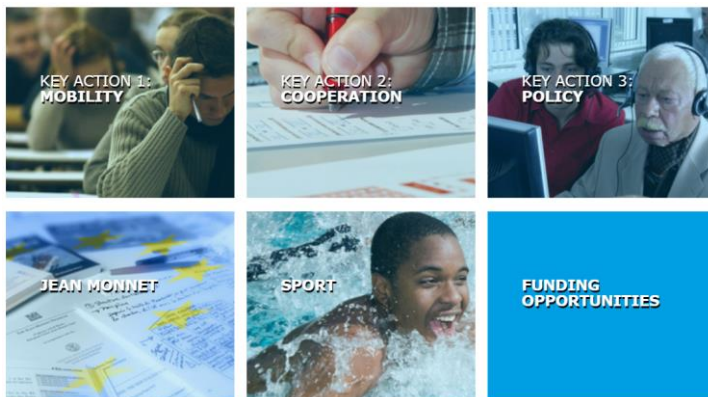
## Co-funded by the Erasmus+ Programme of the European Union

The European Union's **Erasmus+** programme is a funding scheme to **support activities in the fields of Education, Training, Youth and Sport**.

The Programme is made up of three so-called "Key Actions" and two additional actions. They are managed partly at the national level by National Agencies and partly at the European level by the EACEA. The European Commission is responsible for Erasmus+ policies and oversees the overall programme implementation.

Erasmus+ actions managed by EACEA are listed below:

KEY ACTION 1: MOBILITY

KEY ACTION 2: COOPERATION

KEY ACTION 3: POLICY

JEAN MONNET

SPORT

FUNDING OPPORTUNITIES

**Website:**
https://eacea.ec.europa.eu/erasmus-plus_en

Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry (MSIE4.0) has been selected for EU co-funding for Erasmus+ Key Action 2 for Capacity Building in Higher Education.

For more information, please visit: https://msie4.ait.ac.th/

# Western Digital.

Western Digital Corporation (abbreviated WDC, commonly known as simply Western Digital) is an American computer hard disk drive manufacturer and data storage company. It designs, manufactures and sells data technology products, including storage devices, data center platforms and cloud storage services.

Western Digital has long been at the forefront of game changing innovations. From the invention of the first commercial flash solid state drive to recent advancements in 3D NAND our journey of innovation continues to inspire those who dare to think big about the possibilities of data.

Western Digital is the first to deliver the industry's first commercial implementation of energy-assisted magnetic recording (EAMR) technology, the industry's first Triple Stage Actuator (TSA), and its sixth-generation product with HelioSeal® technology to deliver greater capacity capabilities to enable data at scale with optimized TCO for data center architectures, while maintaining workload reliability and performance.

Western Digital offers an expansive portfolio of technologies, storage devices, platforms and solutions for business and consumers alike. Our data-centric solutions are comprised of the Western Digital, G-Technology™, SanDisk® and WD® brands.

**Website:** https://www.westerndigital.com/company

Time: Lisbon Time (GMT+1)

## Workshop 1-1

AIT Conference Center, AIT Auditorium, Ground Floor

| August 26th 10:45 am – 12:15 pm | Agile Project Management: An Online Scrum Workshop |
| --- | --- |
| | Rui M. Lima, Walter Nagai, Diana Mesquita |

## Workshop 1-2

AIT Conference Center, B108, Ground Floor

| August 26th 10:45 am – 12:15 pm | Creating Value for Society by Providing Lean Competencies |
| --- | --- |
| | Anabela C. Alves, Gabriela Witeck |

## Workshop 2-1

AIT Conference Center, AIT Auditorium, Ground Floor

| August 27th 10:45 am – 12:15 pm | Application of Two Modules of a Digital Platform for PBL Support & Automation |
| --- | --- |
| | João M. da Silva, Simone B. S. Monteiro, Khaled B. Hafaiedh, Ana C. F. Lima, Everaldo S. Júnior, Mateus H. Torres, Mejri Nizar, Mohamed Boufaied, Nader Abdellaoui, Zied Kouki, Amine Ayari, Adem B. Zarb, Mohamed A. B. Rekaya, Iheb Zouaghi, Dianne Magalhães Viana, Ari M. Mariano, Paulo Celso Reis |

## Workshop 2-2

AIT Conference Center, B108, Ground Floor

| August 27th 10:45 am – 12:15 pm | Learning Outcomes and the Revised Bloom's Taxonomy |
| --- | --- |
| | Diana Mesquita, Valquíria Villas-Boas |

Time: Lisbon Time (GMT+1)

## P1-1: Innovative Experiences in Engineering Education I

**Session Chair: Prof. Huynh Trung Luong**
Venue: AIT Auditorium, Ground Floor

| August 26th 9:00 am – 10:30 am | |
|---|---|
| | Experience with the Accreditation of Technical Studies in Poland and Thailand's (ID 23) |
| | Developing Lean Competencies Through Serious Games (ID 29) |
| | A Service Leaning Experience with Engineering Students (ID 37) |
| | Adapting Problem Based Learning for Human-Centric Design Course (ID 60) |
| | Success Factor of Activity-Based Learning Experiences for I4.0 SMART OPERATION Course Design and Implementation (ID 85) |

## P1-2: Interdisciplinarity

**Session Chair: Prof. Rui M. Sousa**
Venue: B108, Ground Floor

| August 26th 9:00 am – 10:30 am | |
|---|---|
| | Interdisciplinary Contents Integration and Key Competences Developed in a Project Work of Industrial Engineering and Management Third Year (ID 4) |
| | Design of a New Workstation in a Productive Process: Importance of Multidisciplinary Integration (ID 12) |
| | Global PBL: Cross-Cultural Educational Project for Engineering Students (ID 55) |
| | Students Feedback on the Forced Transition to Online Classroom During Covid-19 (ID 63) |
| | International Student Projects and Sustainable Development Goals: A Perfect Match (ID 70) |

## P2-1: Innovative Experiences in Engineering Education II

**Session Chair: Prof. Valquíria Villas-Boas**
Online Session

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| August 26th 4:00 pm – 5:50 pm | 360° Educational Robotics Project Management with High Abilities and Gifted Students (ID 15) |
| | Application of Educational Games in Professional Training and Its Influence on Productivity in the Sugar-Energy Sector: A Case Study (ID 17) |
| | University-Business Cooperation on SMEs: An Intervention Program on Creativity, Critical Thinking and Trust (ID 50) |
| | The Role of Partnership in Launching PBL Approach in Cooperation with Network of Social Enterprises – Research Case of Częstochowa University of Technology (ID 51) |
| | Curricular and Pedagogic Innovation in a Social Education Programme: Findings From the Implementation of PBL (ID 64) |
| | Structuring a Course Based on the Global Engineer (ID 65) |

## P2-2: Active Learning and ICT Support

**Session Chair: Prof. Marietjie Havenga**
Online Session

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| August 26th 4:00 pm – 5:50 pm | Design and Development of Automated Guided Vehicles for Active Learning in Material Handling Management for Smart Manufacturing Operation (ID 19) |
| | Double Degree M.Sc Program on Industrial Safety Engineering with Aerospace Application: A Case Study (ID 36) |
| | Peer-Assessment for Holistic Student Development (PAHSD): Implementing a Digital Application on a PBL Platform (ID 43) |
| | Team Building through Student's Preferences and Competences (TBSPC): implementation on a PBL platform (ID 44) |
| | COVID-19: Transition to Online Problem-based Learning in Robotics – Challenges, Opportunities and Insights (ID 58) |
| | The Use of Games as A Support Tool for Active Learning in The Context Of 4.0 Industry (ID 74) |

SCAN ME

## P3-1: Research on PBL and Active Learning I

**Session Chair: Prof. Athakorn Kengpol**
Venue: AIT Auditorium, Ground Floor

| August 27th 7:00 am – 8:30 am | Bringing PBL to Philippines's Higher Education: How Much Are Teachers Geared for the Transition from Traditional to PBL Approach? (ID 13) |
| | Problem-based learning (PBL) Implemented in Manufacturing Processes (ID 27) |
| | Collaborative Manufacturing Systems: Active Learning from Its Name (ID 35) |
| | Implementing Problem-Based Learning Model for Elevator Spare Part Procurement Planning in a Group of Airport Buildings (ID 61) |
| | Community Learning and Engagement of OTOP Product Design (ID 84) |

SCAN ME

## P4-1: Student Engagement in Learning

**Session Chair: Prof. Anabela C. Alves**
Venue: AIT Auditorium, Ground Floor

| August 27th 9:00 am – 10:30 am | Make Product Design and Development Beyond Active Learning with 'LOVE' (ID 8) |
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| | Students' Participation in the Internal Quality Assurance System and Their Role in Enhancing Learning (ID 9) |
| | Analyzing Online Learning Behavior and Effectiveness of Blended Learning Using Students' Accessing Timeline (ID 10) |
| | NPS Better Predict Online Classroom (ID 54) |
| | Experiential Learning Through Students Non-Profit Organizations: ESTIEM Case Study (ID 83) |

## P4-2: Curriculum Design

**Session Chair: Prof. Tomasz Nitkiewicz**
Venue: B108, Ground Floor

| August 27th 9:00 am – 10:30 am | Building a Needs-Based Curriculum in Data Science and Artificial Intelligence: Case Studies in Indonesia, Sri Lanka, and Thailand (ID 14) |
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| | Design, Implementation, and Improvement of the Course for Master's Degree Program in Industry 4.0: A Case Study in Digital Factory Subject (ID 20) |
| | LOVE Model-Based Assessment of Teaching Practices Within Industrial Engineering Master Programs in Poland and Thailand (ID 25) |
| | An OBE Curriculum Design for a Manufacturing Engineering Program, from Thai Traditional to Outcome Based Education (ID 52) |
| | A Gap Analysis Between the Expectation of Industry 4.0 and the Ability of the Current Industrial Engineering Graduates in Khon Kaen University (ID 81) |

## P5-1: Research on PBL and Active Learning II

**Session Chair: Prof. José Dinis-Carvalho**
Online Session

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| **August 27th**<br>**4:00 pm – 5:50 pm** | Learning Experiences from Digital Factory Subject and Communications and People Skills Development for Engineering Leaders Subject (ID 40) |
| | Helping Students to Avoid Critical Mistakes/Misunderstands When Using Active Learning/Project-Based Learning Approaches in Teaching Statistical Analysis (ID 7) |
| | Do Student Initial Expectations About PBL Match Their Final Perceptions? (ID 5) |
| | Science Clubs and Scientific and Technological Fairs: Encouraging Girls in Exact Sciences, Engineering and Information Technology (ID 59) |
| | Development of Transversal Skills in an Extracurricular Academic Research Project Through Active Learning in Healthcare – A Case Study (ID 76) |

## P5-2: Student Assessment in PBL and Active Learning

**Session Chair: Prof. Joao Mello da Silva**
Online Session

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| **August 27th**<br>**4:00 pm – 5:50 pm** | The Impact of the Self- Assessment and Peer-Assessment on an Integrated Project (ID 3) |
| | Evaluation of Projects Carried Out in Companies by Second-Year Engineering Students (ID 11) |
| | Evaluation of a Pilot Course of Project Management for Industry 4.0 (ID 45) |
| | Class Dissatisfaction and Intelligibility of PBL (ID 66) |
| | Evaluation Process in the Application of Case Teaching Method in Management Education: A Study in the Perception of Professors from Brazilian Universities (ID 68) |
| | Assessment of Student Performance in the Context of Active Learning (ID 75) |

## P6-1: Education for Sustainability I

**Session Chair: Prof. Thanate Ratanawilai**
Venue: Pinehurst Hotel, 8th Floor, Golf View Bollroom

| August 28th 9:00 am – 10:30 am | A Survey of Requirements for Thailand's Industry 4.0: The Perspectives from Academics and Entrepreneurs (ID 21) |
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| | Standards of Developing Study Program. An Example of Polish legislation in Higher Education (ID 24) |
| | International Dual-Degree Programs: Learning Experience in Student's Perspective (ID 32) |
| | How to Create Sustainable Future Through Curriculum in Higher Education (ID 33) |
| | COVID 19 and Academia Community Cooperation: Skills Development Fostering Diversity, Inclusion and Equal Opportunities (ID 57) |

**SCAN ME**

## P6-2: Student Session I

**Session Chair: Prof. Jens Myrup Pedersen**
Venue: Pinehurst Hotel, 8th Floor, Golf View Bollroom

| August 28th 9:00 am – 10:30 am | Awareness and Expectation of Industrial Engineering Students on Competences Required Toward Industrial Revolution 4.0 (ID 62) |
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| | Fully 3D Printed Spring Powered Car: A Project-Based Learning Experience (ID 42) |
| | Development of Automated Guided Vehicles for a Smart Factory: A Project-Based Learning Experience (ID 56) |
| | A Student Perspective on the Blended Learning Experience in a Project Based Context (ID 22) |

**SCAN ME**

## P7-1: Education for Sustainability II

**Session Chair: Prof. Chutiporn Anutariya**
Venue: Pinehurst Hotel, 8th Floor, Golf View Bollroom

**SCAN ME**

| August 28th 10:45 am – 12:15 pm | Ethics in Engineering – Involving Students and Assessing Institutions (ID 2) |
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| | "EXTEND" to the "NEXT LEVEL" (ID 86) |
| | PBL Student Projects and Sustainable Development Goals: A Case Study (ID 67) |
| | Lessons Learned from the Dissemination, Exploitation and Sustainability of the Curriculum Development of Master's Degree Program in Industrial Engineering for Thailand Sustainable Smart Industry (MSIE4.0) (ID 82) |
| | A-Cube Way for Research Learning Experience: View of Students (ID 31) |

## P7-2:  Student Session II

**Session Chair: Dr. Diana Mesquita**
Venue: Pinehurst Hotel, 8th Floor, Golf View Bollroom

**SCAN ME**

| August 28th 10:45 am – 12:15 pm | Application of Scrum and PM Canvas in a Project-based Learning Approach (ID 47) |
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| | Communication Tools Used by Distributed Teams in a BIM Learning Project (ID 72) |
| | An Overview of Assessment of Competences Based on Publications in Journals (ID 18) |
| | Active Learning Workshops Production: Impacts and Benefits for Engineering Students (ID 34) |

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