

AALBORG UNESCO CENTRE FOR PBL ANNUAL REPORT 2023



United Nations
Educational, Scientific and
Cultural Organization



AALBORG
UNIVERSITY

Aalborg Centre for Problem Based Learning
in Engineering Science and Sustainability
under the auspices of UNESCO

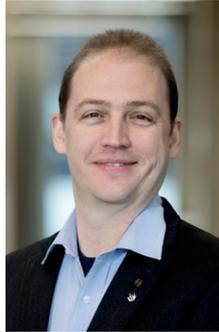
TABLE OF CONTENTS

Looking back and ahead	
Forward	4
Leonardo da Vinci Medal	6
Key Research	7
Activities in 2023	
IRSPBL – 9 th International Research Symposium on PBL	8
Advisory Board Meeting, Paris	8
Meeting with the Ambassador from South Africa, Aalborg	8
Visitors at Aalborg University	9
Global Network	10
Publications	10
PhD degrees awarded	
Anders Boelt	11
Current PhD students	11

ADVISORY BOARD MEMBERS

Professor Thomas Bak	Dean, The Technical Faculty of IT and Design, Aalborg University	Advisory board Chair
Ms. Lidia Brito	Assistant Director General for Natural Science	UNESCO
Mr. Shaofeng Hu	Director of the Division of Science Policy and Basic Sciences	UNESCO
Dr. Ezra Clark	Chief of Section; Science Technology and Innovation Policy, Division of Science Policy and Basic Science (PBS), Natural Sciences Sector (SC); UNESCO	UNESCO
Dr. Amal Kasry	Chief of Section; Basic Science, Research Innovation and Engineering (RIE), Division of Science Policy and Basic Science (PBS), Natural Sciences Sector (SC); UNESCO	UNESCO
Ms. Ashwini Madanayake	Associate Programme Specialist; Basic Science, Research Innovation and Engineering (RIE), Division of Science Policy and Basic Science (PBS), Natural Sciences Sector (SC); UNESCO	UNESCO
Professor Brian Figaji	Eng Council South Africa, former UNESCO Exec Board	Representing Member States
Professor José Ismael Peña Reyes	Vice President, Professor of Engineering Faculty, Universidad Nacional de Colombia	Representing Member States
Professor Qidi WU	Director, UNESCO ICEE, Tsinghua University, China	Representing Member States
Associate Prof Zheping XIE	UNESCO ICEE, Tsinghua University, China	Representing Member States
Professor Gopalkrishna Joshi	Currently: Founding Vice Chancellor of MIT Vishwapyayag University, Solapur, India. Former: chief director of Karnataka State Higher Education Council Bengaluru India	Representing Member States
Professor Mogens Rysholt Poulsen	Dean, Faculty of Engineering and Science, Aalborg University, Denmark	Representing Aalborg University
Professor Anne Merrild Hansen	Head of Department of Planning, The Technical Faculty of IT and Design, Aalborg University	Representing Aalborg University
Professor Olav Geil	Associate Dean, Faculty of Engineering and Science, Aalborg University, Denmark	Representing Aalborg University
Professor Thomas Ditlev Brunø	Department of Mechanical Engineering and Production, Faculty of Engineering and Science, Aalborg University, Denmark	Representing Aalborg University
Prof Euan Lindsay	Aalborg PBL Centre, Aalborg University, Denmark	Staff
Prof Tony Marjoram	Aalborg PBL Centre, Aalborg University, Denmark	Staff
Associate Prof. Aida Guerra	Aalborg PBL Centre, Aalborg University, Denmark	Staff
Associate Prof. Bente Nørgaard	Aalborg PBL Centre, Aalborg University, Denmark	Staff
Prof Thomas Ryberg	Aalborg PBL Centre, Aalborg University, Denmark	Staff
Prof Anette Kolmos	Founding Director, Aalborg PBL Centre, Aalborg University, Denmark	Staff
Prof Xiangyun Du	Director, Aalborg PBL Centre, Aalborg University, Denmark	Staff

LOOKING BACK AND AHEAD



Foreword

The year of 2023 has been through transitions for Aalborg Centre for PBL in Engineering Science and sustainability under the auspices of UNESCO. Great appreciations are own to professor Anette Kolmos, founding director of the centre to offer her kind support for the new directorship to and the new management team consisting of section head associate professor Bente Nørgaard, centre director professor Xiangyun Du and two vice-directors professor Euan Lindsay and associate professor Aida Guerra. During the leadership transition, we are also working on the centre transition of contract renew for 2025 on, which has also been a process to collaboratively work on centre strategies on diverse aspects including network, research and educational development, and young researcher development.

To further our engagement to global network, the centre has successfully organized IRSPBL – 9th International Research Symposium on PBL in collaboration with

and hosted by Massachusetts Institute of Technology (MIT) School of Engineering and its New Engineering Education Transformation (NEET) program, the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS) June 21st-23rd, 2023. With a focus on ‘Transforming Engineering Education’, the success of the symposium has been resulted from the extensive efforts by Anette Kolmos and her well-built global influence in the field. To further on such global connection, the IRSPBL-10th International Research Symposium on PBL will take place Nov 19th-21st 2025, hosted by Pretoria University and jointly organized by a consortium of 12 universities in South Africa.

The top highlight of the year for our centre took place September 13th during SEFI conference in Dublin when Professor Anette Kolmos received the Leonardo da Vinci Medal – a major international recognition for her work in engineering education and PBL. This award was a glory to our centre and Aalborg University.

We were also pleased to host our Advisory Board meeting for the Centre UNESCO headquarter Oct 27th. This provided us an opportunity to be connected with the headquarter new leadership and meet colleagues in person to reflect upon the role of UCPBL as a UNESCO Category 2 Centre. We were proud to hear highly positive comments from headquarter colleagues and advisory board members regarding our centres' achievements.

Late of the year we were also pleased to receive the delegation visit from India which is one of our key strategic global partners. Professor Gopalkrishna Joshi, who had been a close partner for the centre over the years and newly joined as a partner in the advisory board, suggested on multiple ideas to follow up centre's network and collaboration with India. We look forward to the next regional conference on PBL December 2024 hosted by Anurag University.

To further strength our strategic collaboration with African partners, we had the opportunity to invite South African Ambassador to Copenhagen, Madam Fikile Sylvia Magubane and a delegation from the University of Pretoria. This visit was also an opportunity to build regional network with the Aalborg municipality and University College North Jutland (UCN) with the participation of Aalborg Mayor Lasse Frimand Jensen, directorship of Aalborg Children & Youth, and research leadership from UCN. This event paves a ground for further collaboration on grant application for research and development for our centre's strategic area in K12 STEM development.

During 2023, our centre's partnerships in South America were also further enhanced through the support of the regional conference on PBL in Bogota in January, with the Centre represented by Bart Johnson and Ron Ulseth. This was supplemented in December by a visit by Professor Euan Lindsay to the National University of Colombia to discuss PBL and digitalization.

Last but not the least, while we celebrate Anders Boelt's defense of his PhD thesis: *Engineering student's development of PBL competences in a PBL Curriculum - Exploring students' reflections of teamwork competences in PBL* on 15th November 2023, we also welcomed new PhD candidate Sruthi.

Moving forward in 2024, we will further on our strategic work on connecting global network and educational development in a research-based way.

Management team:

*Xiangyun Du, Bente Nørdgaard,
Euan Lindsay, and Aida Guerra*

Leonardo da Vinci Medal



Professor Anette Kolmos received the Leonardo da Vinci Medal – a major international recognition for her work in engineering education and PBL.

This year, the prestigious Leonardo da Vinci medal from the European Association for Engineering Education in Europe (SEFI) lands in Denmark, more specifically around the neck of Professor Anette Kolmos from the Department of Sustainability and Planning. It is the highest award one can get in Europe for efforts in Engineering Education. Incidentally, it has been given to very few women.

In Denmark and internationally, you can hardly say Anette Kolmos without saying problem-based learning. And vice versa. Therefore, it is also very well deserved that she receives the Leonardo da Vinci

Medal for her many years of work in precisely problem-based learning, which has been the cornerstone of her scientific career together with the establishment of research in the development of engineering educations. Among other things, she was one of the absolute main forces behind when Aalborg University in 2009 became the home to Denmark's only UNESCO Centre for Problem-Based Learning in Engineering and Sustainability – a centre she has headed until 2022.

She has thus played a very clear role for Denmark and Aalborg University in a UNESCO context, focusing on project- and problem-based learning within engineering and sustainability.

Anette Kolmos received the medal at a ceremony in Dublin on 13th September 2023, and it was of course with a big smile on her face: It is a fantastic recognition that has been given to both Aalborg University and Aalborg UNESCO Centre for PBL by our European colleagues. I am very proud to have led the construction of engineering education research in Europe and not least to have focused on the development of PBL models on the international stage.

The European Association for Engineering Education – SEFI – is the largest network of engineering education institutions and engineering education staff in Europe. SEFI is an international non-governmental organisation (NGO) established in Belgium in 1973.

(source: AAU Update)

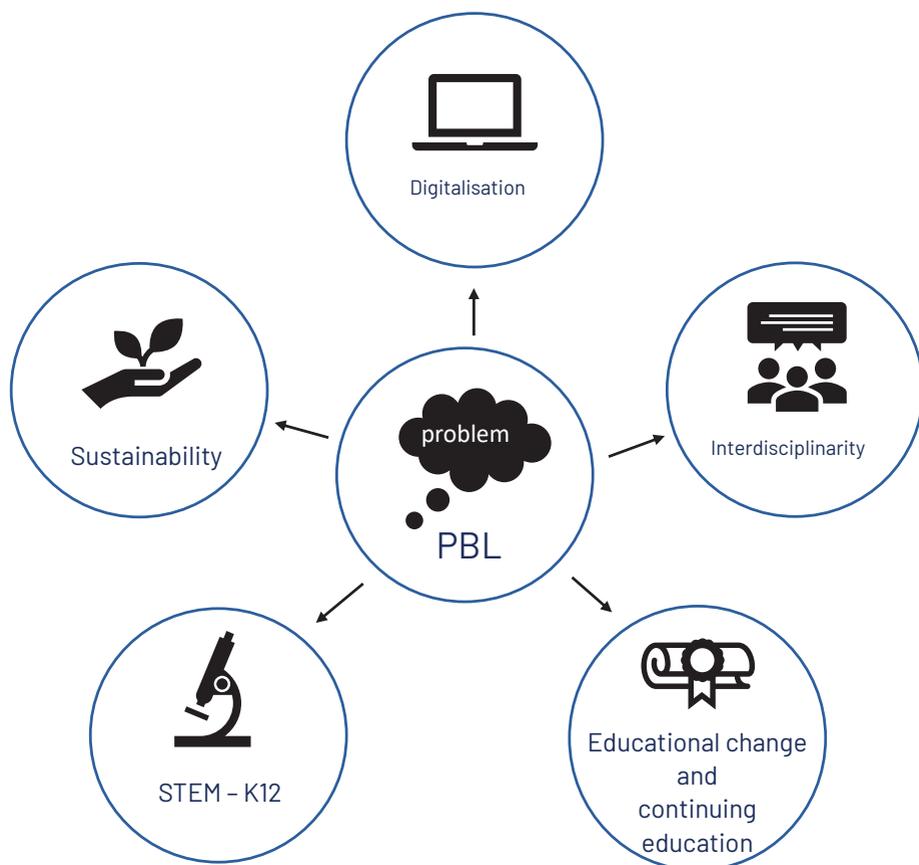


KEY RESEARCH

Topics and link to website

Aalborg Centre for PBL in Engineering Science and sustainability research on several topics related with problem-based learning, and engineering and science education, which some are financed and supported by external partners and grants.

See more here [Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability – Aalborg University's Research Portal \(aau.dk\)](https://www.aau.dk/en/research/centres-and-institutes/aalborg-centre-for-problem-based-learning-in-engineering-science-and-sustainability)



GLOBAL NETWORK AND ACTIVITIES IN 2023

Like 2022, 2023 was also a year of intense activity to further strengthen and develop the Aalborg UNESCO Centre for PBL Global network. The main activities were:

IRSPBL – 9th International Research Symposium on PBL

Hosted on June 21st-23rd, 2023 in Boston

Transforming engineering education were the theme of the 9th International Research Symposium on Problem Based Learning (IRSPBL 2023), convened by the MIT School of Engineering, Harvard's John A. Paulson School of Engineering and Applied Sciences, and the Aalborg Centre for Problem-Based Learning in Engineering Science and Sustainability under the auspices of UNESCO.

How can engineering education be transformed so that students develop the required skills to perform in globalised contexts and address global challenges? What learning can be shared by higher-education institutions that have embarked on educational transformation processes? What do other stakeholders in higher education, industry and society have to say about these efforts?



These are examples of questions that were discussed during the conference. The IRSPBL 2023 collected 55 contributions from 16 different countries.

Advisory Board Meeting, Paris Oct 27th, 2023

The Advisory Board meeting for the Centre was hosted by UNESCO at their building in Paris. This provided us an opportunity to reflect upon the role of UCPBL as a UNESCO Category 2 Centre, and to explore opportunities for collaborations with other centres and with UNESCO more broadly. In particular UNESCO will be the lead agency for the upcoming 2024-2033 International Decade of Science for Sustainable Development, which strongly aligns with our strategic goals as a centre.



Meeting with the Ambassador from South Africa, Aalborg

November 2023, Aalborg

Problem-based learning was at the top of the agenda when Ambassador to Denmark Fikile Sylvia Magubane and a delegation from the University of Pretoria met with Aalborg Mayor Lasse Frimand Jensen and representatives from AAU, University



College North Jutland (UCN) and Aalborg Children & Youth.

The School of Cooperation in South Africa is well advanced in applying problem-based learning in primary schools, and the South African ambassador is pleased to be able to further strengthen the use of PBL with the help of AAU.

Visitors at Aalborg University

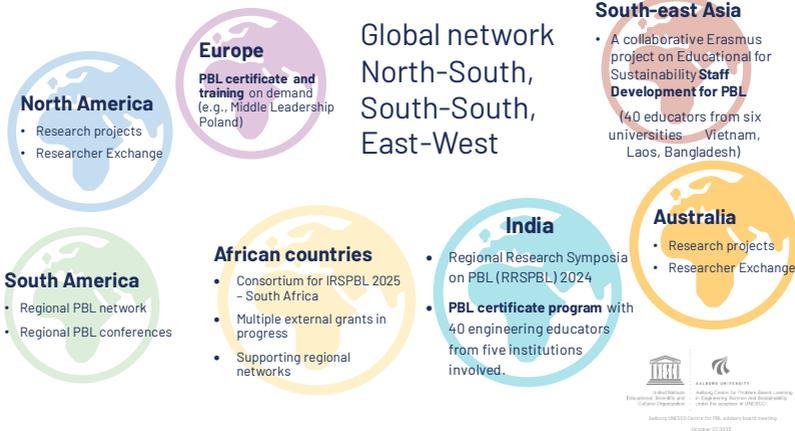
By Aida Guerr

UCPBL organised and hosted together with IAS-PBL two editions of the workshop on PBL for visitors (March 2023 and October 2023) in addition to 38 visiting delegations, from more than 20 different countries.



GLOBAL NETWORK

In 2023, UCPBL continued to build connections throughout the world, both through research projects and networks.

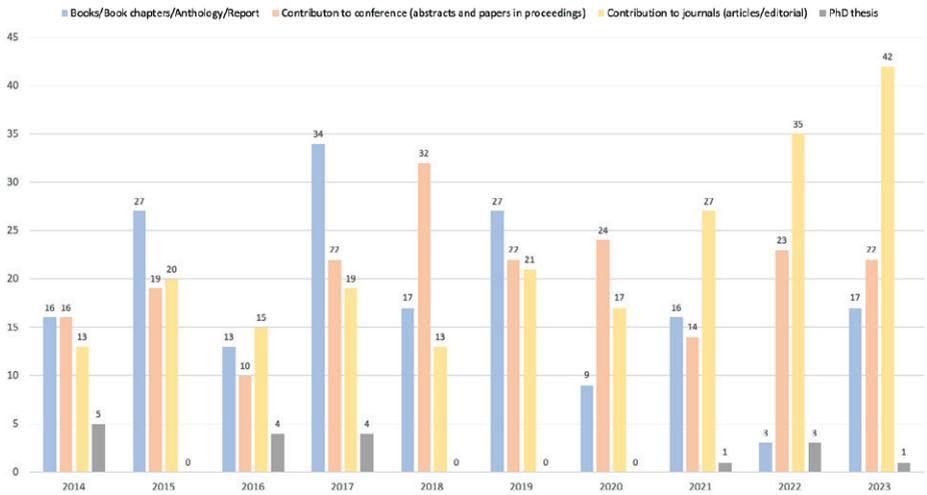


PUBLICATIONS

Members of the UCPBL continue to be closely involved in engineering education and international science communities, by participating in their international conferences (namely SEFI, ASEE, FIE, AAEE, etc.), being members of their boards (namely REEN) and guest speakers, and

by hosting workshops and seminars (e.g. BNU Expo and SEFI).

One important part of the Centre's dissemination activity is the reporting and publication of research outcomes through conference and journal articles.



You can see the full list of our participation in projects and publication of research outcomes on our [Research Profile](#).



PHD DEGREES AWARDED



Anders Boelt

Anders Boelt defended his PhD thesis: Engineering student's development of PBL competences in a PBL Curriculum – Exploring students' reflections of teamwork competences in PBL on 15 November 2023.

CURRENT PHD STUDENTS



Dan Jiang



**Anna Overgaard
Markman**



Maiken Winther



**Svend Hauekrog
Christiansen**



Henrik Worm Routhé



Sofie Otto



**Karoline Bailleu
Kjærgaard, Affiliated**



Sizwe Errol Nxasana



Sruthi Sunil

STAFF LIST

PROFESSORS

Anette Kolmos
Xiangyun Du
Euan Lindsay

ASSOCIATE PROFESSORS

Aída Guerra
Bente Nørgaard
Lykke Brogaard Bertel
Jette Egelund Holgaard
Bettina Dahl Søndergaard
Stine Ejsing- Duun
Steffen Elmose

POST DOC AND ASSISTANT PROFESSORS

Niels Erik Lyngdorf
Mia Thyrré Sørensen
Gajenthiran (Kalle) Velmurugan
Juebei Chen
Dennis Friedrichsen

PHD FELLOWS

Dan Jiang
Henrik Worm Routhe
Maiken Winther
Svend Haekrog Christiansen
Anna Overgaard Markman
Sizwe Errol Nxasana
Sruthi Sunil
Nicolaj Riise Clausen
Sofie Otto
Karoline Bailleur Kjærgaard

RESEARCH ASSISTANTS AND PART-TIME LECTURES

Camilla Guldborg Nielsen
Søren Hansen
Christian Skelmose Jensen
Sandra Burri Gram-Hansen
Pauline Fredskilde
Simon Skårhøj

ADJUNCT PROFESSORS

Roger Georg Hadgraft
Tony Marjoram (*guest professor*)

ADJUNCT ASSOCIATE PROFESSORS

Annette Grunwald
Ronald Richard Ulseth
Steen Hyldegaard
Egon Moesby

ADMINISTRATIVE SUPPORT

Stine Randrup Nielsen
Jeanette Arboe



United Nations
Educational, Scientific and
Cultural Organization



AALBORG
UNIVERSITY

Aalborg Centre for Problem Based Learning
in Engineering Science and Sustainability
under the auspices of UNESCO