ANNUAL REPORT 2022

INSTITUTE FOR
ADVANCED STUDY IN PBL

AALBORG
UNIVERSITY

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INTRODUCTION

2022 marked the establishment of Aalborg University's Institute for Advanced Study in Problem-Based Learning (IAS PBL) – and what a year and a half it has been! We have been brought together from all corners of the university, all merged in an institute that will seek to leverage PBL research and practice throughout Aalborg University. Many of us have moved into a brand-new building – INNOVATE, Science and Innovation Hub, and we have welcomed visitors from all over the world during this first year of our existence.

This first year has focused on creating a strong foundation for problem-based learning to rest on. In bringing together a group of researchers, practitioners and administrative staff all connected through a shared interest in PBL, the IAS PBL has sought to support this process by hosting a range of social and academic events with the aim of creating a strong community around PBL as a basis for knowledge sharing and collaboration.

Some of the research groups that form part of the IAS PBL were already well-established while others have emerged more recently. Thus, following the establishment of IAS PBL, we have seen the formation of new research collaborations across and within faculties, two of which are the new PBL research group, SHARE-PBL, formed by PBL researchers from the Faculty of Social Sciences and Humanities and the research network HEALTH-PBL, formed by researchers from the Faculty of Medicine. In September 2022, the IAS PBL administration team, CDUL and UCPBL moved together into INNOVATE, Science and Innovation Hub in Aalborg. Researchers from the Faculty of Medicine and the Faculty of Social Sciences and Humanities all have permanent office spaces elsewhere and are therefore offered to use flexible office spaces in INNOVATE. We hope this will contribute to strengthening the synergy between PBL researchers from all faculties.

Our joint activities this past year and the IAS PBL being brought together physically have undoubtedly contributed to IAS PBL rapidly taking shape as an essential centre for PBL development at Aalborg University, and we look forward to continuing our efforts towards further strengthening PBL at Aalborg University.

PROFESSOR THOMAS RYBERG
Director,
Institute for Advanced Study in PBL

ESTABLISHMENT AND ORGANISATION

Problem-based learning is at the very heart of the teaching and learning practices of Aalborg University. Since the university was founded in 1974, problem-based learning has constituted the underlying pedagogical model applied throughout AAU degree programmes, and the basic principles of problem-oriented project-based group work still form an integral part of AAU today. Throughout the university's history, many research environments focusing on PBL have emerged, and the Institute for Advanced Study in PBL was developed with the ambition to strengthen the synergy between these research environments and other PBL-related environments within the organisation.

The Institute for Advanced Study in PBL was created with the overall ambition to:
- maintain AAU's unique and clear PBL profile
- maintain and expand the university's strong research position in PBL
- strengthen the synergy between PBL environments and staff members working with PBL
- ensure the connection between PBL research and PBL practice
- ensure that research breakthroughs inform practice

IAS PBL's relation to the rest of the university is depicted in the AAU organisational chart (see figure 1) which shows IAS PBL's direct link to the university management and its position as a supporting foundation for all faculties and departments.
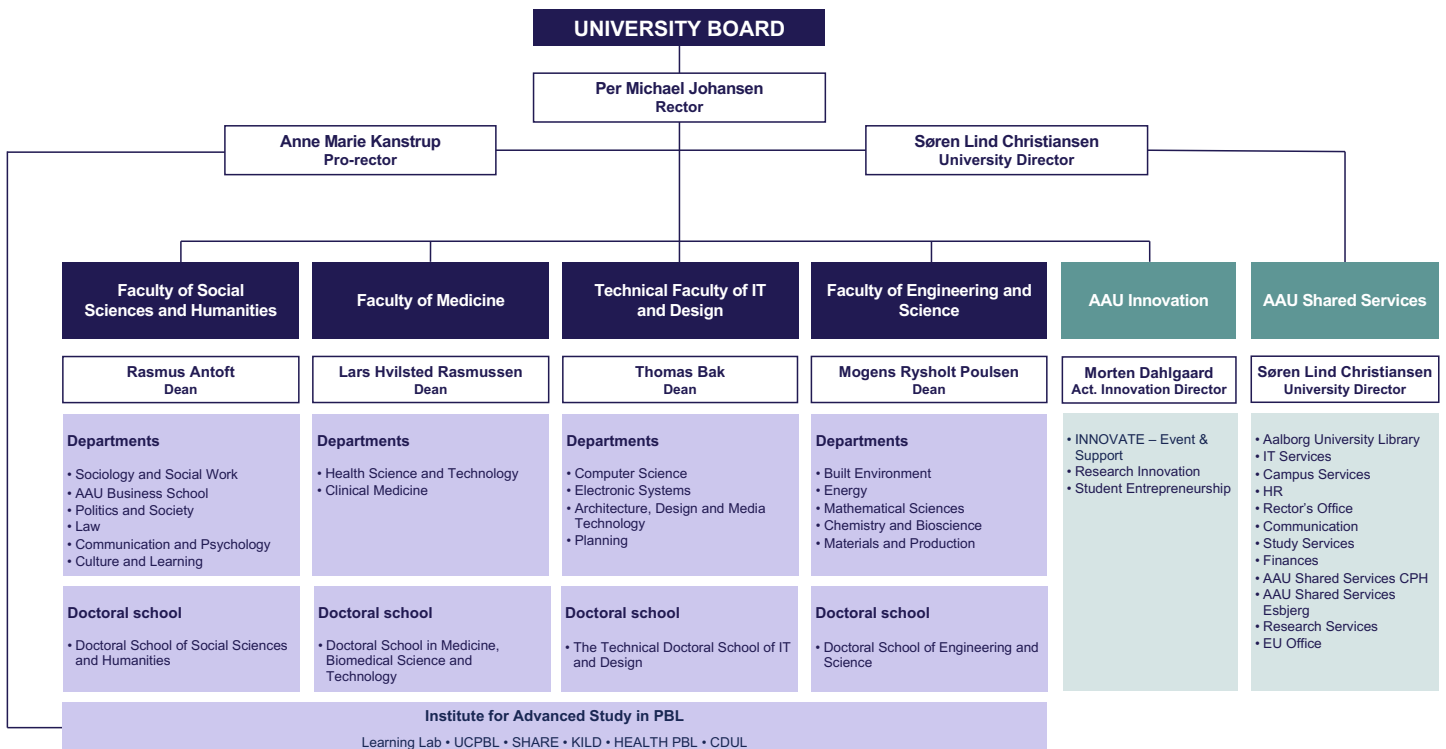

Figure 1: Aalborg University's organisational chart

2022 has been a year characterised by organisational establishment, and it has been a year during which the IAS PBL has worked towards defining itself and building its internal organisational structure which is illustrated in the IAS PBL organisational chart (figure 2). IAS PBL members having been brought together from across the university have generated a need for clearly defined internal forums and committees that meet at regular intervals to discuss matters of relevance to the entire IAS PBL. In meeting this need, the Forum for Research Group Leaders was established as a forum in which the management of IAS PBL units discuss strategic matters and collaboration opportunities across IAS PBL. The Forum for Research Group Leaders has been instrumental in the efforts towards formulating an IAS PBL strategy to define the shared goals of the entire IAS PBL. The strategy will be finalised in 2023 as a dynamic document to be revisited annually; it is formulated to support the overall AAU strategy, Knowledge for the World, and the initial thoughts behind the establishment of a cross-organisational PBL institute.

The IAS PBL Reference Group consisting of deans, vice deans and the pro-rector was established in 2022. The IAS PBL Reference Group is advisory to the IAS PBL management and as such functions as a sounding board between IAS PBL and its steering committee, the Strategic Council for Education (DSUR).

Throughout 2022, the Implementation Group for IAS PBL has contributed to all aspects involved in the establishment of IAS PBL by providing knowledge on the different units that form part of IAS PBL and by being advisory to the management on matters such as establishing the foundation for internal collaboration, moving into new offices, etc. The Implementation Group was also involved in planning and developing social and academic activities and initiatives, and when the group was dissolved by the end of 2022, the Interdisciplinary Professional and Social Committee took over the responsibility for making suggestions, planning, and developing activities across IAS PBL.
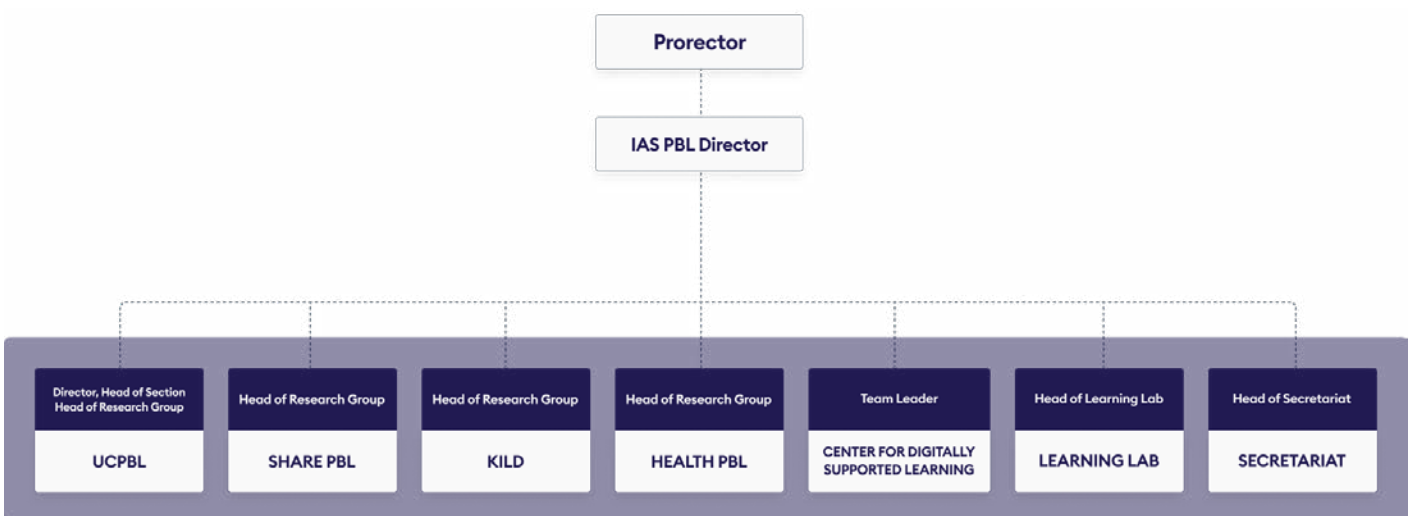
Figure 2: Institute for Advanced Study in PBL organisational chart

IAS PBL GROUPS AND UNITS

As depicted in the IAS PBL organisational chart (figure 2), IAS PBL consists of several groups and units divided into research groups and units connected to different AAU departments and IAS PBL administrative units. The Aalborg UNESCO PBL Centre, UCPBL is the largest of these groups (see figure 3). The research group consists of a total of 37 staff members, including externally affiliated staff, and all UCPBL staff members are employed at the Department of Planning which also makes this the largest university department in terms of IAS PBL researchers (see figure 4).

Figure 5 depicts the proportion of IAS PBL staff divided into staff categories. IAS PBL is made up of two overall staff categories; academic staff and administrative staff (the categories *administration, digital learning consultant and digital learning designer,* see figure 5). The largest proportion of IAS PBL staff members are employed as associate professors (30%), followed by PhD fellows (18%).
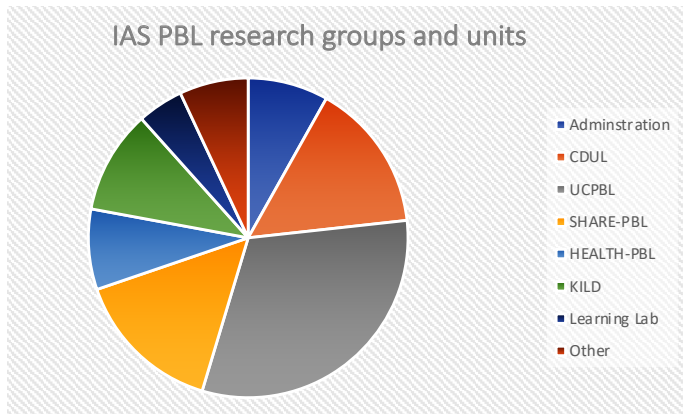
Figure 3: Proportion of IAS PBL research groups and units
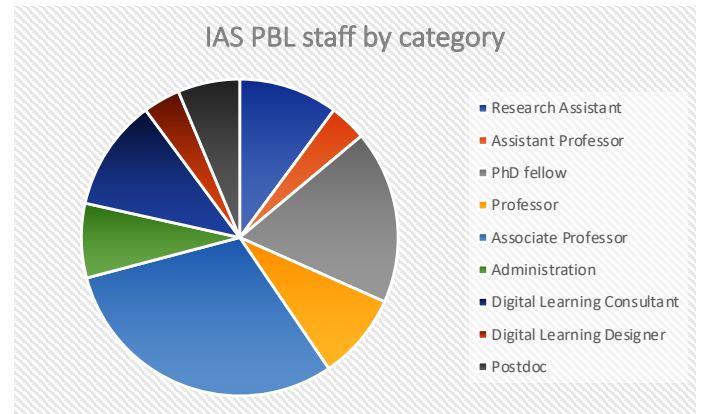
Figure 5: Proportion of IAS PBL staff by category
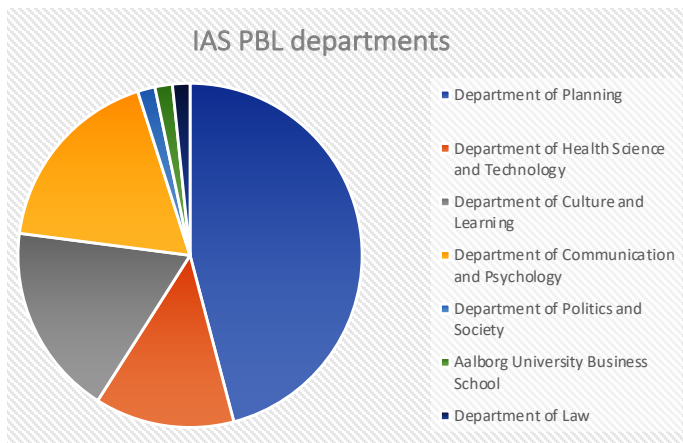
Figure 4: Proportion of AAU departments connected to IAS PBL

IAS PBL – SOCIAL AND ACADEMIC INITIATIVES

The Institute for Advanced Study in PBL seeks to create a culture that supports knowledge sharing and collaboration across IAS PBL, and the first year of IAS PBL has focused on bringing together researchers and administrative staff to not only get to know each other but also to get an insight into the focus and research areas of other IAS PBL members. With this, we hope that IAS PBL is finding its form as a strong PBL community to continuously develop and support how problem-based learning is applied at AAU.

IAS PBL SOCIAL EVENTS

Among the initiatives to bring together IAS PBL is the recurring morning bread and brain food. Once each month, IAS PBL members are invited to meet up and enjoy a cup of coffee and morning bread together while listening to relevant presentations on a wide range of topics from international researchers, IAS PBL staff or AAU staff. An example of this was a presentation given in December 2022 by Professor Maarten De Laat from the University of South Australia on the AI Playground initiative and how artificial intelligence may be used to gamify the learning experience.

Other joint IAS PBL events include the annual summer, autumn and Christmas events that have all featured relevant academic presentations in a social setting that inspire participants to network across IAS PBL groups and units.

In 2023, the first IAS PBL Professional Day took place in both Aalborg and Copenhagen. All IAS PBL members were invited to discuss the IAS PBL draft strategy and take part in formulating actions to fulfil the strategy. Everyone was eager to share their thoughts on how IAS PBL should move forward together. New connections for knowledge sharing were made, and all in all, the inspiring discussions and the output from this event were testaments to the commitment and energy that exists in IAS PBL. The IAS PBL Professional Day is a recurring event that seeks to involve all IAS PBL staff in joint strategic discussions on how IAS PBL can work towards fulfilling the visions and goals defined in the strategy. Thus, once each year, all IAS PBL staff members will come together to revisit the strategy in ensuring that IAS PBL works towards meeting the goals and ambitions for problem-based learning at Aalborg University.

Q-METHODOLOGY WORKSHOPS

In 2022, Professor Xiangyun Du from UCPBL organised a series of workshops on Q methodology supported by lectures from Q methodology expert Adrian Lundberg from Malmö University. The workshop series was offered throughout 2022 and aimed to introduce Q methodology to AAU researchers and support initial experiences of practising Q methodology in actual research.

Q methodology integrates techniques of qualitative and quantitative approaches to systematically explore the complexity of subjectivity. Involving an abductive inquiry process, Q allows participants' values and beliefs to be explored with a group-based overview through comparative analysis of consensus and difference. Q thus provides access to insights less accessible through other methods (e.g. qualitative interviews and Linkert-scale questionnaires) and offers a time-efficient and feasible pathway to a profound account of individual and collective views of participants. Having been employed in social science research for decades, Q is recently introduced to educational research.

IAS PBL PHD NETWORK

With the ambition to establish a forum for early career researchers to support and provide feedback to each other, a new IAS PBL PhD network was formed in 2022, and we expect that this will grow to include even more PhD students, especially from the disciplines in Medicine, Social Sciences and Humanities. The activities offered to the network will include network meetings, relevant workshops and presentations.

RESEARCH AND DEVELOPMENT PROJECTS IN IAS PBL

PEDAGOGICAL DEVELOPMENT IN A PBL CONTEXT

IAS PBL researchers across disciplines and research groups have joined forces in this project which aims to provide a scientifically based perspective on a PBL approach to pedagogical development in Higher Education. The project will seek to assess the current pedagogical development practices at Aalborg University, more specifically, this will include an assessment of the University Pedagogical Programme which is a pedagogical development programme aimed at supporting AAU's early career academics to develop their teaching and pedagogical competences in alignment with the overall AAU pedagogical practices and strategies.

The project will seek to:
• Scientifically assess the current practices at Aalborg University in terms of pedagogical development
• Answer the question, 'what does it mean to teach at a PBL university – as seen from a pedagogical perspective?'
• Support cross-disciplinary collaboration on improving pedagogical practice for IAS PBL and subsequently AAU
• Support a research-based approach to the implementation of the Framework for Advancing University Pedagogy and teaching portfolio development at AAU
• Provide a scientifically based perspective on the problem-based approach to pedagogical development in Higher Education that may be adapted by international research environments

The project is led by Professor Xiangyun Du (UCPBL), Associate Professor Nikolaj Stegeager (SHARE-PBL and Learning Lab), Associate Professor Patrik Kristoffer Kjærsdam Telléus (HEALTH-PBL) and Associate Professor Aida Olivia Pereira de Carvalho Guerra (UCPBL). IAS PBL supports the project through the employment of a research assistant and a PhD fellow.

SSH/STEM INTEGRATION

IAS PBL is involved in the strategic SSH/STEM integration project which aspires for AAU students to complete *a degree that, in addition to their own in-depth expertise, gives them the competences and skills to collaborate with other disciplines to solve concrete challenges on a holistic basis.* As part of the ongoing work to reach this goal, the working group involved in the project has defined a model which includes three focus areas that build on our existing PBL model and through this seeks to develop the students' skills to engage in collaboration across disciplines. During the autumn semester of 2023, pilot projects will test the model on all faculties. The pilot projects will be followed closely by two postdocs, and the results of this process will form the basis of the future implementation of SSH/STEM integration in degree programmes across the organisation.

The project is led by IAS PBL Director Thomas Ryberg in collaboration with Professor Anette Kolmos (UCPBL) and Associate Professor Kirsten Jæger (SHARE-PBL).

PRINCIPLES FOR DIGITALLY SUPPORTED PBL

The increased focus on digitalisation has sparked the need for AAU to focus on how digital opportunities best support the university's existing PBL principles. Thus, a set of principles for digitally supported PBL have been formulated. The principles have been developed by AAU and IAS PBL researchers and practitioners on the following background:
• The principles should challenge and expand upon existing principles and strategic actions
• The principles should inspire and open up new possibilities
• The principles should be considered for the development of "next practice"
• The principles reflect a value-based approach to work on the digitalisation of education

More information on the principles for digitally supported PBL is available in the **Principles for Digitally Supported PBL online booklet**

HEALTH-PBL CASE MODEL

The Study Board of Medicine at Aalborg University's Department of Health Science and Technology offers two degree programmes in Medicine and Medicine with Industrial Specialisation both of which use a unique PBL model. The model combines both cases and projects within the framework of problem-based learning pedagogy.

Recently, however, the application of this case-based model has generated very mixed student evaluations, particularly from bachelor students, and the proportion of students attending case-based teaching activities has declined significantly. As a result of this, the study board has initiated a project to examine the problem and suggest how the quality of case-based teaching may be improved to increase student activity. In supporting the project, IAS PBL has funded the employment of a research assistant to assist in the process towards revising the PBL case model and developing a new case model to be applied across the degree programmes offered by the Study Board of Medicine.

The project is led by Associate Professor Patrik Kristoffer Kjærsdam Telléus.

REASSESSMENT OF THE AAU PBL PRINCIPLES

Every six years, the university's PBL principles are up for reassessment, and this is a process that must involve AAU's PBL experts; thus, in 2022 both the IAS PBL secretariat and CDUL have been involved in initiating and planning this process in close collaboration with AAU Quality and Analysis. The reassessment of the PBL principles is expected to be concluded in 2024.

ADVANCING TEACHING CULTURE

IAS PBL has been involved in analysing and advising on AAU's results in the Teaching Cultures Survey which is a cross-institutional survey that measures the teaching culture and status of teaching at selected universities worldwide. The results are based on questionnaires sent out to AAU academic staff and the final of three surveys is expected to be completed in 2024/2025.

AALBORG UNIVERSITY STUDY ACTIVITY MODEL

The Aalborg University Study Activity Model was introduced in 2019 to support AAU students' study intensity and learning outcomes. The model may be applied to both engage in dialogue with students about what is expected of them as full-time AAU students and as a tool to organise courses, semesters and degree programmes. The Study Activity Model is based on AAU's model for problem-based learning and as such is connected to IAS PBL and the university's PBL principles, and IAS PBL is responsible for the development of the study activity model and the activities related to the model.

IMPLEMENTATION OF DANISH FRAMEWORK FOR ADVANCING UNIVERSITY PEDAGOGY

In collaboration with pro-dean Jeppe Emmersen and AAU's Human Resource department, IAS PBL contributes to the implementation of the Danish Framework for Advancing University Pedagogy. IAS PBL is responsible for the framework being introduced as part of the PBL introductory courses offered to new staff, as part of the mandatory University Pedagogical Programme (UP) for early career academics, as well as for ensuring that the framework is presented to all AAU teaching staff at the annual AAU Learning Day. Furthermore, IAS PBL is collaborating with other stakeholders to develop and strengthen the links between the framework and the mandatory Digital Teacher Portfolio.

OUTREACH

During the first year of its existence, the Institut for Advanced Study in PBL welcomed visitors from all over the world. In the early days of IAS PBL's existence, we welcomed Provost of the University of the Virgin Islands, Dr Camille McKayle, who visited IAS PBL from February 2022 to June 2022. Camille McKayle studied the PBL model from different perspectives and visited several Aalborg University departments during her visit.

In June, IAS PBL welcomed 13 researchers from universities in the Netherlands, as part of The Educational Leadership Program, while both IAS PBL and UCPBL welcomed visitors from Inteli (Instituto de Tecnologia e Liderança) and representatives from the Danish Embassy in Brazil who were interested in learning more about the Aalborg PBL model and PBL and entrepreneurship.

The autumn of 2022 was buzzing with visitors from Israel, Japan, the USA, Poland and Columbia. In September, a group of no less than 30 researchers from Israel stopped by the newly opened INNOVATE building to study the *Nordic philosophy of education* and learn more about PBL as part of a national forum for centres for academic development and quality of teaching in higher education.

We are very glad that the news of our existence has already travelled this far internationally, and we know that we owe this to AAU's existing international reputation as a university founded on a strong PBL foundation.

WORKSHOP FOR VISITORS

In November, UCPBL arranged their PBL workshop for international visitors. This is a recurring event that the centre usually offers twice each year, focusing on PBL within engineering and STEM disciplines.

In May 2023, the first IAS PBL workshop for visitors took place, the workshop design was based on UCPBL's workshops and arranged in a partnership between UCPBL and SHARE-PBL. The aim of the workshop is both to introduce the overarching AAU PBL principles and the unique ways these are applied in the university's different disciplines. Thus, the first day of the workshop aimed to introduce participants to AAU's PBL principles, curriculum organisation and assessment and evaluation, while the second day invited participants to visit AAU departments to both observe educational practices and meet students and teaching staff. The department visits were designed to mirror the disciplines of the participants as best as possible.

The next PBL workshop will take place in October 2023 and will also include HEALTH-PBL. This means that IAS PBL will be able to offer an intense course on PBL for researchers and teaching staff that is not only centred around the STEM area but also incorporates perspectives from other academic disciplines.

IAS PBL RESEARCH

THE AALBORG UNESCO PBL CENTRE

The overall strategic goal of the Aalborg UNESCO PBL Centre, UCPBL, is to facilitate universities, and other higher education institutions, to take an active role in educating engineers and scientists so they can participate and contribute to the development of sustainable solutions to the present and emerging social, economic and environmental challenges.

UCPBL conducts world-renowned research in problem-based learning within engineering and science education and the latest research performance evaluation (2017 – 2022) shows that the centre's research publication has achieved a 2.18 field-weighted score. This means that UCPBL's research publications have been cited 218 % above the world average within the field of PBL and engineering education.

LOOKING BACK

During 2022, the centre has grown and has welcomed a long list of new academic staff, among which were: Professor Xiangyun Du (who became a full-time professor), Professor Euan Lindsay, Associate Professor Stine Ejsing-Duun, Assistant Professor Giajenthiran (Kalle) Velmurugan, and post-doctorates Mia Thyrre and Juebei Chen. Furthermore, we have three new PhD students and five new research assistants. We have now reached a stage where we have a group of people employed at the Copenhagen campus and Stine Ejsing-Duun and Kalle are the two main drivers for building up this unit, in close collaboration with the Aalborg team.

In many ways, 2022 was also a year of organisational and leadership change for the Aalborg PBL Centre in Engineering, Science and Sustainability under the auspices of UNESCO. The first organisational change concerned the establishment of a new Institute for the Advanced Study in PBL (IASPBL), which is where the Aalborg UNESCO Centre for PBL physically moved to. The Aalborg UNESCO Centre for PBL continues as an organisation but is now related to both the Department of Planning and IASPBL. The Aalborg UNESCO Centre for PBL is currently the largest research group at Aalborg University, with 37 academic staff and part-time teachers and associates, such as adjunct professors and adjunct associate professors.

Professor Xiangyun Du took over the research leadership in January 2022 and the development of the research programme and the research output has been taken to a new level, moving from many conference papers to an increased focus on publishing in quality journals. During 2022, there was also clearer research organisation in the four sub-groups: PBL and Capacity Building, Interdisciplinary, Digitalisation and STEM (Science, Technology, Engineering, Mathematics) in schools and high schools.

2022 also marked the last year with UCPBL founder Professor Anette Kolmos as director of the Aalborg UNESCO Centre for PBL, thus, a focal point of this year has been to prepare for the directorship transition. Xiangyun Du will become Director on January 1, 2023. In many ways, the time is ripe for a shift in leadership and a renewal of our goals, organisation, activities, and success criteria. The organisation is in good shape in all respects, and the IAS PBL creates new opportunities for internal cross-faculty collaboration and international projects.

As of 2023, the management team consists of Euan Lindsay, Aida Guerra, and Xiangyun Du, with the support of Anette Kolmos.

tive of integrated STEM and, at other times, with a specific focus on how PBL can support and develop one of the STEM disciplines. We are particularly interested in how a PBL approach can facilitate collaboration and ease transitions in the education system, both horizontally between subjects, disciplines and contexts and vertically between institutions and different educational levels.

PBL and Sustainability

Problem-based, project-organised learning (PBL) is one of the most suitable learning approaches to sustainable development and this is because of the shared principles that allow the creation of learning environments, which not only enable education within the profession but, also, address social and environmental challenges. A PBL environment provides an opportunity for students to be educated for sustainability and to act and develop their agency for sustainability. The current PBL and sustainability research at the Aalborg UNESCO Centre for PBL focuses on the following: 1) What are the different levels of awareness and engagement for sustainability and in what ways do they relate to the development of a student's sustainability mindset and agency? 2) In which ways do students develop their agency for sustainability in a PBL environment? 3) Which PBL activities do academic staff consider most important when educating for sustainability? 4) In what ways do engineering educators' sustainability mindsets determine and influence students' understanding of sustainability?

PBL and First-Year Engineering

First Year Engineering (FYE) experience is a research area that is gaining increasing attention. First-year engineering students encounter 'culture shock' in several ways: adulthood, departing from family to friends and colleagues, college life, new disciplines, the PBL environment, and others. To address such encounters, the group explores the diverse aspects challenging FYE, including the students' learning agency, systematic thinking, and sources of their learning well-being, among others.

PBL and Educational Change

Recent decades have seen tremendous worldwide efforts to adopt Problem-Based and/or Project-Based Learning (PBL) as one of the major pedagogical advancement initiatives. The notion of educational change has been widely explored and discussed. Bringing together multiple theories of change, the recent work of our group has examined how a larger scope of educational change can be initiated, led and facilitated through the PBL implementation. In particular, the complexity theory provides us with a lens, to conceptualise educational change as a dynamic, complex, and nested system which embraces multiple interactive sub-systems including teachers, students, curricula, learning environments surrounding the programme and institutes, and policies, among others. This conceptual standpoint allows for seeing learning as being situated within ongoing changes and emerging through the interactions between learners and other competencies of the system.

Connecting practice and research, our engagement in supporting educational change through the promotion of PBL involves works on policy analysis, leadership support, curriculum restructuring, and pedagogical development aiming to support teachers' professional learning and their work on developing and implementing PBL teaching designs.

RESEARCH

PBL and Interdisciplinary Competence (InterPBL)

Inter-PBL is funded by the Poul Due Jensen Foundation, Aalborg University and part of the Aalborg UNESCO Centre for PBL. Inter-PBL will contribute to the development of innovative educational models – nationally, as well as internationally – with the aim of educating engineers to work proactively and interactively in an interdisciplinary working environment, in order to deal with the increasing complexity of engineering and contribute to the sustainable development of society. For that purpose, Inter-PBL will develop curriculum models for students learning interdisciplinary generic competences in a PBL curriculum, based on case studies on 1) new curriculum practices in interdisciplinary projects, where the students are working on sustainability problems across educational programmes, 2) interdisciplinary projects in companies, and 3) transdisciplinary projects with universities and companies working on common problems.

PBL and Digitalisation

The increasing digitalisation of engineering practice, academic practice, and students' everyday lives is driving a seemingly inevitable transition towards the digitalisation of the engineering curriculum. Our key research question is: How should engineering education benefit from digital transformation? With all of the possibilities of engaging learners in new, varied and personalised ways, we need to identify, test, and evaluate the different approaches to see which can enhance engineering education in a PBL context.

PBL in STEM Education

Science, Technology, Engineering and Mathematics (STEM) is a concept applied and interpreted in various ways. At Aalborg UNESCO Centre for PBL, we study the role of PBL in STEM education, both from the perspec-

LOOKING AHEAD

In the coming year, our goals will be to continue to work on the central missions and initiatives from our 2019-2024 plan and to work towards the renewal of the centre in 2025. With additional brainpower and collective agency, together, we can exceed our goals. Together, we have strived to envision the future together to further strengthen our collective visions and values. We have discussed what we would like to collaborate on in the year to come, by being explicit in our research themes, funding plans, and international development work, among others, and we are excited to reach both individual and shared goals as a group.

One of the main events of 2023 will be our biennial International Research Symposium on PBL (IRSPBL) which we are planning in collaboration with Massachusetts Institute of Technology and Harvard John A. Paulson School of Engineering and Applied Sciences. This is the 9th International Research Symposium on Problem-Based Learning, under the heading Transforming Engineering Education 2023. More information on this conference is available at **tee2023.mit.edu.**

To learn more about the Aalborg UNESCO Centre for PBL, please visit our website **ucpbl.net** where you will find information about our activities.

SHARE-PBL

The research group on Social and Human science Approaches to Research in Education and Problem-Based Learning (SHARE-PBL) is an interdisciplinary research group that seeks to develop our scientific understanding and practice in regard to PBL, problem-oriented project work and other supporting pedagogical practices based on a social science and humanities (SSH) perspective.

SHARE's work ranges from knowledge within global, international, and national educational policy and educational practice to knowledge about the formation and learning processes of groups and individuals.

SHARE currently conducts research within different learning contexts (institutional, workplace-based, informal, higher education and primary school), and works to analyse/evaluate policy, curricula, teaching and learning practices.

SHARE-PBL was officially formed in August 2022. Since then, the group has formalised itself with a research group leader and an associate research group leader. Furthermore, the group has formulated a plan for how to operate, including an annual cycle of work, a vision paper, and a set of target goals for 2023.

Below are the main accomplishments of the group throughout the first year of its existence.

First strategy and research residential course

ESTABLISHMENT OF THE GROUP

SHARE-PBL has established itself as a research group with researchers from four different departments: AAU Business School, the Department of Communication and Psychology, the Department of Culture and Learning and the Department of Law. All heads of departments have been involved in the process, and we have ensured that all departments have provided group members with the mandate to continue working towards strengthening the bonds between the group and the research and teaching activities at the department level.

We have established a solid foundation for the group by electing a management team, formulating a strategy and an annual cycle of work for the group, and creating a research group website as our communication platform. We have brought the entire group together for SHARE's first-ever strategy and research residential course and have worked on creating a working environment based on shared responsibility between all group members.

RESEARCH

The research activities of SHARE-PBL members focus on interdisciplinary research. The following provides an overview of the group's focus areas and research projects.

In 2022, SHARE-PBL began working on an anthology regarding PBL in social sciences and humanities along with international partners.

Three joint papers authored by SHARE-PBL members were accepted for the European Conference for Educational Research (ECER) and SHARE-PBL also participated in and edited a special issue in Journal of PBL in Higher Education.

SHARE-PBL established a collaboration with Aalborg University Library on organisational development through PBL and participated in a project on interdisciplinary teaching at Aalborg University.

In 2022, SHARE-PBL initiated an interdisciplinary research collaboration with other researchers from IAS PBL on academic development, through the project Pedagogical Development in a PBL Context (one PhD student and one research assistant are connected to the project).

Problem-Based and Project-Oriented Learning in Rebild Municipality
A new research project funded by the A.P. Møller Foundation on PBL in municipal schools in Rebild Municipality was initiated in 2022.

The project Problem-Based and Project-Oriented Learning in Rebild Municipality sets an ambitious direction for competence development in municipal schools for many years to come. The project seeks to increase the motivation of both pupils and teachers and strengthen skills that will prepare children and young people for the demands of the future.

The project aims to strengthen the learning culture throughout the primary school cycle at all municipal schools in Rebild Municipality and to increase knowledge sharing between the schools.

The project spans four years from 2022 to 2026 and is led by Associate Professor Nikolaj Stegeager.

INTERNAL COOPERATION IN IAS PBL

Within IAS PBL, members of SHARE-PBL have been and are still involved in several activities. Thus, some of our members are involved in the strategic project on the integration of SSH and STEM competences in AAU degree programmes and have contributed to both the initial process of designing a model for SSH and STEM integration and to the research that supports the process.

Throughout the past year, IAS PBL has welcomed a number of international guests, and members of SHARE-PBL have participated in presenting our work to international visitors and have also been involved actively in the development of a new PBL course for international visitors in collaboration with UCPBL. SHARE-PBL has also been involved in several of the internal IAS PBL activities and has delivered presentations for our IAS PBL colleagues. Moreover, the group is active in various committees and councils under IAS PBL.

LOOKING AHEAD

One of the main drivers for our involvement in IAS PBL as a research group is collaboration with peers. We have started a research collaboration on academic development in collaboration with IAS PBL researchers from other academic disciplines, and we have participated in developing a new PhD course on problem-based learning. We look forward to continuing what we have initiated this past year and to become engaged in new projects and activities in the years to come.

To learn more about SHARE-PBL, please visit our website **iaspbl.aau.dk/research/share**

KILD: COMMUNICATION, IT AND LEARNING DESIGN

The research group Communication, IT and Learning Design (Danish abbreviation: KILD) explores how digital technologies can be adopted to develop new learning processes in a digital and networked society. This includes a strong interest in how to support PBL through the use of digital learning resources. The group was founded as a knowledge group in 2013 by researchers, who shared IT and learning as a common research field and brought different theoretical perspectives into the group. The group was re-organised as a research group in 2022 to include members from both Aalborg and Copenhagen from the Department of Communication and Psychology. New members include Maria Hvid Bech Dille, Ann Bygholm, Jacob Davidsen and Lucas Paulsen.

KILD boasts a research profile featuring collaborative and networked research, publication ecologies, multi-stranded funding strategy and teaching-based research. These constitute the main elements of the research group's approach to contributing to contemporary societal challenges. KILD carries out basic research as well as action- and practice-oriented research on IT and learning design in collaboration with external partners. The focus is on facilitating learning and qualifying learning designs to enhance creativity and innovation. This includes a special focus on employing visual and aesthetic practices, game-based learning, design processes and PBL in different learning contexts. These research themes are considered to provide the necessary components of renewing learning and organisational practices in the educational sector, businesses, and other types of organisations.

RESEARCH

The Role of Lifelong Learning in Digital Transformation
This project ran from 2020-2022 and was funded by the Nordic Council of Ministers. The research project aimed to identify current Nordic challenges and contribute to joint Nordic solutions to support learning for all adult citizens and to support the development of the digital competences of adults; including basic digital skills, digital skills that are in demand in working life, skills that adults need to be active citizens in a digitalised Nordic region, etc. Initiatives tested and evaluated in the project were to be linked and contribute to the implementation of digitalisation strategies in the Nordic countries. The project result would contribute to developing higher digital competencies among the population and increased digital participation in the Nordic region, as well as policy recommendations for Nordic cooperation and the Nordic countries to achieve this. The PBL contribution is a thorough work with problem identification with stakeholder involvement.

LOOKING AHEAD

SSH/STEM INTEGRATION – PILOT PROJECT: Sustain-able
Development Lab at AAU Copenhagen
The aim is to develop a Sustainable Development Lab at AAU Campus Copenhagen, where students across SSH/TECH can collaborate in cross-disciplinary project groups on Sustainable Development problems. The inspiration comes from D-Lab at UC Davis and D-Lab at MIT. The project will contribute to further developing Campus Copenhagen as a key actor in digitalisation and sustainable development.

Partners: Department of Communication and Psychology, the Department of Planning and the Master of ICT and Learning (with more partners expecting to join in).

Generative AI and Problem- and Project-Based Learning
Project under preparation:
Generative AI is developing rapidly, and educational systems need to adapt to new developments in this field. In 2022, we saw the launch of OpenAI ChatGPT, which has since been followed by MathGPT, Bard, AI-Powered Bing, etc. ChatGTP is just the latest offshoot, and it is expected that the landscape of Generative AI will change dramatically within the next 3-6 months with the inclusion of e.g., speech recognition, speech synthesis, and later realistic androids. In this way, it is important to view generative AI as a dynamic field, which will develop radically within a short time span. That is why AAU should consider establishing more permanent resources relating to AI and education.

Partners involved in the preparation of this project include the Department of Communication and Psychology, IAS PBL and AI for the people.

To learn more about the KILD research group, please visit our website (in Danish): **kommunikation.aau.dk/forskning/forskningsenheder/kild**

PBL Hybrid Learning - Beyond Covid-19 (PBL-Hybrid)
In 2022, this project received funding from the Ministry of Foreign Affairs and will run from 2023-2024. The overall objective of the project is to transform master's degree programmes by incorporating problem- and project-based learning (PBL), design thinking and hybrid learning to redesign the curriculum (PBL-hybrid). The project will feature a pilot study at Gulu University where the master's degree programmes in Public Administration and Management (MPAM), Development Studies (MDS), Monitoring and Evaluation (MME) will be involved. Incorporating the above approaches aims to foster the development of employability and entrepreneurial skills (problem-solving, collaboration with external stakeholders, team working, creativity, ability to integrate theories to practice, and collaborative knowledge creation) - known also as 21st Century competencies. The partners involve AAU, Gulu University and Consufé (consultancy company).

HEALTH-PBL

HEALTH-PBL is an interdisciplinary group that represents the education portfolio of the Faculty of Medicine. The group consists of strong PBL research profiles and members who focus on theory-practice, case- and project-based PBL.

In late 2022, the Faculty of Medicine moved into a new building with teaching facilities specifically designed to support the pedagogical principles behind the AAU PBL model.

FOCUS AREAS

HEALTH-PBL supports the teaching activities at the Faculty of Medicine to ensure the connection to AAU's educational profile and PBL principles. Moreover, the group collaborates with the faculty's study boards, heads of studies, etc., to ensure that all degree programmes and teaching activities are developed based on the latest knowledge on PBL, and several of the group members have been involved in the development of many of the faculty's degree programmes. HEALTH-PBL is particularly attentive to the implementation of the progressive PBL learning objectives that are included in all AAU's degree programmes across curricula.

HEALTH PBL members teach the degree programmes in medicine, medicine with industrial specialisation (MedIS), Sports Science, Public Health, Biomedical Engineering and Informatics and Clinical Science and Technology and are also involved in activities related to the strengthening of the students' employability.

HEALTH-PBL is involved in the pedagogical competence development of all teaching staff at the Department of Health Science and Technology, and several of the group members are pedagogical supervisors for early career faculty teaching staff completing the University Pedagogical Programme. This contributes to ensuring and strengthening the quality of the department's study activities and the overall learning outcomes of its students. Along with the high academic level of the department's teaching activities, this also contributes to promoting the motivation and academic curiosity of students.

RESEARCH

HEALTH-PBL collaborates with relevant partners in IAS PBL, heads of studies, lecturers and others associated with the faculty's degree programmes on various development and research projects, such as the project on the HEALTH-PBL case model and the project Pedagogical Development in a PBL Context.

E-MEDIC

HEALTH-PBL is a partner in the E-MEDIC (Effectiveness of Medicine E-learning Distance Courses) project which is an EU project funded by the Erasmus+ Programme. The project will run from 2023 to 2025. The project seeks to address gaps in continuing professional development and training for health professionals and to increase training opportunities in digital skills and e-learning and ultimately aims to deliver practical strategies and learning modules for academic staff in the health sector. Patrik Kjærsdam Telléus from HEALTH-PBL leads AAU's work in this project.
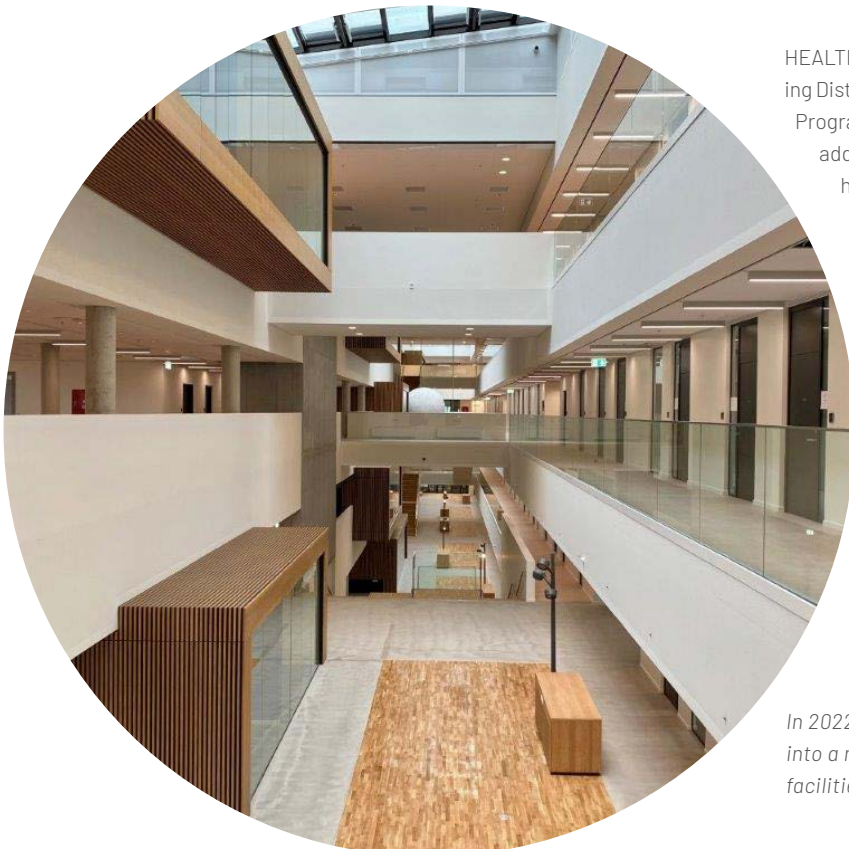
In 2022, the Faculty of Medicine moved into a new building with new teaching facilities designed to support PBL

JOURNAL OF PROBLEM-BASED LEARNING IN HIGHER EDUCATION

The Journal of Problem-Based Learning in Higher Education (JPBLHE) publishes state-of-the-art rigorous research related to problem-based learning in higher education and wishes to emerge as one of the leading international platforms for PBL researchers and practitioners in higher education.

ORGANISATION

In 2022, Frederik Hertel (SHARE-PBL) became a member of the Journal of Problem-Based Learning in Higher Education editorial team and thereby filled the space focused on research within the social sciences. The editor-in-chief in 2022 is Patrik Kjærsdam Telléus (HEALTH-PBL), and, in addition to Patrik and Frederik, the editorial team consists of Lykke Brogaard Bertel (UCPBL), Bettina Dahl Søndergaard (UCPBL) and Nikolaj Stegeager (SHARE-PBL). Annemette Helligsø is affiliated with the journal as administrative support. In 2022, the editorial team held eight editorial meetings.

In 2022, a new editorial board was established. The board consists of ten internationally renowned PBL researchers. The editorial board is responsible for supporting the qualitative development of the journal and for strengthening its profile and visibility. The board meets with the editorial team once each year. In 2022, this meeting took place on 15 November.

Editorial Team Working Day
On 20 May 2022, the editorial team meet for a full day at Lindholm Høje to discuss the quality, profile and strategy of the journal. This working day proved to be a very good investment for the group as it helped strengthen the unity and synergy of the group. Moreover, the day led to the editorial team working together on a thorough revision of the journal's web-site text. In the months following this working day, the group worked on the texts presenting the journal ("About the journal"), as well as the texts explaining the paper and case publishing formats and our "author guidelines". This was the first step in changing the image of the journal and in illustrating its format and profile. This work will continue in 2023 when we expect to create a new review template and design a new website.

PUBLICATIONS

In December, the journal's annual issue (vol. 10, No. 1) was published. The issue consists of four research papers and five PBL cases. A special issue (Strength in Diversity: Future-proofing PBL Research and Practice) was also published in May 2023.

The editorial team received a total of 40 submissions in 2022, nine of which were accepted for publication. 19 submissions were rejected following the initial screening, either on the grounds that the submissions did not match the journal's profile or that the submissions did not meet the quality standards for publication. The initial screening was performed by the editor-in-chief, with the support of the editorial team. Five submissions were rejected after review.

JOURNAL VISIBILITY

In 2022, the journal was indexed in Scopus, following the due application process and evaluation. Efforts towards increasing the journal's visibility and accessibility will continue throughout 2023.

IAS PBL STAFF DEVELOPMENT

LEARNING LAB

Learning Lab delivers research-based pedagogical competence development to new and existing staff members at Aalborg University.

Learning Lab empowers staff to fulfil Aalborg University's commitment to excellence in higher education teaching and learning and builds on current tertiary teaching research to identify and evaluate trends, apply best practices, and address gaps in the University's delivery of higher education practices.

UNIVERSITY PEDAGOGICAL PROGRAMME

The University Pedagogical Programme supports early career academics to develop their teaching and pedagogical competences in line with Aalborg University's teaching principles and strategies. The one-year competence development programme includes compulsory and elective course modules, English language certification, peer group discussions and reflection and supervision. The programme concludes with the participants submitting a project report either individually or in groups. In 2022, a total of 61 participants enrolled in the University Pedagogical Programme, 33 participants completed within one year, and a total of 18 modules were completed. The programme is designed to span one year; however, the project report must be submitted within two years after enrolment.

LEARNING LAB AND IAS PBL

With the establishment of the Institute for Advanced Study in PBL in 2022, Learning Lab became part of IAS PBL and with this became part of a large group of researchers and practitioners dedicated to teaching and problem-based learning at Aalborg University. Thus, 2022 marked a year of transition and change for Learning Lab.

In 2022, a new management team was formed consisting of Associate Professor Nikolaj Stegeager, Professor Xiangyun Du, Teaching Associate Professor Line Bune Juhl, and Team Leader of the Center for Digitally Supported Learning Merethe Juel Hollen. The management team began working towards the development of a new model for the University Pedagogical Programme. The new model is expected to be implemented in 2024.

NEW COURSE ON EDUCATIONAL MANAGEMENT

In 2022, Learning Lab developed and conducted a course on educational management for study board representatives and administrative staff members. A total of 16 participants participated in the initial two-day course. Furthermore, Learning Lab took part in arranging the first national conference in educational leadership which was launched on May 2 with participants from all Danish Universities.

RESEARCH SUPPORTING LEARNING LAB

A group of IAS PBL researchers have formed a research collaboration on pedagogical development in Higher Education that will assess the current practices of the University Pedagogical Programme and provide a research-based approach to the overall pedagogical development at AAU in a PBL context. This new research community will further strengthen the research foundation of pedagogical development at Aalborg University.
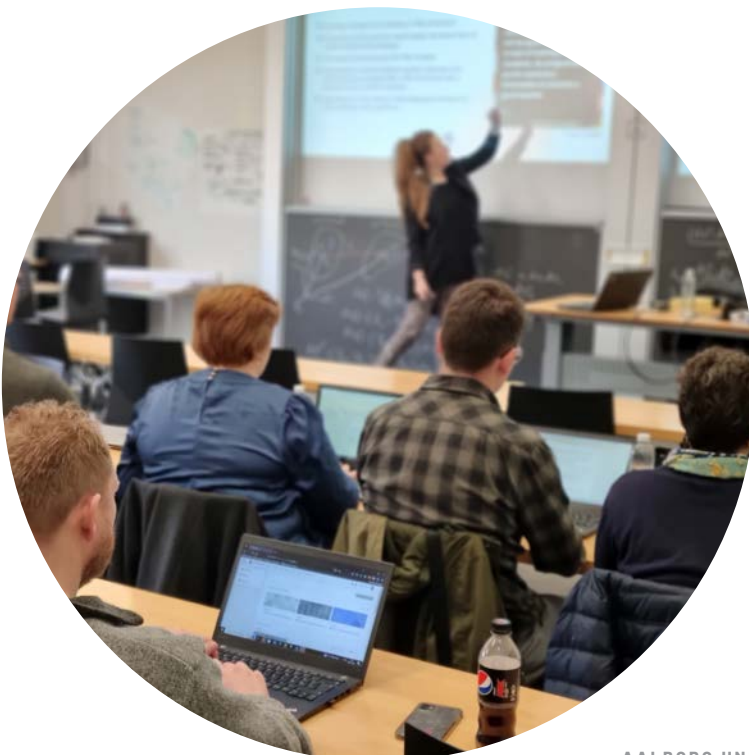
CENTER FOR DIGITALLY SUPPORTED LEARNING

Center for Digitally Supported Learning, CDUL, assists and supports AAU teaching staff in developing their teaching, digitally as well as didactically. In January 2022, CDUL became part of the IAS PBL. In the following sections, CDUL presents some of the results that the centre has created in 2022 and until the summer of 2023. The presentations are centred around CDUL's focus areas which are graphically presented in Figure 6. The focus areas have been created to ensure that CDUL is able to offer specialised and highly professional knowledge in relation to the development projects that are strategically prioritised by Aalborg University.
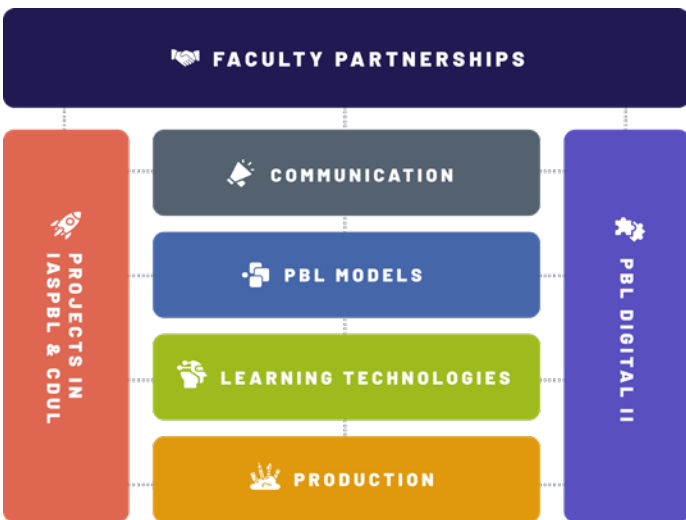

Figure 6: CDUL's focus areas

FOCUS AREAS

PBL Models

Within the focus area of PBL models, CDUL has developed a model and a tool for how we can facilitate dialogues about education and teaching development. The tool is intended to be used horizontally at different levels in the university faculties and across study boards. This allows for a teaching or training challenge to be highlighted and discussed within the many different constellations that exist at AAU. In qualifying the PBL dialogue tool, CDUL has collaborated at managerial levels and with teaching staff across the organisation – most recently at AAU's Learning Day 2023 and DUNK (Danish Network for Educational Development in Higher Education Conference), and the feedback we have received on the tool and the facilitated dialogues have all been positive. One of our colleagues from the University of Copenhagen has also borrowed the tool and wishes to use this in an education development process.

PBL Dissemination and Communication

CDUL promotes knowledge, inspiration, and guides on how to develop digitally supported learning in various ways to ensure knowledge sharing. As a means to reach educators, we use LinkedIn. CDUL is still building its presence on LinkedIn, but CDUL's reach on LinkedIn measures up to that of comparable Danish learning centres.

Another way of reaching educators is through the podcast The Digital Agora (DDA), which is a teacher-to-teacher conversation podcast focused on the challenges connected to digitally supported learning. The podcast guests represent a wide range of AAU teaching staff, such as Casper Steinmann (ENG), Peter Vistisen (SSH), Milo Skovfoged (TECH), Heidi Hautopp (SSH), Director at IAS PBL Thomas Ryberg, a live episode from the 2023 Learning Day with Professor Euan Lindsay (TECH) and Line Bune Juhl (SSH), and most recently, pro-rector Anne Marie Kanstrup. The Digital Agora released its first episode on 23 July 2022, and so far, 14 episodes have been released, all of which are available on Spotify and Apple Music. According to the latest figures, an episode of The Digital Agora has been started over 500 times.

Production

The area for further and continuing education and the development of degree programmes is an area of ongoing development – especially following the current intense focus on lifelong learning, flexibility and on-demand teaching. Under the auspices of PBL Digital, CDUL has had a close collaboration with the Faculty of Engineering and Science in order to be able to deliver production tasks in connection with two of the PBL Digital efforts: "Digital education structure of the future" and "EVU and Lifelong Learning". CDUL's production unit has been instrumental in developing a process for defining what a micro is and what it must contain, as well as in defining the conditions that must be met for a teaching subject to become relevant as a micro. In this connection, CDUL has collaborated with AAU teaching staff to develop the processes and define the various aspects of a micro. CDUL's production unit has also developed a site dedicated to the publication of micros. Moreover, the production unit has produced a large number of professional digital learning resources which really put AAU on the world map in terms of offering high-quality higher education based on PBL.

CDUL and IAS PBL Projects

Within the focus area for projects, IAS PBL and CDUL respond to project inquiries and manage specific projects that benefit the entire AAU. Within the scope of this focus area, we have, for example, identified the need for initiating funding efforts in IAS PBL. Furthermore, a project involving various educational institutions across Denmark and the company EdTech Denmark is taking shape; this project aims to establish a nationwide EdTech Denmark Learning Centre. The focus area also maintains a close focus on the development of generative AI. CDUL took the initiative to team up with relevant partners across the university to gather relevant information about generative AI, and the result of this has now been made available on **the new AAU generative AI website**.

Learning Technologies

The focus area involving learning technologies is very broad and covers everything from competence development in relation to learning technologies that support PBL, to working towards creating a real understanding of what learning technologies are and how these may be applied to best support the daily teaching practices of AAU teaching staff. Thus, CDUL is supporting AAU to stay up-to-date on the technologies that have been implemented across the university.

PBL Digital

CDUL is linked to PBL Digital and contributes to realising strategic efforts by participating as project managers or project participants. For example, CDUL has worked together with PBL Digital to provide input to AAU's new digital master plan and managed the project The Classroom of the Future II as well as the project on the implementation of Principles for Digitally Supported PBL.

CDUL Partnership Model

The intention behind the CDUL partnership model is to facilitate a framework for providing management with the necessary strategic guidance and feedback in relation to digitally supported PBL. The partnership model consists of a number of different meeting forums: start-up meetings, dialogue meetings, planning meetings, and evaluation meetings.

The starting point was identical for all AAU faculties, however, the start-up meetings revealed that the four faculties differed greatly in how they approached this initiative. Some faculties had brought along strategic advisors while others brought along heads of studies and local e-learning ambassadors. The partnership model is dynamic and adaptable, and it is entirely up to the faculties to assess who will participate. CDUL has hosted a total of 13 dialogue meetings across the four faculties.

The dialogue meetings have been followed by several planning meetings that specifically involve the stakeholders and digital learning consultants, PBL researchers and other collaboration partners who will be involved in developing the activities that the dialogue meetings have brought about.

The partnership model has only existed for a short time, and the evaluation process has therefore not yet begun, but CDUL is looking forward to kicking off this process with the first evaluation meetings scheduled for the end of 2023. More information about the partnership model and the local digital learning consultants at the various faculties is available in Danish at **CDUL's website**

LOOKING BACK AND LOOKING AHEAD

Both 2022 and the first part of 2023 have been very busy and eventful for CDUL. In addition to the above, a main focal point has also been to integrate CDUL into IAS PBL and to collaborate with the IAS PBL research groups. This has generated interest from the research group UCPBL, which wishes to carry out joint research with CDUL on the partnership model. CDUL is also involved in various development processes, particularly noticeable is the development of a master programme in the Faculty of Medicine, and CDUL's involvement in the development of further and continuing education across the faculties.

CDUL is looking forward to continuing working on the focus areas, as well as all the other exciting challenges that arise when we work with digitalised PBL focused learning.

IAS PBL RESEARCH RESULTS

RESEARCH RESULTS

The annual research report of the Institute for Advanced Study in PBL covers information and analyses on a number of key research indicators, such as publications, impact, collaboration, openness, visibility and research projects. Since IAS PBL only dates back to 2022 and the research output connected to IAS PBL before this time is limited, comparing this year's results to that of previous years is not yet relevant. The information provided in the report is based on the data that has been made available in PURE, which is Aalborg University's Research Information Management System. This means that for publications and other types of research output to count towards the overall IAS PBL research results, these must be connected to IAS PBL in the system. The IAS PBL con-

tinuously seek to update the data available in the system to ensure the relevance of all research affiliated with IAS PBL.

The following sections provide an overview of some of the main research results affiliated with the Institute for Advanced Study in PBL from 2022.

IAS PBL Scopus Coverage and Citations

A total of 40 journal articles were published in 2022 by researchers connected to IAS PBL; of these, 68% were published in journals indexed in Scopus (see figure 7). When adding articles in proceedings and review articles to this, the total number of publications amounts to 65 of which 68% were indexed in Scopus (figure 8)
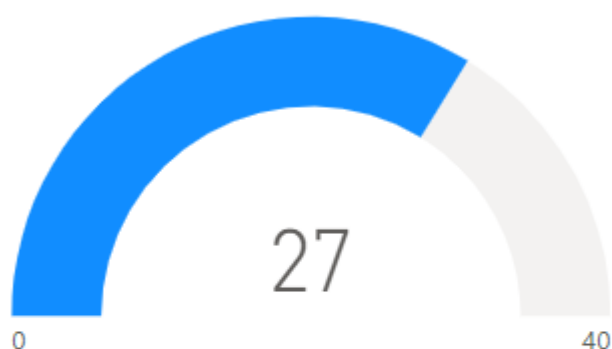
Figure 7: IAS PBL journal articles in Scopus, 2022
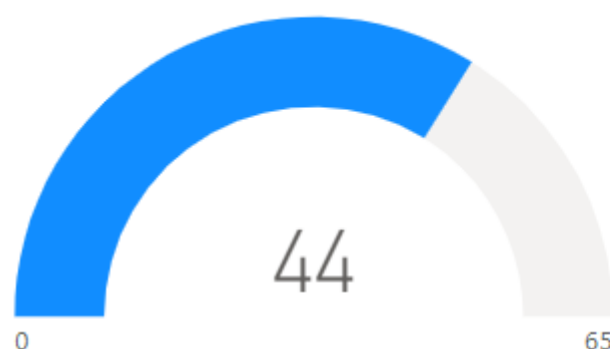
Figure 8: IAS PBL articles in proceedings, journal and review articles in Scopus, 2022

13 (39.4%)

number of publications in the top 10% journals by SNIP

- % of publications in top 10% journals
- % of publications in top 1% journals
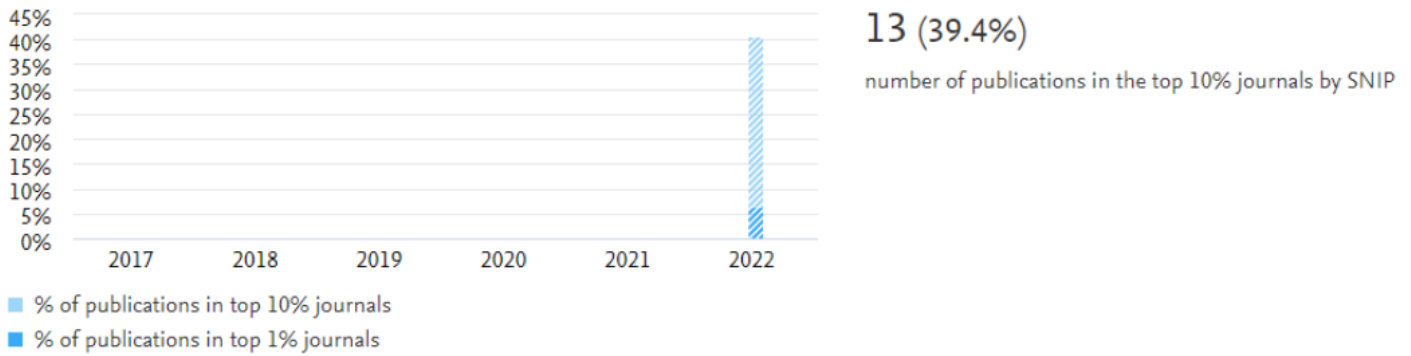
Figure 9: Share of IAS PBL publications in the top journals (SNIP)

The total share of IAS PBL publications published in the top 10% most cited Scopus journals is 39.4% (see figure 9)

During 2022, publications affiliated with IAS PBL were cited in 54 instances. The most cited publication types are journal articles, comments/debates, review articles, articles in proceedings, and editorials. With a total of 43 citations in 2022, journal articles have by far received the highest proportion of these citations (see figure 10).
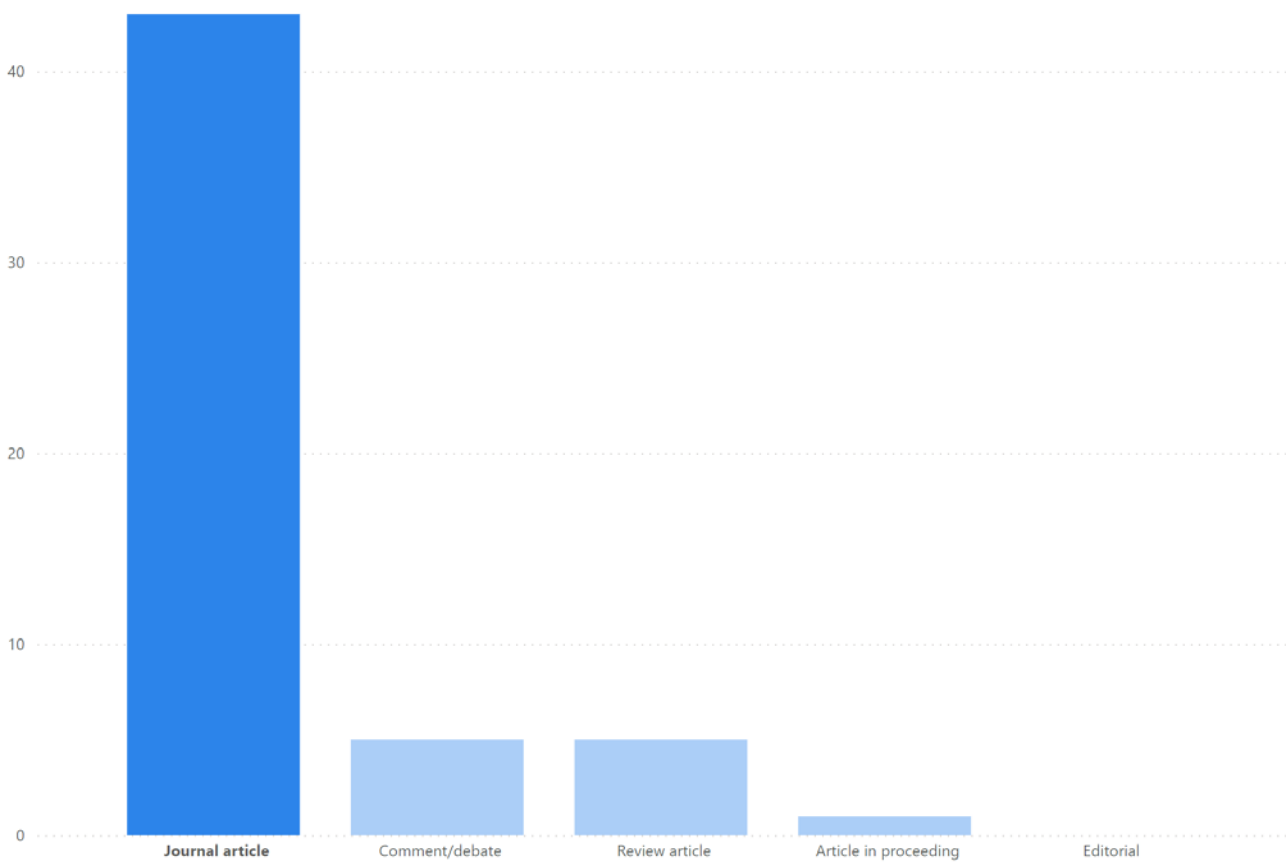
Figure 10: Total number of citations by publication types, 2022

Publications

Articles in journals or proceedings account for more than half of all IAS PBL publications published in 2022 (57%). In 2022, a total of 40 journal articles were published by IAS PBL researchers; this amounts to 37% of all publications affiliated with IAS PBL (see figure 11). English is the pre-ferred publication language, and in 2022, 68% of all publications affili-ated with IAS PBL was published in English (see figure 12).

Figure 11: Proportion of IAS PBL publications by category

Figure 12: Proportion of IAS PBL publications by language

External Collaboration – Publications

IAS PBL researchers collaborate with a wide range of academic and non-academic partners (defined within the categories *corporate, government (Danish Central Administration), academic, medical, educational institution, NGO, etc.*) both in Denmark and internationally. A total of 67 external collaborations affiliated with a publicati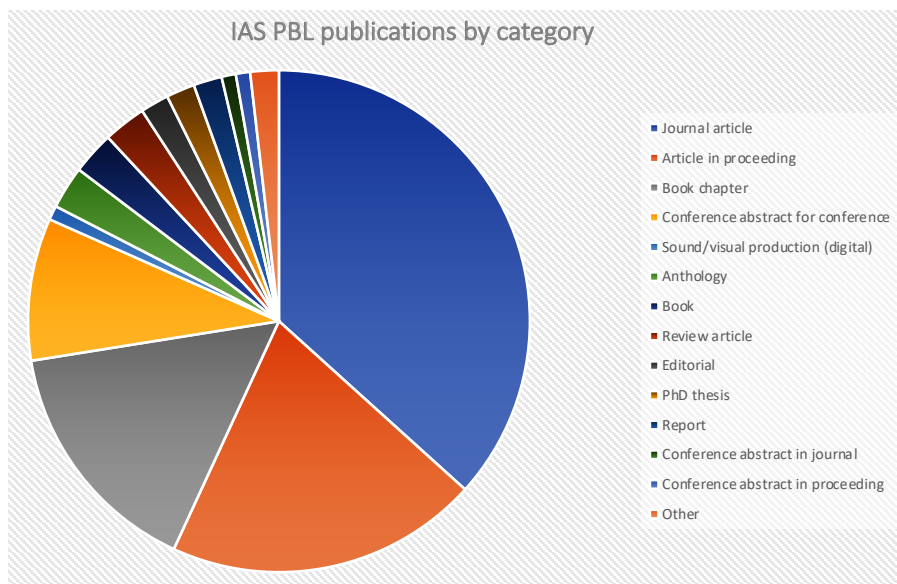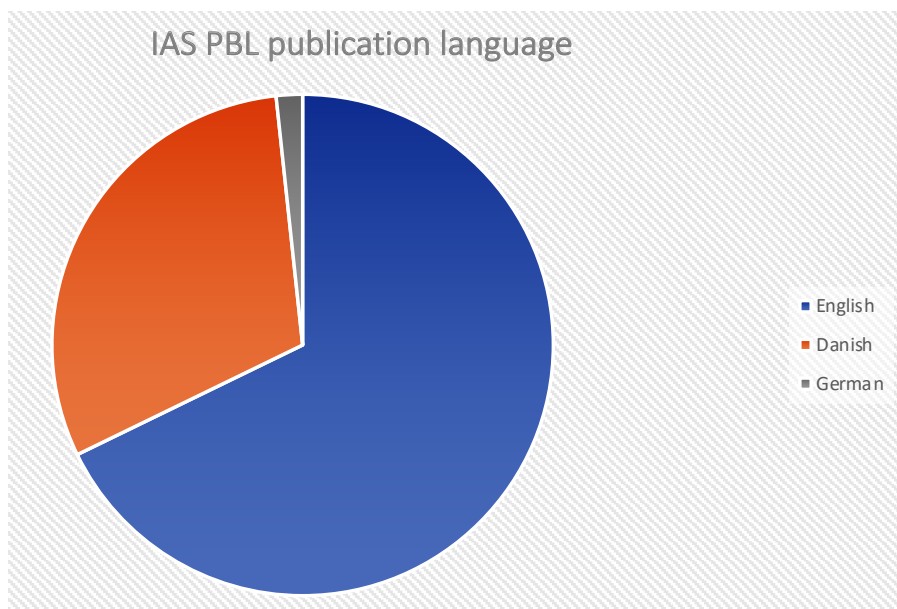on were registered in 2022. Figure 13 depicts all registered collaboration partners and the proportion of IAS PBL publications affiliated with each partner.

Figure 14 shows the impact of collaboration on publications, the field-weighted citation impact of IAS PBL's international collaboration on publications is 1.54, which means that these publications are cited above world average for similar publications (see figure 14).

Figure 13: Proportion of external collaboration partners affiliated with IAS PBL publications

Metric	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	34.7%	17	34	2.0	1.54
Only national collaboration	14.3%	7	2	0.3	0.15
Only institutional collaboration	46.9%	23	17	0.7	0.46
Single authorship (no collaboration)	4.1%	2	20	10.0	1.06

Figure 14: Impact of international, national and institutional collaboration, 2017-2022

Sustainable Development Goals

Aalborg University's Research Information Management System, PURE, allows all researchers to add the United Nations' Sustainable Development Goals (SDGs) to publications. Figure 15 shows how the connected SDGs are distributed across IAS PBL publications, and SDG 4 Quality Education has been connected to more IAS PBL publications than any other of the SDGs. The possibility to connect SDGs to research publications has only been available since March 2021.

Sustainable Development Goal

- SDG 3 - Good Health and Well-being
- SDG 4 - Quality Education
- SDG 8 - Decent Work and Economic Growth
- SDG 9 - Industry, Innovation, and Infrastructure
- SDG 10 - Reduced Inequalities
- SDG 12 - Responsible Consumption and Production
- SDG 16 - Peace, Justice and Strong Institutions
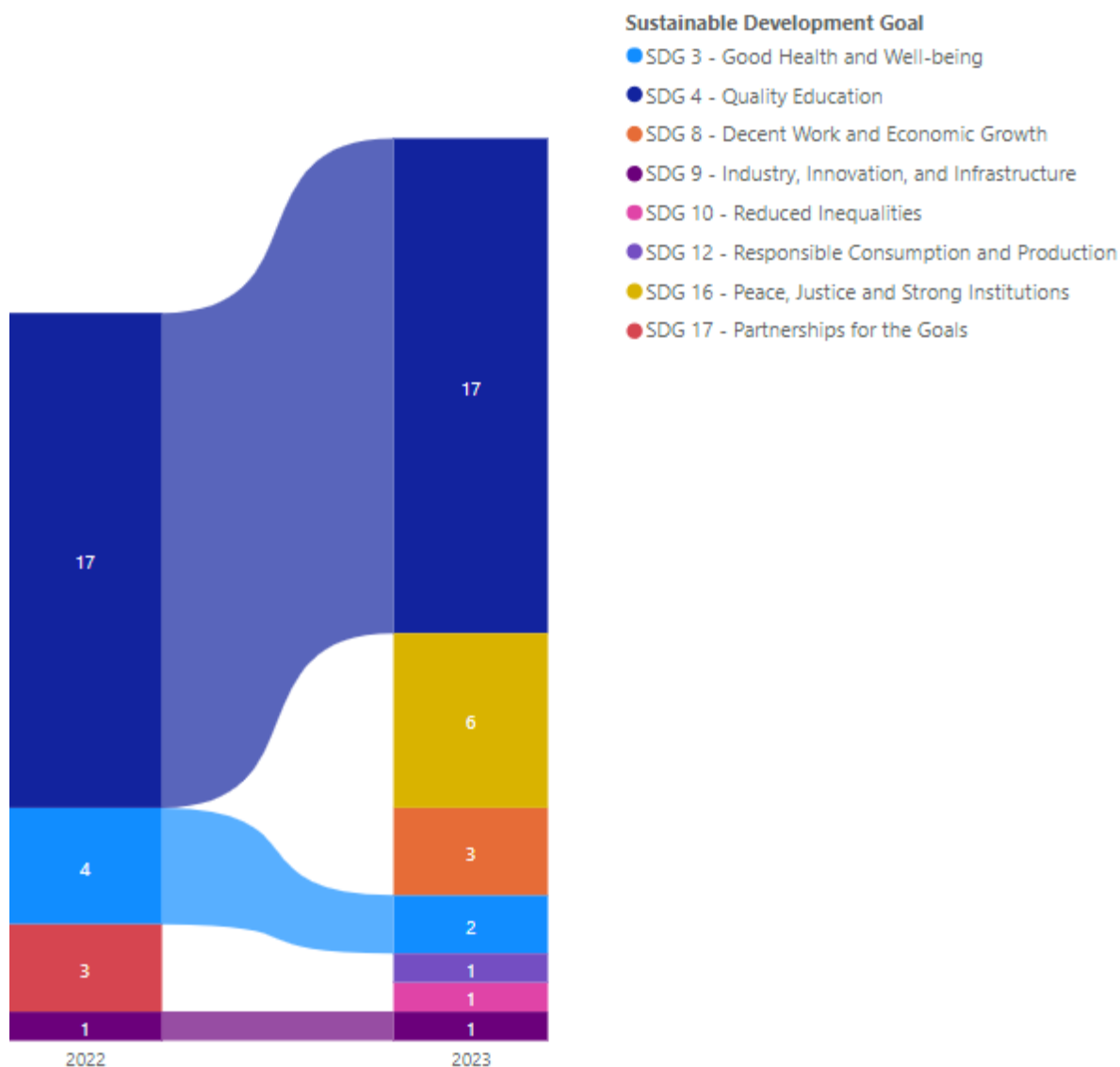- SDG 17 - Partnerships for the Goals

Figure 15: Number of Sustainable Development Goals connected to IASPBL publications

PHD COURSES

In 2022, researchers connected to IAS PBL organised the PhD courses listed below.

Aesthetics of Slowness – PhD summer school
Organised by Professor Lone Dirckinck-Holmfeld
An interdisciplinary course that combines perspectives of artists, art critics, philosophy, learning, human-computer interaction and other theories and examines the concept of aesthetic experience through the aesthetics of slowness in both theory and practice.

Applying the Danish Code of Conduct for Research Integrity to Your Research
Organised by Associate Professors Tine Fink and Antonia Scholkmann
The course examines the Danish Code of Conduct for Research Integrity that guides the research practices of scientists, researchers and their collaborators. The course introduces the principles of research integrity, dwells on the basic standards for conducting responsible research and introduces the current administration for misconduct.
In 2022, a total of five courses were completed.

Basic Bioethics
Organised by Associate Professor Patrik Kristoffer Kjærsdam Telléus
The course provides PhD students with a basic understanding of the discipline of bioethics and equips them with the knowledge necessary to participate constructively in the bioethical discourses in their research fields.

Introduction to the PhD Study (Medicine)
Organised by Associate Professor Trine Fink
The course provides PhD students with a basic understanding of the PhD programme at Aalborg University. It aims to support PhD students in developing their study plans and provides practical information on how to work on research projects.

Learn How Creative Thinking Can Transform Your Research
Organised by Research Assistant Søren Hansen
The course offers a deep understanding of creative thinking in research and aims to enable PhD students to make room for creative thinking and methodology in their own research. The systematic use of creative thinking can be particularly helpful in generating new ideas, hypotheses, experimental designs, and data interpretation as well as in the communication of research.

Qualitative Research within Health Science
Organised by Associate Professor Henrik Vardinghus-Nielsen
This course will provide participants with the basic skills to design a qualitative study and inform participants of the benefits and limitations of using qualitative methods in health science. The course focuses particularly on designing a study, selecting appropriate methods, collecting data and finally analysing the data.

PBL and Facilitations Skills
Organised by Professor Xiangyun Du and Associate Professor
Aida Olivia Pereira de Carvalho Guerra
The course aims to provide PhD students, especially those who are new to AAU, with a better understanding of what PBL is, the learning principles and practices behind the Aalborg PBL model, the collaborative project work, how to facilitate students' projects and how to handle various problems and projects.

PBL and Mixed Methods
Organised by Professor Xiangyun Du
This PhD course focuses on research design for how to study problem- and project-based learning by applying a mixed methods approach. Mixed methods are a comprehensive research design applying both qualitative and quantitative methods which can be combined in various ways depending on the research questions.

Professional Communication
Organised by Associate Professor Aida Olivia Pereira de Carvalho Guerra
The course aims to train and improve the participants' skills in oral communication, especially at scientific conferences and in university teaching by taking both a theoretical and a practical approach to scientific communication.

Research in a Mission-Driven Institution
Organised by Associate Professor Aida Olivia Pereira de Carvalho Guerra
This PhD course addresses relevant questions related to mission-oriented research and innovation and aims to equip PhD students with a deeper understanding of mission-oriented research and innovation. The course also provides participants with tools that enable them to contextualise their research within the SDGs framework and identify potential missions.

Transcribing Multimodal Interaction – Preparing and Transcribing Video Data
Organised by Associate Professor Jacob Gorm Davidsen
This course introduces participants to multimodal transcription of human social actions captured with video. The course aims to provide participants with an understanding of the theory and practice of transcription, an understanding of digital transcription software tools and the basic skills for preparing video data for transcription.

Understanding Theory of Science
Organised by Associate Professor Patrik Kristoffer Kjærsdam Telléus
The course provides participants with the opportunity to practice the art of the theory of science, to better acquaint themselves with the field, and learn how to apply its thoughts and positions. The course focuses on current problems in the theory of science that are relevant for research within the health sciences and the technological and natural sciences.

PUBLICATIONS

Abou-Hayt, I., Dahl, B., & Rump, C. Ø. (2022). **Teaching transfer functions without the laplace transform.** *European Journal of Engineering Education*, *47*(5), 746-761.

Algayres, M. G., Timcenko, O., & Triantafyllou, E. (2022). **From flipped to remote to hybrid: Transformation of a game-based flipped classroom during the Covid-19 pandemic.** In P. Fotaris, & A. Blake (Eds.), *Proceedings of the 21st European Conference on e-Learning - ECEL 2022* (pp. 10-18). Academic Conferences and Publishing International. Proceedings of the European Conference on e-Learning.

Algayres, M. G., Timcenko, O., & Triantafyllou, E. (2022). **Development and use of a playful learning observation tool (PLOT) for active game-based learning in physical classroom situations.** In *Proceedings of the 16th European Conference on Games Based Learning ECGBL 6 - 7 October 2022, Lisbon, Portugal* (1 ed., Vol. 16, pp. 28-37). Academic Conferences and Publishing International. Academic Bookshop Proceedings Series.

Ali, K., Du, X., & Lundberg, A. (2022). **Does problem-based learning facilitate enactment of learner agency in undergraduate dental curricula? A Q study.** *European Journal of Dental Education*.

Ali, K., Daud, A., Ba Hattab, R., Philip, N., Matoug-Elwerfelli, M., Anweigi, L., Al Khabuli, J., & Du, X. (2022). **Development of self-regulation amongst dental students in problem-based learning curricula: A qualitative study.** *European Journal of Dental Education*.

Al-Thani, H., Chaaban, Y., & Du, X. (2022). **Teacher educators' simplex system in navigating the process of responding to disruptive education–a case from Qatar.** *Research in Post-Compulsory Education*, *27*(2), 242-266.

Andersson, V. (2022). *Intercultural and problem-based learning.* Abstract from The Nordic Intercultural Communication Conference, Reykjavik, Iceland.

Balslev, H., & Andersson, V. (2022). ***The digital dilemma.*** 39. Abstract from TAL2021 Teaching for Active Learning, Odense, Denmark.

Beagon, U., Kövesi, K., Tabas, B., Nørgaard, B., Lehtinen, R., Bowe, B., Spliid, C. M., & Gillet, C. (2022). **Preparing engineering students for the challenges of the SDGs: what competences are required?** *European Journal of Engineering Education*.

Bernhard, J., Ryberg, T., & Davidsen, J. G. (2022). **Is "digital education" the right way forward? – or is, maybe, postdigital education what is needed!** In H-M. Jarvinen, S. Silvestre, A. Llorens, & B. V. Nagy (Eds.), *SEFI 2022 - 50th Annual Conference of the European Society for Engineering Education, Proceedings* (pp. 110-121). SEFI: European Association for Engineering Education.

Bertel, L. B., Møller Jeppesen, M., Henriksen, L. B., Hansen, S., & Dahl, B. (2022). **Bridging the gender gap through problem-based learning in STEM labs: What can we learn from biotechnology?** In *2022 IEEE Frontiers in Education Conference (FIE)* (pp. 1-5). [9962400] IEEE Press. Proceedings - Frontiers in Education Conference, FIE.

Boelt, A. M., Kolmos, A., & Holgaard, J. E. (2022). **Literature review of students' perceptions of generic competence development in problem-based learning in engineering education.** *European Journal of Engineering Education*, *47*(6), 1399-1420.

Braga, M., d'Escoffier, L., & Guerra, A. O. P. D. C. (2022). **A research program about a short-term PBL approach based on the SDG.** In H-M. Järvinen, S. Silvestre, A. Llorens, & B. Nagy (Eds.), *Towards a new future in engineering education, new scenarios that European alliances of tech universities open up: SEFI 2022* (pp. 988-996). SEFI: European Association for Engineering Education.

Buhl, M., Dille, M. H. B., & Kårstein, A. (2022). **Developing new practises for digital empowerment of adult learners as competent, creative and critical co-creative participants in a sustainable societal change.** 1039-1040. Abstract from Nordic Educational Research Association 2022, Reykjavik, Iceland.

Buhl, M., Dirckinck-Holmfeld, L., & Jensen, E. O. (2022). **Expanding and orchestrating the problem identification phase of design-based research.** *Nordic Journal of Digital Literacy*, *17*(4), 211-221. [1].

Buhl, M., Hanghøj, T., & Duus Henriksen, T. (2022). **Reconceptualising design-based research: Between research ideals and practical implications.** *Nordic Journal of Digital Literacy*, *17*(4), 205-210.

Bundsgaard, J., Fougt, S. S., Hanghøj, T., & Misfeldt, M. (2022). Scenariedidaktik - en introduktion. In S. S. Fougt, J. Bundsgaard, T. Hanghøj, & M. Misfeldt (Eds.), *Håndbog i scenariedidaktik* Aarhus Universitetsforlag.

Chen, J., Kolmos, A., & Clausen, N. R. (2022). **Gender differences in engineering students' understanding of professional competences and career development in the transition from education to work.** *International Journal of Technology and Design Education*.

Chen, J., Du, X., & Kolmos, A. (2022). **Students' views on sources of engineering identity development in a collaborative PBL environment.** *International Journal of Engineering Education*, *38*(2), 525-542.

Chen, J., Zhu, J., & Zheng, T. (2022). From initiators to free-riders: Exploring the spectrum of female engineering students' functional roles in project based learning using phenomenography. *International Journal of Engineering Education*, *38*(4), 917-933.

Chen, J. (2022). **Professional identity development for engineering students in a PBL context.** Aalborg Universitetsforlag. PhD Series of the Technical Faculty of IT and Design, Aalborg University.

Christiansen, S. H., Bertel, L. B., & Dahl, B. (2022). **Problem-based learning in STEM: Facilitating diversity and change in pre-college engineering education through online collaborative teacher communities in virtual STEMlabs.** In *Paper presented at 2022 ASEE Annual Conference & Exposition, Minneapolis, MN.*

Clausen, N. R., & Hansen, C. D. (2022). **Revitalizing the oddi continuing learning inventory.** *International Journal of Learning, Teaching and Educational Research, 21*(5), 351-366.

Dahl, B., & Grunwald, A. (2022). V**ariation of pbl in higher education within engineering, science and mathematics.** *International Journal of Engineering Education, 38*(4), 934-946.

Dahl, B. (2022). **Lack of gender differences in engineering students' assessment of group-based project exams.** In H-M. Järvinen, S. Silvestre, A. Llorens, & B. Nagy (Eds.), *SEFI 2022 - 50th Annual Conference of the European Society for Engineering Education, Proceedings: 50th Annual Conference in September 2022 4 Towards a new future in engineering education, new scenarios that European alliances of tech universities open up* (pp. 225-233). SEFI: European Association for Engineering Education.

Dahl, B., & Hoogland, K. (2022). **Matematisk modellering på erhvervsskoler.**

Dalsgaard, C., & Ryberg, T. (2022). *Digitale læringsrum.* Samfundslitteratur.

Daud, A., Matoug-Elwerfelli, M., Du, X., & Ali, K. (2022). **A qualitative enquiry into dental students' perceptions of dentistry as a career choice in the State of Qatar.** *BMC Medical Education, 22*(1), [452].

Davidsen, J. G., & McIlvenny, P. (2022). **Towards collaborative immersive qualitative analysis.** In A. Weinberger, W. Chen, D. Hernandez-Leo, & B. Chen (Eds.), *15th International Conference on Computer-Supported Collaborative Learning (CSCL)* (pp. 304-307). International Society of the Learning Sciences (ISLS). Computer-Supported Collaborative Learning Conference, CSCL.

Davidsen, J. G., McIlvenny, P., & Kovács, A. B. (2022). **Volumetric Capture and Replay in Virtual Reality – Entering the age of immersive and volumetric analysis in CSCL.** In A. Weinberger, W. Chen, D. Hernandez-Leo, & B. Chen (Eds.), *15th International Conference on Computer-Supported Collaborative Learning (CSCL)* (pp. 296-299). International Society of the Learning Sciences (ISLS). Computer-Supported Collaborative Learning Conference, CSCL.

Davidsen, J. G., Larsen, D. V., Paulsen, L., & McIlvenny, P. (2022). Designing for networked learning in 360VR - A scenographic turn in online learning environments? In J. Jaldemark, M. Håkansson Lindqvist, P. Mozelius, A. Öberg, M. De Laat, N. B. Dohn, & T. Ryberg (Eds.), **Proceedings for the Thirteenth International Conference on Networked Learning 2022.**

Davidsen, J. G., Larsen, D. V., Paulsen, L., & Rasmussen, S. (2022). **360VR PBL: A new format of digital cases in clinical medicine.** *Journal of Problem Based Learning in Higher Education, 10*(1), 101-112.

Du, X., Lundberg, A., Ayari, M. A., Naji, K. K., & Hawari, A. (2022). **Examining engineering students' perceptions of learner agency enactment in problem- and project-based learning using Q methodology.** *Journal of Engineering Education, 111*(1), 111-136.

Du, X., Guerra, A., Nørgaard, B., Chaaban, Y., Lundberg, A., & Lyngdorf, N. E. R. (2022). **University teachers' change readiness to implement education for sustainable development through participation in a PBL-based PD program.** *Sustainability (Switzerland), 14*(19), [12079].

Du, X., Ibiapina, C. D. C., Kassab, S. E., & Yan, A. (2022). **Good advice from authors working in under-represented countries.** *Medical Education.*

Du, X., Nomikos, M., Ali, K., Lundberg, A., & Abu-Hijleh, M. (2022). **Health educators' professional agency in negotiating their problem-based learning (PBL) facilitator roles: Q study.** *Medical Education, 56*(8), 847-857.

Duus Henriksen, T., & Ejsing-Duun, S. (2022). **implementation in design-based research projects: a map of implementation typologies and strategies.** *Nordic Journal of Digital Literacy, 17*(4), 234-247.

Ejsing-Duun, S. (2022). Teknologiforståelse og komplekse problemer. In M. Misfeldt, T. Hanghøj, S. Skov Fougt, & J. Bundsgaard (Eds.), *Håndbog i scenariedidaktik* (pp. 502-513). Aarhus Universitetsforlag. Didaktiske studier.

Ejsing-Duun, S., & Pischetola, M. (Accepted/In press). '**Does it matter?': Learning through aesthetic experiences in a higher education communication design course.** *Postdigital Science and Education.*

Ejsing-Duun, S., Gravesen, L. B., Ager, A. H. S., & Dirckinck-Holmfeld, L. (2022). **Åbn undervisningens 'black boxes': Fælles undersøgelses- og designprocesser af teknologibrug i omstillingen til online undervisning.** *Learning Tech – Tidsskrift for læremidler, didaktik og teknologi, 11*, 172-198. [11].

F. C. Servant-Miklos, V., & Kolmos, A. (2022). **Student conceptions of problem and project based learning in engineering education: A phenomenographic investigation.** *Journal of Engineering Education, 111*(4), 792-812.

Feilberg, C., & Keller, K. D. (2022). **Eksistensopfattelsen i fænomenologien.** *Psyke & Logos, 43*(1), 31-59.

Fougt, S. S., Bundsgaard, J., Hanghøj, T., & Misfeldt, M. (2022). *Håndbog i scenariedidaktik.* Aarhus Universitetsforlag. Didaktiske studier.

Fougt, S. S., Bundsgaard, J., Hanghøj, T., & Misfeldt, M. (2022). Scenariedidaktik på tværs af roller, ting, tid og rum. In S. S. Fougt, J. Bundsgaard, T. Hanghøj, & M. Misfeldt (Eds.), *Håndbog i scenariedidaktik* (pp. 43-61). Aarhus Universitetsforlag.

Granerud, L. S., & Søndergaard, B. D. (2022). **Læringsstile.**

Guerra, A. O. P. D. C., Jiang, D., & Du, X. (2022). **Student agency for sustainability in a systemic PBL environment.** *Sustainability*, *14*(21), [13728].

Gyldendahl Jensen, C., Clausen, N. R., Dau, S., Bertel, L. B., & Ryberg, T. (2022). Envisioning scenarios in designs for Networked Learning: Unfolding value tensions between technology and social learning. In J. Jaldemark, M. Håkansson Lindqvist, P. Mozelius, L. M. Öberg, M. De Laat, N. B. Dohn, & T. Ryberg (Eds.), *Networked Learning 2022: Proceedings for the Thirteenth International Conference on Networked Learning*. The International Conference on Networked Learning No. 13.

Gyldendahl Jensen, C., Dau, S., Clausen, N. R., Ryberg, T., & Bertel, L. B. (2022). **Dilemmaer i translation og transformation af erfaringsbaserede kollaborative læringsformer til digitale læringsplatforme.** *Læring og Medier*, *15*(25).

Gyldendahl Jensen, C., Otto, S., Dau, S., Clausen, N. R., Andersen, T., & Bertel, L. B. (2022). **A literature study on experiential collaborative e-learning based on ECEL articles.** In P. Fotaris, & A. Blake (Eds.), *Proceedings of the 21st European Conference on e-Learning - ECEL 2022* (pp. 128-136). Academic Conferences and Publishing International.

Hanghøj, T., Fougt, S. S., Bundsgaard, J., Lorentzen, R. F., Brahe-Orlandi, R., Molbæk, L., & Rørbech, H. (2022). Scenariedidaktik i dansk - et overblik. In S. S. Fougt, J. Bundsgaard, T. Hanghøj, & M. Misfeldt (Eds.), *Håndbog i scenariedidaktik* (pp. 63-80). Aarhus Universitetsforlag.

Hanghøj, T., Händel, V. D., Duedahl, T. V., & Gundersen, P. B. (2022). **Exploring the messiness of design principles in design-based research.** *Nordic Journal of Digital Literacy*, *17*(4), 222-233. [4].

Holgaard, J. E., Du, X., & Guerra, A. O. P. D. C. (2022). **When problem based learning becomes entrepreneurial – a facilitator view on student challenges.** In H-M. Jarvinen, S. Silvestre, A. Llorens, & B. V. Nagy (Eds.), *SEFI 2022 - 50th Annual Conference of the European Society for Engineering Education, Proceedings: 50th Annual Conference in September 2022 4 Towards a new future in engineering education, new scenarios that European alliances of tech universities open up* (pp. 315-323). SEFI: European Association for Engineering Education.

Hussein, M. H., Ow, S. H., Elaish, M. M., & Jensen, E. O. (2022). **Digital game-based learning in K-12 mathematics education: a systematic literature review.** *Education and Information Technologies*, *27*(2), 2859-2891.

Jaldemark, J., Håkansson Lindqvist, M., Mozelius, P., Öberg, L-M., de Laat, M., Bonderup Dohn, N., & Ryberg, T. (Eds.)(2022). **Networked Learning 2022: Proceedings for the Thirteenth International Conference on Networked Learning.** Institute for Advanced Study in PBL, Aalborg University.

Jandrić, P., Martinez, A. F., Reitz, C., Jackson, L., Grauslund, D., Hayes, D., Lukoko, H. O., Hogan, M., Mozelius, P., Arantes, J. A., Levinson, P., Ozoliņš, J. J., Kirylo, J. D., Carr, P. R., Hood, N., Tesar, M., Sturm, S., Abegglen, S., Burns, T., ... Hayes, S. (2022). **Teaching in the age of Covid-19—The new normal.** *Postdigital Science and Education*, *4*(4), 877-1015.

Jiang, D., Dahl, B., & Du, X. (2022). **A narrative inquiry into developing learner agency of engineering students in an intercultural PBL environment.** *European Journal of Engineering Education*, *47*(6), 1103-1121.

Johansson, N., Nøhr, S., Klitgaard, T. L., Stentoft, D., & Vardinghus-Nielsen, H. (2022). **Clinical problem-based medical education: A social identity perspective on learning.** *Dansk Universitetspædagogisk Tidsskrift*, *17*(33), 79-96.

Johri, A., Edstrom, K., Du, X., Mitchell, J., & May, D. (2022). **Knowledge construction in engineering education research: Assessing the role of journals, books, conferences, and other products of research.** In *2022 IEEE Frontiers in Education Conference, FIE 2022* (pp. 1-4). [9962543] IEEE. Proceedings - Frontiers in Education Conference, FIE Vol. 2022-October.

Kergel, D., Trifonas, P. P., Letamendia, A., Paulsen, M., Nowakowski, S., Kjærsdam Telléus, P., Rachwał, T., & Heidkamp-Kergel, B. (Eds.)(2022). **Learning in the digital age: A transdisciplinary approach for theory and practice.** Springer. Diversität und Bildung im digitalen Zeitalter.

Lindsay, E., Møller Jeppesen, M., & Vesterheden, L. R. (2022). Microcredentials as a pathway for the digitisation of engineering degrees. In *Proceedings of AAEE 2022 - Future of Engineering Education* AAEE - Australasian Association for Engineering Education.

Lyngdorf, N. E. R., Du, X., & Lundberg, A. (2022). First-year engineering students' learner agency sources in a systemic PBL environment: A Q study. Manuscript submitted for publication.

Lyngdorf, N. E. R., Ruan, Y., Chen, J., Du, X., & Kolmos, A. (2022). Engineering teachers' professional learning and role identity change in an intercultural (study-abroad) PBL programme. *International Journal of Engineering Education*, *38*(4), 959-973.

Misfeldt, M., Blomhøj, M., Lindhart, B. K., Larsen, D. M., Skånstrøm, M., & Jensen, E. O. (2022). Scenariedidaktik i matematik - et overblik. In S. Skov Fougt, J. Bundsgaard, T. Hanghøj, & M. Misfeldt (Eds.), *Håndbog i scenariedidaktik* (pp. 172-189). Aarhus Universitetsforlag. Didaktiske studier.

Møller, A. K., Kaup, C. F., Brooks, E., Gnaur, D., Schürer, M. H., & Lyngbye, M. C. (2022). **From programming to computational perspectives in higher educations for humanities students.** *Acta Didactica Norden*, *16*(4), [9183].

Nørgaard, B., Schrey-Niemenmaa, K., Sjoer, E., Berge, R. A., Kalman, A., & Miettinen, K. (2022). A panoramic view of the state of continuing engineering education in Europa: The development and future insight. In *Proceedings of the 18th World Conference on Continuing Engineering Education* (pp. 73-81). International Association for Continuing Engineering Education Conference.

Nørgaard, B., Beagon, U., Koponen, J., & Kövesi, K. (2022). **Students' perception of applied educational and pedagogical approaches at STEM Universities: A european overview.** In H-M. Järvinen, S. Silvestre, A. Llorens, & B. Nagy (Eds.), *Towards a new future in engineering education, new scenarios that European alliances of tech universities open up: SEFI2022* SEFI: European Association for Engineering Education.

Otto, S., Markman, A. O., & Svarre, T. (2022). Critical success factors for Learning Management Systems in higher education: A literature review. In **Networked Learning 2022: Proceedings for the Thirteenth International Conference on Networked Learning.**

Paulsen, L., Davidsen, J. G., & Steier, R. (2022). **"Do you see what we see?" – Perspective-taking across realities.** In A. Weinberger, W. Chen, D. Hernández-Leo, & B. Chen (Eds.), *15th International Conference on Computer-Supported Collaborative Learning (CSCL)* (pp. 300-303). International Society of the Learning Sciences (ISLS). Computer-Supported Collaborative Learning Conference, CSCL.

Philipps, M. R., Fougt, S. S., & Ejsing-Duun, S. (2022). **Kritisk-æstetiske scenarier i teknologiforståelse - en tværfaglig tilgang**. *Acta Didactica Norden*, *16*(4).

Qadhi, S. A., Al-Thani, H. H., Hasan, M. A., Romanowski, M. H., Du, X., & Al-Emadi, A. (2022). **Online teaching strategies of language skills during pandemic: A case of self-efficacy of teaching faculty in Qatar universities.** *Eurasian Journal of Applied Linguistics*, *8*(1), 176-190.

Romanowski, M. H., & Du, X. (2022). **Education transferring and decentralized reforms: The case of Qatar**. *Prospects*, *52*(3-4), 285-298.

Routhe, H. W., Winther, M., Nguyen, N. T., Holgaard, J. E., & Kolmos, A. (2022). **Challenges for engineering students working with authentic complex problems.** In H-M. Jarvinen, S. Silvestre, A. Llorens, & B. V. Nagy (Eds.), *SEFI 2022 - 50th Annual Conference of the European Society for Engineering Education, Proceedings: Annual Conference 19-22 September 2022 Barcelona* (pp. 1508-1517). SEFI: European Association for Engineering Education.

Routhe, H., Winther, M., Holgaard, J., & Kolmos, A. (2022). Interdisciplinary problem-based projects for first-year engineering students. In *ASEE 2022 Anual Conference: Excellence through Dicersity* [37017] American Society for Engineering Education. ASEE Annual Conference and Exposition, Conference Proceedings.

Routhe, H. W., & Bøgelund, P. (2022). **Retaining engineering students: A case study at Aalborg University.** *International Journal of Engineering Education*, *38*(4), 1116-1129.

Scholkmann, A., & Lund, D. (2022). Portfolioprüfung. In J. Gerick, A. Sommer, & G. Zimmermann (Eds.), *K*ompetent Prüfungen gestalten: 60 Prüfungsformate für die Hochschullehre (2 ed., pp. 258-261). Waxmann Verlag.

Scholkmann, A. (2022). Schriftliche Problemfalldiskussion. In J. Gerick, A. Sommer, & G. Zimmermann (Eds.), **Kompetent Prüfungen gestalten: 60 Prüfungsformate für die Hochschullehre** (2 ed., pp. 287-292). Waxmann Verlag.

Stegeager, N., & Nørlem, J. (2022). Problem-based Learning as a Lever for Organizational Development in Danish Public Schools. Unpublished. In *Paper for the International Conference onOrganizational LEarning, Knowledge and Capabilities 2022* (pp. 1).

Sukackė , V., Guerra, A. O. P. D. C., Ellinger, D., Carlos, V., Petronienė, S., Gaižiūnienė, L., Blanch, S., Marbà-Tallada , A., & Brose, A. (2022). **Towards active evidence-based learning in engineering education: A systematic literature review of PBL, PjBL, and CBL.** *Sustainability*, *14*(21), [13955].

Tabo, G. O., Dirckinck-Holmfeld, L., & Bygholm, A. K. M. (2022). **Innovative pedagogies: The impact of blended learning in higher education during the Covid-19 pandemic.** In *10. Pan-Commonwealth Forum 10 (PCF10), 2022* Commonwealth of Learning (COL).

Telléus, P. K., & Søndergaard, B. D. (2022). **Fifteenth issue of the journal of problem based learning in higher education.** *Journal of Problem Based Learning in Higher Education*, *10*(1), i-iii.

Telléus, P. K. (2022). Tab og vind med samme sind. In A. N. Holm (Ed.), *Filosofi og empiri* (1. ed., pp. 95-110). Aalborg Universitetsforlag. Applied Philosophy / Anvendt Filosofi Vol. 12.

Telléus, P. K. (2022). **Windmills of your mind.** In D. Kergel, P. P. Trifonas, A. Letamendia, M. Paulsen, S. Nowakowski, P. Kjærsdam Telléus, T. Rachwał, & B. Heidkamp-Kergel (Eds.), *Learning in the Digital Age: A Transdisciplinary Approach for Theory and Practice* (pp. 15-30). Springer. Diversität und Bildung im digitalen Zeitalter.

Velmurugan, G. (2022). **Problem construction in problem-based learning: How students deal with disagreements in decision-making .** Aalborg Universitetsforlag. PhD Series of The Faculty of Medicine, Aalborg University.

Weber, D., Kanstrup, A. M., Karadechev, P., Davidsen, J., Bygholm, A., & Kaan-Kristensen, B. P. R. H. (2022). *Digitale unge med kognitive handicap: Om brugen og betydningen af digitale teknologier i sociale fællesskaber.* Aalborg Universitet. Aalborg Universitet. Dansk Center for Sundhedsinformatik. Technical Report Vol. 22 No. 1.

Wyke, S., Jensen, A. A., Krogh, L., Ravn, O., & Svidt, K. (2022). **Employability competences through short-term intensive PBL-events in higher education.** *Frontiers in Education*, *7*, [959355].

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