



Strategy 2030





Department of Science Education Strategy 2030

MISSION AND VISION

IND's mission is to open up science and mathematics for all by producing and sharing knowledge to improve the practice, education and communication of these fields.

The educational landscape is affected by profound transformations driven by digitalisation, policy shifts, changing teaching cultures and increasing learner diversity. These changes require state-of-the-art research to support innovative methods, enhance accessibility and prepare learners and teachers for the complexities of a rapidly evolving world, with particular attention to inclusivity and equity for underrepresented populations.

The social, historical and material conditions of scientific research are changing, shaped by societal expectations, interdisciplinary challenges, technological advances and the need for sustainability. These require continuous critical reflection on the past, present and future of scientific practices to ensure robust, impactful and thoughtful knowledge production and application.

Understanding and improving how science and society interface is vital for fostering public trust, shaping informed engagement and addressing global challenges through the effective translation of research into societal action.

Opening up science and mathematics also involves critical examination and discussion of their practices, educations and tacit and explicit assumptions in order to prepare citizens for a reflective and critical engagement with science and mathematics in social contexts.

IND's vision is a future where people drive positive change through a thoughtful use of science and mathematics. Realising this vision requires the interdisciplinary efforts of IND as a global agenda-setter in science and mathematics education, digital education, the history and philosophy of science and science communication. IND's strengths to contribute to realising this vision derive from the unique position of its researchers to coalesce competences in mathematics and the sciences with expertise in the social sciences and humanities.

SOCIETAL AGENDAS

Among the many global agendas or trends that are relevant to our vision, we emphasise three to which we believe we can greatly contribute to and that we aspire to increase our influence on and engagement with.

EDUCATION IS BEING TRANSFORMED

Rapid and profound changes in the educational landscape must be supported by state-of-the-art research and development.

1

Education systems worldwide are undergoing profound transformations driven by technological advances, policy reforms, diversified student bodies and shifting teaching cultures. Further, the role of education in society is changing. Digital tools are reshaping traditional classrooms, lifelong learning is becoming essential and inclusion is a key priority in global education. These changes present opportunities to innovate educational systems and teaching methods, to enhance accessibility and to prepare learners for complex, evolving societal demands. They also call for critical scrutiny and inquiry into the assumptions and consequences related to these transformations, for example what the purpose of teaching and learning science is and how this should be reflected in the form and content of science and mathematics teaching and learning to accommodate diverse learners.

CONDITIONS FOR SCIENCE ARE CHANGING

Understanding the evolving practices of scientific knowledge production and use is essential for research practice and for fostering public trust and engagement.

2

The production and use of scientific knowledge operates within a dynamic landscape influenced by societal expectations, policy demands, interdisciplinary challenges and technological advancements such as big data and artificial intelligence. Simultaneously, public perceptions of science are shaped by communication strategies, historical narratives and philosophical debates about the nature of scientific inquiry. These factors influence trust in science and engagement with research and also shape how students and the public perceive the role of science in addressing global challenges.

SUSTAINABILITY REQUIRES NEW APPROACHES

Addressing sustainability challenges calls for synergy between many different disciplines.

3

Global sustainability challenges call for collaborative efforts across all fields of knowledge. Science and mathematics drive innovation in areas such as renewable energy and resource management, while the humanities and social sciences contribute essential understanding of human behaviour, societal dynamics and ethics. Together, these disciplines can address the multifaceted nature of sustainability issues. However, it requires reflection on the purpose of the disciplines and how this should be represented in the form and content of teaching and learning. Integrating sustainability into scientific practice, communication and education becomes a cornerstone of preparing individuals to create a more resilient and inclusive future.

STRATEGIC AIMS

The strategic aims outline key priorities for IND during the strategy period, aligning our efforts with our mission, vision and values. While not the only way to address the emphasised societal agendas, these aims represent areas where IND can use its strengths to make meaningful contributions. They set the overall direction for IND's department-wide activities and help guide the department's initiatives.



RESEARCH DRIVEN BY CURIOSITY

IND will strengthen conditions for research initiated and driven by its researchers' curiosity and their quest to delve deeper into research topics – whether problem-oriented, applied or basic.

- We build structures that provide the best possible conditions for IND's researchers to make decisions about their research efforts.
- We ensure that IND sets its own research agendas with scientific integrity.
- We work with funding agencies to prioritise highly relevant yet underexplored research areas.



SHAPING POLICY

IND will advance its role as an agenda-setter in science research and education, shaping priorities and discussions that influence societal, institutional and policy landscapes. Research at IND has an untapped potential for informing the decisions of scientists, science policy makers and science managers.

- We leverage IND's expertise, networks and collaborative efforts.
- We initiate focused outreach and science stakeholder engagement.
- We support researchers focusing on societal impact.

EDUCATION AND LIFELONG LEARNING

IND will broaden its role as a provider of education and lifelong learning opportunities, enhancing its contribution to professional development across the science and education sectors. This strategic aim builds on our recognised expertise to provide education about the production of scientific knowledge and about education from a position that is deeply rooted in science and mathematics.

- We expand the range of competence development activities for professionals.
- We explore prospects of new IND-riven, international programmes (e.g. an MSc programme on science in perspective).
- We advocate for research-based educational development at all levels and contribute to building a professional research-based didactical preparedness at our university.



RESEARCH GROUPS & CENTRES

IND's researchers excel in a wide range of fields. Research at IND is organised in research groups that act as stewards of a research area. Alongside our research groups we host strategic centres. The full list and description of these groups and centres can be found at ind.ku.dk.

VALUES

IND's values serve as ideals, guiding our actions and priorities throughout the strategy period. These values will shape our department-wide initiatives and support a forward-thinking academic culture.



CURIOSITY AND DARING

Our curiosity and daring, anchored in research, push boundaries and drive transformation.

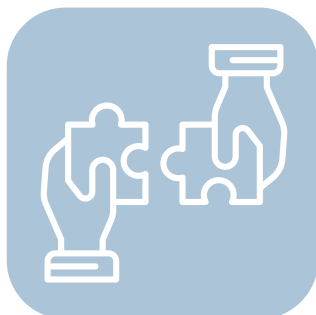
We aspire to cultivate a future where curiosity and daring drive research and enable transformation in academia and society. At IND we are dedicated to advancing knowledge by working across conventional boundaries to challenge and elevate our academic disciplines. We seek to strike a thoughtful department-wide balance between basic and applied research and to support bold, high-risk, high-reward endeavours that push the frontiers of knowledge.



COMMUNITY AND BELONGING

We empower all staff through transparency, respect and inclusivity.

We envision IND as a community where transparency, mutual respect and inclusivity are the foundation for our work. At IND a sense of belonging is cultivated through open dialogue, equitable opportunities and a culture where ideas come before rank. We prioritise fostering an environment where every individual feels empowered to contribute, connect and thrive. By valuing diverse perspectives and practicing care for one another, we aim to create a supportive and forward-thinking academic culture.



BRIDGES AND PARTNERSHIPS

We connect theory, practice and stakeholders to create impact.

At IND we are committed to improving academia and education in general, and to create benefit for society. Our work bridges theoretical exploration and practical application, translating research into actionable insights, shaping educational practices and informing public and academic discourse. By fostering meaningful partnerships and collaborations, we contribute to tackling global challenges, advancing policy and contributing to critical reflection on the role of science in society. Together, we aim to build a legacy of research and teaching for the benefit of learners, educators and decision makers.

STRENGTH PROFILE

IND's strength profile derives from its researchers' unique combination of competences in mathematics and the sciences with expertise in the social sciences and humanities. This equips us to be a world-leading environment for producing and sharing knowledge within the following three profile areas.

SCIENCE AND MATHEMATICS EDUCATION

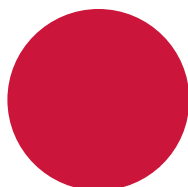
With a deep foundation in the disciplines along with strong research competences within social science and humanities, IND is uniquely positioned to lead inquiry into science, mathematics and digital education, addressing contemporary challenges such as sustainability, generative AI and changes to educational systems. We advance the research fields within both discipline-based and general educational research targeted at science and mathematics. We investigate how institutional, cultural and policy frameworks shape education. We critique and qualify the processes, perceptions and experiences of educational activities inside and outside formal learning environments. We seek to analyse, develop and share teaching and learning interventions and models that address core-topic learning, critical thinking, interdisciplinary learning, deep learning, inclusion and science identities. This work promotes a transition towards more inclusive and sustainable societies in times of global change. Our teaching targets university science, mathematics and health educators for university pedagogy, pre-service and in-service K-12 teachers in STEM fields and undergraduates as well as graduates in science and mathematics. Our interdisciplinary research in this area can advance knowledge and influence policies at local, national and international levels.

HISTORY AND PHILOSOPHY OF SCIENCE

We analyse and critically reflect on how scientific knowledge is produced and applied. We investigate the interplay between scientific practices, institutional structures, cultural and societal contexts and policy frameworks, and we analyse the strengths as well as limits of scientific developments. Among other things, we focus on the sustainability of the scientific ecosystem and how to promote scientific progress, we critically examine the promises, limitations and ethical implications of major scientific developments and we study the history of scientific practices and institutions. We educate future researchers, science educators and science professionals in philosophy of science to enable them to view their activities and disciplines from a broader perspective and to empower them to reflect on the opportunities, limitations and ethical implications of scientific research as well as the applications of scientific knowledge. By bridging academic insights with societal needs we aim to inform and improve practices in scientific institutions.

PUBLIC ENGAGEMENT WITH SCIENCES

We research public perceptions, knowledge and views of science and mathematics, including what members of the public think and know about these fields and the ways in which they view them. Our research examines the democratisation of science, addressing contemporary challenges such as the validity of science in public discourse and sustainability. Our ability to apply multifarious analytical lenses, theoretical frameworks and methodological approaches uniquely enables us to lead the advancement of science communication research. Our research focuses on social conversations about digital literacy, technology comprehension and sustainability. We produce innovative frameworks and approaches that empower equitable and inclusive engagement with science.



DEPARTMENT OF SCIENCE EDUCATION - STRATEGY 2030
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