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## Kort præsentation

### Background

I have degrees in chemistry, education, and chemistry education from universities in the United Kingdom, the Netherlands, Czech Republic, and Indonesia. My professional background as a school teacher, curriculum coordinator, workshop leader, and educational researcher in international schooling dovetails my perpetual interest in science and science education. I have been working in the education sector since 1999, and for the past 8 years, I have been diligently building an expertise in laboratory education research at the university level, with a strategic focus on multidimensional learning.

### Programmes

My research programmes are centred on epistemic orientations in higher science education. Within the line of research in laboratory education, I investigate various aspects of student learning during experimental work conceptualised as epistemic practice, *viz.* epistemic affect, conation (in an Aristotelian perspective), embodied and epistemic cognition, multimodality, and materiality. I also develop a theoretical framework and working model for the integration of six domains of learning in the lab, mainly informed by science studies and the learning sciences. In the IQ-Lab research project, I have led a work package focussed on systematic review of empirical literature and faculty's deliberation of student learning.

Accordingly, I explore historical narratives in this area, particularly on justifications for instruction in the lab of physical and chemical sciences drawn from original texts by the likes of Maxwell, Kelvin, and Liebig.

In the near future, the programme will be geared towards elucidation of epistemic practices in higher science education. I am interested in investigating wicked problems and how they should be addressed in HE curriculum and instruction, partly by a conceptual framing in post-normal science education. I also seek to look closer into science teacher education as a vital agent by which alignment can be better forged between scientific and lay communities.

Inspired by my previous engagement in inclusive education and special education needs, I also aim to address inequities in higher science education, primarily in terms of access and learning opportunities. I am interested in recontextualisation of universal design for learning and institutional efforts to develop inclusion. I have worked and published in the field of international education and seek future collaboration opportunities, particularly related to internationalisation of curricula, inclusive practices, and cultural dissonance.

### Methodological Interests

Philosophical inquiry

(Quantitative) ethnography

Structural equation modelling

Epistemic network analysis

Artefact-based cognitive focus groups

Multimodal discourse analysis

Hermeneutic phenomenology

Grounded theory

Critical policy analysis

Educational design research

Mixed methodology

Systematic review

Research synthesis

Historical narrative analysis

## Teaching and Supervision

I teach courses in science didactics (preservice teachers) and university pedagogy (PhDs, postdocs, faculty, medical professionals). I also lead workshops in laboratory education (faculty, laboratory assistants and technicians). In the past, I taught in laboratories of general and environmental chemistry. Prior to my current focus on post-secondary education, I taught mathematics and chemistry at the primary and secondary levels. I also led workshops in K-12 curriculum development, primarily within curricular frameworks of International Baccalaureate and Cambridge International Examination. In my current role, I supervise students' projects in the field of chemistry education, practical work at tertiary level, and philosophy of chemistry as applied to instruction and curriculum development.

## Pedagogical Development

I am keen on supporting scholarship of teaching and learning within SCIENCE and SUND, particularly the ones focussed on inquiry-based, research-based, and problem-based frameworks. I have been exploring the role of and various approaches to interactive demonstrations in those frameworks, the use of dialogic, discursive feedback, as well as fostering reflective practice in teaching. I work with colleagues from both physical and chemical sciences, and am keen on providing professional consultancy which is strongly anchored in research. My experience working at the Netherlands Institute for Curriculum Development provides a robust foundation for development work related to higher science education curricula and strategic policies.

## Academic Service

I serve on the Editorial Board of *Journal of Research in Science Teaching* (Wiley) and the scientific committee of the *International Conference on Chemistry Education* (IUPAC). I have peer-reviewed in various journals, including *Chemistry Education Research and Practice* (Royal Society of Chemistry), *Higher Education* (Springer), *Journal of Chemical Education* (American Chemical Society), and *International Journal of Science Education* (Taylor & Francis).

## Hobbies

In my spare time, I sing in choirs, working on a vaudeville repertoire ranging from Tallis to Macmillan, von Bingen to Stravinsky. I was a choral scholar at an Edinburgh cathedral and currently sing with Vokalensemble Willemoes in Copenhagen.

## Kvalifikationer

Chemistry Education, PhD, The University of Edinburgh, Scotland, UK.

sep. 2016 → dec. 2019

Dimissionsdato: 3 feb. 2020

## Ansættelse

### Tenure track adjunkt

Institut for Naturfagenes Didaktik

Københavns Universitet

København N., Danmark

30 nov. 2019 → nu

### Tenure Track Adjunkt

Institut for Naturfagenes Didaktik

Københavns Universitet

København N., Danmark

1 dec. 2019 → nu

## Publikationer

### Pupil's role in educational design: Exploring what it means to have a say in primary school

Agustian, Hendra Y., 30 apr. 2024, (Accepteret/In press) I: *European Journal of Education*.

### "I feel like a real chemist right now": Epistemic affect in the chemistry laboratory

Agustian, Hendra Y., Gammelgaard, Bente, Rangkuti, Muhammad Aswin & Niemann, Jonas, mar. 2024, (Afsendt) I: *Science Education*.

### Striving to learn to do good science: Epistemic conation in the chemistry laboratory

Agustian, Hendra Y., Gammelgaard, Bente, Rangkuti, Muhammad Aswin & Ryberg, Marie L., mar. 2024, (Under udarbejdelse) I: *Science & Education*.

### **10 Guiding principles for learning in the laboratory**

Seery, M. K., Agustian, Hendra Y., Christiansen, Frederik Voetmann, Gammelgaard, Bente & Malm, Rie Hjørnegaard, 2024, I: Chemistry Education Research and Practice. 25, s. 383-402

### **On problematizing the epistemic and axiological nexus of post-normal science education**

Agustian, Hendra Y., nov. 2023, (Accepteret/In press).

### **Methodological rigor in laboratory education research**

Agustian, Hendra Y., okt. 2023, (Afsendt) I: Laboratories.

### **The critical role of understanding epistemic practices in science teaching using wicked problems**

Agustian, Hendra Y., sep. 2023, (E-pub ahead of print) I: Science & Education.

### **Demonstrations as a part of inquiry-based science teaching: Potentials and critical reflections**

Agustian, Hendra Y., aug. 2023, (Afsendt) I: Dansk Universitetspædagogisk Tidsskrift.

### **Use QE to disentangle the complexity of wicked problem inquiries in USE**

Agustian, Hendra Y., jul. 2023, (Accepteret/In press).

### **Wicked problems inquiries in higher science education: Philosophical analysis and pedagogical implications**

Agustian, Hendra Y., jul. 2023, (Accepteret/In press).

### **Advancing the conception of multidimensional learning: Insight from theoretical and empirical investigations on laboratory education**

Agustian, Hendra Y., 2023. 2 s.

### **Enculturation of pharmacy students into scientific practices: a closer look into affect and conation in the laboratory of pharmaceutical sciences**

Agustian, Hendra Y. & Gammelgaard, Bente, 2023. 4 s.

### **Synthesizing and contextualizing knowledge on teaching and learning in the laboratory: Perspectives from Copenhagen and Edinburgh**

Agustian, Hendra Y., 2023. 1 s.

### **Synthesizing and contextualizing knowledge on teaching and learning in the laboratory: Perspectives from Copenhagen and Edinburgh**

Agustian, Hendra Y., 2023. 1 s.

### **Understanding the teaching laboratories: Moving from research to practice**

Agustian, Hendra Y., Finne, Laura Teinholt, Jørgensen, Jonas Tarp, Malm, Rie Hjørnegaard, Christiansen, Frederik Voetmann, Nielsen, Jan Alexis & Gammelgaard, Bente, 2023. 1 s.

### **Understanding the teaching laboratories: Moving from research to practice**

Agustian, Hendra Y., Finne, Laura Teinholt, Jørgensen, Jonas Tarp, Malm, Rie Hjørnegaard, Christiansen, Frederik Voetmann, Nielsen, Jan Alexis & Gammelgaard, Bente, 2023. 1 s.

### **Considering the hexad of learning domains in the laboratory to address the overlooked aspects of chemistry education and fragmentary approach to research on student learning**

Agustian, Hendra Y., 2022, I: Chemistry Education Research and Practice. 23, 3, s. 518-530 13 s.

### **Danish university faculty perspectives on student learning outcomes in the teaching laboratories of a pharmaceutical sciences education**

Agustian, Hendra Y., Pedersen, M. I., Finne, Laura Teinholt, Jørgensen, Jonas Tarp, Nielsen, Jan Alexis & Gammelgaard, Bente, 2022, I: Journal of Chemical Education. 99, 11, s. 3633-3643

**Laboratory discourse through the lens of multidimensional learning**

Agustian, Hendra Y. & Gammelgaard, Bente, 2022. 1 s.

**Laboratory work as an epistemic practice: Discursive characteristics of student learning in the pharmaceutical chemistry teaching laboratory**

Agustian, Hendra Y. & Gammelgaard, Bente, 2022. 2 s.

**Learning outcomes of university chemistry teaching in laboratories: A systematic review of empirical literature**

Agustian, Hendra Y., Finne, Laura Teinholt, Jørgensen, Jonas Tarp, Pedersen, M. I., Gammelgaard, Bente, Christiansen, Frederik Voetmann & Nielsen, Jan Alexis, 2022, I: Review of Education. 10, 2, 41 s., e3360.

**Rhetoric and reality of inclusive practice in international schooling**

Agustian, Hendra Y., 2022, s. 440-441.

**Investigating inclusive practice in international schooling: A case study of two schools**

Agustian, Hendra Y., dec. 2021, I: Journal of Research in International Education. 20, 3, s. 226-241 16 s.

**Experimental work and student learning: University professors' perspective**

Agustian, Hendra Y., 2021. 2 s.

**Laboratory-related competences at university level: Systematizing empirical literature and expert validation**

Agustian, Hendra Y., Nielsen, Jan Alexis & Pedersen, M. I., 2021. 4 s.

**Students' learning experience in the chemistry laboratory and their views of science: In defence of pedagogical and philosophical validation of undergraduate chemistry laboratory education**

Agustian, Hendra Y., mar. 2020

**Students' understanding of the nature of science in the context of an undergraduate chemistry laboratory.**

Agustian, Hendra Y., 2020, I: Electronic Journal for Research in Science & Mathematics Education. 24, 2, s. 56-85

**A Framework for Learning in the Chemistry Laboratory**

Seery, M. K., Agustian, Hendra Y. & Zhang, X., 2019, I: Israel Journal of Chemistry. 59, 6-7, s. 546-553

**Students' understanding of the nature of science in the chemistry laboratory context**

Agustian, Hendra Y., 2019.

**Systematic review of research in the nature of science, 1963-2019: Towards a pedagogically and philosophically valid undergraduate laboratory education**

Agustian, Hendra Y. & Seery, M. K., 2019.

**Teaching and assessing technical competency in the chemistry laboratory**

Agustian, Hendra Y., Seery, M. K. & Lambert, T. O., 2019, *Teaching Chemistry in Higher Education: A Festschrift in Honour of Professor Tina Overton*. Seery, M. K. & McDonnell, C. (red.). Dublin: Creathach Press, s. 349-362

**Pre-laboratory activities in undergraduate chemistry: Design and evaluation**

Agustian, Hendra Y., aug. 2017.

**Developing laboratory skills by incorporating peer-review and digital badges**

Seery, M. K., Agustian, Hendra Y., Doidge, E. D., Kucharski, M. M., O'Connor, H. M. & Price, A., 1 jan. 2017, I: Chemistry Education Research and Practice. 18, 3, s. 403-419 17 s.

**Reasserting the role of pre-laboratory activities in chemistry education: A proposed framework for their design**  
Agustian, Hendra Y. & Seery, M. K., 1 jan. 2017, I: Chemistry Education Research and Practice. 18, 4, s. 518-532 15 s.

**Redefining disability in the context of 'masyarakat madani', an Indonesian model of inclusive society**  
Agustian, Hendra Y., 1 dec. 2016, I: British Journal of Special Education. 43, 4, s. 358-372 15 s.

**De rol van de kinderen bij vormgeving in het onderwijs**  
Agustian, Hendra Y., 2014, (Ikke-udgivet)

## **Aktiviteter**

**Nordic Chemistry Learning Conference 2024**  
Agustian, Hendra Y. (Medlem af organisationskomité eller programudvalg)  
23 sep. 2024 → 24 sep. 2024

**Foregrounding the epistemic core of experimental work in university chemistry teaching laboratories**  
Agustian, Hendra Y. (Keynote)  
sep. 2024

**Teaching to learn to do chemistry in the laboratory**  
Agustian, Hendra Y. (Inviteret foredragsholder)  
sep. 2024

**The 27th International Union of Pure and Applied Chemistry (IUPAC) Conference on Chemistry Education**  
Agustian, Hendra Y. (Medlem af organisationskomité eller programudvalg)  
15 jul. 2024 → 19 jul. 2024

**Recent advances in chemistry laboratory education research**  
Agustian, Hendra Y. (Inviteret foredragsholder)  
jul. 2024

**The value and meaning of STEAM education + Anna Craft Memorial Lecture**  
Agustian, Hendra Y. (Paneldeltager)  
jul. 2024

**Teaching in the laboratory: what is the pedagogy?**  
Agustian, Hendra Y. (Inviteret foredragsholder)  
18 apr. 2024

**Journal of Research in Science Teaching (Tidsskrift)**  
Agustian, Hendra Y. (Medlem af redaktionsgruppen)  
apr. 2024 → apr. 2027

**Review of Educational Research (Tidsskrift)**  
Agustian, Hendra Y. (Fagfællebedømmer)  
apr. 2024 → maj 2024

**#TownsFest: A Celebration of Professor Marcy Towns**  
Agustian, Hendra Y. (Inviteret foredragsholder)  
11 jan. 2024

**Science Education (Tidsskrift)**  
Agustian, Hendra Y. (Fagfællebedømmer)  
nov. 2023 → dec. 2023

**Science & Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
okt. 2023 → nov. 2023

**Teaching and Teacher Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
okt. 2023

**ESERA paper presentation on the affective and conative learning domains in the lab**

Agustian, Hendra Y. (Oplægsholder)  
1 sep. 2023

**Pedagogical Day at Pharma**

Seery, M. (Taler), Gammelgaard, Bente (Arrangør), Agustian, Hendra Y. (Medlem af organisationskomité eller programudvalg) & Christiansen, Frederik Voetmann (Medlem af organisationskomité eller programudvalg)  
24 aug. 2023

**Chemistry Education Research and Practice (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
aug. 2023

**Journal of Chemical Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
aug. 2023

**Research synthesis and work in progress**

Agustian, Hendra Y. (Oplægsholder)  
9 jul. 2023 → 14 jul. 2023

**Higher Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
jul. 2023

**International Journal of Educational Research (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
jul. 2023 → aug. 2023

**Review of Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)  
jul. 2023 → sep. 2023

**10 Guidelines to Improve Laboratory Education**

Agustian, Hendra Y. (Oplægsholder) & Christiansen, Frederik Voetmann (Oplægsholder)  
8 jun. 2023

**Paper and poster presentations from the IQ-Lab**

Agustian, Hendra Y. (Oplægsholder), Gammelgaard, Bente (Andet), Christiansen, Frederik Voetmann (Oplægsholder), Malm, Rie Hjørnegaard (Oplægsholder), Finne, Laura Teinholt (Andet) & Jørgensen, Jonas Tarp (Andet)  
24 maj 2023 → 25 maj 2023

**Bachelor's Project Examination**

Agustian, Hendra Y. (Eksaminator)  
14 apr. 2023

**International Journal of Science Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

feb. 2023 → sep. 2023

**Science Didactics Examination**

Agustian, Hendra Y. (Eksaminator)

24 jan. 2023

**DUN SIG Seminar on Labwork and Fieldwork**

Christiansen, Frederik Voetmann (Arrangør), Agustian, Hendra Y. (Arrangør), Gammelgaard, Bente (Arrangør) & Magin, L. (Arrangør)

7 dec. 2022

**Journal of Educational Research (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

dec. 2022

**University of Oxford**

Agustian, Hendra Y. (Gæsteforsker)

26 nov. 2022 → 5 dec. 2022

**Seminar Series on University Laboratory Education**

Agustian, Hendra Y. (Arrangør) & Malm, Rie Hjørnegaard (Arrangør)

23 nov. 2022 → 28 mar. 2023

**Teaching for Active Learning Conference 2022**

Agustian, Hendra Y. (Deltager)

8 nov. 2022

**ESERA SIG 2 Video-Based Research Network Meeting**

Agustian, Hendra Y. (Deltager)

7 nov. 2022 → 11 nov. 2022

**Journal of Chemical Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

okt. 2022

**Department of Science Education Annual Seminar**

Nielsen, Jan Alexis (Arrangør), Larsen, Christina (Arrangør), Harper, Kristine Cecile (Arrangør), Klingenberg, L. (Arrangør) & Agustian, Hendra Y. (Arrangør)

21 sep. 2022 → 22 sep. 2022

**International Journal of Science Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

sep. 2022

**Complexity of laboratory learning outcomes: Examples of educational research at Pharma**

Agustian, Hendra Y. (Oplægsholder), Jørgensen, Jonas Tarp (Oplægsholder) & Gammelgaard, Bente (Andet)

31 aug. 2022

**New faculty meeting**

Agustian, Hendra Y. (Deltager)

19 aug. 2022

**Chemistry Education Research and Practice (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

aug. 2022

**Discursive characteristics of student learning in the pharmaceutical chemistry teaching laboratory**

Agustian, Hendra Y. (Oplægsholder) & Gammelgaard, Bente (Andet)

18 jul. 2022 → 22 jul. 2022

**Bachelor's Project Examinations**

Agustian, Hendra Y. (Eksaminator)

22 jun. 2022 → 23 jun. 2022

**Research Visit**

Agustian, Hendra Y. (Vært) & Ryberg, Marie L. (Vært)

10 jun. 2022

**Rhetoric and reality of inclusive practice in international schooling**

Agustian, Hendra Y. (Oplægsholder)

1 jun. 2022 → 3 jun. 2022

**American Chemical Society (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

apr. 2022 → ...

**Special Interest Group Meeting in Laboratory Work and Fieldwork**

Agustian, Hendra Y. (Andet)

21 mar. 2022

**Nordic Educational Research Association (NERA) (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

mar. 2022 → ...

**Journal of Research in Science, Mathematics and Technology Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

feb. 2022 → mar. 2022

**Progression in laboratory competences in the Physics BSc Program**

Christiansen, Frederik Voetmann (Konsulent) & Agustian, Hendra Y. (Konsulent)

feb. 2022 → okt. 2022

**Science Didactics Examination**

Agustian, Hendra Y. (Eksaminator)

24 jan. 2022 → 27 jan. 2022

**Practical work in university pedagogy**

Agustian, Hendra Y. (Foredragsholder)

25 nov. 2021

**Learning in the lab – How can we strengthen our teaching activities to enhance the students learning?**

Agustian, Hendra Y. (Foredragsholder)

9 nov. 2021



**Experimental work and student learning: University professors' perspective**

Agustian, Hendra Y. (Oplægsholder)

8 okt. 2021

**Laboratory education at university level: Philosophy, pedagogy, and practice**

Agustian, Hendra Y. (Inviteret foredragsholder)

1 sep. 2021

**Journal of Chemical Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

sep. 2021

**Journal of Chemical Education (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

aug. 2021

**Multidimensionality of learning in the laboratory: Insights from a systematic review**

Agustian, Hendra Y. (Oplægsholder)

8 mar. 2021

**Science Didactics Examination**

Agustian, Hendra Y. (Eksaminator)

jan. 2021

**Dansk Universitetspædagogisk Tidsskrift (Tidsskrift)**

Agustian, Hendra Y. (Fagfællebedømmer)

okt. 2020 → dec. 2020

**Workshop on learning framework in the laboratory**

Agustian, Hendra Y. (Konsulent) & Christiansen, Frederik Voetmann (Konsulent)

29 jun. 2020

**Dansk Universitetspædagogisk Netværk (DUN) (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

mar. 2020 → ...

**Preliminary activities in the teaching laboratory**

Agustian, Hendra Y. (Inviteret foredragsholder)

26 feb. 2020

**Students' learning in the chemistry laboratory and their views of science**

Agustian, Hendra Y. (Oplægsholder)

25 feb. 2020

**American Educational Research Association (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

sep. 2019 → jan. 2021

**European Science Education Research Association (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

sep. 2019 → ...

**North American Association for Philosophy and Education (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

jun. 2019 → jun. 2020

**Students' understanding of the nature of science in undergraduate chemistry laboratory education**

Agustian, Hendra Y. (Oplægsholder)

31 maj 2019

**Royal Society of Chemistry (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

maj 2019 → maj 2021

**Philosophy of Education Society Great Britain (Ekstern organisation)**

Agustian, Hendra Y. (Medlem)

feb. 2019 → feb. 2020

**Pre-laboratory activities in undergraduate chemistry: Design and evaluation**

Agustian, Hendra Y. (Oplægsholder)

16 aug. 2017 → 19 aug. 2017

**Internationalisation of secondary education in the Netherlands**

Agustian, Hendra Y. (Inviteret foredragsholder)

aug. 2012

**Inclusive practice in international schooling**

Agustian, Hendra Y. (Oplægsholder)

24 jun. 2010