

E Teaching qualifications portfolio

1 Reflection on teaching

Teaching Philosophy

My teaching philosophy is grounded in the belief that university teaching should empower students to think critically, develop independent learning strategies, and acquire skills that they can apply beyond the classroom. I see myself not primarily as an examiner, but as a tutor and guide: someone who creates a safe, stimulating environment where students are encouraged to ask questions, explore alternative perspectives, and connect theory with practice. Central to this approach are three guiding principles:

Student-centred learning: Students learn most effectively when they are actively engaged. I use interactive activities, group projects, and problem-based exercises to create learning processes where students are co-producers of knowledge (Kugel, 1993; Laros, 2017; Lovett, 2023).

Formative feedback: I prioritise formative over purely summative assessment. This means integrating short feedback loops into teaching that help students monitor their progress and adjust their learning strategies (Aust et al., 2024; Black & William, 2009; Clark, 2012; Forsgren et al., 2018).

Diversity and inclusion: Teaching in international contexts has made me attentive to issues of gender, ethnicity, and cultural background. I strive to create learning environments where all perspectives are valued and respected, and where neurodiversity is an integral part, recognizing that students differ in how they process information, communicate, and demonstrate understanding (Rose, 2017; Schudde, 2018).

Reducing cognitive barriers: When working with more complex, math-based or statistical content, I place strong emphasis on reducing cognitive load and managing statistics anxiety. By offering a clear course structure, well-organised materials, and step-by-step scaffolding, I ensure that students' cognitive resources can be directed towards the actual learning tasks rather than being consumed by organisational or emotional barriers. This structured and supportive approach allows students to build confidence and maintain engagement, even when dealing with challenging quantitative content (Onwuegbuzie & Wilson, 2003; Sweller, 1994).

Teaching, for me, is not about transmitting knowledge in a one-directional way. It is about facilitating learning processes that are meaningful, sustainable, and connected to students' academic and professional trajectories. It is closely tied to students' motivation and engagement, as teachers need to recognise and facilitate (Ryan & Deci, 2000). In my personal experience, students pick up my motivation and are willing to participate because I show engagement. Also having a clear structure, takes away many burdens such that even unexperienced students felt confident learning Python.

Teaching Experience

I have accumulated **723.5** registered (**~850 currently**) hours in total. My teaching spans quantitative methods, statistics, computer-based data analysis, and research methodology.

My teaching experience spans undergraduate and graduate education across statistics, quantitative research methods, data analysis, computational methods, mathematics, and social science methodology, including courses in human geography, development studies, cognitive science, computer science, and media studies, with substantial experience in applied quantitative and data-scientific teaching.

Reflection: I continuously ask students for feedback (through Mentimeter) and have also received official student evaluations across multiple years. The following aspects were consistently evaluated positively by students, and I have tried to maintain and further improve them over time:

Clarity and comprehensibility: Students appreciate my calm and clear way of explaining complex methods. Many commented that statistical content, which is often perceived as abstract, became more accessible and structured.

Supportive atmosphere: The learning environment is often described as open and respectful, with "no stupid questions." This helps reduce anxiety around quantitative methods and encourages active participation.

Flexibility and responsiveness: Students highlighted my willingness to adapt sessions to their needs, revisit difficult content, and integrate feedback into subsequent classes.

Professional competence: Evaluations consistently emphasize my expertise and preparedness. Students describe me as competent, approachable, and highly motivated to support learning.

Practical orientation: Applied exercises in R and data analysis are seen as particularly valuable for connecting theory to practice.

Critical engagement: I encourage students not only to learn techniques, but also to question assumptions and reflect critically on methods, fostering a deeper methodological understanding.

Constructive feedback has played an important role in my continuous development as a teacher. Some students expressed a wish for more scaffolded exercises, clearer alignment between lectures and seminars, and shorter input phases combined with more interactive activities. I have taken these suggestions into account by expanding guided exercises, restructuring seminar flows, and increasing peer-to-peer interaction.

So far, I have supervised bachelor's theses in both education science and computer science and have also been involved in informal PhD supervision within different collaborative projects. While my formal supervision experience is still developing, I greatly enjoy mentorship and supporting students in their academic development. I would therefore very much welcome further opportunities to engage more actively in supervision and mentoring at the BA, MA, and PhD levels.

Course Development

The planned course development for a 30 ECTS course in Spatial Data Analysis represents a great opportunity for me to use my methodological expertise to create a course that introduces students to the computational and statistical world throughout an entire semester. It provides the possibility for students to deeply engage with data analysis and develop a more comprehensive understanding of computational methods. In combination with the Pedagogical Training Course in Higher Education on course development, this creates a particularly valuable synergy for me.

Pedagogical Training

I have completed pedagogical training in higher education, quantitative methods education, and mathematics teaching at Lund University and the University of Tübingen. These trainings deepened my understanding of constructive alignment, the role of formative assessment, and the challenges of teaching statistics and methods to students with heterogeneous backgrounds. In practice, I have applied these insights by:

- Redesigning quantitative methods courses to focus on *progressive learning sequences* (breadth + depth) (Lovett, 2023).
- Integrating formative assessment strategies, including weekly feedback forms, to support learning autonomy (Clark, 2012).
- Experimenting with flipped classroom approaches (Baig & Yadegaridehkordi, 2023), where video inputs and self-study tasks free classroom time for application and discussion.

Innovation and Technology in Teaching

I see digital and AI-based tools not as replacements for teaching, but as enablers of new learning opportunities. Recent innovations in my courses include:

- AI-assisted programming:** Using Google Colab, I introduced students to browser-based coding exercises. This approach removes technical barriers (installation, setup) and makes statistical programming in R or Python more accessible. Students can immediately focus on learning by doing (Bien & Mukherjee, 2025).
- Responsible AI use:** I actively integrate discussions on AI tools such as ChatGPT into coursework, encouraging students to reflect on their opportunities and limitations in research practice (Kirkwood & Price, 2014).
- Flipped learning:** I provide short videos or interactive learning webpages as input before seminars, allowing synchronous sessions to focus on discussion, clarification, and higher-order tasks (Baig & Yadegaridehkordi, 2023).
- Adaptive learning environments:** I create modular structures in which students can select deeper exploration tasks depending on their interest and pace (Contrino et al., 2024).

By combining classical didactics with modern technologies, I help students build methodological skills while at the same time strengthening their critical reflection on the role of AI and digitalisation in the scientific process.

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