Robert REUTER
Christian MEYERS
Luc NIJS

University of Luxembourg

Fostering Scientific Reading and Writing Competencies in Future Teachers

EAPRIL 2023 | 24/11/2023 | Belfast, UK

Ambitions

- Sharing a higher education teaching practice
- Providing a possible source of inspiration for others
- Post-hoc reflection: analysis and evaluation
- Lessons learned and impact on our future practice
- Not a report on systematic empirical research

Context

- Grand Duchy of Luxembourg
- Bachelor in **Educational Sciences** (BSCE): 240 ECTS, preparing for **teaching** profession in **fundamental schools**: K-6, 7-9 (one of 3 tracks), special needs
- Bachelor in **Music Teaching** (BEM): 180 ECTS, preparing for the **musical teaching** profession in **music schools**

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Goals (1)

- Develop scientific reading & writing competences
- Capacity to engage with research literature
- Develop a scientific stance
- Capacity to independently form scientifically informed positions, empowerment & emancipation
- Informed decision making, evidence-based teaching, effective communication (colleagues & parents)
- *Leitmotif*: reflective practitioner (Schön, 1987)
- Theory-practice integration

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Goals (2)

- We wish to develop **rational** thinking, **conceptual** thinking, **logical** thinking and **critical** thinking in our students (**Libre Examen** at ULB, Brussels/Belgium)
- Learning to read and process scientific literature and learning to write in a scientific way, helps students **becoming reflective practitioners** that go b**eyond intuitive** and even **deliberate reflection**, being able to **systematically reflect** on their own teaching, and on the students learning process.

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Goals (3)

- We strongly belief that developing academic reading and writing skills are important for the development into autonomous and creative (music) teachers. **Autonomous** means they do not just teach the way they have been thought and **creative** means they find new ways of teaching.
- Learning to read and process scientific literature and learning to write in a scientific way, helps students **becoming reflective practitioners** that goes **beyond intuitive** and even **deliberate reflection**, being able to **systematically reflect** on their own teaching, and on the students learning process.

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Practices put in place

- In both programmes: active pedagogy approaches, auto-socio-construction of knowledge, like project-based learning, problem-based learning, meaningful tasks, student autonomy, collaborative and cooperative learning, dialogues, and discussions, aiming to establish communities of learners

Practices in the BSCE

- First-year students are required to **collaboratively write** a **review of the literature**, where they develop an empirically grounded answer to a **self-chosen research question**. Before writing their review, they need to (1) **search** for scientific, primary, empirical and peer-reviewed research papers, (2) **read** them, **analyse** and **evaluate** them in terms of content, relevance and credibility, (3) develop an **annotated bibliography** about 5 sources. In addition, they have to **document** their working and learning process and to **reflect** on it.

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Resources in the BSCE

- We provide a diversity of online **resources**, as well as systematic **formative feedback**. We **scaffold** their learning process without doing the work for them.
- We have them work in groups.
- We let them choose their own research question.
- The university provides them with a large online library with research papers.

Challenges in the BSCE (1)

Students struggle with certain aspects of the course:

- **First**, they did not have much prior exposure to scientific or academic writing. They do need to re-learn how to read and how to write, because academic papers are far from their habits.

Challenges in the BSCE (2)

Students struggle with certain aspects of the course:

- **Second**, they tend to bring along a positivist conception of science that makes it difficult for them to engage in critical thinking about research papers. This also often leads them to work on research questions that concern socio-economic contextual factors or longitudinal effects, which have little direct relevance on in-class teaching strategies.

Challenges in the BSCE (3)

Students struggle with certain aspects of the course:

- **Third**, they struggle with how to organise themselves as a group of learners, they underestimate the need to work over the semester and to overcome moments of frustration. Some groups, for instance, would rather change their research question, if they do not find suitable sources, than rethinking their bibliographic search strategies.

Challenges in the BSCE (4)

Students struggle with certain aspects of the course:

- **Finally**, many students find our teaching approach itself very challenging, because we give them a lot of freedom to make choices, which also means that they become responsible for them.

Practices in the BEM (1)

- Second-year students are introduced to the practice of scientific reading and writing through a combination of **individual and collective practices**, related to the different stages of the research process. The leitmotif here is the **connection to the daily practice of music teaching**. Students first focus their work, like **searching and critically evaluating research papers**, or **constructing a research question**, on their individual topic of interest. Then they discuss their work in groups.

Practices in the BEM (2)

- In addition, students **jointly reflect on the same text**, using models such as PICO (Nishikawa-Pacher, 2022) or Pollock's (2021) pathologies of academic writing, or based on peer evaluation.
- **Discussions** are often scaffolded by online tools.
- While the core of the course is joint reflection on the different aspects of scientific reading and writing, the connection to practice is often fuelled by the teacher demonstrating **possible practical applications**.

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Resources in the BEM (1)

- We use **scientific literature that questions the traditional ways of teaching** musical skills.
- We constantly engage in a **meta-reflection** on how the reading and writing skills have a common ground with competent teaching, by **constantly making a link to pedagogical practice**, helping them to **reflect on how their practice and teaching** can be **improved through scientific thinking**.

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Resources in the BEM (2)

- We also make students **aware** of the **changing role** of the musician and music teacher **in society**. For example, **communication** with parents and **entrepreneurship** have become increasingly important for the 21st century music teacher.

Challenges in the BEM (1)

- The biggest hurdle we experience is the fact that **musician are doers**, **less often thinkers**.
- A second hurdle is the importance of the "masters" they had in their musical life, and the **tendency to copy their ways of teaching**. Often admiring their master teachers, they don't see the benefit of doing it differently.

Challenges in the BEM (2)

- So, the main challenge is **making their thoughts explicit** in a systematic way. For years, they have been trained in a **culture of doing based on a master-apprentice approach**, often being told (intuitive verbal explanations) or shown (demonstration by the teacher) how to play rather then being scaffolded to think for themselves about how to play, why to interpret music in a certain way.
- Another major challenge lies in how to **motivate students** to read academic papers, because they do not see the links to the act of teaching.

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Conclusions (1)

- **First**, we would understand that some of you are surprised to see that we have special courses on scientific reading and writing in our initial teacher training programs, because in many places students are expected to develop these skills on their own, when confronted with scientific papers in other courses and when required to write academic essays.

Conclusions (2)

- Overall, we are quite satisfied with our teaching practices, in both programmes, because we think that
  - (1) teaching scientific reading and writing to our future teacher students is important and relevant, and
  - (2) that we implement appropriate hands-on, learning by doing approaches.

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Conclusions (3)

- We are trying to **empower** them, to help them develop the tools for their own **emancipation** which - hopefully, will enable them to navigate the stormy seas of a **knowledge society**.

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Conclusions (4)

- There are nevertheless some challenges we have been facing and wish to address in future iterations of our courses, given the increasing number of students that we will have in future years.
- And we would love to do more systematic empirical research about the “impact” of our pedagogical practices, to critically reflect them.

Questions to you!

- Is scientific reading & writing part of the the curriculum of ITT in your place?
- What are your own experiences with teaching scientific reading & writing?
- What's your opinion about the solution that we put in place?
  - What did you like?
  - What did you not like?
  - What could you imagine copying?
  - How would you improve our solution?

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Contact

luc.nijs@uni.lu

christian.meyers@uni.lu

robert.reuter@uni.lu

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