ANNOTATED BIBLIOGRAPHY

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Reference 1 - My comments on [Betts, 2019]

This source is aligned to my subject/disciplinary area: NO

Summary:
This chapter explores the challenge of integrating technology into teaching, noting that the constantly evolving tech landscape makes it difficult to know where to begin. Drawing inspiration from Lao Tzu's idea that the important part is simply getting started, the chapter offers practical guidance by presenting five real-world examples of innovative technology use in education. These examples include building learner communities through social media, encouraging self-directed learning with interactive resources, promoting creativity through multimedia challenges, enhancing formative assessment with online tools, and using mobile technology for peer observation and feedback. The examples are drawn from diverse collaborations across the globe.

Purpose for identifying this source:
Relates to the theme of *Inclusive & Decolonised Curriculum*, to improve on the checklist point: "I work with students as active partners in curriculum design and delivery".

Planned use for curricular enhancement:
Statistical Models includes weekly 1-hour tutorials where the lecturer reviews solutions to the previous week's worksheet. This traditional format often leads to passive learning, with students passively receiving explanations for exercises they may have already completed, resulting in low attendance and engagement. To address this, I considered involving students more actively by having them present their solutions. In previous modules, I implemented this approach, which led to more popular and well-attended tutorials. Students engaged in friendly competition, debating their solutions, which deepened their understanding and fostered a sense of active participation. I wanted to apply the same approach to the Statistical Models tutorials. However, many exercises require coding in R, and most students lack access to laptops, raising concerns about digital exclusion. While holding all classes in computer labs is not feasible, I observed that every student has access to a smartphone or tablet.
This is where [Betts, 2019] became particularly relevant. The second real-world example discussed an innovative teaching approach that promotes self-directed learning through interactive presentations with hyperlinks. Inspired by the concepts of heutagogy and guided discovery, this method allows students to explore content at their own pace, choosing their own path rather than following a fixed sequence. This approach offered a potential solution to my challenge: Include links to online R compilers in my solutions, such as mycompiler.io. This approach enables me to provide R code missing sections that students can complete and run directly in a browser using their tablets or smartphones, eliminating the need for laptops. Once they finish, students can share the online link to their code with me. I can then access their work, display it on the projector, and facilitate a group discussion around their solution. This method ensures that all students can actively participate in tutorials, present their solutions, and engage fully with the curriculum, fostering a more interactive and inclusive learning environment.

Reference 2 - My comments on [Pokorny, 2021]

This source is aligned to my subject/disciplinary area: NO

Summary:
This chapter discusses the role of assessment in education, emphasising the need for a shared understanding of assessment criteria between students and educators to ensure a consistent and fair process. It explores both formative and summative assessments, highlighting their importance in driving student learning. Diverse assessment methods, including exams, projects, and e-assessment tools, are examined for their effectiveness in different contexts. The chapter also underscores the value of collaborative learning, where students *Act as Teachers* through peer explanations and *Team Tasks*, enhancing mutual understanding and collective problem-solving skills.

Purpose for identifying this source:
Relates to theme of *Sustainability in the Curriculum*. Serves to improve on the ESD Competence "Collaborative working".

Planned use for curricular enhancement:
The Statistical Models module comprises two weekly 2-hour lectures, where the lecturer presents theory and examples. This traditional format tends to foster passive learning and lacks opportunities for student collaboration. To address this, I explored alternative teaching methods that promote collaborative and participatory problem-solving, encouraging students to learn from one another. These strategies align with the ESD Competence "Collaborative working" which emphasises the importance of teamwork and peer learning in education.
Reference [Pokorny, 2021] discusses the concept of *Team tasks*, where students collaborate in groups to solve problems. This approach not only promotes teamwork but also serves as a form of *formative assessment*, with feedback shared across the group to highlight what was easy or challenging about the task. To ensure the success of these informal group activities, it is crucial to provide clear tasks, objectives, and the necessary resources.
I have already included numerous worked examples in the Statistical Models slides, which can easily be adapted into 15-minute tasks for students to collaboratively solve in pairs. To further engage students, I plan to ground these tasks in real-world applications. After each task, I can ask a student to volunteer and present their solution on the whiteboard, effectively turning students into teachers. This way students can learn from each other, which is one of the targets in the ESD Competence "Collaborative working". I have experimented with this approach at the end of this year's module, and it was well-received by the students. For next year, I plan to incorporate one interactive task per lecture. This strategy is low effort with high potential for impact, and I see no obstacles to its implementation.

Reference 3 - My comments on [Pak, 2018]

This source is aligned to my subject/disciplinary area: YES

Summary:
The paper emphasises the critical role of clarity in academic writing, with a particular focus on mathematical papers. The author contends that achieving clarity requires considerable effort, including refining notation, simplifying explanations, and making the content accessible to a wider audience. Moreover, the paper argues that clear writing can offer a competitive edge, enhancing a researcher's visibility and increasing the likelihood of citations. In addition to discussing the importance of clarity, the paper provides a comprehensive guide to the publication process. It covers essential topics such as structuring a paper, proper referencing, effective

writing styles, tips for using LaTeX, and strategies for promoting the paper once it's published.

Purpose for identifying this source:
Relates to theme of *Global Competence in the Curriculum*. Serves to improve on the Global Competencies "Global Challenges", "Historical / Cultural Awareness" and "Respect & Understanding Perspectives".

Planned use for curricular enhancement:
In evaluating how *Global Competencies* are met within the module, I identified specific areas of enhancement in *Global Challenges*, *Historical / Cultural Awareness*, and *Respect & Understanding Perspectives*. A standout example I had in mind is the supervision of an undergraduate dissertation that employed methods taught in the Statistical Models module, focusing on the statistical analysis of Formula 1 races. This work advanced the econometric understanding of Formula 1 modelling and culminated in a publication in a prestigious economics journal [Fry et al., 2024].
This joint work fulfils the above mentioned areas of enhancement within the theme of *Global Competencies*. Indeed it meets *Global Challenges* by tackling a problem with broader societal or global implications, such as sports modelling. The impact of the work extends to the broader application of statistical and econometric methods in real-world scenarios, like Formula 1 racing. Additionally, under *Historical / Cultural Awareness*, the paper contextualises current research by exploring the historical development and use of statistical models in sports analytics. It also aligns with *Respect & Understanding Perspectives* by including and addressing different views, offering comparisons to existing alternative methods, and effectively communicating complex mathematical ideas to a broad audience.
While recognising that the exceptional achievement of the student's published paper cannot be replicated for every student, I believe that incorporating the concept of writing a student paper could significantly enhance the Statistical Models curriculum. I propose a new assignment where students will write a short paper on a statistical analysis of a problem chosen from a list provided by the lecturer. Although challenges exist, such as sourcing suitable topics, these can be addressed by reusing existing case studies. Additionally, developing a marking rubric that emphasises strong mathematical analysis and clear communication (without requiring originality) will be key.
In developing the marking rubric for the new assignment in the Statistical Models curriculum, I will draw on insights from [Pak, 2018], which emphasises the critical role of clarity in academic writing, especially in mathematical papers. According to [Pak, 2018], clear writing not only enhances a researcher's visibility but also increases the likelihood of citations. This work offers a comprehensive guide to the publication process in mathematics, covering essential elements such as structuring a paper, proper referencing, effective writing styles, and tips for using LaTeX. By integrating these insights with my own experience, I can create a robust marking rubric that ensures students focus on clarity, accuracy, and effective communication in their work.

References

[Betts, 2019] Betts, T. (2019). Technology, tools and tips for active learning: Five innovative ideas for integrating technology with your teaching. In Betts, T., Garnham, W., and Oprandi, P., editors, *Disrupting Traditional Pedagogy: Active Learning in Practice*, pages 141–171. Brighton: University of Sussex Library. Link: https://doi.org/10.20919/9780995786240.

[Fry et al., 2024] Fry, J., Brighton, T., and Fanzon, S. (2024). Faster identification of faster formula 1 drivers via time-rank duality. *Economics Letters*, 237:111671.

[Pak, 2018] Pak, I. (2018). How to write a clear math paper: Some 21st century tips. *Journal of Humanistic Mathematics*, 8(1):301–328. Link: https://doi.org/10.5642/jhummath.201801.14.

[Pokorny, 2021] Pokorny, H. (2021). Assessment for Learning. In Pokorny, H. and Warren, D., editors, *Enhancing Teaching Practice in Higher Education*, pages 79–106. London: Sage.