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#PsyTeachR

Using open access peer-reviews and pre-printed submissions to improve students' comprehension of academic writing.

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Background

- One of the challenges that students face when beginning a Higher Education programme is reading and assessing verbose, complex journal articles filled with a mix of subject-specific jargon and intricate analyses
- While numerous rubrics exist for improving general structuring and academic writing (Derntl, 2014; Hillier et al., 2016; Kording and Mensh, 2016), few if any exist on how to improve conceptual understanding.
- This is a key skill required for students in their own academic engagement with evidence-based literature, both in terms of critical and active reading and writing.

Aim

- To improve students' reading, understanding & overall approach to academic journals by engaging them in a peer review task using open access reviews and journal articles.

Approach

- Two-step process as part of a "Portfolio of Skills".
- **Step 1:** 1 hour 30 min lab covering three aspects of **Peer Review**:
  a) Brief introduction of the peer-review process using freely available online materials from publishers (e.g. Wiley, PLOS)
  b) Analytical discussion of open access peer-reviews of published articles (via PeerJ, Royal Society Open Science); i.e. a learn-by-example approach.
  c) Small group discussion of the merits and weaknesses of three open access pre-printed journal articles (via PeerJ, PsyArXiv) with guidance on how a reviewer makes a decision.
- **Step 2:** Submission of student's own mock peer-review of chosen paper with specific guidelines to focus on the key aspects of theory, methodology and readability (*example available on request*).
- 73 students on Postgraduate MSc Psychology Conversion course. Entry level: Upper Second Class in previous degree.
- 15 responded to open request for feedback

The Issue

"Nothing makes you feel stupid quite like reading a scientific journal article. I remember my first experience with these ultra-congested and aggressively bland manuscripts so dense that scientists are sometimes caught eating them to stay regular." Ruben (2016)

Available Open Science Resources

PLOS ONE TENTH ANNIVERSARY | Collabra: Psychology | OSF PREPRINTS The open preprint repository network | PeerJ | ROYAL SOCIETY OPEN SCIENCE | PsyArXiv A free preprint service for the psychological sciences.

Open Student Comments

"I learnt to read an article critically, and provide feedback. In order to do this I required to gain in-depth knowledge on the topic…. So the task provided me with the opportunity to read up on a topic of interest and statistics."

"The peer review task was also interesting, I thought, and useful as a way to reflect on our own reports' strengths and weaknesses. …might be useful earlier in the year, whe[n] we can take lessons from it into more of our own writing."

Directed Questions

Has the task changed how you approach journal articles?

"It has certainly helped to make evaluation of methods and literature review in articles more critical."

"More critical of them now, don't take it for granted that the stats/ claims/ interpretation are reliable just because they have been peer reviewed. "

How well did you feel the task was supported?

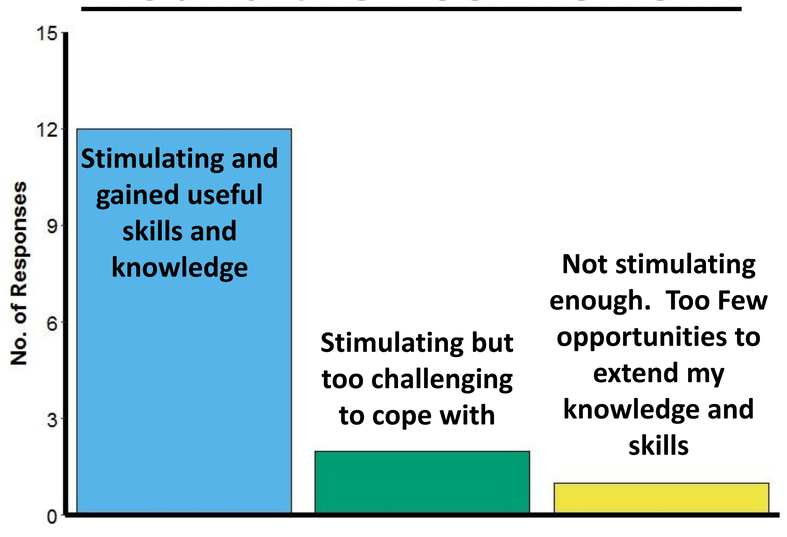
"There was plenty of material online but I think that more lab sessions were needed."

"The support session was useful and helpful."

Overall, what was your feeling towards the task & the chosen articles?

"Genuinely useful task. It was quite demanding, requiring a fair bit of quick reading and synthesising of totally unfamiliar articles to get a sense of the subject area. But it was stimulating, and a good learning experience. The article selection seemed good to me, and I was happy with the one I picked in the end (memory/abstract words)."

I found the Peer Review:



Feed Forward: Closing the Loop

Students' Reflections

"could do with this at the start of the year, …develop this skill early on, due to the amount of peer-reviewed reading we do…"

"Provide introductory reading on the concept of critical review"

"Clearer, more concise instructions. Definitely keep it though."

Teachers' Reflections

"Great opportunity to teach about the Open Science philosophy. I enjoyed picking the papers and keeping up with the field."

"Interesting to see differing levels of professionalism in the comments"

"Would be good to maybe have a formative version earlier in the year"

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Goal

Aiming to improve students' reading, understanding and overall approach to academic journals by engaging them in a peer review task using open access reviews and journal articles.

Rationale

One of the challenges that students face when beginning a Higher Education programme is reading and assessing verbose, complex journal articles filled with a mix of subject-specific jargon and intricate analyses. They must quickly meet the challenge of understanding new terminology, and unfamiliar approaches, as well as the general concepts of the work. Ruben (2016) captures this frustration in his blog, stating, "Nothing makes you feel stupid quite like reading a scientific journal article". Pain (2016) looks to alleviate this issue by offering insights from experienced professionals on how best to approach articles. While numerous rubrics exist for improving general structuring and academic writing (Derntl, 2014; Hillier et al., 2016; Kording and Mensh, 2016), few if any exist on how to improve conceptual understanding. This is a key skill required for students in their own academic engagement with evidence-based literature, both in terms of critical and active reading and writing.

What we did

We looked to address this issue by creating a mock 'peer-review' assessment as part of a portfolio of skills in our Masters-level psychology conversion course; a cohort faced with the challenge of having to rapidly learn to read and comprehend academic writing from a novel discipline over a relatively short time-span. Our approach involved three stages. First a brief explanation of the peer-review process using freely available online materials from publishers (e.g. Wiley, PLOS). Next an analytical discussion of open access peer-reviews of published articles (via PeerJ, Royal Society Open Science); i.e. a learn-by-example approach. This stage included small group discussions in the form of journal clubs where students could discuss the merits and weaknesses of their chosen papers with guidance from tutors on how these points may influence a reviewer's decision. Finally, the student's own mock peer-review of one of three open access pre-printed journal articles (via PeerJ, PsyArXiv, etc) with specific guidelines to focus on the key aspects of theory, methodology and readability - example of review form is available through request by email.

This tends to work better when staff teaching are engaged in Peer Review themselves and the students have had some experience of reading journal articles (Semester 2). Alternatively could be used at different time-points to show improvement of engagement with material. Has added bonus of allowing staff to keep up with current papers.

This doesn't work unless students read the chosen papers and arrive ready to discuss them. Asking students in advance to read the papers and to choose the one they wish to review seemed to reduce the likelihood of students not having read any.

Links

PLOS ONE Peer Review Guide: http://journals.plos.org/plosone/s/reviewer-guidelines
Royal Society (for example Peer Reviews): http://rsos.royalsocietypublishing.org/
PeerJ (for example Peer Reviews & PrePrints): https://peerj.com/
Collabra (for example Peer Reviews): http://www.collabra.org/articles/
Open Science Framework (for example PrePrints): https://osf.io/preprints/ (links to numerous multidisciplinary sites)
PsyArxiv: https://osf.io/preprints/psyarxiv

Additional References:

Derntl, M. (2014). Basics of research paper writing and publishing. International Journal of Technology Enhanced Learning, 2014 Vol.6, No.2, pp.105 – 123. doi: http://dx.doi.org/10.1504/IJTEL.2014.066856

Hillier, A., Kelly, R. P. & Klinger, T. (2016) Narrative Style Influences Citation Frequency in Climate Change Science. PLOS ONE 11(12): e0167983. doi:10.1371/journal.pone.0167983

Kording, K. P. & Mensh, B. (2016). Ten simple rules for structuring papers. bioRxiv. http://biorxiv.org/content/early/2016/12/17/088278, doi: 10.1101/088278

Pain, E. (2016). How to (seriously) read a scientific paper. [online] Available at: http://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper

Ruben, A. (2016). How to read a scientific paper. [online] Available at: http://www.sciencemag.org/careers/2016/01/how-read-scientific-paper

Conclusion

Students are novice readers of academic journals and as a result often focus on irrelevant information, skip difficult details and generally misinterpret the gist of papers. Through showing them how 'experts' read and review papers it may be possible to improve the way students approach their background reading and in turn encourage further independent reading and a deeper understanding of their field. This may also contribute to their confidence and competence development within their chosen new field. Preprints are an exceptional resource for this task as they allow students to develop their own feedback/feed-forward approach and, with increasing confidence, have a real-world input on upcoming literature in their field through submitting their comments to the authors via the online repositories in accordance with good practice guidelines for Open Science.