

Journal Club to practice scientific communication and peer feedback

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1. Introduction

Journal clubs are widely adopted educational activities within health sciences training programs, typically involving groups that regularly meet to review and critically discuss scientific literature. Such clubs are particularly valuable during MSc and PhD curricula, as they encourage students to engage directly with literature and interpret and contextualize recent scientific findings (Eusuf and Shelton, 2022). Nonetheless, there has been a debate regarding the primary purpose of journal clubs: should they mainly serve to keep participants informed of recent research developments (Linzer et al., 1986), or should their primary function be to develop critical appraisal, communication skills, and scientific evaluation abilities (Spillane and Crowe, 1998)? While staying current with literature remains crucial throughout a researcher's career, cultivating critical thinking and effective communication skills are essential competencies expected of graduate-level students (Cameron *et al.*, 2015).

Additionally, journal clubs serve as forums for students to receive constructive feedback on these key competencies. Feedback is recognized as one of the most impactful educational practices for enhancing student learning (Hattie and Timperley, 2007). Typically, feedback in journal clubs can be provided by supervisors or, more commonly, by peers, fostering a collaborative and reflective environment. Beyond benefiting the receiver, the act of giving feedback also deepens students' own understanding of evaluation criteria (Sadler, 2010). Consequently, students providing feedback enhance their abilities both in critical analysis and in delivering constructive, specific, and tactful feedback.

Finally, by encouraging an inclusive and supportive atmosphere, journal clubs can also provide a safe environment for students to ask questions, provide feedback, and engage in critical discussion without fear of judgment (Cetnar, 2021). This sense of safety is crucial for improving the aforementioned skills, making journal clubs an ideal setting for academic growth and professional development.

2. Methods

2.1. Context and aim of the intervention

This journal club initiative was designed and implemented within the Section for Bacteria and Virus at the Department of Veterinary and Animal Sciences, University of Copenhagen, specifically targeting MSc and PhD students. Following a discussion with my pedagogical supervisor, it became evident that students in our Section had limited opportunities to receive constructive feedback on their skills in scientific presentation and discussion. Therefore, this intervention was developed with dual aims: first, to enhance students' critical evaluation of scientific literature, and second, to specifically improve their scientific communication skills and peer-to-peer feedback abilities.

The intended learning outcomes (ILOs) addressed these aims explicitly. For presenters, the objectives were to strengthen their capacity to critically evaluate the objectives, methods, findings, and scientific relevance of research articles relevant to their MSc or PhD projects, and to improve clarity and engagement during scientific presentations. For audience members, the main goal was to develop their proficiency in giving clear, constructive, and supportive feedback.

The structure and objectives of the journal club were aligned with established recommendations for effective and sustainable journal clubs (Deenadayalan et al., 2008). These recommendations highlight the importance of clearly defined goals, relevance of selected articles to participants, regular and structured meetings, active facilitation, and the development of feedback skills. They also highlight the value of participant engagement through peer-led discussions and the use of

structured tools such as checklists or rubrics. A result of this alignment is provided in Table 1.

2.2. Description of the intervention

As part of this pedagogical project, two journal club sessions were held on 15th May and 3rd June 2025, each lasting approximately one hour. Participation was voluntary and open to MSc and PhD students, with two student presenters per session selecting and presenting a scientific paper relevant to their own research. As facilitator, I opened each session with a brief introduction outlining the ILOs and how to give effective feedback.

Presenters delivered a 10–15 minutes talk using a maximum of 10–12 slides. In preparation, each student received a suggested presentation structure (Table 2), which included targeted questions to help them summarize, evaluate, and communicate the selected article effectively. After each presentation, approximately 15 minutes were dedicated to structured peer-to-peer feedback. All attendees were provided with a peer evaluation rubric (Table 3) designed as a formative tool to guide constructive critique. The rubric focused on core competencies, including content clarity, scientific understanding, verbal and non-verbal communication, and critical thinking.

My role throughout was to foster a supportive and inclusive environment, encourage participation, and facilitate constructive dialogue. To evaluate the impact of the sessions, a feedback questionnaire was administered to all participants at the end of each meeting (Table 4). The questionnaire included 10 Likert-scale statements (1 = Strongly disagree, 5 = Strongly agree), allowing students to reflect on their motivation, confidence in giving and receiving feedback (from peers and instructors), perceived usefulness of the session, and willingness to engage in future journal clubs.

3. Results

3.1. Student participation and engagement

A total of 16 and 18 students participated in the first and second journal club sessions, respectively, with the majority being PhD students. The relatively small group size positively influenced the learning environment, creating a supportive atmosphere. Presenters appeared more at ease and delivered their talks in a relaxed and confident manner, while the audience remained attentive and actively engaged throughout the sessions.

All presenters followed the recommended presentation structure (Table 2), which students reported as beneficial in clearly organizing and communicating their content. Presenters successfully delivered their talks within the allocated timeframe and addressed all critical aspects of the chosen scientific papers (context, methodology, results, conclusions, and limitations). The level of scientific presentation and communication skills varied among presenters and appeared to reflect their PhD seniority, with more advanced students generally demonstrating greater fluency and confidence in delivery.

Following each presentation, I facilitated a peer feedback session focusing explicitly on presenters' communication skills. All participants were encouraged to provide oral feedback to at least one presenter per session. This approach aimed to enhance active listening, develop feedback skills, and reduce hesitancy among students, especially those who are less comfortable speaking in group settings. Notably, students took the feedback process seriously, consistently providing respectful, constructive, and balanced feedback highlighting strengths and areas for improvement. The peer evaluation rubric (Table 3) was instrumental in structuring this feedback, offering clarity about criteria for assessing scientific content, verbal, and non-verbal communication skills.

3.2. Questionnaire results

A total of 18 students completed the feedback questionnaire after attending the journal club sessions (Figure 1). Overall, students reported very positive experiences. The structure and timing of the sessions were considered appropriate (mean = 4.6), and students felt highly motivated to actively participate (mean = 4.4). Particularly high ratings were given to the perceived value of giving and receiving peer feedback (mean =

4.8), with students strongly agreeing that the feedback sessions were useful and constructive (mean = 4.9). Similarly, participants highly valued the journal club as preparation for future presentations (mean = 4.9) and expressed strong interest in presenting at future sessions (mean = 4.5).

Students also reported feeling generally comfortable receiving feedback from peers (mean = 4.4), although their comfort levels in giving feedback to peers (mean = 3.7) and receiving feedback from teachers or supervisors (mean = 3.9) were lower. This result suggests that some participants experienced mild discomfort or uncertainty with these aspects, highlighting an area for potential future intervention or additional support.

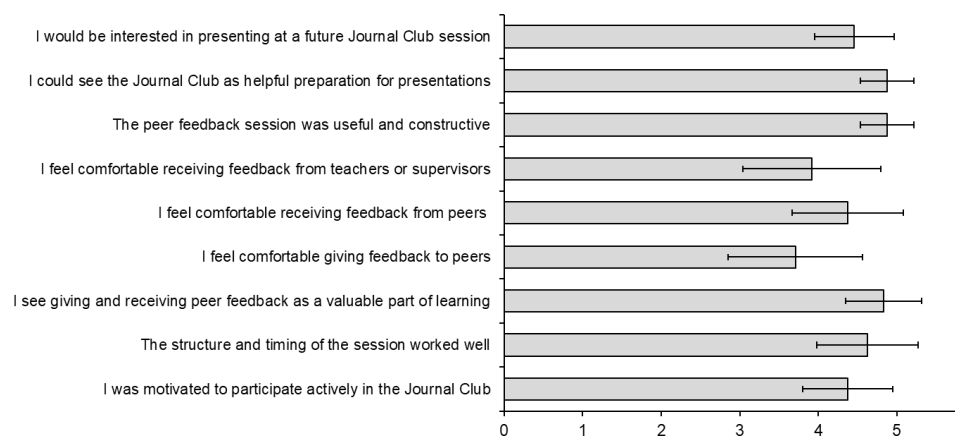


Figure 1. Student responses to the feedback questionnaire (n = 18). Data are presented as the mean \pm standard deviation.

4. Conclusion and reflections

I consider this intervention as successful, both in terms of student engagement and educational impact. I am especially pleased with the environment I was able to facilitate: a space where feedback is not a form of evaluation, but a tool for learning and growth. Watching students support each other's development through constructive dialogue has been one of the most rewarding aspects of this project. Encouraged by this outcome, I plan to continue running the journal club on a regular basis. The initiative has been endorsed by the Section for Bacteria and Virus as a valuable activity. Looking ahead, I intend to expand the format by

occasionally inviting experienced speakers who can deliver effective scientific presentations and share strategies for clear and impactful communication. This will offer students further opportunities to observe and reflect on best practices in scientific storytelling.

One important insight from this experience was the realization that the overall level of communication skills among students in our Section is already quite solid, particularly among more senior PhD students. However, the ability to provide peer feedback and to ask critical questions during presentations remains an area for growth, which I intend to explore in the upcoming journal club sessions.

5. Acknowledgment

I wish to thank my departmental supervisor Prof. Luca Guardabassi for his constructive feedback and valuable suggestions that helped refine the format and focus of the journal club. While all ideas, content, and reflections presented in this report are entirely my own, I acknowledge the use of artificial intelligence tools to assist with language editing.

6. References

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7. Appendix

Table 1. Alignment of the journal club with best practice recommendations (Deenadayalan *et al.*, 2008).

Recommendation	Alignment
<i>Journal club attendance</i>	
Establish a journal club group of members of the same discipline, or similar interests within a clinical specialty.	All participants will be MSc or PhD students in veterinary microbiology within the same Department section.
<i>Journal club purpose</i>	
Have an established and agreed overarching goal for the long term journal club intervention. The overarching journal club purpose should be reviewed regularly, and agreed by participants.	The purpose will be defined (improve communication and feedback skills) and agreed upon with participants during the first session.
Establish the purpose of each journal club meeting, and link this to the paper being read, or the skill acquisition being addressed.	Each session will be designed to support the development of the speaker's communication skills.
<i>Structure of an effective journal club</i>	
Regular attendance should be expected and recorded. Attendance may be mandatory, particularly if the journal club has a curriculum-based format.	Attendance will be recorded, but participation will remain voluntary.
Conduct journal clubs at regular predictable intervals (suggest monthly).	Two pilot sessions will be conducted during the intervention, with monthly sessions planned to continue after the project.
Conduct journal club at appropriate times of the day for all participants.	Sessions will be held at 13:00 during working hours, in a shared meeting room.
Provide incentives to attend such as food (which is shown to increase attendance as well as the conviviality of the occasion).	Cake will be provided as incentive.
<i>Leading journal club</i>	
Journal clubs appear to be more effective if they have a leader. The journal club leader should be responsible for identifying relevant articles for discussion, however the final choice needs to be decided by the journal club members.	I will serve as the facilitator, while students will independently select and present the articles.
Train the leader/facilitator of the journal club in relevant research design and/or statistical knowledge so as to appropriately direct group discussions and assist the group to work towards its goals.	As a trained researcher, I will guide scientific discussions. Additionally, experienced speakers will occasionally be invited to share strategies for scientific communication.

The leader can change from meeting to meeting, however he/she needs to have the skills to present the paper under discussion and lead the group adequately.	The facilitator will remain constant, while presenters will rotate. No shared leadership has been implemented yet.
Provide access to a statistician to assist the leader in preparing for journal club, and to answer questions that may arise from the journal club discussion.	Not applicable.
<i>Choosing articles for discussion</i>	
Choose relevant case-based or clinical articles for discussion. These papers should be of interest to all participants. Articles should be chosen in line with the overarching purpose of the journal club.	Students will select scientific articles relevant to their MSc/PhD projects.
Identify one journal club member (either the designated leader or a member) who has the responsibility for identifying the literature to be discussed for each meeting. This person should also lead the discussion on the article at the journal club.	Each presenter will be responsible for choosing the article and leading the discussion. I will facilitate the session and moderate the peer feedback.
<i>Circulating articles for discussion</i>	
Provide all participants for each journal club (in addition to the leader) with pre-reading at a suitable time period prior to the journal club (may be up to a week prior). Participants should agree to the time frame for pre-reading. In some curriculum-based situations, assessment of whether pre-reading has occurred may be appropriate.	Articles will not be shared in advance, as the focus of the journal club will be on the speaker's communication skills.
Use the internet as a means of distributing articles prior to the meeting, maintaining journal club resources and optimizing use of time and resources.	Invitations will be shared via email. Resources, including the presentation guide and peer feedback rubric, will be provided in advance.
<i>Efficiently running the journal club</i>	
Use established critical appraisal approaches and structured worksheets during the journal club session, which leads to healthy and productive discussion.	A structured presentation format will be used, and feedback will be guided by a peer evaluation rubric.
Formally conclude each journal club by putting the article in context of clinical practice.	Not applicable.
<i>Journal club effectiveness</i>	
Depending on the journal club purpose, it may be appropriate to evaluate knowledge uptake formally or informally.	Effectiveness will be assessed using a structured post-session questionnaire.

Evaluation should specifically relate to the article(s) for discussion, critical appraisal, understanding of biostatistics reported in the paper and translating evidence into practice.	Evaluation will focus on communication and feedback skills rather than article-specific scientific content.
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Table 2. Suggested structure for student presentations.

Question/section	Slides no.	Guidelines and tips
1. Which paper did you select?	1	Include title, authors, affiliations, journal, and year.
2. What is the paper about in a nutshell?	1	Summarize in max. 3 sentences. Focus on clarity: imagine you're explaining it to a non-scientist!
3. Why did you choose this paper?	1	Share why it's relevant to your work.
4. What background is needed to understand the study?	1	Keep it minimal, just enough context to understand the main aim.
5. What is the main aim of the study?	1	Highlight the central question. Avoid listing all sub-aims.
6. What methods or technologies were used?	1–2	Focus on the main techniques, avoid excessive technical detail
7. What are the key findings?	1–2	Focus on 2–3 key figures or tables
8. What are the main conclusions?	1	Summarize in max. 3 bullet points (try to link the conclusions to the study aim)
9. What is your critical opinion?	1	Was the question relevant? Was the study well-designed? Any limitations or suggestions for improvement? What can we learn from it (scientifically or methodologically)?

Table 3. Peer feedback rubric for evaluating presentations.

Area	Excellent	Good	Fair	Needs improvement
Content and structure	The presentation flows logically and is easy to follow	Mostly clear and well organized, with a few small issues	Some parts are unclear or jumpy	Hard to follow (lacks clear structure)
Scientific understanding	Shows strong understanding (explains key points accurately)	Understands the main ideas (a few unclear moments)	Partial understanding (some confusion)	Misunderstands key concepts

Verbal communication	Speaks clearly, confidently, and at a good pace	Mostly clear; some hesitation or unclear moments	Sometimes hard to hear or follow	Difficult to understand or too fast/slow
Non-verbal communication	Makes eye contact, uses gestures, and looks confident	Some eye contact and natural body language	Limited gestures or eye contact	Avoids eye contact; very stiff or distracted
Critical thinking	Provides thoughtful critique and identifies key strengths and weaknesses	Some personal insight beyond summary	Mostly summary, with little analysis	Just repeats the paper without critique
Overall impression	Engaging, well-prepared, and professional	Solid effort with minor issues	Some areas need improvement	Presentation needs more preparation

Table 4. Post-session questionnaire on student experience.

No.	Rate the following statements (1 = Strongly Disagree, 5 = Strongly Agree)	1	2	3	4	5
1	I was motivated to participate actively in the journal club	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	The structure and timing of the session (presentation + discussion) worked well	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	I see giving and receiving peer feedback as a valuable part of learning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	I feel comfortable giving feedback to peers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	I feel comfortable receiving feedback from peers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	I feel comfortable receiving feedback from teachers or supervisors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	The peer feedback session was useful and constructive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	I could see the journal club as helpful preparation for presentations (congress, thesis, defense, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	I would be interested in presenting at a future journal club session	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>