

## Offering alternative pathways of intellectual production

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### **Abstract**

*The Summer Festival of Learning held across June and July 2021 saw dozens of students creating teaching sessions based on their personal interests. Here I reflect on the session I presented to my peers: 'A Brief History of Palaeontological Controversies'. Palaeontology is a popular subject among the general population, but scientific consensus can change rapidly, and in the absence of a foundational knowledge base, outdated ideas can propagate unchecked for years. To this end, my presentation covered how a number of major ideological shifts played out over palaeontology's 200-year history, focusing on a ground-up approach and attempting to maintain effective and engaging delivery of the material. This session was largely successful from my perspective, delivering a presentation of this type was novel to me and has had a positive impact on my research and communication skills, especially to a non-specialist audience. However, upon reflection, I attempted to cover too much material in an hour, and as a result, the delivery was rushed at points. I subsequently identify how, with hindsight, I would alter the presentation to be more successful.*

*Keywords: Summer Festival of Learning, Student as Producer, Palaeontology, student engagement, science communication, Pedagogy.*

### **Introduction**

In June and July of 2021, the University of Lincoln in collaboration with the Students' Union, launched 'The Summer Festival of Learning' to celebrate the easing of lockdown restrictions that had been imposed due to Covid-19, and re-establish a sense of community (University of Lincoln, 2021). Through the Festival of Learning, students were given the chance to produce lectures, workshops, and skill tutorials on topics of their choice and deliver these to their peers (University of Lincoln, 2021). Through this opportunity, I researched, produced a PowerPoint, and presented a 1-hour in-person lecture titled 'A Brief History of Palaeontological Controversies'.

### **Background for the session**

The Summer Festival of Learning was run in tandem with the College of Arts' Lincoln Festival of Creativity and showcased work created under the 'Student as Producer'

model. This is an institutional philosophy that aims to create a mutually beneficial relationship between students and academics, and in turn, produce high-quality works which drive student engagement and attainment whilst integrating the twin objectives of the university: teaching and research (Neary and Winn, 2009; Neary et al., 2014). This principle was partially a response to, and push back against, the rising commodification of university education (Slaughter and Leslie, 1997).

The session was implemented through the festival's 'Skills Stream', which coordinated the creation of student-led sessions (University of Lincoln, 2021). Sessions ranged from one to two hours, typically lasting just over an hour. Student creators were awarded a bursary to cover costs associated with session creation, for sessions up to two hours this was £100, and for two-four hour sessions £200.

As a Zoology student in my final year of undergraduate study, the Festival of Learning provided a chance to apply the research and presentation skills I had developed through my degree. I also recognised the potential employability benefits of being able to evidence the growth of these skills (Strudwick, 2021) alongside the financial benefit presented in light of a lockdown-free summer.

I successfully applied to the scheme and decided to present an introduction to my specialist subject: palaeontology. Palaeontology is the study of extinct species (Nature, 2022), and my specific interest (and potentially future career) lies in researching dinosaurs. The success of the 'Jurassic Park' and 'Jurassic World' film franchises (van Ginneken, 2007) demonstrate that this is a topic of broad appeal. However, these are not documentary films and scientific accuracy often takes a backseat to action set pieces. As a result, popular misconceptions regarding dinosaurs can remain firmly lodged in the public conscience for many years (Schmidt and Savarese, 2012).

To provide an informative baseline introduction to the field of palaeontology, I decided to use controversies as a framing device. This would enable me to highlight key paradigm shifts, whilst also keeping the audience engaged as I could simplify these events into an "X vs Y" format. Whilst doing so, I intended to highlight the origins of, and dispel enduring mistruths on the subject.

## **Review of literature**

Modern palaeontology is considered to have begun with the description of the first dinosaur in 1824. However, people have interacted with fossils for millennia. The earliest literary references to fossils (c. 500 BCE) are attributed to Xenophanes of Colophon, a philosopher who recognised that aquatic fossils appearing in rocks miles from the sea suggested the state of the planet has changed over time (McKirahan, 1994). The earliest attempts to imagine the creatures that left behind fossils date back to China c. 350 CE, documenting the collection of 'dragon bones' (Rieppel, 2019). Until the early modern era (c. 1500 CE), it was believed that fossilisation occurred due to animals becoming covered with "petrifying fluids" released from the

earth during earthquakes, this was first described in the 9th century by Islamic polymath Ibn Sīnā (Rudwick, 1985).

When the first dinosaur, *Megalosaurus*, was described in 1824 (Buckland, 1824) it was utterly unlike anything previously known to science. In the coming years, more similar animals would be discovered and were reconstructed as unfeasibly enormous (100m+) lumbering, lizard-like animals that were ‘simple’: often termed “evolutionary dead-ends” in light of Darwin’s theory of evolution by natural selection published shortly after in 1859.

The public was instantly enthralled, and the ease of funding for ‘dinosaur digs’ led to the ‘Bone Wars’: a highly-publicised, two-decade (1872-1892) feud between rival academics E.D. Cope and O.C. Marsh. However, despite naming many famous species of dinosaurs, such as *Triceratops* and *Stegosaurus* (Colbert, 1984), their underhanded tactics soured public perception of, and interest in, the field of palaeontology (Limerick and Puska, 2003). Over this time, our understanding of dinosaur biology had left the monster-phase, but still portrayed dinosaurs as slow and dim-witted.

This changed suddenly with the discovery of the agile and bird-like predatory dinosaur *Deinonychus* in 1969 (Ostrom, 1969) – later inspiring Jurassic Park’s “raptors”. In light of this, dinosaurs were progressively viewed as more highly active, behaviourally complex, social, and dynamic animals (Naish, 2021), setting the foundation of the proto-modern understanding of extinct life on Earth. Present controversies are more often of an ethical nature, discussing topics such as: which fossils are acceptable to work on (Cisneros et al., 2021), and how best to transmit research to non-specialist audiences (Still, 2020).

## **Methodology**

Before developing the session, I had a broad-scale plan for the content I wanted to include. To gather the information, I followed the discovery principle of ‘Student as Producer’. Specifically, my research pattern mirrored ‘enquiry-based learning’ (Neary et al., 2014) as I identified key research questions such as “What were the major shifts in our understanding of palaeontology?” and “What were the dominant pre-modern interpretations of fossils?”. This direction of my research also uncovered additional topics which I had not initially considered such as discourse surrounding communicating research to non-specialist audiences.

When creating the PowerPoint presentation, I attempted to follow 3 guidelines to maintain audience focus on the speaker:

- Display a minimum of 1 image per slide.
- Present no more than three-four pieces of information per slide.
- Minimise use of technical terms.

Furthermore preparing a PowerPoint presentation bolstered the digital aspects of my session.

Lectures within the 'Skills Stream' were streamed, to allow students unable to attend the timetabled session to still receive the content, or for those that did attend, to experience it again at a later point at their convenience. This increased the engagement and accessibility of my session compared to only offering a single timetabled presentation (Davis et al., 2019).

### **Key areas of development from the experience**

Effective production and delivery of the session exceeded my expectations in terms of complexity. However, this challenge enabled me to critically evaluate my skills as a researcher and as a science communicator. In particular, I have realised that my initial aims were somewhat overenthusiastic. I attempted to cover every major event in palaeontology, which even at the surface-level detail required a certain front-loading of technical terms which, whilst reducing the run-time of the presentation, likely hampered audience enjoyment and engagement. Effective science communication prioritises establishing a factual baseline and then uses this to inspire and facilitate critical discussion (Fischhoff, 2013). This relies on delivering the core message through effective use of style, metaphor, and analogy, whilst minimising unnecessary technical language (Illingworth and Allen, 2020). As established, the audience had a pre-existing interest in the subject matter; extinct animals are inherently mysterious and captivating. However, using this to explore how approaches to science have changed was a perpetual balancing act that I did not always succeed in. Yet, identifying these weaker points within the presentation has enabled me to have a greater awareness of how I communicate my research, and science more broadly, both to colleagues and non-specialists.

Assuming the role of a lecturer for this session strengthened my presentation skills. Despite presenting short presentations during my degree, interacting with an audience that had voluntarily attended the presentation, and covering a topic of my choosing for a whole hour, filled me with a mix of excitement and anxiety. Despite these initial feelings, the presentation went smoothly and I received positive feedback. This reinforced my confidence in both my presentation and delivery, empowering my sense of student voice to carry forward, which is one of the outcomes identified by the 'Student as Producer' model (Neary et al., 2014).

### **Challenges**

Delivering an hour lecture at 9 am presented obstacles in terms of engagement, though this was partially ameliorated by the session being non-mandatory and after exam season. To maintain engagement and counter academic boredom (Sharp et al., 2017), I attempted to keep my delivery: energised, varied, and occasionally humorous. This was largely observational humour, e.g. a fossil named 'Scrotum

humanum’, or drawing comparisons of appearance and character between Ebenezer Scrooge and a certain 19th-century palaeontologist.

Compared to assignments within my degree, the production of this session relied far more on published books and less on peer-reviewed articles. This was partly due to the focus on the cultural elements of the topic, which are naturally more subjective than the empirical research I was familiar with, and partly due to the relative lack of papers written in the 19th century (compared to the 21st). Criticality is a key skill promoted through ‘Student as Producer’ (Neary, 2019), and as books tend to have a larger scope than individual research articles. Therefore I was required to be particularly discerning in identifying and differentiating between key and contextual information.

My lack of experience with the principles of visual design proved challenging. Therefore, I mostly relied on ‘best practice’ principles when creating the presentation: limiting text per slide, including pictures etc. However, my choice of black text on a faint pastel green background was informed by research (Atai and Talebzadeh, 2012) to be visually appealing but not distracting.

### **Lessons learnt and what might be done differently**

Upon reflection, and informal verbal feedback from attendees, many of the weaknesses of the presentation: overuse of technical terms, rushed delivery at points, and some text-heavy slides, can be attributed to attempting to cover too much information within the hour. Despite the positive reception from the audience – specifically enthusiastic delivery- the general sentiment was that each topic needed “more time to breathe”. Specifically, I realise that setting out to cover the history of palaeontology and modern controversies, two highly distinct topics, was likely the root cause.

Thus if given the option to design the session from the ground up, I would likely focus on modern controversies, as I feel they represent the cutting edge of the field. In-kind, I would reduce the historical component to approximately 5 slides, briefly mentioning the first dinosaurs to be named, and how our interpretations of their lifestyle changed. I would use the additional time to include a participation element, potentially discussing one of the controversies, such as the removal of fossils from politically unstable countries (Cisneros et al., 2021) for ten to fifteen minutes. This participation element is intended to shift the presentation from an audience-passive lecture to an audience-active session. I acknowledge that participation in this section may be quite limited due to subject matter, but lack of oral participation does not correlate with a lack of engagement (Frymier and Houser, 2016), therefore some participation is preferable to none.

## Conclusion

Overall, despite identifying multiple areas for improvement, I consider my session 'A Brief History of Palaeontological Controversies' to have been a major success. I feel privileged to be able to contribute to the wider university community by delivering this session, which has exemplified the benefits of the 'Student as Producer' model (Neary et al., 2014). This undertaking has given me the chance to combine the research and presentation skills developed throughout my undergraduate degree, with my passion for palaeontology and create an experience for my peers. Through this session, I hope that attendees gained an appreciation and understanding of the often misrepresented field of palaeontology, in an approachable format.

Following the project's completion, I feel more confident in my ability to communicate the results of a research topic and more well-rounded as a researcher. These skills will continue to be evergreen both in my remaining time within academia and beyond. I would highly encourage anyone presented with a similar opportunity to take advantage of it, as the benefits are numerous and the experience is gratifying, fulfilling, but most crucially, enjoyable.

## References

- Atai, M.R. and Talebzadeh, H. (2012) Exploring visual and textual discourse of applied linguistics PowerPoint conference presentations. *ESP across Cultures*, 9, 7-26.
- Buckland, W. (1824) Notice on the *Megalosaurus* or great Fossil Lizard of Stonesfield. *Transactions of the Geological Society of London*. 2. 1(2), 390–396.
- Cisneros, J.C., Ghilardi, A.M., Raja, N.B. and Stewens, P.P. (2021) The moral and legal imperative to return illegally exported fossils. *Nature Ecology & Evolution*, 1-2.
- Colbert, E. (1984) *The Great Dinosaur Hunters and Their Discoveries*. Mineola, New York, USA: Courier Dover Publications.
- Davis, N.L., Gough, M. and Taylor, L.L. (2019) Online teaching: advantages, obstacles and tools for getting it right. *Journal of Teaching in Travel & Tourism*, 19(3), 256-263.
- Fischhoff, B. (2013) The sciences of science communication. *Proceedings of the National Academy of Sciences*, 110(Supplement 3), 14033-14039.
- Frymier, A.B. and Houser, M.L. (2016) The role of oral participation in student engagement. *Communication Education*, 65(1), 83-104.
- Illingworth, S. and Allen, G. (2020) *Effective science communication*. Bristol, UK: Institute of Physics Publishing, 1-5.
- Limerick, P., Puska, C. (2003) *Making the Most of Science in the American West: An Experiment*. Boulder, Colorado, USA: Center of the American West.

- McKirahan, R.D. (1994) *Philosophy Before Socrates*. Indianapolis, Indiana, USA: Hackett Publishing Company, 66.
- Naish, D. (2021) *How did we get to here? Dinopedia and the dinosaur renaissance* [blog]. 01 December. Available from: <https://press.princeton.edu/ideas/how-did-we-get-to-here-dinopedia-and-the-dinosaur-renaissance> [accessed 24 Mar 2022].
- Nature (2022) *Palaeontology*. London, UK: Nature. Available from: <https://www.nature.com/subjects/palaeontology> [accessed 24 Mar 2022].
- Neary, M. and Winn, J. (2009) The student as producer: reinventing the student experience in higher education. In Bell, L., Stevenson, H., and Neary, M., *The Future of Higher Education: Policy, Pedagogy and the Student Experience*. Oxford, UK: Continuum International Publishing Group Ltd, 192-210.
- Neary, M., Saunders, G., Hagyard, A. and Derricott, D. (2014) *Student as producer research-engaged teaching, an institutional strategy*. York, UK: The Higher Education Academy. Available from: [https://www.heacademy.ac.uk/sites/default/files/projects/lincoln\\_ntfs\\_2010\\_project\\_final\\_report\\_fv.pdf](https://www.heacademy.ac.uk/sites/default/files/projects/lincoln_ntfs_2010_project_final_report_fv.pdf) [accessed 24 Mar 2022]
- Neary, M. (2019) Student as Producer and the Democratisation of Science. *IMPact*, 2(1), 1-9.
- Ostrom, J. H. (1969) A new theropod dinosaur from the Lower Cretaceous of Montana. *Postilla*, 128, 1-17.
- Rieppel, L. (2019) *Assembling the dinosaur: Fossil hunters, tycoons, and the making of a spectacle*. Cambridge, Massachusetts, USA: Harvard University Press.
- Rudwick, M. J. S. (1985) *The Meaning of Fossils: Episodes in the History of Palaeontology*. Chicago, Illinois, USA: University of Chicago Press, 24.
- Schmidt, D. and Savarese, M. (2012) Confronting and Correcting Misconceptions in Paleontology Through Use of the Conceptual Change Model. *The Paleontological Society Special Publications*, 12, 155-168.
- Sharp, J.G., Hemmings, B., Kay, R., Murphy, B. and Elliott, S. (2017) Academic boredom among students in higher education: A mixed-methods exploration of characteristics, contributors and consequences. *Journal of Further and Higher Education*, 41(5), 657-677.
- Slaughter, S. and Leslie, L.L. (1997) *Academic Capitalism: Politics, Policies, and the Entrepreneurial University*. Maryland, Baltimore, USA: The Johns Hopkins University Press.
- Still, E. (2020) *Too Big To Walk: The Book Nobody Wanted Published* [blog]. 10 January. Available from: <https://thecookieraptor.com/2020/01/10/too-big-to-walk-the-book-nobody-wanted-published/> [accessed 24 Mar 2022].
- Strudwick, K. (2021) Student as Author: Mapping the field of undergraduate research publications in the UK in Social Sciences. *IMPact*, 4(1), 1-11.

University of Lincoln (2021) *Summer Festival*. Lincoln, UK: University of Lincoln.  
Available from: <https://www.lincoln.ac.uk/home/studentlife/summerfestival/> [accessed 24 Mar 2022].

van Ginneken, J. (2007) *Screening Difference: How Hollywood's Blockbuster Films Imagine Race, Ethnicity, and Culture*. Lanham, Maryland, USA: Rowman & Littlefield Publishers, 11.