Mixed Cultures: Developing Skills in Microbiology Undergraduates using Art and Literature

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• Teaching
• Laboratory-based research
• Public engagement
• Education and science communication research outputs

• Students skills development
  – Year 1, 2 and project work year 3

• Opportunities
• Your own career development
Microbiology and Art Lecture

Deterioration of art
Beauty of microorganisms
Microorganisms in art
Microbiology and art collaborations
Artists working with microorganisms and microbiologists include: Ana Dumitriu, Mell Fisher, Sarah Craske, Heather Barnett
Assignment

• Consider an output that links microbiology and art
• Discuss your idea with the tutor
• Identify what you will submit
• Negotiate assessment criteria
• Submit your output
Jennie Hutchinson

Rehana Akhtar, Stacey Goulden

Iqra Ali
Siobhan Webb, Anthony Clayton, Mark Worrall

Jessica Murray
Exhibitions, calendars, publications, postcards, awards

Enthusiasm, inspiration, extension
Microbiology and Literature
www2.mmu.ac.uk/engage/what-we-do/bad-bugs-bookclub/

Engage: Public Engagement in Science and Engineering

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Public Engagement in Science and Engineering • What we do • Bad bugs bookclub

Bad bugs bookclub

What we do

Podcasts
Bad bugs bookclub
Scibar

The aim of the Bad Bugs Book Club is to get people interested in science, specifically microbiology, by reading books (novels) in which infectious disease forms some part of the story.

We also try to associate books, with some other activity or event, to widen interest and to broaden impact. Our bookclub comprises both microbiologists and members of the general public. We felt that this would encourage some discussion on the science – accuracy, impact etc – as well as about the book.

More than 50 novels since 2009; reading guides and meeting reports on website
BMS Bookclub

- Tutorials, year 2
- Formative
- Discursive

- Lots of students
- Learning
- Not all engaged

- Suggestions for re-run
World AIDS Day

- Community quilt project, tv documentary screening
  - *Dorian* by Will Self
  - student project (AIDS Sutra)
- Launch of SGM HIV booklet
  - *Dracula* by Bram Stoker
- AIDS Quilt/Banner exhibition at Manchester People’s History Museum
  - *28 stories of AIDS in Africa* by Stephanie Nolen
- Banner presented to Terrence Higgins Trust, London
- MSI Saturday Science ‘the very small world of viruses’
- Graphic novel. *Second Avenue Caper* by Joyce Brabner
World Malaria Day

- Malaria Migrations, microbiology, and music
- Student art
- WHO research project
- *Calcutta Chromosome* by Amitav Ghosh
Emily Robertson
Zombies, vampires and werewolves

- Typically pandemic
- Compare epidemiology with existing infectious disease
- Many novels, including:
  - Dracula
  - Twilight
  - Warm Bodies
  - The Strain
SimZombie!
ANOTHER DIMENSION

Emerging Infectious Literatures and the Zombie Condition

Joanna Verran,¹ Xavier Aldana Reyes¹

The book club format has enabled expert and nonexpert exploration of infection and epidemiology as encountered in popular literature. This exploration reveals that fiction focusing on apocalyptic disease often uses the zombie as an embodiment of infection, as well as an exemplar of current knowledge on emerging disease.

The Bad Bugs Book Club (https://www2.mmu.ac.uk/engage/what-we-do/bad-bugs-bookclub/) was established in 2009 (1). This reading group meets every 2 months to discuss works of literary fiction from any genre that features infectious disease. The aim of these meetings is to engage scientists and nonscientists in discussions about disease, particularly for books that they have suggested. The meeting leader prepares questions before the meeting to guide discussion and publishes them online on the book club’s website after the meeting, but usually conversation does not require prompting. Meeting reports are also posted online, enabling themes to be identified across books and genres, as well as establishing a rich, freely accessible resource that has informed much of the content of this article.

Our findings, based on the reports accessible from the book club’s website, show that fiction content in epidemiologic narratives is often influenced by epidemiologic outbreaks. Authors absorbing and recasting what have been...
Manchester Children’s Book Festival

- Two epidemics/books
  - Charlie Higson series
  - *Code Orange* by C. Cooney

- Consider how the two diseases are controlled using Simzombie and Simfection

- Simfection developed as learning resource

- Evaluated as vaccine-hesitancy intervention
Journal of Biological Education

SimFection: a digital resource for vaccination education

K. Carolan, J. Verran, M. Amos, M. Crossley, J. Redfern, N. W. Loultit

To cite this article: K. Carolan, J. Verran, M. Amos, M. Crossley, J. Redfern, N. W. Loultit (2018) SimFection: a digital resource for vaccination education, Journal of Biological Education

To link to this article: https://doi.org/10.1080/00219266.2018.1469524

Impact of educational interventions on adolescent attitudes and knowledge regarding vaccination: A pilot study

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Abstract
Journal of Biological Education

ISSN: 0021-9266 (Print) 2157-6009 (Online) Journal homepage: http://www.tandfonline.com/doi/njbe20

Refreshing the public appetite for ‘good bacteria’: menus made by microbes

Joanna Verran, James Redfern, Haleh Moravej & Yvonne Adebola

To cite this article: Joanna Verran, James Redfern, Haleh Moravej & Yvonne Adebola (2018): Refreshing the public appetite for ‘good bacteria’: menus made by microbes, Journal of Biological Education, DOI: 10.1080/00219266.2017.1420678

To link to this article: https://doi.org/10.1080/00219266.2017.1420678
Research Letter – Professional Development

Developing microbiological learning materials for schools: best practice

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Journal of Biological Education
Publication details, including instructions for authors and subscription information: http://www.tandfonline.com/doi/rjbe20

Transforming a school learning exercise into a public engagement event: ‘The Good, the Bad and The Algae’

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Published online: 03 Jun 2013.

To cite this article: James Redfern, Dariel Burdass & Joanna Verran (2013) Transforming a school learning exercise into a public engagement event: ‘The Good, the Bad and The Algae’, Journal of Biological Education, 47:4, 246-252, DOI: 10.1080/00220576.2013.828187

Practical microbiology in schools: a survey of UK teachers

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A survey of secondary school teachers investigated practical microbiology in the classroom. The results were heartening (practical microbiology was common), but concerns were expressed regarding equipment time, cost, and expertise. Microbiologists should engage more with school educators to support teachers and maintain the health of microbiology for future generations.

Microbiology has a century-long tradition of commitment to science education [1], relying heavily on practical activity in its teaching. Since the introduction of the National Curriculum in the UK in 1988, the content of microbiology in schools has undergone some changes and additions. For example, the Education Act 1996 highlighted the need for education on HIV/AIDS and sexually transmitted infection, with a more recent push to include PCR. Despite this, practical activity in schools is in decline for a variety of reasons (cost, time, curriculum issues, class sizes) [2]. Some have even suggested that microbiology as a subject is undergoing a change in direction, from the 'classical' techniques to a more molecular focus, and is potentially losing (SGM) in – 96. The of respondents, 82% taught students aged 14–16 years, 77% taught 11–14-year-olds, and 42% taught only students older than 16 years. The sample was not restricted to any particular science specialism, and was likely to mainly comprise motivated teachers. The survey was designed to be short and easy to complete. The survey focused on three areas:

- Are teachers currently using practical microbiology activities in schools?
- What are the perceived limitations in delivering practical microbiology?
- To what extent is practical activity valued in teaching microbiology?
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- For students:
  - Important
  - Useful
  - Stimulating
  - Educational
  - Challenging
  - Social

- For staff:
  - Connections
  - Collaborations
  - Opportunities
  - Outputs
  - Rewarding
  - Value
  - Fun!
• Thanks!
  – Colleagues
  – Collaborators
  – Students
  – Sponsors
• Microbiology Society 75th
• Bookclub 10th
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