

ELECTRONIC ENGINEERING WITH DR RADU SPOREA

TALKING POINTS

KNOWLEDGE & COMPREHENSION

1. What benefits do printed electronics have over conventional electronics?
2. Why is it not necessarily a problem that printed electronics are slow?
3. What are the pros and cons of using paper over plastic as a substrate for printed electronics?
4. What advantages do a-books have over e-books?

APPLICATION

5. Why do you think the Climate Domesday Book opted for a hybrid printed-digital format, rather than one or the other?
6. Radu's group chose a travel guide to demonstrate their Next Generation Paper. What other genres of books do you think might lend themselves to future demonstrations, and why?

ANALYSIS

7. How has Radu's team overcome the challenge of the non-uniformity of paper as a substrate for printed electronics? Do you think this solution will continue to be used as printed electronics become more sophisticated?

EVALUATION

8. As the world prepares for a low-carbon future, the skills needed to develop and operate new technologies are changing. Some are worried this may lead to a 'skills deficit'. How do you think students and teachers of electronic engineering can embrace this challenge?
9. As electronic technologies become increasingly adopted worldwide – for instance, the replacement of diesel cars with electric vehicles – there are worries that the rare minerals used in electrical components, such as batteries, will become scarce. How do you think electronics engineers can collaborate with other disciplines to address this issue?

ACTIVITY

Create an augmented poster that introduces readers to Next Generation Paper and/or the Climate Domesday Book.

- Consider what written and visual information should be included on the printed poster. The poster should aim to engage an audience without a background knowledge in electronic engineering and get them excited about the project(s).
- Next, consider what relevant digital content is also likely to be interesting to readers. The links in 'More Resources' may help you out.
- Link digital content to your physical poster using printed QR codes, that users can access with their smartphones. You can generate QR codes here: www.qr-code-generator.com
 - How can you integrate the physical and digital content as seamlessly as possible?
- Display your poster to your classmates, encourage them to explore the digital content and collect their feedback.
 - Did they find your poster engaging?
- Consider how the augmentation of your poster could be improved with access to the technology Radu has developed.
 - How could you use Next Generation Paper to link digital content to your poster?
 - How could you use a magic bookmark to link digital content to your poster?
 - How would the viewer's experience change if you included this technology?

MORE RESOURCES

- Radu has his own YouTube channel, where he discusses electronic engineering, potential careers and the future of the field: www.youtube.com/playlist?list=PLF5CFD031EC74DDE1
- If there is an electronic engineering topic that interests you, you can contact Radu through his lab group website (www.teamsporea.info/future-member) and he will create a video about it!
- Find out more about Next Generation Paper and watch demos of augmented books in action: www.surrey.ac.uk/digital-world-research-centre/funded-projects/next-generation-paper-markets
- The Climate Domesday Book is currently in development. Learn more and keep an eye on its progress: www.climatedomesday.com