

APPLIED MATHEMATICS

WITH PROFESSOR ANOTIDA MADZVAMUSE

Talking points

KNOWLEDGE

1. What is applied mathematics?
2. What is pure mathematics?
3. What are the long-term impacts of the UK-APASI project?

COMPREHENSION

4. Why is applied mathematics so important in the modern world?
5. Summarise Anotida's process for 'data-driven mathematical modelling'.

ANALYSIS

6. What are the motivations behind the UK-APASI project?
7. Why do you think it is key that African early career researchers are trained in their host countries?

EVALUATION

8. In what way is the UK-APASI mutually beneficial to the UK and Africa?
9. To what extent do you believe it is worthwhile for an individual country to support other countries in advancing their skills and knowledge in applied mathematics?
10. What do you think might be the issues with using models to direct government policies?

Activities

Careers in applied mathematics

The Society for Industrial and Applied Mathematics has an excellent page on careers in applied mathematics and has produced a careers brochure that you can download:

www.siam.org/students-education/programs-initiatives/thinking-of-a-career-in-applied-mathematics

The brochure includes a number of interviews with people using applied mathematics in their careers. Choose one that interests you and makes notes on:

- Job title and salary
- Education required
- Main job responsibilities
- Pros and cons of the job
- Career path

Which of these jobs interests you in particular? Think about how you might pursue a path to that career, and research what you need to study to get there and where you could do this. If you can, present your findings to the class, and compare which careers have caught people's attention.

Apply for funding

Anotida's article highlights that without funding, programmes like the UK-APASI cannot take place, and many early career mathematics researchers will miss out on further training. Referring back to the key points in the article, write a letter applying for funding for an applied mathematics training programme you are leading.

Outline:

- the purpose of the programme
- who will be involved
- what problems or issues participants will investigate through mathematical modelling
- why the programme is important for wider society
- what your programme has achieved so far
- what the future outcomes could be.

If possible, share your letter with a friend. Ask them to imagine they are the funder. Does your letter include all the information they need? Have you convinced them your programme deserves funding?

More resources

- Listen to this fascinating podcast to hear Anotida talk about his inspiring life: www.newton.ac.uk/media/podcasts/post/living-proof-podcast-episode-31
- You can find out more information on the UK-Africa Postgraduate Advanced Study Institute in Mathematical Sciences (UK-APASI) at gtr.ukri.org/projects?ref=EP/T00410X/1 www.ul.ac.za/index.php?Entity=compu_prog_scie_app_doc
- Details on the UK-APASI workshops, including recordings of the lectures, can be found here: www.icms.org.uk/workshops/2022/uk-apasi-mathematical-sciences.
- Anotida is also co-founder of the Southern Africa Mathematical Sciences Association's Masamu programme, which was founded in 2010 to strengthen links between US and South African mathematicians: www.samsa-math.org/home-2/programmes/masamu
- The University of Twente in The Netherlands has made a great video about pursuing careers in applied mathematics: www.youtube.com/watch?v=Lh_нду4z6f4.