*biomath*tutor

Blending with traditional teaching methods to support mathematics learning within the life sciences
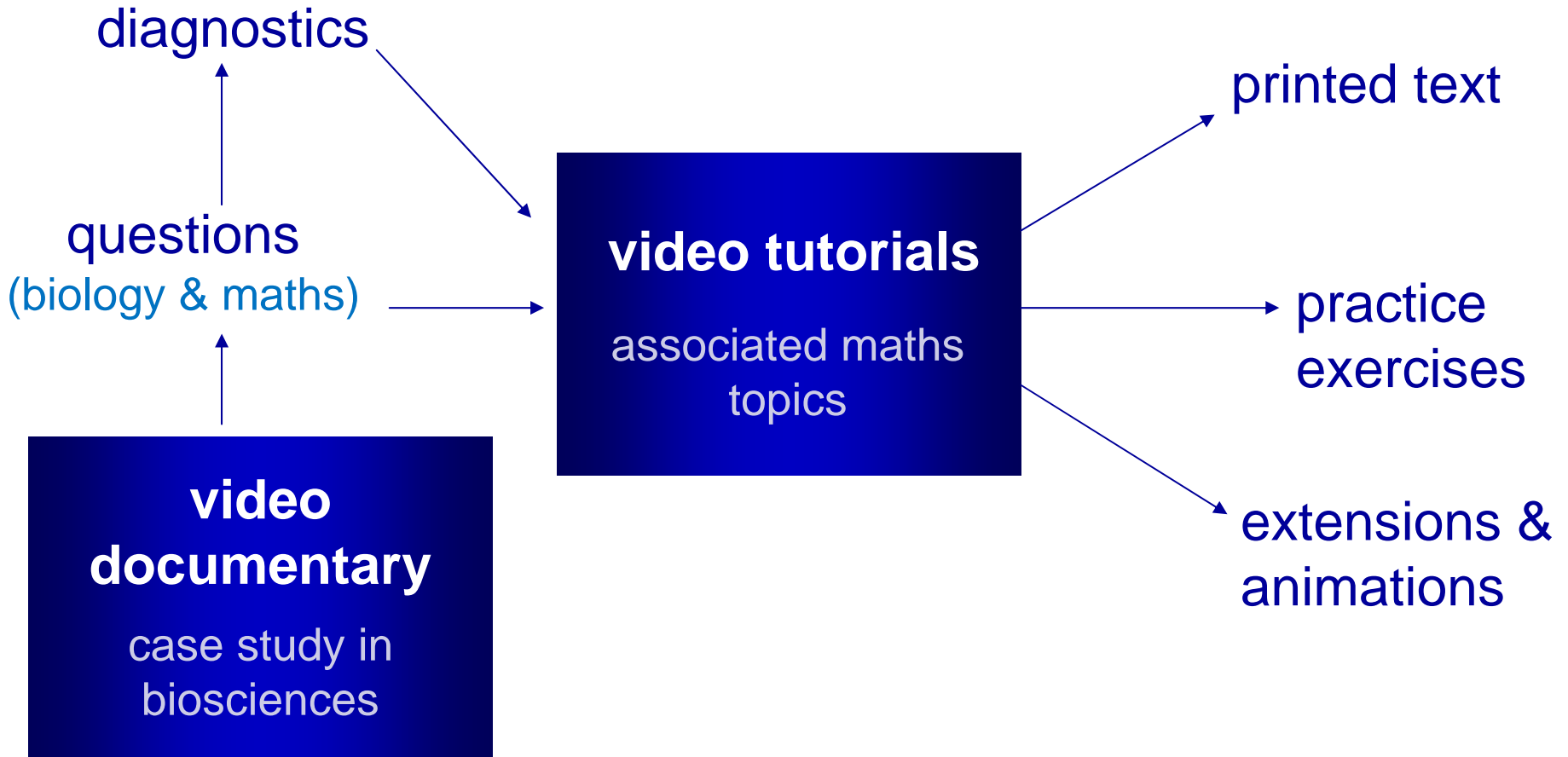
Vicki Tariq

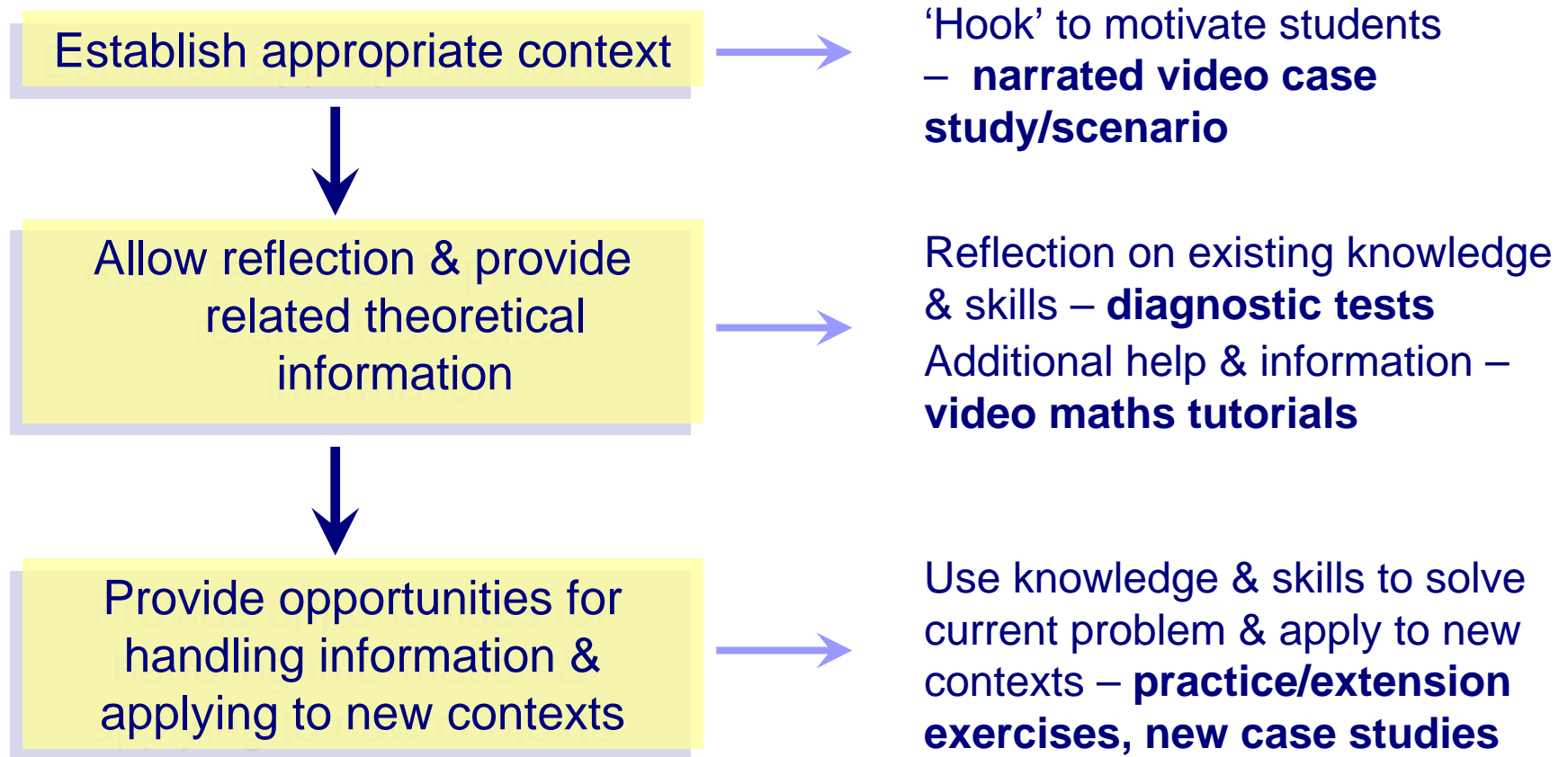University of Central Lancashire

Background & rationale

❖ Studies highlighting growing decline in mathematics skills amongst undergraduates

❖ ***math***tutor (FDTL4-funded)

❖ ***biomath***tutor (NTFS-funded):

➢ pilot DVD-ROM of video-led, multimedia e-learning resources

➢ to motivate students to *want* to learn maths

➢ designed to support tutor-facilitated and flexible independent learning

biomathtutor

Coles' contextual learning model

Establish appropriate context → 'Hook' to motivate students – **narrated video case study/scenario**

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Allow reflection & provide related theoretical information → Reflection on existing knowledge & skills – **diagnostic tests** Additional help & information – **video maths tutorials**

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Provide opportunities for handling information & applying to new contexts → Use knowledge & skills to solve current problem & apply to new contexts – **practice/extension exercises, new case studies**

Coles, C. (1997) Is problem-based learning the only way? In D. Boud and G. I. Feletti (eds) *The Challenge of Problem-based Learning*, 2nd edition, Kogan Page, London. Chapter 31, pp. 313-325.

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Project aims

- ❖ Investigate impact of ***biomath***tutor on mathematics skills competencies of bioscience undergraduates <u>and</u> on their ability to transfer and apply these skills to different biological contexts

- ❖ Identify and evaluate strategies aimed at embedding ***biomath***tutor into current T & L practices to develop a blended learning experience

Key research questions

❖ Contextual problem-solving model

  ➢ Will its application to mathematics e-learning facilitate improvements in students' knowledge and skills?

❖ Transferability of knowledge & skills

  ➢ Will students demonstrate a capability to transfer their mathematics knowledge & skills to new biological contexts?

❖ Integrating into bioscience curricula

  ➢ How might tutors blend ***biomath****tutor* with more traditional teaching practices?

Key research questions

❖ Student motivation

➢ What motivates students to use such resources? Learning model adopted? Quality of resources? Link to specific support strategies, e.g. PAL? Link to assessment?

❖ Potential barriers to adoption

➢ What are these and how might they be overcome?

❖ Evaluation of ***biomath***tutor

➢ What are students' and their tutors' reactions to the various components of ***biomath***tutor?

Outcomes

- ❖ **biomath***tutor* pilot DVD-ROM (NTFS-funded)

- ❖ Advertising leaflet (NTFS-funded)

- ❖ Guidelines for tutors

- ❖ $\geq$ 3 articles targeting bioscientists, mathematicians & learning technologists

- ❖ $\geq$ 2 UK conference presentations

- ❖ 1-day dedicated conference/workshop

- ❖ Interim & final reports for HE Academy

Dissemination & impact

- ❖ HE bioscience & mathematics education communities
    - ➤ Biomaths JISCMAIL list
    - ➤ HE Academy Subject Centres, Institute of Biology, Advisory Committee on Mathematics Education

- ❖ Specific e-learning agenda
    - ➤ JISC and BECTA

- ❖ Responsibility for CPD of teachers
    - ➤ Training & Development Agency for Schools
    - ➤ HE Academy

- ❖ Potential funders of a more comprehensive **biomath**tutor resource
    - ➤ Gatsby Foundation, Nuffield Foundation, HEFCE, industry