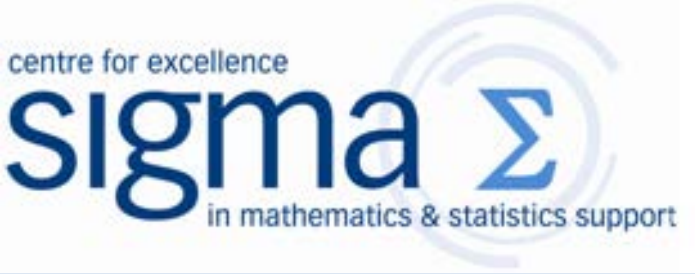
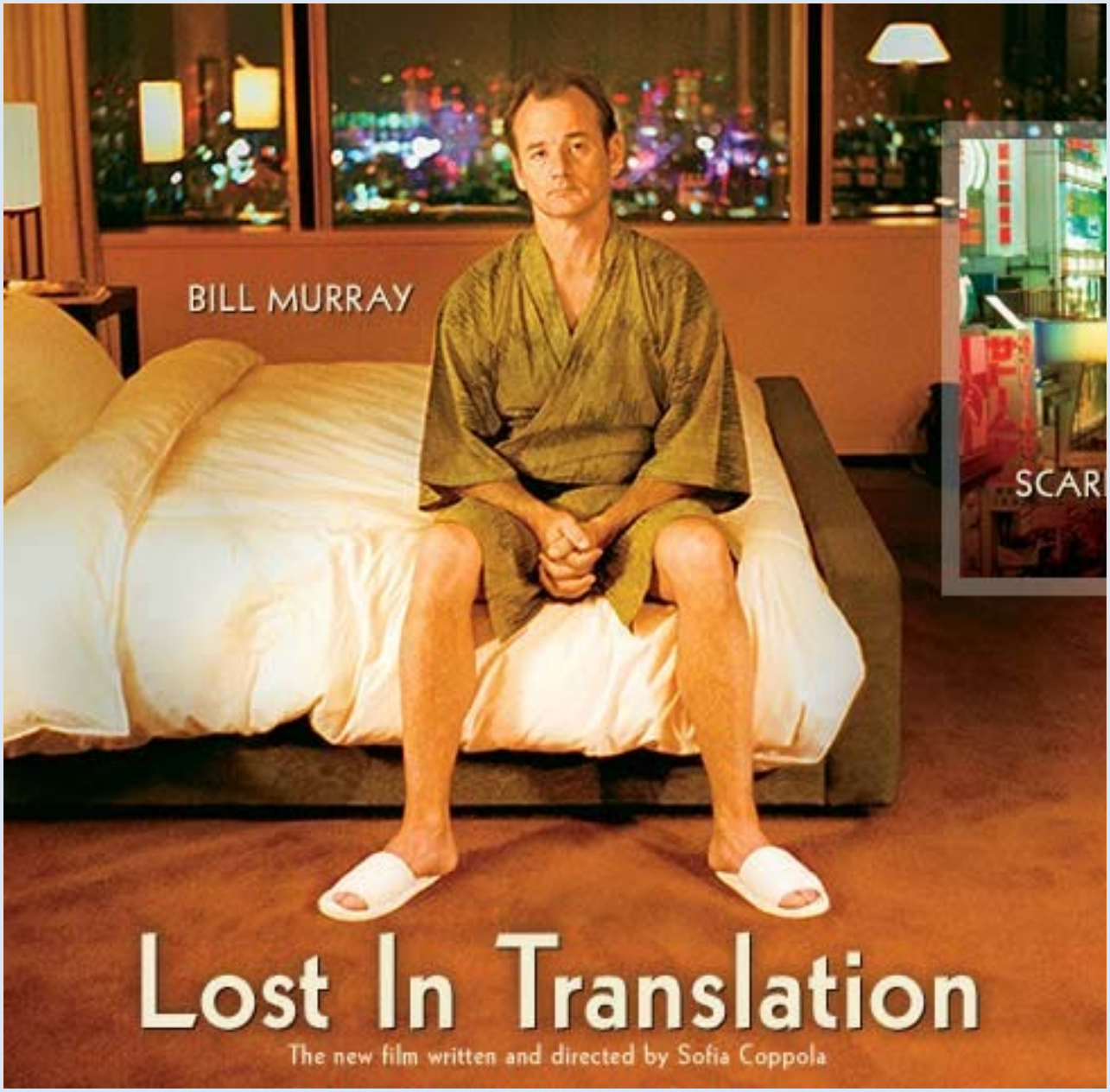
Lost in Transition

The continued relevance of maths support



David Bowers
University Campus Suffolk
Chair, **sigma** Network


BILL MURRAY
Lost In Translation
The new film written and directed by Sofia Coppola

Aspects of “transition” within HE, and implications for maths support

The challenge

The evidence

The response

Transition from school to studying at university

The challenge

- Different approaches to the subject
- Expectation of prior knowledge (“skills gap”)
- Independent learning
- Speed of delivery
- New classmates

- Plus all the non-academic challenges
  - Living away from home, finance, friendships etc etc

Transition from school to studying at university

Evidence

"There is strong evidence … of a steady decline over the past decade of fluency in basic mathematical skills and of the level of mathematical preparation of students accepted onto degree courses."

The Engineering Council (2000) *Measuring the Mathematics Problem.*
http://www.engc.org.uk/ecukdocuments/internet/document%20library/Measuring%20the%20Mathematic%20Problems.pdf

More.....

Transition from school to studying at university

Evidence

"Some universities refrain from spelling out the level of maths knowledge and skills required for some of their courses because they wish to maximise the number of applicants."

Michael Gove, Letter to Russell Group Universities, quoted in *Times Higher Education* (5 Sept 2013).

Transition from school to studying at university

Response

SaPRA (University of Bradford). A self-audit tool to help identify study skills strengths and weaknesses

http://www.bradford.ac.uk/developme/sapra/

IMPRESS (University Campus Suffolk). A pilot based on SaPRA including numeracy skills

http://www.aldinhe.ac.uk/resources/files/Bowers-D.ppt

Anything but an off-the-shelf diagnostic test!

Transition from year 1 to year 2

The challenge

- The move from descriptive to analytical (from mastery of routine methods to application and problem solving).
- Overcoming complacency if year 1 “passed”.
- Identifying and dealing with skills gaps from year 1.

Transition from year 1 to year 2

Evidence

"It is not also simply about managing the transition between sixth-form and university. The minimum 40% mark threshold for a large number of first year students at university can result in a culture of complacency, rather than as preparation for "the more important" second and third years. Many revert to old habits and do not feel the need to step outside their comfort zone delaying the development of key skills exclusive to university education. As a result in the years that follow, when traditionally contact time decreases, students are less well equipped to succeed as individuals and in turn their results suffer."

Carter, J. (2011) *Starting university: Managing the transition* http://www.thenationalstudent.com/Advice/2011-02-07/starting_university_managing_the_transition.html

More >

Transition from year 1 to year 2

Evidence

"evidence recently published refers to some problems emerging in later years, particularly Year 2 of single honours Mathematics programmes, with disillusionment amongst parts of the cohort and high drop-out rates"

Grove M. J., Croft A. C. & Bright D.L. "Developing mathematics support for the specialist mathematician at year 2 and beyond" in: Marr, C. M. & Grove, M. J. (eds) (2010) *Responding to the Mathematics Problem.* HEA Maths, Stats and OR Network.

http://www.mathcentre.ac.uk/resources/uploaded/mathssupportvolumefinal.pdf

Transition from year 1 to year 2

Response

- Don’t overlook second year students when planning and promoting maths support provision.
- Peer mentoring.
- Pre-empt emerging needs with end-of-year one workshops (eg TRANSYT programme at UCS).

Transition towards more online learning

The challenge

- Online resources in maths tend to be “how to” guides or routine drill-and-practise.
- Difficult for online systems to provide error-recognising feedback or assist problem solving.
- Asynchronous tutor support (eg via email or message boards) is ineffective.

Transition towards more online learning

Evidence

"The current models of e-learning and the common online course management systems (e-learning environments) do not effectively address the challenges of online math."

Smith, G. & Ferguson D. (2005) Student attrition in mathematics e-learning, *Australasian Journal of Educational Technology*, 21(3), pp 323-334.
http://www.ascilite.org.au/ajet/ajet21/smith.html

Transition towards more online learning

Response

- Newer (free!) technologies include real-time, multi-user online whiteboards (eg www.scribblar.com)
- But still need student and tutor to be “together” at the same time.
- Blend online provision with F2F elements. Where?
- Build a comprehensive, “pre-emptive” FAQ bank, eg using videocasts.

Change in the student demographic

The challenge

- Increase in “non-traditional” students:
  - Age, family and work commitments, educational background, level of qualification
- Students living at home
- Out of practice
- Lack of confidence (but actually…..)
- Limited opportunity to engage

Change in the student demographic

Evidence

UCAS Annual Reference Tables
http://www.ucas.com/data-analysis/data-resources/data-tables

Chowdry H. et al (2008) *Widening Participation in Higher Education*. London. Institute for Fiscal Studies
http://www.econstor.eu/bitstream/10419/64590/1/726093211.pdf

Change in the student demographic

Response

- Pre-entry study skills courses
- Enhanced induction programme
- Review the scheduling of maths support

Increase in students from overseas

The challenge

- Differences in mathematical notation
- Language problems (not maths problems)
- Unwilling to seek support

Increase in students from overseas

Evidence

"The long-standing suspicion that universities accept international students with weak qualifications to boost their income appears to be unfounded"

Lower-grade foreign queue-jumpers a 'myth', Times Higher Education, 2 May 2013
http://www.timeshighereducation.co.uk/news/lower-grade-foreign-queue-jumpers-a-myth/2003583.article

Increase in students from overseas

Response

- Awareness-raising and training for maths support tutors.
- Maths support works more closely with language and other study skills support (integrated Learning Development centres?).

Students as “customers”

The challenge

- Rise in tuition fees
- Sense of “entitlement”
- Greater readiness of students to complain
- The National Student Survey

Students as “customers”

Evidence

“Students are growing keener to stand up for their consumer rights … with official objections lodged with the Office of the Independent Adjudicator up by a quarter in 2012”

Nursing grievances, Times Higher Education, 13 June 2013
http://www.timeshighereducation.co.uk/features/handling-complaints-in-the-high-fees-age/2004711.article

Students as “customers”

Response

- Ensure all support provision is well publicised – to students and to staff.
- Ensure scope of provision is made clear.
- Scan social media for mentions.
- Treat students as valued customers anyway!

Changes in the school curriculum

The challenge

- A levels no longer a foundation for degree level study.
- Should universities have a say in the school curriculum?
- University lecturers failing to keep up to date with changes at school level.

Changes in the school curriculum

Evidence

"Current A levels do not always provide the solid foundation that students need to prepare them for degree-level study … I am delighted that the Russell Group is planning to create an organisation to provide advice to Ofqual on the content of A levels"

Michael Gove, Secretary of State for Education, Letter to Ofqual, 22 January 2013.
http://media.education.gov.uk/assets/files/pdf/l/ofqual%20letter%20alevels%20v2.pdf

Changes in the school curriculum

Response

- Maths support tutors must keep abreast of changes to school curriculum and maths syllabus.
- Maths support tutors to brief other university lecturers on implications, and support them too.

Increased requirement for quantitative skills

The challenge

- More and more subjects have a quantitative element.
- Students are often surprised & bewildered by this.
- Subject lecturers are often inexperienced in teaching "maths/statistics"

Increased requirement for quantitative skills

Evidence

"The number of students taking maths post-16 is insufficient to meet the level of numeracy needed in our society, and the level at which it is taught often fails to meet the requirements for studying STEM subjects at undergraduate level. We share the view that all students should study some form of maths post-16"

House of Lords Select Committee on Science and Technology (2012) *Science, Technology, Engineering and Mathematics (STEM) Subjects*. London. Stationery Office. http://www.parliament.uk/business/committees/committees-a-z/lords-select/science-and-technology-committee/publications/previous-sessions/session-2012-13/

More >

Increased requirement for quantitative skills

Evidence

"There are many courses, with entry requirements limited to Grade C at GCSE, which make significant mathematical demands on their students at some stage during the course."

Advisory Committee on Mathematics Education (2011) *Mathematical Needs: mathematics in the workplace and in higher education.* http://www.acme-uk.org/media/7624/acme_theme_a_final%20(2).pdf

Increased requirement for quantitative skills

Response

- Ensure maths support resources are kept relevant.
- Provide statistics support as well as maths.
- Adopt a different approach to “non-specialist” students.
- Offer support to lecturers who themselves might feel out of their comfort zone.

In summary, there are transitions in many areas of UK Higher Education that place demands upon the provision of maths and statistics support:

- Transition of students from school to university
- Transition of students between years of a degree
- Transition to more online learning
- Transition in the student demographic
- Transition to more international student mobility
- Transition to students as customers
- Transition in the school curriculum
- Transition in the mathematical needs of many subjects

To cope with this, there needs to be transition in the nature of maths support itself ….

What is your priority?

centre for excellence
sigma Σ
in mathematics & statistics support

sigma has also undergone a transition:

From a funded CETL

To a professional network

The **sigma** Network for mathematics and statistics support

New website: www.sigma-network.ac.uk

Jiscmail list: sigma-network@jiscmail.ac.uk

Thank you