



Heads of University Biosciences

HUBS Spring Meeting 2013

The transition between A-Level and higher education
&
HUBS and the Learned Societies – working together in HE

Meeting Report

24th – 25th April 2013
Chicheley Hall, Buckinghamshire

Organised by Prof. Jon Scott, University of Leicester
Dr Hilary MacQueen, Open University
and Zoë Martin, Society of Biology.

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Session 1 – The transition between A-Level and higher education (HE)

Chaired by Prof Jon Scott, University of Leicester

The speakers offered a range of perspectives about the difficulty of student transition from A-Levels to higher education. This was topical given that the current A-Levels are undergoing reform, with new science qualifications due to be introduced for first teaching in September 2015.

Gemma Garrett

Head of Education, Society of Biology and SCORE Committee member

[SCORE Position on A-Level reform](#)

Gemma Garrett gave delegates background information about [SCORE \(Science Community Representing Education\)](#)¹, before explaining some of the issues and concerns surrounding current A-Levels and the work SCORE has done in relation to the planned reforms.

In November 2010 the Government outlined plans to reform A-Levels in the Schools White Paper². This included limiting the number of re-sits, exploring the re-introduction of linear A-Levels and involving higher education and learned societies in A-Level design. As a partnership of learned societies with strong links to HE, teachers and employers, SCORE have been gathering views on A-Levels since 2010. SCORE's view of the current A-Levels are that the subject criteria are broadly fine but that students reaching HE are underprepared when it comes to their skills (in particular, quantitative skills, problem-solving, practical skills, extended writing ability, and aptitude for independent thinking) and ability to apply their knowledge to different contexts. SCORE are also concerned about the impact of negative drivers in the system, such as competition between awarding organisations and league tables, and potentially practical resourcing. Applying mathematical skills in the sciences was also highlighted as a particular concern.

SCORE commissioned research that looked at the assessment of mathematics in the sciences. The report³, published in April 2012, highlighted a number of issues, including great variability amongst the five awarding organisations in terms of the type and difficulty of the questions. It also showed that the current assessments do not accurately reflect the maths requirements outlined in the content criteria for the sciences – with some assessed repeatedly and other in limited way or not at all.

The [SCORE response](#) to the Ofqual consultation on A-Level reform, submitted in September 2012, supports A-Level reform that will better prepare students for future progression with HE involvement, the removal of January assessment, the retention of the relationship between AS- and A-Level, and a revised grading system with Ofqual retaining responsibility for standards.

The main concerns highlighted in the SCORE response included questions about how assessment can become fit for purpose, the short timescale and lack of transparency of the A-Level reform process, the requirement for support of a set number of universities, the

¹ SCORE is a partnership of organisations (the Association for Science Education, Royal Society, Society of Biology, Royal Society of Chemistry and Institute of Physics) that aims to improve science education in UK schools and colleges by supporting the development and implementation of effective education policy.

² The importance of Teaching: Schools White Paper

<http://www.education.gov.uk/schools/toolsandinitiatives/schoolswhitepaper/b0068570/the-importance-of-teaching>

³ [Mathematics within A-level science 2010 examinations](#), SCORE, 2012

removal of subject criteria, A-Levels as an accountability measure, the phased introduction of new A-Levels, and the funding required for the process.

In June 2012 SCORE published a position statement which outlined principles for a reform system including the proposal for National Subject Committees. The National Subject Committees would ensure a balance of representatives are employed and oversee specification and assessment development. They envisioned that professional bodies would be the best placed to convene the Committees, since they are independent bodies, with the ability to represent a full range of stakeholders. In addition, professional bodies have interests across all education levels, and are therefore well-placed to ensure coherence and progression across different stages of education. The proposal gained support from a number of groups, including HUBS (and their equivalents for chemistry and physics) and the awarding organisations.

Earlier this year Michael Gove wrote to Ofqual outlining the Government's direction for A-Levels. The letter explained that some A-Levels would be reformed for first teaching in September 2015. They would be fully linear and have more synoptic assessment and open-ended questions. The letter also stated AS-Levels would no longer contribute to A-Levels, the Russell Group would set up an advisory body to advise on content, and Ofqual will develop new regulatory requirements to secure standards.

Gemma highlighted that learned societies were still keen to engage in the A-Level reform process, even though it now looked unlikely that the National Subject Committee proposal would be adopted. She also outlined the next steps for learned societies, including their continued push regarding the need to review assessment, alongside content, to ensure it becomes fit for purpose. The learned societies would be keen to play a role in this.

Andy Squires

Director of Teaching School & Senior Deputy Headteacher, Denbigh School
[*Biology A-Level Curriculum and Assessment – a teacher's perspective*](#)

Andy Squires gave his personal teaching perspective of A-Levels. He highlighted that currently students are assessment driven and that this was not ideal. His view was that A-Levels are the most common way to recruit students into HE and that they are a satisfactory way of selecting students. He mentioned the common view that A-Levels are becoming easier by commenting that students could be getting better at passing exams.

Mr Squires spoke of his experience of the changes since new A-Levels were introduced in 2008. He described the loss of the synoptic papers and the optional module and explained that this was not positive. He then gave some examples of content that has been removed from and added to the syllabus.

Mr Squires presented the view that some lecturers at HEIs prefer to start on the assumption that students know nothing because of the disparity in knowledge between first year undergraduates.

He then outlined some of the changes due to take place when the A-Levels reform in 2015. He was positive about their being a greater emphasis on synoptic, the removal of January exams, up to date biology content and hopefully more time for practical work. His main points of concern were the de-coupling of AS-Levels from A-Levels, greater standardisation,

the lack of clarity around assessments and lack of clarity around the treatment of core mathematics.

Louise Jukes

Bioscience student, University of Leicester

The transition from A-Levels to Higher Education – a student's perspective 1

Louise gave a view of her experience of some of the difficulties of entering HE. The main areas she reported struggling in included content that she hadn't learnt at A-Level but that contemporaries had learnt and that she did not have sufficient IT and numeracy skills.

Sadif Khan

Bioscience student, University of Leicester

[*The transition from A-Levels to Higher Education – a student's perspective 2*](#)

Sadif explained the differences she had encountered between learning at HE and at school. She pointed out that learning in a lecture theatre was very different to learning in a classroom setting. She described HE education as more of an adult experience and delivered by the experts on particular topics. She described her experience of tutorials and was also positive about her experience of practical work at HE which she said was fun and helped course material make more sense. She described how examinations were less tied to a specification and were much more demanding than A-Level exams.

Beth Black & Sally Brown

OCR representatives

[*AS/A-Level biology and transition to HE*](#)

Beth Black gave an overview of the current GCE A-Level and AS-Level Biology qualification aims and framework. She highlighted the three assessment objectives A01 (Knowledge and Understanding), A02 (Application of knowledge and understanding) and A03 ('How science works') and also gave an example of an OCR exam paper. She explained that the qualification was based on subject criteria devised by a working party and convened by the QCA.

She gave some details of research into:

1. Knowledge retention between A-Level and undergraduate courses.

This was a collaborative project between UEA, Leicester, Birmingham, Bristol and Cardiff. She explained how 38 questions had been asked to a sample of 594 first year students. The research found some differences between the knowledge retention of different exam boards and topic area. They also discovered A-Level grade was a reliable indicator of retention.

Sally Brown presented results from the research on:

2. Research projects on the effectiveness of curricula for 16 -19 year olds as preparation for university

Strengths and weaknesses of students at the start of their degree were recorded, as were the aspects of teaching and assessment in HE that posed transitional challenges. The differences between Russell Group and non-Russell Group institutions were compared. Notable strengths recorded included communication skills, teamwork, intellectual curiosity and practical/ICT skills. Many notable weaknesses were recorded including mathematical skills, academic writing skills, critical thinking and self-directed study. Some notable transitional challenges recorded included the amount of self-directed study and expectations that students make their own notes. The areas lecturers would be most likely to adapt their teaching approaches included covering more fundamental content, teaching more numerical and HE study skills.

Sally then spoke about the OCR consultative forum on that was held about the biology subject area. She mentioned some of the outcomes and remarked that there had been discussion that the A-Level might be redesigned but that whole scale reform was not considered necessary. The key themes from the forum included the concern about the level of maths, lack of understanding of biology in the wider context, lack of observational skills and practical work opportunity, lack of application of knowledge and a call to include extended writing.

Sally finished by speaking about the future of A-Levels, including the new specification which will first be taught in 2015. She raised some of the issues surrounding uncertainty about the subject criteria, the review of specifications by the Russell Group, the implications of a standalone AS-Level, the linear A-Level and the types of assessment.

Roundtable discussion session

The group broke out into a roundtable discussion session where they discussed the transition between A-Level and higher education with the focus surrounding the below questions.

- 1. What do we want students to know and be able to do when they come to HE?**
- 2. How much and what type of biology do students really know?**

The main points that came out of the discussion session related to the first question as it was felt that the differing backgrounds of the students meant it was hard to tell how much and what type of biology students really knew. One of the key themes that came out of the discussions was that specific knowledge was not as important as skills and flexibility. The main points discussed are summarised below:

- Students should have solid independent learning skills, transferable skills and be able to analyse and strategise their own learning being flexible where necessary.
- Students should have a good understanding of the scientific method. They should be able to question what they read and make sound judgements.
- Students should know how to work in teams without collusion.

- Students should have more experience of practical skills. These practical skills should enhance the student's ability to practice proper scientific conduct and not encourage non-scientific practices.
- Students should have a quantitative mind-set and confidence in applying mathematical skills to a biology context. Mathematical skills should be embedded in their learning (e.g serial dilutions.)
- Students should have experience of extended essay writing which should be a core requirement of their A-Level studies
- Students should have a better overarching framework of understanding with a broader picture of how themes in biology fit together. They should be confident in their application of knowledge across different areas with experience of a range of biology content. This knowledge should not be so much based on facts but based on systems.
- Whilst students should have a good breadth of knowledge it was considered important to also have the opportunity to go into greater depth in certain topics , perhaps through optional modules. T
- here was concern that A-Levels were too focused on human and biology content and there might be greater room for plant and sustainability content.
- It was noted that there was a problem with students being assessment driven. That this made encouraging certain skills difficult as, for example, independent learning and practical skills are a particular challenge to assess.
- It was questioned whether chemistry and maths skills might be more useful for those studying biology at HE than biology itself.
- There was a question of how to reward students who show understanding beyond the mark scheme.

Session 2 – Panel discussion: HUBS and the Learned Societies – working together in HE

Chaired by Dr Hilary MacQueen, Open University

& Professor Jon Scott, University of Leicester

Panel members

- **Prof John Newbury, University of Worcester** – *Chair of the Biochemical Society's Education Committee* ([Presentation slides](#))
John spoke about the Biochemical Society's educational activities, focussing on teaching. He emphasised that the Biochemical Society were likely to focus less on schools and more on HE but that they would still do some school liaison to support the pipeline to HE.

- **Dr Jeremy Pritchard, University of Birmingham** – Chair of the Society of Experimental Biology’s Education and Public Affairs Committee, Chair of the Society of Biology’s Education, Training and Policy Committee ([Presentation slides](#))
Jeremy spoke about the ways the Society for Experimental Biology and the Society of Biology are working on HE issues.
- **Dr Sara Burton, University of Exeter** – Chair of the Society for General Microbiology’s Professional Development Committee ([Presentation slides](#))
Sara spoke about the Society of General Microbiology and their education work.
- **Prof Judy Harris, University of Bristol** – Co-Lead of the Physiological Society’s Education and Teaching Theme and Deputy Chair of the Education and Outreach Committee ([Presentation slides](#))
Judy spoke about how the Physiological Society are supporting teaching at HE including the work they are doing on reward and recognition.

The panel members gave short presentations about the work of the learned societies in higher education. Following their presentations, there was a panel discussion and the following points were raised:

- There was discussion about whether the whole HE sector should be looked at or whether the societies should focus on biology-specific issues.
- The needs of the members should be focused on.
- There was concern that HEIs might be recruiting their pool of HE teachers from those who are unsuccessful in achieving research funding rather than from those who are good teachers or who want to teach.
- It was noted that staff might be reluctant to apply for teaching only contracts as there was a stigma that these positions were not as respected.
- There was a consensus the value of teaching should be recognised across the whole institution. This value might be both financial and non-financial.
- There was comment that the way that teaching fits in to promotion criteria was of particular importance.
- Teaching should be excellent from those who are researchers as well as those who have pure teaching positions.
- The experimental design of research into HE teaching needs to be well thought out. There was debate about how useful student feedback data would be.
- The news fees will likely increase demand for excellence in teaching

Discussion session - Reward and recognition for teaching

Professor Jon Scott, University of Leicester

Professor Jon Scott gave a [short presentation](#) about Reward and Recognition for teaching before the group broke out into a roundtable discussion session. He used the following questions for discussion and the points below were raised bearing the questions in mind.

1. **Is teaching still under-valued in terms of career progression?**
 - The consensus was that promotion through the research route was more prevalent.

2. Is there a need for explicit, identifiable criteria for promotion at each stage: how can they be developed?

- The criteria for promotion should be consistent across different HEIs, transparent, clear and flexible.
- It was recognised that providing evidence was somewhat challenging particularly that proved excellence
- Both innovation and quality need to be considered in such criteria.
- There was discussion that about whether teaching and learning was separate from leadership
- It was questioned whether pedagogical research should be included in such a criteria
- Active role in programme reviews
- Agreeing targets with manager might help – defining criteria all the way up the chain needs to be agreed
- There was speculation that CPD points could be useful for quantification and that raising the profile of chartered status could be important.

3. Should HEIs review the composition of promotions panels?

4. Is there a need for a clearer steer from senior management? From HoDs? Provision of Mentors?

- It was agreed setting targets with managers was helpful but that there needed to be agreement of criteria all the way up the management chain.
- Mentoring will vary between HEIs and it was questioned whether internal or external mentoring might be better

5. Should there be transparency regarding the promotions awarded?

- It was agreed that transparency should be embedded by explaining the main reasons someone is promoted.
- There was discussion that mapping to case studies of those promoted to different levels through teaching would be useful to enhance those already on the HEA website.

6. Can the different societies work together on this?

- Learned societies could be used for mapping and supporting promotion
- Learned societies could help with a mentoring scheme
- Who could referee for promotions – a repository? A role for learned societies?
- Funding for staff development activities like L and T events

7. Additional points

- The sharing of good practice within and outside their institution was of importance
- Sustained activity is important
- There should be workshops to support staff

Meeting Programme

24th April 2013

12:00 – 14:00 Registration

13:00 – 14:00 Lunch

14:00 – 17:30 Session 1 - The transition between A-Level and higher education

(Includes mid-session tea break)

Confirmed speakers:

Gemma Garrett, Society of Biology and SCORE Committee member – Head of Education

Andy Squires, Denbigh School – Director of Teaching School & Senior Deputy Headteacher

Louise Jukes and Sadif Khan, University of Leicester – bioscience students

Beth Black and Sally Brown - OCR representatives

Discussion sessions:

What do we want students to know and be able to do when they come to HE?

How much and what type of biology do students really know?

17:30 – 18:15 Presentation of HE Bioscience Teacher of the Year and lecture

Presented by: **Peter Heathcote, HUBS and Society of Biology** - Judge for HE Bioscience Teacher of the Year, HUBS Executive Committee and Society of Biology ETP Committee

Lecture from: [HE Bioscience Teacher of the Year](#) – Professor Tim Birkhead

19:30 – 23:00 Dinner

25th April 2013

09:00 – 10:00 AGM & coffee

10:00 – 13:00 Session 2 - HUBS and the Learned Societies – working together in HE

(Includes mid-session coffee break)

Confirmed speakers:

Prof John Newbury, University of Worcester – Chair of the Biochemical Society’s Education Committee

Dr Jeremy Pritchard, University of Birmingham – Chair of the Society of Experimental Biology’s Education and Public Affairs Committee

Dr Sara Burton, University of Exeter – Chair of the Society for General Microbiology’s Professional Development Committee

Prof Judy Harris, University of Bristol – Co-Lead of the Physiological Society’s Education and Teaching Theme and Deputy Chair of the Education and Outreach Committee

Discussion session:

Reward and recognition for teaching

13:00 – 14:00 Lunch & Meeting Close

This event was approved by the Society of Biology for the purposes of CPD and can be counted as 33 CPD points.

Delegates

Dr	Anthony Baines		University of Kent
Dr	Christopher Baldwin	MSB	Newcastle University
Professor	Yvonne Barnett	FSB	Nottingham Trent University
Dr	Celia Bell	FSB	Middlesex University
Professor	Tim Birkhead		University of Sheffield
	Beth Black		OCR
	Sally Brown		OCR
Dr	Sara Burton		Society for General Microbiology
Professor	David Coates	FSB	University of Dundee
Dr	Neil Cresswell		MMU
Dr	Steven Crosby		Liverpool John Moores University
	Jonathan Crowe		Oxford University Press
	Rebecca Freeman		University of Warwick
Dr	Maurice Gallagher		University of Edinburgh
	Gemma Garrett		Society of Biology
Dr	Anne Goodenough	MSB	University of Gloucestershire
Dr	Kate Graeme-Cook		University of Hertfordshire
Dr	Jonathan R Green	MSB	University of Birmingham
Dr	Neville Hall		Middlesex University
Professor	Judy Harris		Physiological Society
Professor	Peter Heathcote	FSB	Queen Mary University of London
Professor	Janey Henderson	FSB	Teesside University
Dr	Stuart Hogg		University of South Wales
	Jennifer Jacobs		Middlesex University
Dr	Helen James		University of East Anglia
	Louise Jukes		University of Leicester
	Sadif Khan		University of Leicester
Dr	Sandra Helen Kirk	FSB	Nottingham Trent University
Dr	Susan Laird		Sheffield Hallam University
Professor	Paul Lynch		University of Derby
Dr	Hilary MacQueen	FSB	The Open University
	Zoë Martin	AMSB	Society of Biology
Dr	Darren Mernagh	FSB	University of Portsmouth
Professor	John Newbury		Biochemical Society
Ms	Ginny Page		University of Cambridge
Dr	Jeremy Pritchard		Society of Experimental Biology
Dr	Jim Ralphs		Cardiff University
Dr	Jane Saffell		Imperial College London
Professor	Jonathan Scott	FSB	University of Leicester
Dr	Robert Ian Scott	FSB	University of Westminster
Professor	Judith Smith		University of Salford
	Andy Squires		Denbigh School
	Stephen Tilling		Field Studies Council

Dr	Richard Waites		University of York
Dr	Peter Watkins	MSB	Cardiff Metropolitan University
Dr	Christopher Willmott	MSB	University of Leicester