The problem:

According to the **National Audit Office** "When science, technology, engineering and mathematics students are considered together, they are less likely to continue to a second year of study than students following other subjects".

The Office for Fair Access requires institutions wishing to charge in excess of £6,000 per annum to submit an Access Agreement detailing a commitment to 'additional access measures' to sustain or improve access and, where appropriate, student retention and success (ensuring that under-represented students access the full benefits of higher education).

The National Student Survey indicated limited improvement (2%) in overall student satisfaction between 2005-2010.

The Browne Report states that HEIs can charge different and higher fees provided that they can show improvements in the student experience and demonstrate progress in providing fair access (p3). HEIs will be evaluated on how well they are doing in providing fair access to all.

Towards a Solution: Two new projects aim to improve the first year experience of students (particularly from widening participation backgrounds) studying Science, Technology, Engineering and Mathematics (STEM) HE programmes. They aim to increase retention through enhanced experience.

Exploration and enhancement of transition and induction experiences of students starting on HE STEM programmes in the South West region

This project explores existing practice in the SW region, offering opportunities for sharing of experience and knowledge through a series of seminars. Much good work already takes place within the secondary school sector in introducing students to HE and preparation for HE through agencies such as AimHigher.

We aim to:

- learn from the experiences of a number of STEM Ambassadors who have worked closely with young people in the school environment and who have particular insights into their expectations and a sense of potential barriers that young people experience.
- draw on work taking place in the wider HE sector in order to provide models of good practice that can be adopted.
- use research informed approaches around pre-entry guidance, transition support, induction activities, and continued support over the first year of HE STEM programmes.

http://www.hestem-sw.org.uk/widening-participation/wp-projects/?p=9&pp=summary

Peer Assisted Learning: in and beyond the classroom

The support of higher level student mentors for new first year students has significant benefits both academically and socially. Peer Assisted Learning (PAL) Leaders, or mentors, can use their experience to provide reassurance and guide students through difficult aspects of their course.

This project will:

- research the particular benefits of PAL for students studying HE STEM programmes.
- explore the benefits for mentors, for example, in confidence building, acquisition of graduate attributes and enhanced employability.
- investigate different models of PAL including the development of an on-line approach.

http://www.hestem-sw.org.uk/widening-participation/wp-projects/?p=13&pp=summary

Work in Progress: STEM Projects

Meet the Scientists: Do scientists actually exist? Are they real people?

Meet the Scientist (MTS) events are where scientists and engineers (STEM Ambassadors) visit schools and colleges across the South West to talk to young people about their day-to-day job and their journey through higher education into a STEM career. MTS events help to clarify misconceptions about university and reassure young people that studying STEM in higher education is not beyond their reach.

An interview with five STEM Ambassadors found:

- Most young people believe that university will be expensive. Some see a job as their only option.
- Some young people see the future as a long way off and find it hard to relate to future careers.
- For others, it is not seen as 'cool' to be interested in science and pupils don't see themselves fitting into a stereotypical scientist image.
- Lacking awareness of science related careers is a barrier to studying STEM subjects at university.
- Lots of pupils at MTS events regard science as 'too hard', preventing further study of the subject.

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Taking Peer Assisted Learning (PAL) out of the classroom: opportunities with e-learning

This research study will investigate the process of learning as a mix between the informal and formal contexts of learning and bridging the divide between social and academic networking to support the student experience. The study will focus upon using e-learning to support students with specific reference to the first year experience and peer assisted learning (PAL) in a number of STEM courses at the University of the West of England (UWE). The intention is to deliver online PAL via Blackboard Virtual Learning environment (VLE).

Ultimately, the study will attempt to propose an online peer tutoring model based around:

- Peer tutoring – the role of the online peer moderator, Online facilitator role and f2f facilitator role.
- Communication patterns in collaborative learning environments – f2f and online.
- Factors influencing engagement in online collaborative learning.
- Process of learning as a mix between informal and formal contexts of learning.

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A mapping exercise of Peer Assisted Learning (PAL) in the South West region

The aim of the mapping exercise is to explore the extent to which PAL is utilised in HE and FE institutions across the south west region. We also want to identify different models of PAL that are being used. Information for the mapping exercise was collected by contacting HEIs and FEIs by mail and phone. A more detailed overview of models of PAL in the region together with a brief literature review and a PAL bibliography may be accessed on the project website

- In some institutions, PAL schemes are well developed, centralised and well known across the organisation
- In others it can be difficult to identify whether PAL is being used at all
- Sometimes PAL is implemented in response to a specific problem and in these cases a number of different PAL schemes may be functioning independently of one another across an organisation without central co-ordination
- In others PAL schemes are the result of university wide initiatives, for example, at Bournemouth University where PAL has been used widely across the university for 10 years

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Work in Progress: In the Sector

Here!

The Higher Education Retention and Engagement (Here!) project has observed that approximately one third of students experience doubts at some point during their first year at university. Doubters were found to report a worse experience in every category than non doubters. The overwhelming category for student doubting is course related matters, with anxiety about coping and course organisation the most significant factors. A toolkit is being developed on the following themes:

Strategies for reducing Leaving

1 Choosing the right course
2 Transition and learning experience
3 Relationship and communication with staff
4 Identifying and responding to students at risk

Strategies for increasing Staying

5 Central student support
6 Social integration
7 Belonging
8 Engaging students
9 Motivation and goals

For more information about the Here! project and six others in the What Works: Student Retention and Success programme, see **http://www.actiononaccess.org/index.php?p=11_3_2**

National HE STEM Programme

The National HE STEM Programme **(www.hestem.ac.uk)** is a HEFCE & HEFCW-funded initiative that supports Higher Education Institutions across England and Wales in encouraging the exploration of new approaches to recruiting students and delivering programmes of study within the Science, Technology, Engineering and Mathematics (STEM) disciplines. Programme activities take place across three related strands:

1 Widening participation within the STEM disciplines at university level;

2 Higher Education curriculum developments focusing upon course delivery and design and student support, to enhance student knowledge, progression and skills;

3 Encouraging those currently within the workforce and society without a prior university-level qualification to engage with further study to develop enhanced knowledge and skills.

Running until July 2012, the programme has funded 330 projects (anything from £150 to £344,000) and has engaged with 77 different HEIs.

As part of the national STEM programme, the SW regional team (based at the University of Bath) have distributed some £1m worth of regional monies, funding over 30 projects across the region.

For full details of the projects available, please see **www.hestem-sw.org.uk**

Looked after Children Project supported by the HE STEM Programme (North East spoke)

It is widely reported that Looked After Young People (LAYP) face significant barriers to entering Higher Education. Figures suggest that as few as 2% of LAYP progress to University. Choices Together was forged in 2006 with collaboration from Northumbria University, Newcastle University and University of Sunderland to combat this. Local Authorities in Tyne and Wear, Northumberland and Durham each contribute Aimhigher funds to the Choices Together programme to support LAYP in the North East. The existing programme, which has a year long Club format offering over 30 members from year 10 and 11 a cumulative total of 800 hours contact time has led to 53% of last year's cohort planning to attend university in the future.

The STEM programme funding provides for extra sessions including:

- access to on campus STEM activities in Forensic Science, Forensic Chemistry, Forensic Biology and Mathematics
- aspiration raising fun days delivered by all university partners
- opportunities to attend additional STEM events such as Bright Sparks Science Club and Chemistry for the Terrified.

Further information about this project including a handbook entitled Higher Education: A guide to supporting Looked After Young People, developed by the Choices Together partners is available on our project website **http://www.hestem-sw.org.uk/widening-participation/wp-projects/**. Alternatively, contact Kerry Baker, **k.baker2@bradford.ac.uk**

News about the First Regional Seminar held on 7 June 2011

This was the first of four seminars which will take place over the course of the projects. The seminars aim to provide national context, examples of practice from within the region and within the sector, and small group work where delegates can share ideas and experiences.

We had an interesting range of speakers who helped us to focus our thoughts:

Professor Liz Thomas provided an overview of the topic in the national context. She spoke about the What Works? Student retention and success programme which is a three year funded programme including seven projects. More information about the projects can be found on the Action on Access website **http://www.actiononaccess.org/index.php?p=11_3_2** and there will be more detail about these projects at a future seminar.
liz.thomas@edgehill.ac.uk

Noel-Ann Bradshaw gave us an overview of activities designed to improve the experience of students studying Mathematics at the University of Greenwich. These included induction activities designed to encourage interaction and course engagement, and she also described the University of Greenwich Maths Cafe which provides both support and challenge for learners and has also been shown to improve retention.
n.e.bradshaw@greenwich.ac.uk
http://bit.ly/iv2fwo

Dr Barrie Cooper provided an overview of a STEM project that he is leading at the University of Exeter that is aiming to develop a sustainable south-west regional community of practice for STEM outreach and WP practitioners. The aim of the project is to broker and facilitate community wide sharing and dissemination of good practice in relation to STEM and WP outreach activities which will in turn enhance the range of resources available.
b.cooper@exeter.ac.uk

Martin Kaye drew on his experience of working with adults with aspergers syndrome and reminded us of the need for adjustments and understanding when thinking about the experience of students with aspergers syndrome. This is definitely a topic that we will be exploring in more detail during the project.
enjoyworking@specialistskills.co.uk

Lisa Benjamin reported on work she is undertaking for the project in mapping the provision of peer assisted learning in the SW region. She touched on the undoubted benefits for first year students, and there was also discussion about the clear benefits for PAL leaders.
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Creative Learning Journeys

STEM HE SW has commissioned Dovetail, a creative social enterprise, to capture the learning experiences, learning outcomes and reflections of people engaging with our projects. The process began with our first seminar with photographic and interview resources being developed. The creative materials gathered will be available online in an exciting new website which will also capture learning journeys from across a number of STEM SW projects as they progress. This will enable us to see themes emerging and broaden the reach to a wider learning community. There will be more information as we progress.

Next Steps

You are encouraged to get involved with the work of the projects by contacting Chris Keenan or any working group member .

You are also encouraged to become a member of the Retention Network. This would enable you to to keep in touch with the Support and Co-ordination Team, to share your knowledge across the sector and for them to support the work you are doing in this area. Just send your name and email address to **retention@actiononaccess.org** with 'Retention Network' in the subject line to register.

If you are doing work to improve student retention and success, especially when its effectiveness can be demonstrated, we can include examples of good practice in future briefings to support dissemination across the sector. Please email details to **lthomas@phf.org.uk**

Useful Reading

Browne, J. (2010) Securing a sustainable future for higher education: an independent review of higher education funding and student finance. Available at: http://www.bis.gov.uk/assets/biscore/corporate/docs/s/10-1208-securing-sustainable-higher-education-browne-report.pdf (Accessed: 11 February 2011)

Jones, R. (2008) Student retention and success: A synthesis of research. Higher Education Academy

Keenan, C. (2008) Stepping Stones 2HE a model for student retention IN Crostling, G., Thomas, L. & Heagney, M. (Eds)(2008) Student Retention Programs in Higher Education Routledge Oxon

Keenan, C. (2009) Stepping Stones 2HE: Students Active in Transition to HE IN Induction and Disabled Learners Action on Access

Keenan, C. (2010) A Personal Development Planning Perspective on Supporting Student Transition into Higher Education IN Hartley, P., Hilsdon, J., Keenan, C., & Sinfield, S. (Eds) (2010) Learning Development in Higher Education Palgrave London

National Audit Office (NAO) (2007) Staying the course available at: http://www.nao.org.uk/publications/0607/student_retention_in_higher_ed.aspx accessed on 2.6.11

Office For Fair Access (OFFA) (2011) Access Agreement Guidelines http://www.offa.org.uk/wp-content/uploads/2011/03/2011-01-OFFA-How-to-produce-access-agreement-2012-13.pdf accessed on 2.6.11

Thomas, L. (2002) Student retention in Higher Education: The role of institutional habitus Journal of Educational Policy 17:4 pp423-442

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National HE STEM Programme

Stepping Stones 2STEM

July 2011 ▪ Briefing Document 1
December 2011 ▪ Briefing Document 2
March 2012 ▪ Briefing Document 3
April 2012 ▪ Briefing Document 4

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