STEM DISABILITY COMMITTEE

31 May 2013

Dear Paul,

The STEM Disability Committee has been established as a cross-STEM collaborative group of professional bodies to consider practical ways to improve policies, practices and provision for disabled people. It exists within the wider picture of diversity in STEM but has specific focus on all aspects of disability. Its area of interest spans the whole STEM pipeline, including those aspiring to a STEM career as well as those already employed in a STEM role.

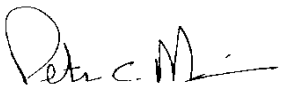
Core members are those organisations in the STEM community who have made a clear commitment to increasing disability access for people studying or working in STEM. The core members are:

- Institute of Physics (IOP)
- Royal Academy of Engineering (RAEng)
- Royal Society of Chemistry (RSC)
- Society of Biology (SoB)
- Campaign for Science and Engineering (CaSE)
- Royal Society (RS)

The STEM Disability Committee welcomes the opportunity to respond to the Review of Targeted Support for Higher Education Students. Our response to the questions posed in the call for evidence is attached.

If you need any further information on the points raised, please do not hesitate to contact me.

Yours sincerely,

pp 

Dr John Conway
Chair, STEM Disability Committee

**Response from the STEM Disability Committee to the Department for Business, Innovation and Skills (BIS) on the Targeted Support for Higher Education Students Review: Call for Evidence**

The STEM Disability Committee has been established as a cross-STEM collaborative group of professional bodies to consider practical ways to improve policies, practices and provision for disabled people. It exists within the wider picture of diversity in STEM but has specific focus on all aspects of disability. Its area of interest spans the whole STEM pipeline, including those aspiring to a STEM career as well as those already employed in a STEM role.

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The Committee is serviced by the Royal Society and has an independent Chair, who is currently Dr John Conway of the Royal Agricultural University.

This response deals only with those aspects of the review that are relevant to disabled students, i.e. the questions on Disabled Students' Allowances (DSAs)

There is little difference in the proportions of disabled students studying science, engineering and technology (SET) subjects and non-SET subjects (for all undergraduates, 8.7% of SET students and 9.6% of non-SET students declared a disability and for postgraduate research students this was 5.3% and 6.7% respectively).[1] However, there are patterns of under-representation between different SET subjects, with Agriculture & Related Sciences and Biological Sciences having the highest proportions (10.8% and 9.3% respectively) and Engineering & Technology and Mathematical Sciences the lowest (both 6%). The reasons for the different patterns of representation at the subject level are not clear and there are many factors, including A Level subject choice, aspiration to a particular career, and of course, attainment at A Level, that will contribute to any student, including a disabled student, choosing to study in a particular field. Nevertheless, it is clear that there are no intrinsic barriers to disabled students in studying a SET subject relative to other subjects.

There are broad similarities between the subjects in terms of impairment types, with almost 50% of disabled SET students declaring that they have a specific learning difficulty, eg dyslexia. This mirrors the population of disabled students in all subjects.

[1] All figures are taken from Equality Challenge Unit Equality in higher education: statistical report 2012, Part 2: Students. The ECU figures for SET subjects include medicine & dentistry, Veterinary science and subjects allied to medicine, which are outside the remit of the STEM DC.

Likewise, there is no evidence to suggest that the take-up of DSAs differs significantly between the subjects (42.9% of disabled SET students were in receipt of DSA, compared to 39.5% of non-SET students).

The most recent report of disabled graduate employment by the Association of Graduate Careers Advisory Services (AGCAS)[2], found that the prospects for disabled graduates were very bright, and that whilst they were more likely to be unemployed than non-disabled graduates (11.4% compared to 8.8% respectively), the differences between employment levels in certain fields was only slight. Indeed, the proportions of disabled students and non-disabled students entering "Professional, scientific and technical activities" (which could be used as a useful proxy for SET graduate employment in this context) were broadly similar (10.2% and 10.4% respectively). Overall, proportions of disabled and non-disabled graduates going on to further study were the same (around 12%).

**Q 15: Based on your knowledge of DSAs, disabled students and the general student population, is there any IT equipment currently supplied through DSAs that you think is generally required by the majority of students entering HE?**

In forming our evidence, we have consulted with some of our SET academics in HEIs, through our networks of departmental disability officers who work within departments to ensure that the needs of disabled students are met at the subject level. Such academics generally do not have specialist knowledge of disability issues; rather they work with their central university disability practitioners, and act as a local point of contact for disabled students. Many of the academics who responded to our call for evidence reported that having access to IT equipment was essential for all students, and having equipment that was portable was extremely useful as it could be used in different teaching and learning environments, such as labs, tutorials, lectures, etc. They all pointed to the increasing availability of PCs on campus, or in departments, which the majority of students can use should they not have a PC at home.

However, there are many reasons why general access to computers is not always sufficient for disabled students in SET subjects, particularly where they require assistive technology to aid them in their studies. Many disabled students will require their own computer, in order that they can study at their own pace and in their own time, depending on their particular impairment. The assistive technology – both hardware and software – provides each disabled student with a unique solution to their individual needs. It is both the hardware and software that impact on the use of subject-specific software and the learning strategies of the individual student.

Many disabled students, depending on the nature of their impairment or condition, will bring their own specialist IT equipment with them to the lab or the lecture theatre, and increasingly, portability of equipment means that there is a more effective learning environment. None of the academics we consulted had expert knowledge in dealing with assistive technology and generally they would rely on the student, or the central disability officer or practitioner, to have had training and/or expertise in this area. Whilst departments generally network generic and subject-specialist software,

[2] What Happens Next?: *A Report on the First Destinations of 2009/2010 Disabled Graduates, AGCAS 2012 http://www.agcas.org.uk/assets/download?file=3064&parent=74*

such as *Mathematica*, or *Chemdraw*, we are not aware of any departments that have expertise in dealing with how assistive technology and specialist software interact with each other.

In making any changes to the availability of IT equipment under the DSA rules, therefore, the STEM Disability Committee would want to ensure that disabled students would not be placed at an additional disadvantage, particularly where they would then have to rely on departmental equipment or assistance that is not necessarily readily available. Ensuring that a disabled student receives appropriate equipment, software and the necessary training as part of a package, will allow the student to access their studies on a level playing field with their non-disabled peers.

**16. If you haven't done so, please indicate what IT equipment you feel is generally required by all students.**

Feedback from our academics tells us that, generally, students require access to IT equipment but that often this equipment may need specialist software on it, such as *Chemdraw*. There will be different IT equipment requirements for different subjects, and students may need different types or specs of computers, depending on portability issues, access to particular software, and interaction with any assistive technology that they may need. Therefore, we do not believe that there is a one size fits all approach to IT equipment for all HE students.

**17. What types of IT equipment do you believe should be continued to be regarded as additional, ie it is required specifically by disabled students as a result of their disability?-**

STEM DC would point to the needs assessment process as being the means by which support would be identified as being additional. Any student that has been identified as needing access to their own PC – whether this is due to subject specialism (eg a mathematics student may need a tablet), a directly disability-related reason (such as needing quiet time to study or to study at their own pace – students with Aspergers' or dyslexia) or because the most appropriate computer programme is not readily available on a campus PC (for example a student with a visual impairment needing LaTeX) – should have that equipment as "additional" to that required by the majority of (non-disabled) students.

Disabled students often need to seek new solutions to software/hardware conflicts between their assistive technology and subject-specific software, and also, more generally, to new tasks they encounter as part of course content. i.e. they may need to invest time and financial resource in trying something new, or seeking support. This may not have been identified within the needs assessment (i.e. there is no "contingency").

**18. Is there any IT hardware or software that you feel disabled students need that they are currently unable to get?**

In some cases, DSA equipment maxima are reached – for example where a student with complex or with multiple, impairments needs a specific piece of expensive

hardware and complex software packages. In 2006[3], the *Snowdon Survey* found that those with visual, hearing and mobility impairments were especially disadvantaged as they were the most likely to exceed the equipment maximum. They also found that totally blind students, who are Braille users, generally exceeded DSA maxima and that disabled postgraduate students were at a particular disadvantage, given that their maximum for the entirely of their study is less than a third of that available to disabled undergraduates.

The needs assessment process is not usually conducted by assessors with a working knowledge of the programme of study content and demands, and this is especially true in STEM subjects, which often have specific requirements for technical and laboratory work. This means there may be an underestimation of the resources the student will need, and so students may ultimately exceed their DSA as additional requirements become clearer as the programme unfolds. The STEM Disability Committee is about to initiate a new project, in conjunction with the National Network of Assessment Centres (NNAC) to provide resources, skills and knowledge to assessors, to STEM academic staff and STEM students about the particular issues that need to be addressed during the assessment process, such as technical course content, laboratory work and/or specialist subject requirements, such as specialist software (e.g. *Chemdraw*).

There may be some students who need a specific piece of expensive hardware and several different software packages and therefore need a much higher spec of computer to run all of these. It is often the training on the equipment that is the vital link in the chain. Feedback from students is often that they have to spend significant amounts of time alone trying to use their equipment and software, only to give up and spend further time and resource finding an alternative solution. It is essential, therefore, that a student receives adequate training to use the equipment to its full potential, and, in particular, how it interacts with subject specialist software or equipment, as this expertise may not be readily available within that student's department.

[3] Tozer, N. (2006). *The Snowdon Survey 2006*. Horsesham: The Snowdon Award Scheme [Accessed 11th August 2008], http://www.leeds.ac.uk/disability-studies/archiveuk/tozer/The%20Snowdon%20Survey%202006.pdf. (last accessed 7 May 2013)