CPHCLDG Survey of Computing Student Engagement

Sally Fincher and Janet Carter

Workshop

In January 2012, the Council of Professors and Heads of Computing (CPHC) Learning Development Group (LDG) ran a workshop looking at the National Student Survey (NSS). Delegates were provided with the NSS results for their own Departments. During the workshop they compared their own scores, variously, to those from Departments from institutions with similar missions, Departments with similar NSS scores, and Departments in the same geographic region.

The NSS was set up with specific policy aims:

> "The National Student Survey (NSS) forms part of the revised quality assurance framework (QAF) for higher education (HE). The aim of the survey is to gather feedback on the quality of students' courses in order to contribute to public accountability as well as to help inform the choices of future applicants to HE." [HEFCE- ref]

Computing delegates were extremely conscious of the role the NSS played in their lives, and considered that it *contributed to public accountability* by providing material for comparison (and hence "rankings") and *informed the choice of future applicants* by evaluating student terminal and summative "satisfaction".

Delegates were not convinced of the value of either of these approaches. Commonly-expressed opinions regarded the disproportional emphasis that departmental (and institutional) management placed on the NSS ranking, over which staff felt they had little control; and the absence of truly informative questions. Teachers said they would be very interested in questions that elicited how their students genuinely engaged with disciplinary learning, with their peers, and with non-academic input (for example industrial placements) which are a feature of many computing degree programmes. Questions about learning except, arguably, *the course is intellectually stimulating* are noticeably absent from the NSS.

Broadly, what emerged from the day was that whilst delegates did not like the NSS and its associated machinery of ranking and comparison, they did care for their students, and were keen to explore an instrument that might uncover how students were engaging with learning in higher education in general, and with their discipline in particular. To this end, the LDG formed a working group to pilot such survey.

Working Group

The working group focussed on the US *National Survey of Student Engagement* (NSSE) [ref] as a model and exemplar for the *Survey of Computing Student Engagement* (SCSE). The NSSE is a long-established and much imitated model, from which, for example, the Australian national student survey is derived [ref]. It contains broader categories of questions than the NSS, and these are based on robust research results that focus on factors associated with better higher education experiences [ref]. The working group considered the NSSE to be directly for the benefit of the departments that administer it, rather than for governmental aims of public accountability.

The working group selected and adapted questions for a UK perspective, added some with a specifically disciplinary (Computing) focus, and piloted the resultant survey with a group of 12

students. Thirteen institutions were then recruited to form a trial group, from all areas of the United Kingdom, and including institutions from all mission groups. The survey was offered to the trial group online in spring of 2013.

Survey of Computing Student Engagement (SCSE)

It was hoped that responses would be solicited from first and final year students, so that issues of retention, change, progression and deeper engagement could be assessed. However, the reality of the national situation meant that departments were unwilling to ask final year students to undertake an additional survey, potentially jeopardising their NSS returns (in some cases there were institutional prohibitions) so, broadly, only the first year experience was represented.

520 students began the survey, with 315 participating fully enough to produce analysable results. There were no statistically significant differences to be found between the results produced by students from the different institutions, so all results have been pooled for analysis.

Profile of respondents

The gender balance of respondents at 29% female, was found to have a statistically significant difference to the norm for female participation in the CS subject area in the UK, which is approximately 12% [ref]. The results provided by female respondents, however, were closely aligned with those provided by male respondents and show no statistically significant differences.

The average age of respondents was 20.4 years, with very few mature student respondents. The number of mature students was too small for meaningful statistical comparison, however a visual inspection suggests that the results do not differ markedly between traditional and mature groups, except in regard to living accommodation.

Accommodation choices for the participants show 40% living in a family home – this includes all mature respondents – with 30% living a hall of residence. 10% live in rented accommodation within walking distance of campus and the remaining 20% live in rented accommodation that is further afield. The average commute, whether on foot or by vehicle, for those living off campus is 30 minutes for each journey, amounting to just over 5 hours per week.

Questions relating to how students spend their non-academic time showed that 50.5% undertake no form of paid employment and those that do spend an average of 12 hours per week at work. A further 15% undertake 1-2 hours of voluntary work each week. On top of this, 35% of the students spend an average of 3 hours per week involved in extra-curricular activities such as clubs and societies, sporting activities etc., with 20% spending even more time than this. 45% declare no involvement at all. It is worth noting that the employment and activity figures do not inverse correlate; it is not the case that students with higher paid employment hours are less involved in extra-curricular activities.

All respondents admitted to spending some time socializing each week. 13% spent an average of 3 hours per week – this group contained most of the mature students – 20% 8 hours, 20% 13 hours and the rest even more. The number of students admitting to the most hours spent socializing is very small but they are also those that do not report any paid employment.

About how many hours do you spend in a typical 7 day week doing the following
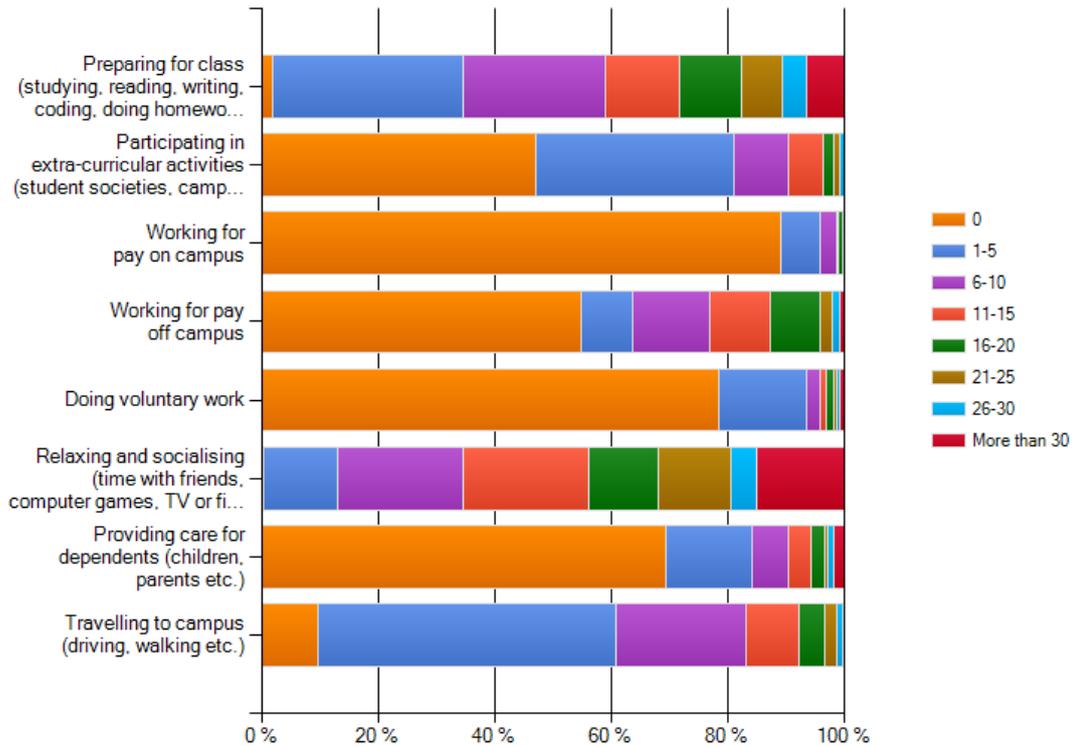

Social aspects of studying

It may not be surprising that 68% of respondents have never attended an art exhibition or play during their time at university (especially bearing in mind that respondents were almost exclusively first years), but it is also the case that over 50% have never connected their learning to societal issues or included diverse perspectives in their coursework.

However, half of the students reported learning something that changed the way they understand an issue or concept and over 60% have often connected their prior learning to their current academic studies. Perhaps more surprisingly, one third have never used numerical information to evaluate a real world problem or evaluated the results obtained by others.

During the current academic year, about how often have you done the following?
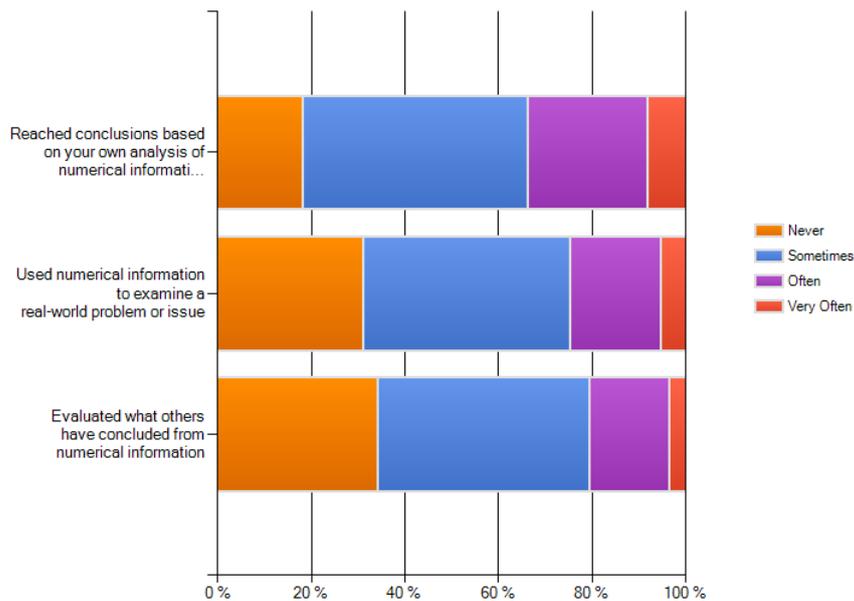

Academic and personal development

Questions relating to academic and personal development show that 95% of students say that group work and that presentations are regularly required on their courses. Every student reports being set written assignments. However they do not relate this work to developing those skills, as 60% of the respondents state that their course provides *very little* or *no* contribution to improving their writing or in helping them to speak clearly and effectively.

More positively, 80% believe that their courses teach them to write clean and efficient code and 70% believe their course helps them to think critically.

Given the importance of "work placements" and internships for Computing it is perhaps unsurprising that 78% report having completed, or intending to undertake, a sandwich year. That contrasts with only 30% who have, or intend to, join a professional society.

Which of the following have you done, or do you plan to do, before you graduate?
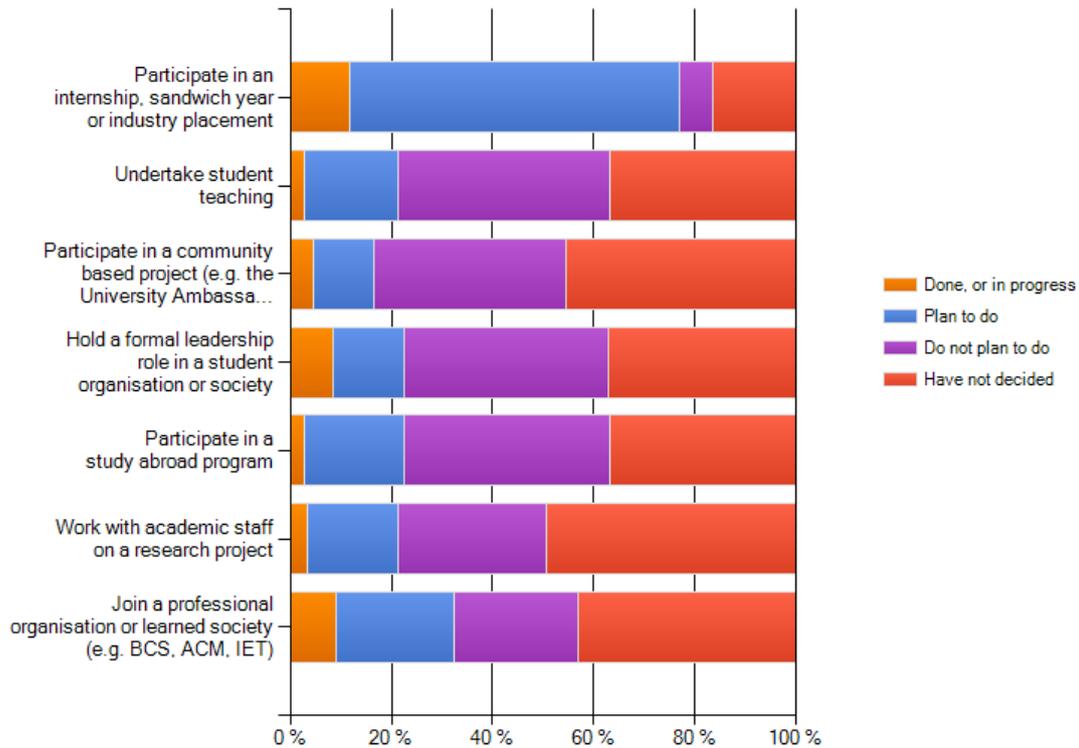
Interactions with staff

The questions in this section did not elicit as many responses as would have hoped for. Students only appear to have responded to express an extreme opinion, and it may be that this section of questions requires reworking.

22% found interaction with "tutors" to be excellent, but 71% left the question blank. In the corresponding responses for interactions with "other academics", 18% find the interactions to be excellent with 77% providing no response.

Interactions with learning support services was as rated 10% excellent, 13% poor and 82% non-response.
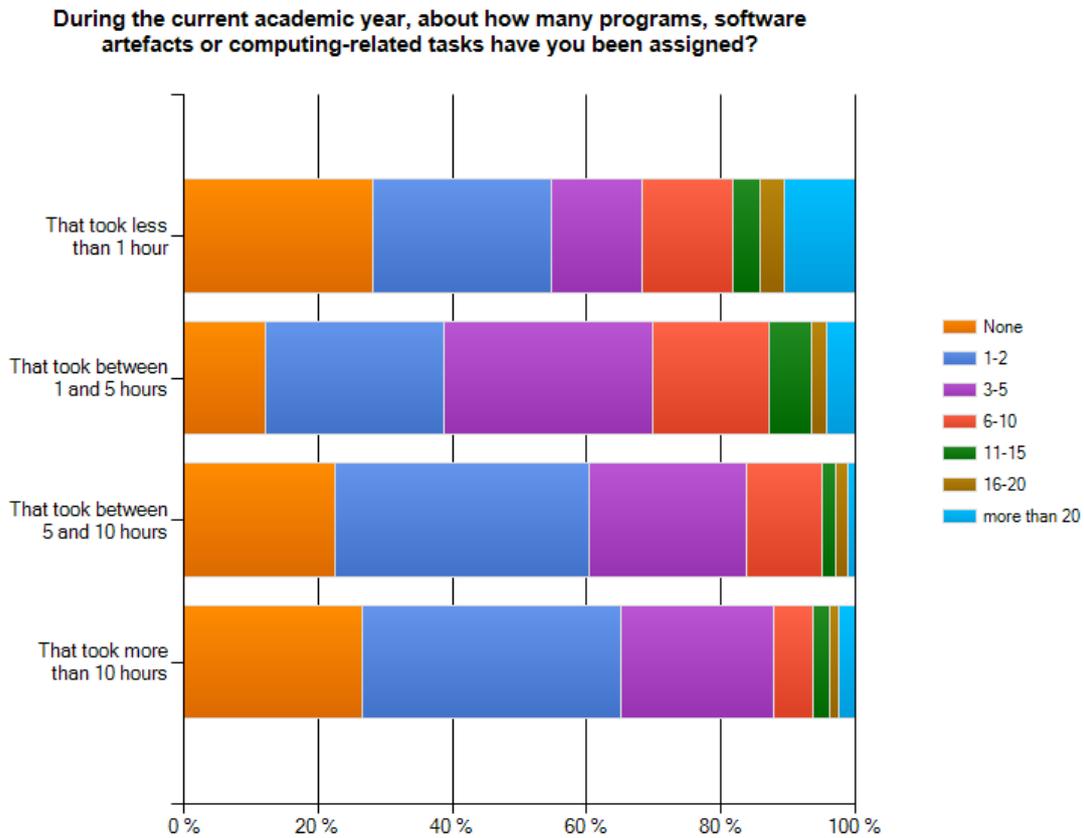
Study habits

When it comes to preparation for classes and teaching sessions 5% of respondents admit to *never* doing preparatory work and a further 13% say they *regularly* do not complete it.

8% of students never speak in class, either to ask questions or voice opinions.

When working outside class 44% regularly explain concepts to others. Only 15% claim to never ask anybody for help, whereas 29% do so regularly – almost half of these respondents both explain to others and ask when necessary. It may be interesting to ask whether this is a general, or a disciplinary approach (that is, particularly relevant in the learning of Computing) and so it may be useful to compare results from this specific question with other NSSE-based data.

Students report spending an average of 9.6 hours per week on programming assignments, that academic suggest should take 4.

During the current academic year, about how many programs, software artefacts or computing-related tasks have you been assigned?
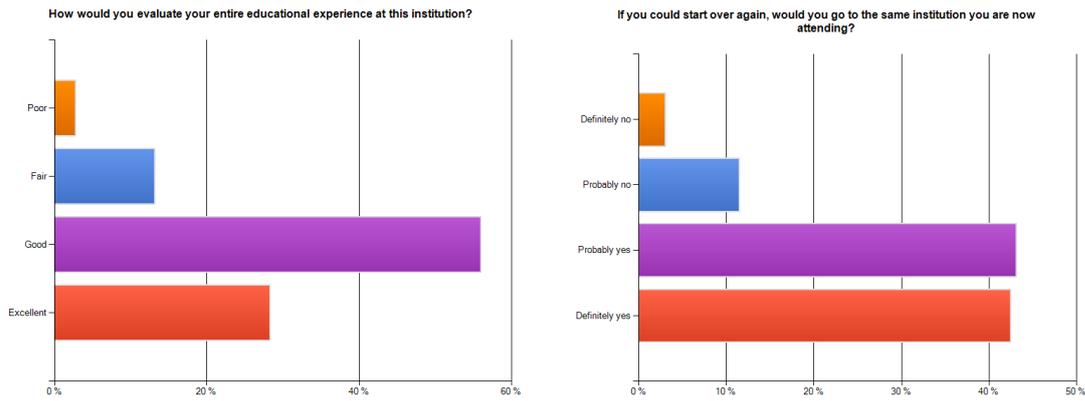

Overall experience

Students were asked to rate their experience at their current institution and to state whether, if they had their time again, they would attend their current institution.

Rating the experience: 31.5% excellent, 62.2% good, only 3.2% poor.

Repeat the experience: 41.6% definitely yes; 42.0% probably yes, only 2.8% definitely no.

3% did not respond to either question.

How would you evaluate your entire educational experience at this institution?

If you could start over again, would you go to the same institution you are now attending?

Redundant questions

Despite the pilot, some questions failed to elicit responses.

- When students were asked how often their modules *challenged them to produce their best work* 20% said *often*, but 80% did not respond.
- Questions asking about the quality of interactions with a variety of different people including fellow students, support staff and academics were left blank by over 60%.
- Questions relating to interactions with students of different ethnicity, religious and political beliefs appear to have a random response pattern.
- Nobody completed the enquiry relating to contact with students from different economic and social backgrounds.

This raises questions about the suitability of the questions for such a survey in the UK and is worthy of investigation; either to amend or remove the questions.

Responses rates for some questions may be lower than we would like, but the students with the more extreme views have completed them. Rewording, reworking and perhaps reordering might produce an improved range of responses in the future.

Future Work

The LDG working group met again in summer 2013. At that time, it was thought that the rewards of SCSE were too weak - when set against the machinery of the NSS - to encourage institutions to participate, and there was insufficient appetite to roll SCSE out across the sector.