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Taking responsibility for learning isn't everything: A case for developing tertiary students' conceptions of learning

MARCIA DEVLIN
Centre for the Study of Higher Education, The University of Melbourne, Parkville, Victoria Australia

ABSTRACT: This study examines first year university student perceptions of responsibility for their learning, within the context of their conceptions of learning, with a view to meeting two of the objectives of higher education in Australia: teaching students to think and to learn. A questionnaire was distributed to 100 students undertaking at least one first year subject at the University of Western Sydney (UWS) in 1998. Their written responses provided information about their conceptions of learning as well as both direct and indirect indications of their perceptions of responsibility. Results indicated that students held perceptions of personal responsibility for their learning but that their conceptions of learning were essentially quantitative in nature and were at the lower levels of complexity. The implications of these findings are discussed in terms of university teaching and learning and of meeting the ultimate objectives of higher education.
The objectives of higher education
In order to find routes to enhancing and improving the quality of student learning in higher education, it is necessary to clarify what constitutes good learning. In other words, the ultimate objectives and purposes of higher education need to be identified. One common way to do this is to outline what a graduate should have achieved and learnt through a university education (Department of Employment, Education, Training and Youth Affairs, 1998). Along with the employability of graduates, the recommendations that graduates should be able to think reflectively and to learn throughout their life have become widely accepted as the important objectives of higher education in Australia, and in other western nations.

In order to think reflectively, tertiary students must take some responsibility for their learning. Reflective thinking can, of course, be facilitated through a number of teaching frameworks including those based on constructivist epistemology, phenomenography and the critical thinking movement. The successful application of each of the frameworks, however, relies on students taking some level of personal responsibility for their learning, through metacognitive input. Metacognition includes two closely related components: knowing about cognition, particularly one's own cognitive strategies, and secondly, monitoring, regulating, controlling and applying this knowledge to the planning and implementation of appropriate activities related to learning.

Similarly, in order to become a lifelong learner, tertiary students must take responsibility for their learning to some extent. The acquisition of the independence and attributes inherent in a lifelong learner can be facilitated and encouraged by university teachers, but given the nature of such attributes, would also necessarily rely on student willingness to take some personal responsibility for their learning and for knowing about and regulating their cognition.

If instilling the capabilities to think reflectively and to be a lifelong learner are accepted as two of the main objectives of a higher education, several issues then arise. For example, do students understand that these objectives are what a university education is ultimately focussed upon? Do they hold conceptions of learning that differ from the one that encompasses these objectives? To what extent do they recognise and accept their share of the responsibility for their learning? There is anecdotal evidence that staff in some Australian universities feel that students do not take enough responsibility for their learning. Teaching staff across a range of disciplines comment on the seemingly low level of responsibility that students appear to take for their learning. Some teaching staff feel that at least a proportion of students are overly dependent on guidance in learning from staff and that a significant number expect, as one put it to this author, ‘to be spoonfed.’

If these perceptions are representative of the way in which students approach learning at university, the ways in which these students conceptualise and understand learning bears careful examination.

The study reported here examined the conceptions of learning held by a group of first year students and compares these to the conceptions that would encompass the accepted

objectives of higher education. Within the context these conceptions provide, the study also uncovered the group's perceptions about responsibility for their learning and specifically whether they take personal responsibility for their learning. It was hoped that eliciting and sharing student responses related to what they understand university learning to be and related to perceptions of responsibility would contribute to understanding first year student learning and therefore to the process of improving the quality of student learning.

The ultimate aim of this study was to answer a central, simple question - do a group of first year students from one university hold perceptions of personal responsibility for their learning? As with many simple questions, this one is more complex than it first appears to be. The complication arises when the definition of learning is considered. Clearly, one's conception of learning is a personal construct and learning therefore cannot be defined in any absolute way that will make sense equally to a range of individuals.

A conception is defined as the fundamental way a person understands a phenomenon in the surrounding world (Marton, 1981, 1988, as cited in Eklund-Myrskog, 1997). Studies of student learning have shown that student conceptions of learning or beliefs about what constitutes learning are strongly correlated with their approaches to study and may be an important influence on learning outcomes. This is specifically because the learner's conception influences the way a task and its demands are interpreted and the way the learner goes about a task (Trigwell and Prosser, 1996).

In summary, in order to take personal responsibility for learning, students must necessarily have knowledge of their own cognitions and of their own learning. The nature of the conceptions of learning that students hold are, therefore, also important to consider when the issue of responsibility is being explored. Taking personal responsibility for learning that is understood by the learner to be an accumulation and repetition of facts will mean something quite different from taking responsibility for learning conceptualised by the learner as deep understanding that leads to personal growth.

Research on student perceptions of responsibility for their learning
Schmelzer, Schmelzer, Figlo and Brozo (1987) examined college student causal attributions related to their study success and failure. The researchers found that these students gave their own persistence and active study as the most common reason for their academic success. On the other hand, the students were more likely to attribute the cause to their lecturer when they failed.

Another study by Killen (1994) examined University of Newcastle (Australia) student perceptions of factors influencing their academic success and failure and compared these perceptions to those of lecturers at the same university. Results indicated that nine of the ten factors students perceived to be the most influential in terms of their success at university were factors within their control. These included 'self-motivation', 'self-discipline' and 'consistent effort'. In terms of perceptions of factors influencing failure, seven of the ten factors students perceived to be the most influential were also factors within student control. These factors included 'lack of self-motivation', 'lack of self-
discipline' and 'insufficient effort'. Overall students perceived personal responsibility for both their success and failure at university.

**Accessing student perceptions**

It has been argued that student choice is important in relation to perceptions of their learning environments (Clarke, 1995). When examining these perceptions, previous studies such as Killen's (1994) study used *a priori* statements, which did not offer students the opportunity to indicate which aspects of university learning were of salience and importance to them. The present study offered participants the opportunity to choose the learning environments of salience to them and the opportunity to provide freely written responses related to the environments they chose. Unlike previous studies, the present study also offered participants the opportunity to choose to comment on their own contributions to their learning and thereby reveal their perceptions about responsibility for their learning. The results of the present study, therefore, are expected to give a more accurate account, than have previous studies, of whether students perceive that they have responsibility for their own learning.

**Accessing student conceptions of learning using identified conceptions**

Individual learners view learning in different ways. Saljo (1979) has identified five conceptions of learning and Marton, Dall' Alba and Beaty (1993) another one conception of learning held by university students. These are

A) learning as increasing quantitative knowledge;
B) learning as memorising;
C) learning as acquiring facts, and/or procedures to be used when required;
D) learning as understanding or the abstraction of meaning;
E) learning as seeing things in a different way - an interpretive process aimed at understanding reality and finally,
F) learning as changing as a person (Marton et al., 1993).

These conceptions are seen as hierarchically related, with each conception subsuming those that precede it (Taylor, 1994). Biggs and Moore (1993) further categorise these six conceptions into two groups - quantitative (A-C) and qualitative (D-F). The quantitative conceptions focus generally on the learning of isolated items, including facts and procedures, and with the quantity of such items that have been learnt. Qualitative conceptions focus on the meaning of those facts (D), on ways of seeing the world (E) and on a philosophy of life (F) (Taylor, 1996).

**Accessing student conceptions of learning using the SOLO taxonomy**

The researchers involved in a large Australian study looking at student perceptions of their learning environments proposed levels of knowledge about learning based on the Structure of Observed Learning Outcomes (SOLO) taxonomy (Biggs and Collis, 1982). This taxonomy allows the categorisation of levels of freely written text responses related to ideas about learning, in terms of an increasing complexity of structure. However, the study asked participants to focus on one subject only. The complexity of structure of their responses was relevant only to that context, then, and not necessarily to university study more generally.
In the current study, responses to the ideas about learning question were also categorised according to the Structure of Observed Learning Outcomes (SOLO) taxonomy. The SOLO classification was on the basis of the complexity of structure of the responses. Specifically, five levels were used to classify responses related to university learning:

1. **Prestructural**: There is no evidence of any knowledge of the process involved in learning.
2. **Unistructural**: One relevant aspect of learning is understood and focussed upon.
3. **Multistructural**: Several [two or more] independent aspects of knowledge are presented. These aspects are not integrated into an overall structure.
4. **Relational**: The relevant aspects of learning are integrated into an overall structure.
5. **Extended Abstract**: The integrated knowledge of learning is generalised more abstractly to a new domain (Biggs and Collis, 1982, as cited in QUT, 1994, p.19).

The responses to the ideas about learning question were analysed using both the six conceptions and the SOLO taxonomy because one way to increase validity is to compare content from different 'instruments' (Fraenkel & Wallen, 1996). The former is used to examine the conceptions themselves and to categorise them according to the identified conceptions. The latter examines the complexity of the structure of the responses.

A case study was used because of the likelihood that particular conceptions are more likely to be represented in particular student populations.

**Methodology**

**Participants**

A type of accidental sampling approach (Cohen and Manion, 1996) was used in this study. The coordinators of first year undergraduate subjects in a range of Academic were asked for help with accessing potential participants. This process meant that the ultimate sample was not randomly selected as it resulted from working with whichever coordinators responded positively to the request and including whichever of their individual students volunteered, until the required sample size was obtained.

Participants were 100 undergraduate students currently enrolled in and studying a first year subject in a course at the University of Western Sydney (UWS), a university with the principle of equitable access to all at the forefront of the its considerations. The university looks for a student's potential and focuses on outcomes rather than limiting intake to those with high academic achievement. Aboriginal and Torres Strait Islander students and students from non-English speaking backgrounds (NESBs) are relatively highly represented in number at the University.

Year levels of participants ranged from University Diploma (X = 4) to fourth year (X = 4) with the majority of the students in first year (X = 77) and all students enrolled in at least one first year subject. The participants’ were undertaking a range of courses, most of which had a strong vocational focus.

Eighty-one of the participants were male and 19 were female. Ninety-six of the students were full-time students and 4 were part-time. The age range of the participants was from 18 years to 52 years, with an average age of 21.9 years.

**Questionnaire and data collection**
The questionnaire was piloted and some language and instructions refined. The final questionnaire had five parts:
1. **Section A**, Demographic and course choice information
   This short section consisted of non-identifying demographic information and the student reasons for doing their course.

2. **Section B**, Student perceptions of their learning environments
   This section asked students to chose a number of learning environments from a list supplied and to comment on how and why their learning was helped and hindered in each environment. Each response was in a cloze-answer format with students filling in the learning environment, the statement about how their learning was helped or hindered in each learning environment and the reason for each statement. Analysis of the responses given in this section provided an indirect indication of perceptions of responsibility for student learning.

3. **Section C**, Student ideas about how to improve their learning.
   A single open-ended question with deliberately minimal guidelines for how it might be answered was asked in this section and a generous amount of space provided for responses. These responses provided another indirect indication of perceptions of responsibility.

4. **Section D**, Percentages of responsibility attributed to people and factors by students.
   Here, students were asked to directly attribute responsibility by assigning percentages to a list of people and/or factors they viewed as responsible for their learning.

5. **Section E**, Student ideas about learning.
   A question that first reminded students of the previous questions then asked for their responses to three specific prompts related to learning. Responses here provided information about participant conceptions and knowledge of learning.

The collection of data took place a number of weeks into second semester so that participants had at least one semester's experience of university study and so that perceptions about their current experiences had had time to stabilise. Information and consent forms and questionnaires were administered at the end of lectures timetabled in the morning of a day when students had both morning and afternoon classes. Potential participants were asked to bring the completed form and questionnaire to a specific lecture timetabled for the same afternoon where it was collected by the researcher.

**Data Analysis**
There were three indirect indicators of personal responsibility used in the study. The three indirect indicators were

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• choosing to comment on particular learning environments where no teachers are present (from Section B);
• referring to one's own behaviour across learning environments (also from Section B) and
• referring to changes in one's own behaviour (from Section C).
Content analysis was used to analyse the data related to the indirect indicators of personal responsibility. These included
• main reasons for undertaking the course;
• student conceptions of learning and
• student levels of knowledge of learning.
There was one direct indicator of personal responsibility used in the study - per cent of responsibility attributed to various people and factors (from Section D).

The relationships between research questions, related questionnaire sections, issues analysed and indicators used for analysis are shown in Figure 1.

Insert Figure 1 about here

Results
Results related to student conceptions of learning
Student reasons for undertaking the course
Almost half (46%) of the reasons recorded were related to vocational outcomes and another fifth (20%) to an interest in the area and/or industry to which the course leads. A relatively small percentage of responses related to the intrinsic benefits of learning.

Six conceptions of learning
The number and percentage of student responses for the 82 participants who chose to answer this question are shown in Table I.

Insert Table I here

As this table shows, more than four-fifths of responses (88%) were classified as corresponding to conceptions A-C, the quantitative conceptions. Half of the responses (50%) were classified at the lowest level of the hierarchy, and reflect conceptions of learning as increasing quantitative knowledge.

Levels of knowledge of learning
The number and percentage of student responses classified at each level of the SOLO taxonomy are shown in Table II.

Insert Table II about here

More than half the responses (59%) were classified as unistructural - where only one relevant aspect of learning is understood and focussed upon. Another third (35%) were classified as multistructural - where two or more relevant, independent but unintegrated aspects of knowledge are presented. Overall, these results demonstrate a limited range of
levels of complexity of structure of conceptions of learning, focussed at the simpler end of the spectrum.

**Results related to student perceptions of responsibility**

**Choice of learning environment as an indirect indicator of perceived responsibility**
The number of times each learning environment was chosen by participants in relation to helping or hindering learning was tallied as were the number of times students’ own behaviour was referred to across the environments. The results of these tallies are displayed in Table III.

Insert Table III about here

**Choice of learning environment as an indirect indicator of perceived responsibility**
These results demonstrate that participants believe a range of learning environments both help and hinder their learning, including those in which there are no teachers present. A total of 89, or approximately 21%, of the responses indicated a perception that learning is helped and/or hindered during private study and/or while studying with student colleagues. The fact that students chose to comment on learning environments where no teachers are present would seem to suggest that they perceive that their learning is helped and hindered in environments where they themselves have the majority, if not all, of the responsibility for the learning that takes place. Participants in this study would seem to be acknowledging indirectly then, that they are at least partly responsible for their learning.

**Reference to own behaviour as an indirect indicator of perceived responsibility**
Overall, 24%, or almost one quarter, of all the responses made in relation to what helped or hindered the participants’ learning made reference to students’ own behaviour in a way that indicated this behaviour was the cause of, or a major contributor to, helping or hindering learning. Given the complexity of university study and the number of factors that could potentially contribute to or cause learning to be helped or hindered, these results would seem to indicate again that participants see themselves as somewhat personally responsible for their learning, across the range of learning environments.

**Student views of how learning could be improved as an indirect indicator of perceived responsibility**
Participants were asked how they thought their learning at university could be improved. Table IV displays the tallies of responses to this question that related to each learning environment.

Insert Table IV about here

A new category was created for this particular analysis - 'Private/self'. This category housed responses that referred to the private study environment and/or to individual behaviour more generally. Interestingly, the number of suggestions about how learning could be improved that related to lectures, and to private study environments/self were almost equal (59 and 57 suggestions, respectively). In other words, just under one third of all suggestions made about how learning could be improved were related to lectures and almost another third to private study/self. Participants appear to perceive that their learning would seem to indicate again that participants see themselves as somewhat personally responsible for their learning, across the range of learning environments.
could be improved equally in a learning environment where their learning autonomy is almost certainly limited and one where they have a high degree of autonomy. That is, they have not concentrated their suggestions for how their learning could be improved on factors outside their control. This would suggest that they view the responsibility for the quality of their learning as belonging somewhat to their teachers and at the same time that they acknowledge a degree of personal responsibility for the quality of their learning.

In summary then, almost one third of responses to the request 'Tell me how you think your learning could be improved' referred to improvements in participants' own behaviours and/or attitudes that influenced study and learning. Over two-thirds of responses referred to the behaviour and/or attitudes of other people and factors. These results provide some evidence of a perception of personal responsibility for their learning on the part of participants.

**Attribution of responsibility for learning as a direct indicator of perceived responsibility**

The average percent of responsibility attributed to each source and typical other people and factors indicated are displayed in Table V.

Insert Table V about here

Taking personal responsibility for one's learning provides a basis for the metacognition necessary to achieve the objectives of higher education and as Table V demonstrates, participants in this study would appear, on the whole, to have that basis. On average, they attribute more than half (56%) of responsibility for their learning to themselves. These students also perceive, on average, that just over one quarter (27%) of the total amount of responsibility for their learning lies with their teachers. Taken together, these two findings suggest that overall, these students believe that the majority of responsibility for their learning is shared between students and lecturers/tutors, with the higher proportion of responsibility being attributed to themselves.

**Discussion and Conclusion**

The first question with which this study was concerned was 'What are first year student conceptions of learning?' The results indicate that many of the participants in this study see learning as a quantitative exercise in accumulating facts and knowledge to be remembered and used in 'practice'.

'Do first year students hold perceptions of personal responsibility for their learning? The results show that overall participants indicated both directly and indirectly that they perceive a substantial amount of personal responsibility for their own learning. However, viewed within the context provided by student reasons for undertaking the course, conceptions of learning and levels of knowledge of learning, it is clear that students in this study are taking personal responsibility for a quite particular, and it could be argued, limited, sort of learning. They perceive personal responsibility for contributing to the accumulation and memorisation of quantitative knowledge, facts and procedures related in the main to practice within a particular industry or vocational area.
Despite the evidence that participants perceive personal responsibility for their learning, without the ability to conceive of learning as a qualitative process, it will be very difficult for students to adopt study and learning practices that lead to high quality learning (Trigwell and Prosser, 1996) - here defined ultimately as reflective thinking and lifelong learning.

The results of this study show that in line with their conceptions of learning, students may, at the same time as accepting personal responsibility for their learning, expect to be 'spoon fed' facts and procedures. Their conceptions of learning indicate that they believe that learning is the accumulation and memorisation of facts and procedures and they would then be likely to expect to receive at least some of this 'knowledge' from their teachers. Once they have it, they will take responsibility for adding it to their 'store' and remembering it, but they must be given it first.

The issue may be the quantitative and limiting conceptions of learning that the students hold. The majority of participants in this study have an essentially quantitative view of knowledge and see learning as an accumulation of the knowledge of others. This view may reflect the demands of many undergraduate courses in universities (Taylor, 1994). These findings suggest that assumptions about what students are trying to do in their university study may need to be questioned, particularly in the context of an increased interest in vocational outcomes of university education generally in Australia.

**Implications for teaching and learning at university**

Conceptions of learning affect approaches to learning (Biggs, 1999) which in turn affect learning outcomes (Trigwell and Prosser, 1996). The teaching challenge is to change the way some students currently and usually learn, not to see this as an impediment to teaching them. To assist such change, it would seem reasonable to begin with student conceptions of learning. Participants in this study hold conceptions of learning that are narrow and simple. There is evidence that such conceptions can change. For example, Eklund-Myrskog (1997) found that car mechanic students’ conceptions developed and became more complex over a period of time. She explained this as owing to the fact that at some point the students "...realise the importance of understanding" (p. 313) and a "...cognitive jump..."(p. 313) takes place. However, she provides no evidence for these assertions, nor, does she explain exactly what this 'jump' involves or how it might be encouraged in other students.

It seems reasonable, however, that such change must be encouraged. The constructivist framework may provide some insight into how this might occur. In contrast to the more traditional view of learning as the transmission, from teacher to student, of a discrete body of information or knowledge, constructivism is a philosophical position where learning is viewed as an active process in which learners construct new concepts or ideas for themselves. Teachers try to encourage students to discover principles and ideas for themselves through active dialogue, negotiation and other similar methods. In order to change personal conceptions of learning, teachers would engage students in constructing and adapting new conceptions that are relevant to their context (Angelo, 2000). Changing
conceptions of learning would seem to be achievable through such methods. Interestingly, the notion of personal responsibility is central: the constructivist view emphasises that "...learners actively construct knowledge for themselves...and [interpret] this on the basis of ...assuming responsibility for their own learning" (Clarke, 1998, p. 114).

**Theory into practice**
In order to provide an example of how such ideas might look in practice, a process that has been planned at the University of Melbourne is described below. In the School of Audiology, as part of their course requirements, students undertake clinical practice - testing the hearing of real patients under the supervision of experienced Audioligists who are also teaching staff. In the view of these staff, students currently hold conceptions of learning focussed at the lower end of the spectrum, that assume that their teachers will provide all the evaluation, feedback and guidance they need on their performance, and on how to improve it, in clinical settings. In order to address this situation and to encourage students to both change their conceptions of learning and increase personal responsibility for their learning, teaching staff have decided to introduce student self evaluation. The importance of such evaluation as a professional practitioner will be discussed and debated in preparation classes. Students will then be taught how to reflect on their own clinical performance and to rate their performance against criteria that they have been involved in developing collaboratively with the teaching staff.

Constructivist epistemology contends that knowledge is the invention of human minds and to gain knowledge is to manoeuvre through a series of conceptual structures. It sees instruction as negotiation between two sets of conceptual structures - the teacher's and the learner's - a view that implies that the learners are made, or become aware of such structures in order that such negotiation can take place. (McGuinness, 1993). The Audiology example illustrates such negotiation in practice. It also provides clear illustration of an active process of learning, of teachers encouraging students to discover ideas for themselves, and of students engaging in the construction of their own knowledge. The process planned is likely to result in evolved conceptions of learning as well as increased personal responsibility for learning among the students.

**Future research**
The objectives of higher education that underpinned this study were determined by outlining what it is commonly agreed a graduate should have achieved and learnt through a university education. There are other methods of determining the ultimate objectives of higher education, which would be likely to result in objectives different from reflective thinking and lifelong learning. Employability, however that might be defined, is an obvious example and might be a useful objective to examine in future investigations.

**Conclusion**
The sample in the present study was small and any subsequent investigation would need to include a larger sample. In addition, because of the use of a case study of one university, the processes used at UWS to select participants for this study, as well as the fact that the study is set within the context of one country, it is likely that the results may not be representative in terms of the conceptions and perceptions of all first year students.

Overall, the findings of this study contribute to a knowledge base on the first year student experience at a particular university. Specifically, the research adds to understanding of how these students conceptualise learning and where they perceive responsibility for their learning lies. The results show that participants in the study hold conceptions of learning that give particular meaning to their perceptions of responsibility. There is the potential for information gathered by this study to be used by other universities to inform improvements in teaching and learning.

Specifically, personal responsibility in students must be maintained, as it is a necessary component of metacognition, which in turn is essential in order to develop reflective thinking and lifelong learning. Student conceptions of learning may need to be changed, however, in order that they become more than the accumulation and memorisation of facts, and conducive to achieving the ultimate objectives of higher education.

References
QUEENSLAND UNIVERSITY OF TECHNOLOGY. (1994). The teaching and learning in tertiary education (T&LiTE) project. A report prepared for the Teaching and Learning Committee. (Australia, Queensland University of Technology).


Table I: Distribution of responses across conceptions of learning categories

<table>
<thead>
<tr>
<th>Learning conception category (Marton et al., 1993)</th>
<th>No. of responses</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: learning as increasing quantitative knowledge</td>
<td>41</td>
<td>50</td>
</tr>
<tr>
<td>B: learning as memorising</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>C: learning as acquiring facts to be used</td>
<td>22</td>
<td>27</td>
</tr>
<tr>
<td>D: learning as understanding, the abstraction of meaning</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>E: learning as seeing things in a different way</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F: learning as changing as a person</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>82</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Table II: Distribution of student responses across SOLO levels

<table>
<thead>
<tr>
<th>SOLO taxonomy level</th>
<th>No. of responses</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prestructural</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Unistructural</td>
<td>48</td>
<td>59</td>
</tr>
<tr>
<td>Multistructural</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Relational</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Extended abstract</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>82</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table III: Number of times each learning environment chosen and
Number of times participants’ own behaviour was referred to in each learning environment

<table>
<thead>
<tr>
<th></th>
<th>Lect</th>
<th>Tute</th>
<th>1-1</th>
<th>Priv</th>
<th>Grp</th>
<th>Prac</th>
<th>Othr</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chosen</strong></td>
<td>173</td>
<td>88</td>
<td>8</td>
<td>56</td>
<td>33</td>
<td>57</td>
<td>6</td>
<td>421</td>
</tr>
<tr>
<td><strong>Refs</strong></td>
<td>14</td>
<td>24</td>
<td>7</td>
<td>29</td>
<td>14</td>
<td>15</td>
<td>-</td>
<td>39</td>
</tr>
</tbody>
</table>

Notes: Number of times each situation chosen in italics.
‘Priv’ refers to the ‘independent study’ environment
‘Grp’ refers to the ‘studying with student colleagues’ environment
‘Prac’ refers to practical sessions on and off campus, which were combined.

Table IV: Number of responses for suggestions of how learning could be improved related to each learning environment

<table>
<thead>
<tr>
<th></th>
<th>Lect</th>
<th>Tute</th>
<th>1-1</th>
<th>Private /self*</th>
<th>Grp**</th>
<th>Prac***</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No.</strong></td>
<td>59</td>
<td>3</td>
<td>2</td>
<td>57</td>
<td>4</td>
<td>19</td>
<td>36</td>
<td>180</td>
</tr>
</tbody>
</table>

‘Private/self’ refers to the ‘private study’ environment and/or to individual students’ own behaviour
‘Grp’ refers to the ‘studying with student colleagues’ environment
‘Prac’ refers to practical sessions on and off campus, which were combined.

Table V: Average percentage of 100% responsibility attributed to each category provided

<table>
<thead>
<tr>
<th>Source of responsibility</th>
<th>Range of % attributed</th>
<th>Average % attributed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self</td>
<td>10 - 100</td>
<td>56.3%</td>
</tr>
<tr>
<td>Lecturers/tutors</td>
<td>3 - 90</td>
<td>27.0%</td>
</tr>
<tr>
<td>Student colleagues</td>
<td>0 - 30</td>
<td>8.9%</td>
</tr>
<tr>
<td>Other people</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family members, friends</td>
<td>0 - 50</td>
<td>3.9%</td>
</tr>
<tr>
<td>Other factors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resources (IT, library)</td>
<td>0 - 30</td>
<td>3.9%</td>
</tr>
</tbody>
</table>

Research question 1: What are first year student conceptions of learning?

<table>
<thead>
<tr>
<th>Related questionnaire sections:</th>
<th>E. Student ideas about learning</th>
<th>A. Course choice information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues analysed (and indicators used for analysis):</td>
<td>• Student conceptions of learning (6 identified conceptions)</td>
<td>Main reason(s) for doing the course (stated reasons - vocational etc)</td>
</tr>
<tr>
<td>• Student level of knowledge (SOLO taxonomy)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Research question 2: Do students hold perceptions of responsibility for their learning?

<table>
<thead>
<tr>
<th>Related questionnaire sections:</th>
<th>B. Student perceptions of learning environments</th>
<th>C. Student ideas about how to improve their learning</th>
<th>D. Per cent of responsibility attributed to people/factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Issues analysed (and indicators used for analysis):</td>
<td>Perceptions of responsibility (chose particular environments; referred to own behaviour)</td>
<td>Perceptions of responsibility (referred to changes in own behaviour)</td>
<td>Perceptions of responsibility (high % of responsibility attributed to self)</td>
</tr>
</tbody>
</table>

Figure 1: Relationships between research questions; related questionnaire sections; issues analysed and indicators used for analysis