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## **Research Article**

# **How engaged are undergraduate students in ethics and ethical thinking? An analysis of the ethical development of undergraduates by discipline**

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### Abstract

Barnett (2000: 257) argues that universities need to prepare students for 'supercomplexity', where "the very frameworks by which we orientate ourselves to the world are themselves contested". Learning to think through ethical issues develops critical thinking skills for dealing with supercomplexity, since the frameworks the students use to consider ethical issues are contested and likely to change. Yet, we might question the extent to which university students, and particularly students in different disciplines, are engaged in ethical thinking and consequently prepared for such complexity. There are indications from previous research that disciplinary identity influences the beliefs of students and faculty (Helms 1998) with significant differences being identified between disciplines in terms of ethical beliefs (Lane & Schaupp 1989). This research builds upon this work by exploring the importance of disciplinary background by analysing the ethical development of students in three academic programmes in the arts, social and pure sciences. A questionnaire exploring students' ethical understandings and level of ethical development was given to students in all three undergraduate years of the English, Geography and Animal Behaviour programmes at an English University. In total 335 students responded. Unexpectedly, no significant differences were found between disciplines in terms of student ethical development. Understanding the differences, or lack thereof, in the development of undergraduate ethical development offers insights for how best teach students to think ethically in the future.

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## **Introduction**

Barnett (2000: 257) argues that universities need to prepare students for 'supercomplexity', where "the very frameworks by which we orientate ourselves to the world are themselves contested". Healey *et al.* (2011) argue that learning to think through ethical issues develops critical thinking skills for dealing with supercomplexity. Ethical issues are an example of supercomplexity, as the frameworks the students use to consider ethical issues are both contested and likely to change. With increasingly dynamic professional and social lives, graduates need these skills to enable them to negotiate an uncertain world. Yet, Boyd *et al.* (2008: 38) question whether graduates are leaving university prepared "for practical and ethical engagement with their scholarly, professional and personal worlds."

Higher education has an important role to play in enabling students to recognise and understand ethical issues (Beck & Murphy 1994; Cortese 2003). Yet within disciplines the nature of the ethical issues studied by graduates varies (Lane & Schaupp 1989; Rooy & Pollard 2002). The ethical issues that pure scientists face when undertaking tests on human subjects, for example, are of a different nature from those explored in literature when deciding whether a character made the appropriate ethical choice. However, in terms of critical thinking, many ethical issues are multidisciplinary in nature, for example assisted suicide may be studied from many different disciplinary perspectives with medical students analysing the issue from the perspective of the physical body, whereas social scientists might consider the implications for broader society.

Ethics is often covered in higher education as part of research skills courses (Boyd *et al.* 2008). Here, ethics is concerned with developing individuals to have the broader skill of *thinking* ethically in all parts of their lives, not just in research. As such it focuses upon meta-ethics as opposed to normative or applied ethics. Whereas normative ethics is concerned with exploring the moral standards and principles underlying actions, and applied ethics considers the moral acceptability of a specified action or practice (Dittmer 2014), meta-ethics explores the basic conception of morality and ethical sensitivity (Clarkeburn *et al.* 2003). It analyses the nature of morality; sources of moral answers, whether there are absolute moral answers; the complexity and multiplicity of moral issues; and personal moral values (Clarkeburn *et al.* 2003). Greater understanding of these different elements leads to ethical development. The overall aim was to analyse the ethical development of students in three academic programmes in the arts, social and pure sciences. This contributes to the research field in two main ways: 1) by comparing student ethical development between disciplines; and 2) by considering how ethical thinking might be supported within different disciplines.

This paper begins by defining what is meant by ethical thinking and discussing the disciplinary variations in relation to ethical understanding and development found in the literature. The methodology of the research is then outlined explaining the Meta-Ethical Questionnaire (MEQ) used to assess ethical development in the three disciplines of Animal Welfare and Behaviour, English and Geography. This is followed by the analysis which first compares ethical development between disciplines overall before analysing the different elements of ethical thinking between disciplines. The discussion then explores how the findings from this research might inform teaching practice.

### **Ethical thinking and discipline variations**

This research adopts Clarkeburn *et al.*'s (2003) concept of 'meta-ethical development' which describes how students construct ethical realities, for example how students interpret the nature of ethical properties, attitudes and judgements. How students construct ethical reality influences their ability to think ethically. Ethical thinking is a particular type of critical thinking. For the purposes of this research 'ethical thinking' encompasses two elements (Clarkeburn *et al.* 2002):

1. *Ethical sensitivity*: an ability to perceive the ethical implications of a situation.
2. *Moral reasoning*: an ability to engage in sound moral reasoning and use practical problem solving strategies.

These elements of ethical thinking are contextualised within the broader skill of critical thinking whereby meta-ethical development occurs through the improvement of critical thinking in relation to ethical issues:

"Ethical learning is impossible without the development of critical reasoning (Kant, 2003) and, at the same time, critical reasoning is reinforced by the aspiration for justice and the independence sought by ethical learning" (Boni & Lozano 2007: 825).

Ethical thinking requires critical thinking skills, enabling students to monitor and, where appropriate, correct their own moral reasoning. Students who have limited meta-ethical development consider reality to be certain, and believe in absolute answers (Clarkeburn *et al.* 2003). Learning to reflect critically on ethical issues offers the opportunity for students to develop their understanding of ethical reality, recognising the complexities and uncertainties within life. However, the extent to which ethics is seen as important in different disciplines may vary.

### ***The impact of disciplinary differences***

It has long been recognised that generic approaches to teaching and learning in higher education do not address the complexities of teaching and learning across different subject areas (Kreber 2009). A wealth of research has argued how disciplinary boundaries have significant influences upon the teaching, learning and assessment of students (Breen & Lindsay 2002; Huber 2002; Healey & Jenkins 2003; Riordan 2005; Kreber 2009). These disciplinary boundaries therefore structure the higher education experience of the majority of students and influence the beliefs of individuals indoctrinated into a particularly disciplinary world view. As students are educated in a particular discipline they not only learn the content of that discipline, but also learn how to be students of that discipline (Barret & Nieswandt 2010). This leads to the development of subject-specific identities. As beliefs and identity are intertwined (Helms 1998) then subject-specific identities can influence ethical perceptions (Barrett & Nieswandt 2010). Consequently it is hypothesised that disciplinary background would have an influence upon the ethical development of students.

Defining disciplinary commonalities and differences is challenging (Becher & Trowler 2001; Kreber 2009). However, all disciplines, by their nature, "have particular conceptions of knowledge and concerns with particular areas of 'content' and epistemology" (Healey & Jenkins 2003: 50). It is the construction of these distinct specialisations which help students and academics to care about it, understand it and use it (Riordan 2005). Such disciplinary structures develop ways of being, thinking and practicing for their members (Becher & Trowler 2001; Kreber 2009), as individuals construct "a personal and professional identity, set of values, attitudes taken-for-granted knowledge and recurrent practices" (Becher & Trowler 2001: 48). Students become

socialised to their disciplines absorbing certain tacit knowledge specific to that subject area (Becher & Trowler 2001).

Chick *et al.* (2009) argue that beyond differences in content “disciplines vary in their ways of thinking, knowing and doing, as well as in what they value” (p3). Although all disciplines focus on skills such as communication and analysis, subject specific skills such as aesthetic engagement is more likely to be a part of the arts of humanities than the pure sciences (Riordan 2005).

“What it means to think, create, demonstrate, know, and evaluate in the biology classroom is different from the meaning of these activities in the creative writing classroom” (Chick *et al.* 2009: 3).

Teaching in this manner invokes the core characteristics of a discipline which help students think like a biologist, a creative writer or a sociologist (Chick *et al.* 2009). It is these ways of thinking which are likely to influence how students from different disciplines think in an ethical manner.

### ***Arts, social and pure science discipline comparison***

Society’s present problems are global and multidisciplinary in nature (Boni & Lozano 2007). Issues such as pollution, human rights, the fight against poverty, world security and so on, involve everybody and require multi and inter disciplinary approaches (Boni & Lozano 2007). Within higher education there are also areas of academic concern which cross disciplines, for example academic dishonesty, plagiarism, collusion and cheating (Ellery 2008; Colnerud & Rosander 2009). Yet, previous work has found significant differences between disciplines in terms of ethical beliefs (Lane & Schaupp 1989). In their research with 8 different colleges (Business and Economics, Arts and Sciences, Education, Physical Education, Engineering, Forestry, Creative Arts and Nursing) at a state university in the eastern United States, Lane & Schaupp (1989: 943) found “that the beliefs which students perceive are required to succeed in the university differ among colleges” with Business and economics students consistently perceiving “a greater need for unethical beliefs than students from other colleges”. Furthermore, within the sciences, Barrett & Nieswandt (2010) found that subject-specific identities of physics and chemistry teacher candidates influenced their conceptions of ethics. However, in their research with two different disciplines, focusing on faculty and undergraduate students personal ethical beliefs, Curren & Harich (1996) found that participants’ discipline (business or humanities) did not play a significant role in value judgements. Such disagreements in the literature may relate to the specific disciplines researched suggesting the need for further research in this area. This project complements these previous studies by considering students understanding of ethics across three specific programmes which cover a range of different types of disciplines: English (English literature), Geography (Human Geography, International Development Studies, and Natural Hazard Management) and Biosciences (Animal Behaviour). These discipline areas cover respectively the arts, social and pure sciences.

### ***English: Arts***

The discipline of English contains significant opportunities for exploration of ethical issues. For example, in English literature stories have the power to “train the moral imagination” (Hilder 2005: 42); in English language, research with participants raises ethical issues around working with participants in an ethically sensitive manner; and in creative writing issues of representation highlight ethical concerns. Yet, the English subject benchmark statement has no mention of ethics in relation to the discipline (QAA

2007a). In contrast, for the sub-discipline of creative writing and English language the importance of ethics is noted as a cognitive ability (NAWE 2008) and as an approach to research (HEA 2011).

*Geography: Social science*

Smith (1995) argues that moral issues are often marginalised within contemporary education, and that the discipline of geography is particularly well positioned to address this deficiency. Geography deals with many “inherently controversial subjects, from population control to environmental change” (Vujakovic & Bullard 2001: 276), providing a significant range of contemporary topics in which to situate ethical discussion. For example, ‘sustainable development’, a contested concept which underpins many contemporary geographical debates, is replete with ethical questions. The geography benchmark statement emphasises research and field based studies in relation to ethics, but also recognises “the moral and ethical issues involved in debates and enquiries” within the discipline (QAA 2007b: 5).

*Biosciences: Pure science*

Bioscientists face numerous ethical considerations whether it is choosing where to apply for funding, the research topic, or their interaction with animal (and sometimes human) research subjects (Clarkeburn *et al.* 2002). However, despite the recognition of the importance of ethics, the extent to which it is taught explicitly within the life sciences varies significantly (Clarkeburn *et al.* 2002). This may be because members of staff are concerned that “ethics would demand too much time in a curriculum at a cost to the ‘core’ scientific subjects” (Clarkeburn *et al.* 2002: 66). Yet with science increasingly being taught within a social context (Reiss 1999), the Biosciences subject benchmark statement explicitly mentions ethics nine times in relation to critical assessment of intellectual arguments, professional codes of conduct, research methods, and a need to interpret decisions in relation to the broader social context (QAA 2007c).

**Methodology: A comparative approach**

This research maintained a common institutional context by taking place in different departments in one post-1992 UK University. It adopted a comparative approach by comparing selected programmes from three contrasting departments: English, Geography and Animal Behaviour. This research asks ‘how’ much students understand about ethics.

*Procedure*

The research aim was addressed by replicating the use of Clarkeburn *et al.* (2003) Meta-ethical Questionnaire (MEQ). The MEQ assessed how students constructed ethical reality, exploring how they interpret the nature of ethical properties, attitudes and judgements by asking students to position themselves between 10 paired statements which addressed 5 different elements of ethical thinking (Table 1). This questionnaire was rigorously developed and tested with a cohort of 478 Life Studies students at the University of Glasgow and the findings published in *Studies in Higher Education* (Clarkeburn *et al.* 2003). During the first two weeks of the academic year (2011-12) all students, at each level, studying on the programmes in the three disciplines were asked to complete the questionnaire during one of their teaching sessions. Teaching of ethics in all three disciplines was implicit within the content throughout the three years of the course and made explicit when during particular topics discussed. It was explicit

towards the end of second year undergraduate course when preparing students for their dissertations in Animal Behaviour and Welfare and Geography, in one third year optional modules in Animal Behaviour and Welfare and one third year optional module in English which focused specifically on ethical issues within the respective disciplines.

**Table 1: Questionnaire paired statements and the element of ethical development addressed**

Paired statements		Element
Statement 1	Statement 2	
Moral questions have absolutely right answers.	There are very few absolutely right answers in the world and answers to moral questions are not one of them.	Element III: Nature of multiplicity
Personal moral values are the same forever.	Personal moral values need to be reconsidered from time to time.	Element I: Source and type of moral answers
People cannot choose their values because values are either right or wrong.	I am committed to a set of values I have chosen for myself.	Element IV: Personal responsibility and relationship with multiplicity
I do not doubt that my values are the right values to have.	I need to commit myself to a set of values even when I am uncertain whether they will always be the right values to have.	Element IV: Personal responsibility and relationship with multiplicity
It is not my place to make moral choices, because right answers have been found already by others.	When I have a moral problem I try to think the answer through myself.	Element IV: Personal responsibility and relationship with multiplicity
A good moral answer is short and simple, because you know the right answer.	You cannot have a good moral answer without arguments to support it, because moral answers are never straight forward.	Element I: Source and type of moral answers
I believe we can always make a judgement whether actions are right or wrong and these rules do not change.	When we make moral decisions, the best we can do is to decide what is right as far as we can tell in different situations.	Element I: Source and type of moral answers
I don't think discussing moral problems is beneficial for me unless a right answer can be found at the end.	Discussing values with other people gives me a beneficial opportunity to reflect on my values, even when there is no agreement in the end.	Element V: Purpose of moral discussions
I don't enjoy discussing moral problems unless the teacher can give the right answer in the end.	I enjoy discussing my values in the class even when we cannot agree on one right answer in the end.	Element V: Purpose of moral discussions
I don't think teachers should assess my moral arguments if they do not know the right answers yet.	It is important that teachers assessing moral arguments look for logical structure and good reasoning rather than a particular answer.	Element II: Role of authority

Source: Clarkeburn *et al.* (2003)

### *Participants*

335 responses were received from the three disciplines (English 98; Geography 86; Animal Behaviour 151). Approximately 40% of the responses were from year 1 for each subject and 30% from both years 2 and 3. Overall more women completed the questionnaire (77%) in comparison to men (23%). This difference reflects the proportions of men and women studying the disciplines at the case study university

(Animal Behaviour: M=18%, F=82%; English: M=24%, F=76%; Geography: M=56%, F=44%)<sup>2</sup>.

*Data analysis procedure*

Following Clarkeburn *et al.* (2003) each student received an ethical score. The score was calculated using the following weightings: A=1, Ab=4, B=9, Cb=16, C=25 (Table 2). The response to each question was totalled and then divided by the number of questions (10 in total). The resulting figure represented the ‘type’ of ethical knowledge each student had at that point in time (Type A = 0–8.9, Type B = 9-15.9, Type C = 16-25). The findings were analysed in Excel and SPSS. The data was analysed for reliability using Cronbach's alpha ( $\alpha = 0.735$ ) the questions used were considered reliable as 9 out of 10 questions had an internal reliability of  $\alpha > 0.7$ . The parametric Analysis of Variance (ANOVA) was used to test for significance between discipline and ethical scores, as the ethical scores of the MEQ approximate to a normal distribution (Mean 16.2; Median 16.2; Skewness -0.340; Kurtosis -0.028). Pearson’s Chi-Squared test was used to test for significance of the cross tabulation between the three types of meta-ethical development and the three discipline.

**Table 2: Meta-ethical Questionnaire response options**

	<b>Definitely my opinion</b>	<b>More or less what I believe</b>	<b>Neither statement represents my view</b>	<b>More or less what I believe</b>	<b>Definitely my opinion</b>	
<b>Statement Type A</b>	<b>A</b>	<b>Ab</b>	<b>B</b>	<b>Cb</b>	<b>C</b>	<b>Statement Type C</b>

**Student ethical development by discipline**

The MEQ asked participants to select a position between ten sets of contrasting paired statements. There were 5 options for each set of paired statements enabling students to position themselves in the middle between the two statements if neither represented their view (Table 2). Students who indicated that their beliefs were closer to the statements on the right hand side of the questionnaire were demonstrating greater understanding of the complex, uncertain, variable nature of ethical issues, and recognising that such issues are contingent and open to different perspectives (Clarkeburn *et al.* 2003). Furthermore the statements to the right suggest greater self-awareness and suggest the participant took greater ownership of their decisions. This analysis focuses upon 295 responses. This smaller number of responses has been filtered for two reasons: 1) the MEQ section of the questionnaire was not completed in full (13 respondents); and 2) the response did not pass Clarkeburn *et al.*’s (2003) internal validity check (27 respondents)<sup>3</sup>.

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<sup>2</sup> Further analysis was conducted on the differences between year and gender overall. For more information see Healey 2012a.

<sup>3</sup> The two statements addressing Element V, the purpose of ethical discussion, were essentially the same statement worded differently. If there was more than one step difference in a student’s response to these two statement pairs, the response was considered invalid (Clarkeburn *et al.* 2003).



**Ethical score analysis**

The mean ethical score for all of the MEQ responses was 16.2 with a minimum score of 4.9 and a maximum score of 25. This is comparable with Clarkeburn *et al.*'s (2003) control group<sup>4</sup> who scored a mean of 16.9.

The mean ethical score for each discipline indicates little difference between the different subject areas (English 16.6; Geography 15.6; Animal Behaviour 16.2). This suggests that there is little difference between the current ethical development of students in the three disciplines. An ANOVA test to compare the means found that there were no significant difference by discipline (F value 1.629,  $p < 0.198$ , df 2). This challenges Lane & Schaupp's (1989) and Barrett & Nieswandt's (2010) work on ethical beliefs which found significant differences between subjects. Although it supports Curren & Harich's (1996) study with business and humanities students and faculty.

**Table 2: Summary of characteristics of different types of ethical development**

Type A	'Safety in dualism' – sees the world in dualistic terms with clear rights and wrongs, they view diversity as an unwarranted confusion.
Type B	'Distress in relativism' – accepted a world of multiplicity and relativism, because they believe that the tutors want them to accept such a world.
Type C	'Comfort in commitment' – makes commitments to moral values, taking responsibility for chosen values and how to fulfil them.

Source: Clarkeburn *et al.* (2003: 445-447)

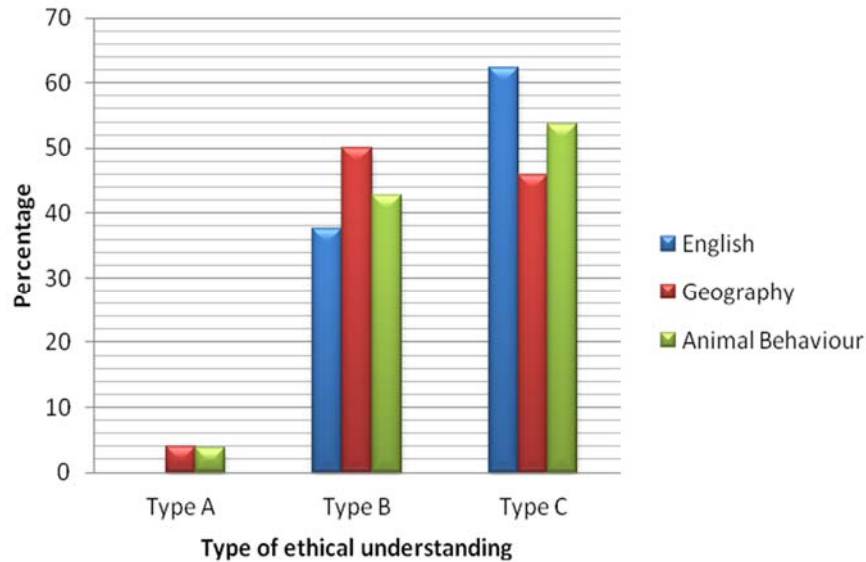
The means from the discipline ethical scores may also be examined in line with Clarkeburn *et al.*'s (2003) different types of students' ethical development (Table 2; Figure 1). Figure 1 clearly shows that the majority of English (62.4%) and Animal Behaviour (53.7%) students can be classified as 'Type C'. This indicates that the majority of these students are recognising the variability and contingent nature of ethical issues. However, a slightly higher proportion of Geography students could be classified as Type B (50.0%) rather than Type C (46.0%). According to Clarkeburn *et al.* (2003) students in this category continue to struggle with the complexity of multiple perspectives and understandings of different issues. Perry (1999) suggests that most students who have reached the stage of higher education are making the transition from Type B to Type C. Type A students are "expected to be rare in the higher education population" (Clarkeburn *et al.* 2003: 447) given that by the time a student reaches university education they are likely to have been taught to think critically to some degree about the subject material of the different disciplines. These findings support this with less than 5% of Geography and Animal Behaviour students, and no English students being classified as Type A. This suggests that these students are applying these critical thought processes in considering how they think about and manage ethical issues. The Pearson Chi-Square test indicates that there is no significant difference between the three different disciplines and the types of meta-ethical development the students have demonstrated (Chi-Square value 4.322,  $p < 0.115$ , df 2). Hence the overall MEQ analysis demonstrates that there are no significant differences between the

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<sup>4</sup> The control group in Clarkeburn *et al.*'s (2003) study did not participate in the ethics programme.

three disciplines. Given the variable nature of the way in which ethics is covered in all three disciplines this is a surprising finding.

**Figure 1: Participant ethical scores by different types of ethical development and discipline**



### **Elements analysis**

Clarkeburn *et al.* (2003) based the questions in the MEQ on five elements which assessed different types of development (Table 1). They identified five elements within the meta-ethical developmental scheme, within which the ethical development occurs:

1. The source and type of moral answers
2. The role of authority
3. The nature of multiplicity
4. Personal responsibility and relationship with multiplicity
5. The purpose of moral discussions

A student's development in these elements is not synchronised, they can develop in one area whilst remaining stagnant in another (Clarkeburn *et al.* 2003). A Chi-square analysis of the student scores between each of the different elements indicates that nine out of ten of the scores were significantly different (the exception being the difference between Element III and Element IV) (Table 5). This relates to the fact that the different elements were assessing different types of development. However, when each element was analysed by discipline there were no significant differences (Table 6). Most of the differences were therefore between elements not within elements.

**Table 5: Statistical differences between elements**

Element	Mean		Element I	Element II	Element III	Element IV	Element V
Element I: Source and type of moral answers	17.6	P=		0.000	0.000	0.000	0.000
		Chi-Square		51.537	43.912	28.007	47.670
		df		4	4	2	4
Element II: Role of authority	17.7	P=			0.016	0.006	0.000
		Chi-Square			12.174	14.408	70.805
		df			4	4	4
Element III: Nature of multiplicity	12.8	P=				0.053	0.028
		Chi-Square				5.892	10.836
		df				2	4
Element IV: Personal responsibility and relationship with multiplicity	14.2	P=					0.010
		Chi-Square					13.181
		df					4
Element V: Purpose of moral discussions	18.4	P=					
		Chi-Square					
		df					

**Table 6: Statistical analysis of elements by discipline**

Element	Mean		Discipline
Element I: Source and type of moral answers	17.6	P=	0.154
		Chi-Square	6.676
		df	4
Element II: Role of authority	17.7	P=	0.431
		Chi-Square	5.931
		df	6
Element III: Nature of multiplicity	12.8	P=	0.789
		Chi-Square	4.703
		df	8
Element IV: Personal responsibility and relationship with multiplicity	14.2	P=	0.086
		Chi-Square	4.913
		df	2
Element V: Purpose of moral discussions	18.3	P=	0.595
		Chi-Square	2.784
		df	4

**Discussion**

The research found that there were no significant differences between disciplines in terms of student meta-ethical development. This finding supports Curren & Harich’s (1996) research, yet their work only focused on two subject areas (business and humanities). The findings, however, challenge other research which included arts and/or science disciplines when investigating disciplinary differences in ethical beliefs (Lane & Schaupp 1989; Barrett & Nieswandt 2010). These differences may relate to the focus of the research. Whereas the previous three studies were looking at ethical beliefs, the current research investigated ethical development by assessing ethical thinking. As discussed earlier, ethical thinking includes ethical sensitivity and moral reasoning as opposed to an individual’s personal perspective on an issue – their ethical beliefs. Whilst ethical beliefs may differ between certain disciplines, in this study the ability to think ethically did not differ along disciplinary lines.

This research has three main limitations. Firstly, the meta-ethical questionnaire (MEQ) itself was restricted as it assessed a particular type of ethical understanding, measuring meta-ethics, as opposed to normative or applied ethics. Students may have indicated their response in relation to where they think the researcher wanted them to be, rather than where they actually believed they were. However, in order to be comparable with Clarkeburn *et al.*'s (2003) study it was necessary to use this same tool. Employing a range of different tools to assess ethical development could help to address this issue. The second limitation relates to the first. By only using a questionnaire to assess student's ethical development it was not possible to follow up with students why they had answered as they had. Time limitations prevented further discussion with the students, as did the issue of how comfortable students would feel discussing ethics one on one. Finally, as the research took place with three independent year groups it was not possible to convincingly make conclusions as to progression during degrees, as the findings may relate to cohort differences. A longitudinal study could address this issue.

Despite these limitations, the findings demonstrate the need to engage students further on the nature of multiplicity and personal responsibility in relation to ethical issues. This has implications for how students are taught. It is important to recognise that the lack of differences demonstrated between the disciplines here does not suggest that teaching about ethics should move over to generic courses. It is essential that ethics remains a part of the discipline in order to embed it within the disciplinary identity of students. As argued earlier, the ability to think through ethical issues has a symbiotic relationship with the ability to think critically (Boni & Lozano 2007). Designing effective ways to support the development of these abilities generally are also likely to support the meta-ethical development of students (Clarkeburn *et al.* 2003). To enhance student ethical development it is important to engage with students in a way which will most benefit the learner in terms of achieving understanding (Hall 2010). Student engagement is about *doing* (Bryson 2014). The most promising approaches for this cast the learner in a role as: "*active learners* (where knowledge and understanding are actively acquired); *social learners* (where knowledge and understanding are socially constructed) and *creative learners* (where knowledge and understanding are created or recreated)" (Phillips 1995; cited Hall 2010: 49). As active learners, students play an active role in their learning, moving beyond listening, reading and working through exercises to discuss, debate, hypothesise, investigate and take viewpoints (Perkins 2006). Activities which encourage students to discuss and debate issues from different perspectives offers potential to support students in understanding how people have different views on ethical issues. Constructivists often emphasise how knowledge and understanding are socially produced (Perkins 2006). Discussing ethical issues with others and recognising that there are multiple perspectives on issues will help to support students to understand how 'truth' varies with interest groups. Moreover, the opportunity for students to create or recreate knowledge may support student learning (Perkins 2006). For example, rather than debating and discussing ethical scenarios, students could create their own ethical scenarios for discussion within the group. A combination of these approaches may help to support students in the key areas where they appear to struggle most i.e. recognising multiplicity and complexity. This offers the potential for transformative learning which enhances student engagement, "leading to a virtuous cycle of formation and development" (Bryson 2014: 17).

One example of a learning strategy that could bring together these three different 'roles' for the learner is debate. The author has argued elsewhere how debate can support the development of critical thinking skills (Healey 2012b). This may be a 'social learning experience' as students work together to prepare for and 'compete' in the debate; an 'active learning experience' as students learn through the activity of the debate; and a 'creative learning experience' as students design the focus of the debate, decide on the materials to be used and construct question(s) for the debate. Teaching mechanisms such as this offer students the opportunity to become active citizens in their learning and to develop their social and cultural capital (Bryson 2014).

Depending upon whether ethical decision making is seen as a generic programme specific skill influences how ethics might be included in the undergraduate curriculum. As a graduate skill it might be taught centrally within institutions, bringing students together from a range of disciplines as a separate optional session. Whereas if it is understood as a programme specific skill there are two ways it might be addressed: 1) As a separate module within a disciplinary programme, focusing specifically on ethics thereby raising student awareness of ethics directly. 2) Embedded into existing modules focusing upon the ethical issues underlying existing discussions. This research suggests that ethical thinking should be a specific programme outcome.

The relevance of ethics to each of the disciplines discussed here has been highlighted, yet this research has also demonstrated the nuances and disciplinary specificity of the discussions (Jenkins 1996; Humber & Morreale 2002). It is essential that in reconsidering the approach to teaching ethics that these disciplinary nuances are not lost, as this is where the main interest lies for the students (Healey 2000; Valentine 2005; Pace & Middendorf 2004). As an additional module, ethics would be explicit to students, enabling focused analysis and discussion of ethical issues. However, by segregating it from the disciplinary content students may compartmentalise their learning and envisage ethics as an 'add-on' to their studies rather than a fundamental element. Yet, by embedding ethics into existing teaching there is a danger that ethics can be so entrenched that students are unaware that they are studying ethical issues. They understand such problems as disciplinary issues, rather than also recognising them to be ethical. A sensible strategy to adopt would be to make ethics more explicit within current content, without undermining the main approach. By embedding ethics through active, social and creative learning within current disciplinary content, students have the opportunity to learn that ethics is part of the discipline.

To conclude, in spite of differences in the teaching, learning and practice of disciplines (Kreber 2009) there was a lack of difference in the ethical development of the participants in this research by discipline. Despite this, in order to continue to engage students in learning to think ethically then it is important that ethics is embedded within the discipline so that students embrace ethical thinking as part of their disciplinary skills set and identity rather than as a separate action that they do beyond their subject. By making the teaching of ethics explicit across disciplinary programmes we will be addressing Hay & Foley's (1998: 169) call for action that:

"Educators need to give greater attention to the teaching of ... ethics as part of our contribution to the education of responsible citizens".

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