

**Paper presented to the 1<sup>st</sup> Pedagogic Research in Higher Education Conference, Liverpool Hope University,  
Liverpool, 2<sup>nd</sup>/3<sup>rd</sup> May, 2006**

**Assessing levels of reflective thinking: the evaluation of an instrument for use within  
accounting and business education**

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## **Abstract**

The paper reports the findings of a pilot study that forms a part of a larger project funded by the Higher Education Academy and the Charitable Trusts of the Institute of Chartered Accountants in England and Wales. The main project investigates the development of a reflective capacity by undergraduates during work-based placement learning and its relationship to student final year academic performance. The objective of the pilot study is to evaluate the Questionnaire for Reflective Thinking (QRT) (Kember *et al*, 2000) for use within a cohort of accounting and business studies students. The paper, firstly, briefly reviews instruments available for the evaluation of reflective thinking and explains the choice of the QRT. The latter is a four-scale instrument measuring four constructs: habitual action, understanding, reflection and critical reflection. Its design draws on the work of Mezirow (1991) and Dewey (1933). The paper then describes the pedagogic context for the pilot study. This is a final year undergraduate double-weighted module that explicitly seeks to develop students' reflective capacity. The questionnaire was administered in September 2004 and March 2005 to final year accounting students (n=70 and n=51). Students enrolled on this module are required to undertake a critical review of information sources for their in-course assessment, and to adopt a multi-disciplinary approach to the identification of key issues within a case study examination. They are also expected to maintain a learning journal to support the production of an assessed reflective report. Finally, the paper provides a comparative analysis of the findings of this pilot study with those in Kember *et al* (2000). It concludes that the QRT is worthy of further investigation and identifies further work that is required to support its effective use.

## 1. Introduction

Within undergraduate education there is an increasing emphasis on the need for reflection as an integral part of learning to learn. We expect students to reflect as a part of their subject-based studies, but also to reflect on their learning and development of skills, for example, through the maintenance of a personal development portfolio. When students graduate and enter professional and managerial life, we expect them to act as reflective practitioners and to exercise professional judgment. The study described in this paper is concerned with the identification of *levels* of reflective thinking. It comprises a pilot study within a larger project funded by the Higher Education Academy and the Charitable Trusts of the Institute of Chartered Accountants in England and Wales.

The aim of the main project is to investigate the development of a reflective capacity by undergraduates during work-based placement learning and its relationship to final year academic performance. Its objectives are to identify:

1. The level of reflective capacity brought by accounting and business studies undergraduates to their work-based placement and/or their final year studies;
2. The elements within the work-based placement that support, encourage or inhibit the development of a reflective capacity; and
3. The way in which the level of reflective capacity brought by undergraduates from their work-based placement is related to their academic performance in their final year of undergraduate study.

The research methods adopted within this larger project fall into two categories. The first involves the use of extended interviews with students who undertake a work-based placement. This relates to research objectives (1) and (2) above. This part of the project draws on the work of Baxter Magolda (1992, 1999, 2001). The latter has played a central role in supporting the growing understanding of the ways in which students develop a capacity to think critically and reflectively. Semi-structured interviews will be conducted with 15 students at the commencement and on completion of their work-based placement. The second category of research method involves the administration of a questionnaire to quantitatively measure students' levels of reflective thinking (Kember *et al*, 2000). This relates to research objectives (1) and (3) above. The objective of the pilot study described in this paper is to conduct an initial evaluation of the Questionnaire for Reflective Thinking (QRT) (Kember *et al*, 2000) for use within a cohort of accounting and business studies students.

The structure of this paper is as follows. The first section will briefly review instruments available for the evaluation of reflective thinking and explain the choice of the QRT. The second section will describe the pedagogic context for the pilot study – a module that explicitly seeks to develop students' reflective capacity. Section three will provide a comparative analysis of the

findings of this pilot study and those of one earlier study - Kember *et al* (2000)<sup>1</sup>. The paper will then conclude with a discussion of what further investigation and work is required to support the use of the QRT.

## 2. Identification of levels of reflective thinking

Although many academic courses seek to develop students' skills in reflection, as Kember *et al* (2000, p.381) observe "there is a scarcity of readily usable instruments to determine whether students engage in reflective thinking and, if so, to what extent." Instruments are needed as they permit the identification of variation in levels of reflective thinking within large cohorts of students. However, instruments vary in their underlying assumptions. For example, Kitchener and King (1994, p.12) reject two measures of critical thinking: the Cornell Critical Thinking Test (CCTT) and the Watson-Glaser Critical Thinking Appraisal (WGCTA) because "they invoke cognitive or metacognitive processes rather than the epistemic assumptions of the respondents".

This is an important issue. Reflective thinking is always about *something*. That *something* may be a task or problem of some sort. However tasks and problems vary in the demands they make on a student, ranging from highly-structured tasks to ill-structured problems. The delineation of a task as "well-structured" implies that a fairly predictable, or algorithmic, approach may be sufficient. However, the delineation of a problem as "ill-structured" implies that a student must draw on a wider range of epistemic resources to identify an appropriate response within conditions of uncertainty. A different form of reflective thinking will be required for the latter, and will draw on a wider range of knowledge, experience and epistemic assumptions.

Within the main project our main focus of interest is on ill-structured problems that involve uncertainty and require the use of professional judgment. We draw on the work of Baxter Magolda (1992) in order to look at the epistemological beliefs that underpin reflective thinking. Her work shows that students vary in their capacity to reflect and to exercise judgment. This arises because students' beliefs about knowledge (epistemology) affect the way in which they learn and make judgments. Sometimes these are referred to as "epistemological beliefs" or "ways of knowing".

She has identified four qualitatively different *ways of knowing*. These are:

- Absolute knowing: knowledge exists in an absolute form, it is either right or wrong.
- Transitional knowing: knowledge is certain in some areas and uncertain in other areas.
- Independent knowing: knowledge is uncertain. Everyone has their own beliefs.

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<sup>1</sup> A second study, Leung and Kember (2003), exists. However, it appears that there may be some overlap between the sample of students used in this study and that used by Kember *et al* (2000). This is difficult to ascertain on the basis of the information provided and further information is required before we can conclude that they are different samples.

- Contextual knowing: knowledge is contextual. One judges on the basis of evidence in context.

As you might expect, if a student possesses a way of knowing that is absolute, then he or she is unlikely to cope well with problem-solving in conditions of uncertainty. However a student who possesses an independent way of knowing is likely to feel more confident, and be more effective, in such a situation.

Within the Questionnaire for Reflective Thinking (QRT)<sup>2</sup>, Kember *et al* (2000) have identified four constructs that cover a broad spectrum of reflective thinking. These comprise: habitual action, understanding, reflection and critical reflection. These constructs are derived from the extensive literature on reflective thinking, particularly the work of Mezirow (1991). This work is also complemented by that of Baxter Magolda (1992), focusing as it does on the way in which beliefs and values underpin action. The four constructs are described below.

Habitual action is “that which has been learnt before and through frequent use becomes an activity that is performed automatically or with little conscious thought” (ibid, p.383). What is habitual will vary from student to student, depending on the extent to which they are accustomed to performing a task. Some tasks may initially seem ill-structured but become well-structured as students become more experienced.

Drawing on Mezirow (1991), Kember *et al* (2000, p.384) describe understanding as thoughtful action, that “makes use of existing knowledge, without attempting to appraise that knowledge, so learning remains within pre-existing meaning schemes and perspectives. Thoughtful action can be described as a cognitive process.” They point out that this covers a wide-range of learning within higher education and covers all of Bloom’s (1956) categories of knowledge, comprehension, application, analysis and synthesis. Since parsimony is required within constructs, in their trialling of the QRT they narrowed down this construct to focus on understanding or comprehension. Thus the “understanding” construct comprises “an understanding of a concept without reflecting upon its significance in personal or practical situations” (ibid, p.384).

Reflection involves “the critique of assumptions about the content or process of problem solving. The critique of premises or presuppositions pertains to problem *posing* as distinct from problem *solving*. Problem posing involves making a taken-for-granted situation problematic, raising questions regarding its validity” (Mezirow, 1991, p. 105 as quoted by Kember *et al*, 2000, p.384).

Finally, critical reflection involves the testing of premises. “Premise reflection [ ] requires a critical review of presuppositions from conscious and unconscious prior learning and their

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<sup>2</sup> A copy of the QRT is included in Appendix 1.

consequences.” (ibid. p.385). This is a profound level of reflection, involving substantial shifts in perspective and thus Kember *et al* (2000) speculate that it is unlikely to be observed frequently.

The QRT thus offers an instrument that is more flexible than those previously available. It comprises four constructs that span a range of thinking. Habitual action and understanding that represent modes of thinking within the context of relatively well-structured tasks or problems and hence can be seen as involving *problem solving*. Reflection and critical reflection represent modes of thinking that are relatively unstructured and place much greater emphasis on *problem posing*.

### **3. Context for the pilot study**

The study was conducted within a cohort of final year accounting undergraduates at a UK university who were undertaking a compulsory double-weighted module titled “Accounting in Context”. The aims of the module are to provide students with the opportunity to :

- develop a spirit of enquiry;
- take a multi-disciplinary approach to business issues/problems;
- develop a critical appreciation of the nature, development and application of knowledge in business;
- integrate technical knowledge acquired from study across the programme; and
- develop as critical consumers of research.

The in-course assessment requires the students to undertake a critical review and evaluation of information sources and literature on a topic of their choice. This then forms the basis of a formal report to a finance director of a large international company or partner in large accountancy firm, highlighting the relevant issues that might inform the development of company / firm policy by the finance director / partner, as well as evaluating the relevance and reliability of the information sources and literature used in the report. Consequently, there is an emphasis on the critical evaluation of information and its sources, which differs from some undergraduate programmes where the focus of the final year project is an extensive academic literature review.

Within the module, learning activities are designed to illustrate different levels of reflection and to provide opportunities for students to engage in different aspects and levels of reflection. These include workshop activities examining current issues in accounting and finance through the critical evaluation of a range of relevant literature, on which students are then required to make group presentations. During the year, students are also expected to maintain a learning journal to support the production of an assessed reflective report. Lectures and clinics using practical examples and exercises are designed to support students in maintaining their learning journals. The end-of-year examination requires students to adopt a multi-disciplinary approach to the identification and discussion of key issues within a case study scenario. A variety of case

studies are used by the module tutors as the basis for workshop discussions in preparation for the year end examination. The teaching and learning activities and the nature of the assessments therefore explicitly seek to develop the students' reflective capacity during the module.

#### **4. The research objectives and data collection**

The objective of the pilot study described in this paper is to evaluate the QRT for future use within a cohort of accounting and business studies undergraduates. The four constructs of habitual action, understanding, reflection and critical reflection are represented by four scales, each containing four items. These items feature as 16 statements about actions and modes of thinking during a course of study (Appendix 1). The questionnaire asks students to indicate their level of agreement with each statement using a five-point Likert scale. As is the norm with this type of questionnaire, students are asked to respond quickly rather than deliberate over each response. Scores are then allocated to the Likert scale, ranging from "definitely agree" (scoring 5), "agree with reservation" (scoring 4) to "disagree with reservation" (scoring 2) and "definitely disagree" (scoring 1). The mid-range response is "only to be used if a definite answer is not possible" (scoring 3). The process of evaluation will be described in section 5.

The QRT was administered to the final year accounting undergraduates (n=72 and n=51: response rates 94% and 66% respectively) in the first (September 2004) and penultimate (March 2005) "Accounting in Context" class of the academic year. The students were asked to complete the questionnaire immediately. As the authors of this paper were also tutors on the module, the students were given the choice whether they wished to provide their student identification numbers when completing the questionnaire. Some students chose not to do so. Consequently, when reviewing the 1<sup>st</sup> and 2<sup>nd</sup> issues of the questionnaire, it was only possible to match 40 cases where the respondents had provided identification details and had completed both issues of the questionnaire. Due to this small number of usable cases and the nature of the findings discussed below, we decided not to review the change in the responses of individual students between the two issues.

The objective of the pilot study is to compare the performance of the QRT with the findings of one previous study that has used the QRT: Kember *et al* (2000). This study describes the development of the QRT, whilst a more recent study, Leung and Kember (2003) used the Revised Study Process Questionnaire (Biggs *et al.*, 2001) and the QRT to examine the association between students' approaches to learning and stages of reflective thinking. However, a review of the two studies suggests that they may be based on the same data set. Therefore, the comparison of the performance of the QRT will focus on the Kember *et al* (2000) study. We are not aware of any other studies that have used the QRT.

Kember *et al*'s (2000) questionnaire was completed by 303 students from eight courses (occupational therapy, physiotherapy, radiography and nursing) in the health science faculty of a university in Hong Kong. Response rates exceeded 80% with the exception of one class where it

fell to 47%. Of the 303 students, 38 were postgraduate, whilst the rest were undergraduates: Year 3 : 42, Year 2 : 163, and Year 1 : 60. Where comparisons are made between this study and the pilot study, they refer to responses from the undergraduates only (except where noted). This is a cross-sectional study and provides information about students' levels of reflective thinking at one point in time, but the does not indicate at what stage of the academic year the questionnaire was completed.

The following observations and comments in respect of the pilot study are made in the context of a comparatively smaller undergraduate cohort than that investigated in Kember and Leung (2000). In addition, as highlighted earlier, the pilot study was conducted on final year students only, who were all undertaking a module specifically designed to develop their reflective capacity.

## **5. Findings**

The evaluation of the questionnaire involved a review of:

- the internal consistency of the four scales;
- the capacity of each scale to identify variation within the sample; and
- the comparative scale means from the two studies

### ***Internal consistency of scales***

The internal consistency, or reliability, of the four scales representing the four constructs was assessed using Cronbach's alpha<sup>3</sup>. Details of Cronbach's alpha, means and standard deviations are provided in Table 1.

The Cronbach values fall within acceptable levels in the Kember *et al* study and in the 2<sup>nd</sup> issue of the pilot study. Indeed the latter study generally shows stronger values for Cronbach than the Kember *et al* study. However, within the 1<sup>st</sup> issue of the pilot study Cronbach values are unacceptable for Habitual Action and Understanding, marginal for Reflection and acceptable for Critical Reflection. The good internal consistency of the 2<sup>nd</sup> issue contrasts with the poor internal consistency of the 1<sup>st</sup> issue.

See over for Table 1.

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<sup>3</sup> Nunnally (1978) suggest that a coefficient  $\alpha$  value of 0.70 is the minimum standard for a measure producing scores that demonstrate satisfactory internal consistency reliability. However, Tait *et al* (1998, p.266) propose that an  $\alpha$  of 0.50 is acceptable. Hinkin (1995) notes that many scales do not reach the 0.70  $\alpha$  threshold, as they comprise too few items, rather than the suggested minimum of five items.



**Table 1 Cronbach's alpha for the four scales across the two studies on undergraduates**

<b>Scale</b>	<b>Pilot study 1<sup>st</sup> issue  n = 72</b>	<b>Pilot study 2<sup>nd</sup> issue  n = 51</b>	<b>Kember <i>et al</i> (2000)  n = 265</b>
<b>Habitual action (HA)</b>			
Mean	9.9	10.4	10.8
SD	2.6	3.0	2.8
Alpha	.49	.65	.62
<b>Understanding (U)</b>			
Mean	17.8	16.4	15.7
SD	1.7	2.7	2.9
Alpha	.43	.74	.76
<b>Reflection (R)</b>			
Mean	15.8	14.8	15.0
SD	2.4	3.2	2.1
Alpha	.54	.81	.63
<b>Critical reflection (CR)</b>			
Mean	13.8	14.3	12.5
SD	3.2	3.6	2.8
Alpha	.74	.87	.68

Cronbach's alpha was compared for the four scales for the 2<sup>nd</sup> issue with the values quoted by Kember *et al* (2000)<sup>4</sup>. The findings are provided in Table 2. For each scale the estimated value of Cronbach's alpha is given. The estimates for Cronbach's alpha for the Habitual scale and the Understanding scale in the pilot study and Kember *et al* do not differ by a statistically significant amount. However, the estimates in the pilot study for the Reflection and Critical Reflection scales are significantly higher than the estimates based on Kember *et al.*'s study.

**See over for Table 2.**

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<sup>4</sup> However, this test was conducted on the entire Kember *et al* (2000) sample, just over 10% of whom were postgraduates.

**Table 2 Comparison of Cronbach's alpha in the pilot study 2<sup>nd</sup> issue with those of Kember *et al* (2000)<sup>5</sup>**

Scale	Pilot study		Kember <i>et al</i> , 2000	
	Alpha	Confidence Interval	Alpha	Confidence Interval
Habitual action	0.653	(0.47, 0.79)	0.621	(0.55, 0.69)
Understanding	0.741	(0.60, 0.84)	0.757	(0.71, 0.80)
Reflection	0.816	(0.72, 0.89)	0.631	(0.56, 0.69)
Critical reflection	0.870	(0.80, 0.92)	0.675	(0.61, 0.73)

### ***The capacity of each scale to identify variation within the sample***

It is important that the statements representing each item are worded in such a way as to convey a common/ consistent meaning with other items within the scale. However, it is also important they generate a good variation in responses within a student cohort; in other words, the scale should be capable of *distinguishing between students* in terms of their responses. Table 3 shows the frequency of responses on the four items within each scale for the 1<sup>st</sup> and 2<sup>nd</sup> issues within the pilot study. This data is not available in Kember *et al's* (2000) paper.

**See over for Table 3.**

### ***Habitual action***

The Habitual Action scale within the 1<sup>st</sup> issue shows a marked difference in the distribution of responses for items 1 and 5 when compared with responses for items 9 and 13. For item 1 there is almost an equal split of responses between those which agree / agree with reservation, and those which disagree / disagree with reservation with the statement. This split becomes more pronounced for item 5, with an increase in the proportion of responses which disagree / disagree with reservation. In contrast, approximately 80% of responses for item 9 and 76% of responses for item 13 indicate disagreement / disagreement with reservation in respect of the statements. Within the 2<sup>nd</sup> issue, this situation is less marked, mainly due to an increase in the proportion of responses indicating that a definite answer was not possible. It appears that this scale does not operate effectively either in terms of internal consistency, or in distribution, within the 1<sup>st</sup> issue. The variation in response to the two groups of items (1; 5 and 9;13) warrants further investigation.

<sup>5</sup> In each instance the work of Feldt and others (see references list) has been used to construct a 95% confidence interval for alpha. The confidence intervals given in the table have been calculated by hand and are based around the sampling distribution of alpha (see Kristof, 1963, and Feldt, 1965). The formulae used are those discussed by Feldt, Woodruff and Salih (1987) and summarised in Fan and Thompson (2001).

**Table 3 Frequency of responses (1<sup>st</sup> issue unshaded: n=72 and 2<sup>nd</sup> issue shaded: n=51)**

	% of responses by category				
Item	1	2	3	4	5
HA 1	8	38	10	39	5
HA 5	7	46	14	30	3
HA 9	30	50	10	7	3
HA 13	22	54	10	14	0
HA 1	12	18	29	37	4
HA 5	12	33	24	25	6
HA 9	33	37	16	12	2
HA 13	18	41	25	14	2
U 2	1	0	3	38	58
U 6	0	3	1	20	76
U 10	0	1	4	46	49
U 14	0	4	11	46	39
U 2	2	8	4	51	35
U 6	2	0	4	43	51
U 10	2	8	8	55	27
U 14	0	12	12	51	25
R 3	1	8	7	50	34
R 7	0	11	18	42	29
R 11	0	8	17	49	26
R 15	0	11	12	49	28
R 3	2	2	15	63	18
R 7	0	16	10	47	27
R 11	4	19	22	31	24
R 15	2	19	18	43	18
CR 4	4	21	18	44	13
CR 8	4	20	25	35	16
CR12	4	30	20	38	8
CR16	1	12	16	46	25
CR 4	0	19	16	51	14
CR 8	4	15	18	39	24
CR12	2	23	22	41	12
CR16	2	18	16	39	25

### *Understanding*

Within the Understanding scale, the responses are heavily weighted towards scores 4 and 5 (“agree only with reservation” and “definitely agree”) in the 1<sup>st</sup> issue, with 95% or more of responses to items 2, 6 and 10 falling in category 4 and 5. Approximately 85% of responses for item 14 fell into category 4 and 5. A similar tendency in responses towards category 4 and 5 is also observed in the 2<sup>nd</sup> issue, but there is greater variation in the distribution of responses. Thus in both the 1<sup>st</sup> and 2<sup>nd</sup> issues, there appears to be relatively little scope for the identification of variation within the student cohort at one point in time, or to changes in student responses between different points in time.

### *Reflection*

Within the Reflection scale, responses are also heavily weighted towards scores of 4 and 5 for the 1<sup>st</sup> issue. For items 7, 11 and 15 the proportion of responses in category 4 and 5 range from 71% to 77%, whilst 84% of responses to item 3 fell in these categories. In contrast, the responses in the 2<sup>nd</sup> issue show a movement towards the lower scores, particularly in respect of items 11 and 15. However, this scale is effectively only providing distribution over four, rather than five, response categories and a large proportion of responses are falling within category 3.

### *Critical reflection*

The Critical Reflection scale shows a wider, more evenly balanced, response distribution for both the 1<sup>st</sup> and 2<sup>nd</sup> issues. This may be attributable to the wording of the statements which require the respondents to reflect on specific actions and ways of thinking. However, with the exception of item 12, the majority of responses in the 1<sup>st</sup> issue were in category 4 and 5. In the 2<sup>nd</sup> issue the majority of responses were also weighted towards category 4 and 5. Apart from item 16 in the 2<sup>nd</sup> issue, the proportion of responses in category 4 and 5 had also increased in comparison with the 1<sup>st</sup> issue.

### *Comparative scale means from the two studies*

Tables 4 and 5 show the means on the scales for the 1<sup>st</sup> and 2<sup>nd</sup> issues respectively, and compares them with the means in Kember *et al* (2000)<sup>6</sup> using the two independent samples t-test. In the tables the mean and standard deviation of each measure for each of the two samples is given along with the t-value and the p-value from conducting a two-sided test. A significant difference is observed on Understanding and Critical Reflection in Table 4. In Table 5 a significant difference is seen on Critical Reflection.

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<sup>6</sup> However, this test was conducted on the entire Kember *et al* (2000) sample, just over 10% of whom were postgraduates.

**Table 4 Comparison of means in the 1<sup>st</sup> issue with those in Kember *et al* (2000)**

Measure	Pilot		Kember <i>et al</i> ,2000		Test	
	Mean	SD	Mean	SD	t	p
HA	9.89	2.587	10.58	2.91	1.8457	ns
U	17.82	1.689	15.88	2.90	5.1895	< <b>0.001</b>
R	15.81	2.395	15.25	2.21	1.9014	ns
CR	13.75	3.214	12.70	2.82	2.7624	<b>0.006</b>

**Table 5 Comparison of means in the 2<sup>nd</sup> issue with those in Kember *et al* (2000)**

Measure	Pilot		Kember <i>et al</i> ,2000		Test	
	Mean	SD	Mean	SD	t	P
HA	10.37	3.013	10.58	2.91	0.4744	ns
U	16.39	2.669	15.88	2.90	1.1748	ns
R	14.84	3.252	15.25	2.21	1.1354	ns
C	14.27	3.600	12.70	2.82	3.5241	<b>0.00048</b>

## 6. Discussion and conclusions

The findings discussed above are those from a pilot study comprising a sample of 72 and 51 students in the 1<sup>st</sup> and 2<sup>nd</sup> issues respectively. The students are final year undergraduate accounting students in a United Kingdom university. The pilot study findings have been compared with those of Kember *et al* (2000). In that study the QRT was completed by 303 students from eight courses (occupational therapy, physiotherapy, radiography and nursing) in the health science faculty of a university in Hong Kong. The pilot study is relatively smaller and any conclusions drawn at this point must be tentative. In addition, the context in which the studies took place vary in terms of level of education and disciplinary and cultural context. Nonetheless we shall identify several interesting issues that we consider would benefit from further enquiry.

Firstly, there is the issue of disciplinary context. Kember *et al* (2000, p.393) state there is no reason why the questionnaire should not be suitable for disciplines other than the health sciences, pointing out that “the literature, from which the framework was derived, referred to reflective thinking as a generic construct rather than specific to particular disciplines or professions.”. However, the Habitual Action and Understanding scales have not operated as expected and it is possible that this arises from the disciplinary context of accounting in which the pilot study was conducted.

There are many technical procedures within accounting and, as students become more proficient, they might well carry these out as a matter of routine or automatic habit. Students might well be thinking of this as they respond to items 1 and 5 in the Habitual Action scale. However, items 9 and 13 may appear to be qualitatively different to an accounting student. They refer to following directions, either from the handout or the lecturer, which then absolves the student from thinking too much. Disciplinary context may also impact upon the performance of the Understanding scale. Apart from item 14, the term ‘understand’ is used within the other three statements comprising this scale. It is possible that students may interpret this term in different ways. An accounting degree has a substantial computational element. Therefore the majority of students may regard ‘understand’ as the ability to master the techniques underlying these computations. Others may have a more complex interpretation of ‘understand’, which includes the ability to not only prepare computations but also to appreciate the accounting principles which underpin them, as well as critically analyse the results of the computations.

Secondly, there is the issue of context for the student. There are weak internal consistencies in Habitual Action and Understanding in the 1<sup>st</sup>, but not the 2<sup>nd</sup>, issue. In addition, there are particularly poor patterns of response distribution in these two scales in the 1<sup>st</sup> issue. Students completed the 1<sup>st</sup> issue of the questionnaire in the following context. They had completed their second year studies some four months previously and had not attended any courses during the intervening period. They were asked to respond to the questionnaire in the context of their “actions and thinking in this course so far i.e. years 1 and 2 or in your previous studies if you are a direct entrant”. Yet that context was quite distant for them. By way of contrast, the students were nearing completion of their final year studies<sup>7</sup> when they completed the 2<sup>nd</sup> issue of the questionnaire. The observations from the 2<sup>nd</sup> issue indicate that the weak internal consistency and anomalies in distribution of responses in the 1<sup>st</sup> issue had, to some extent, dissipated by the time of the 2<sup>nd</sup> issue. It may be that the initial problems with the 1<sup>st</sup> issue are attributable to difficulties students encountered in both recalling, and relating to, their actions and ways of thinking in their previous studies. There would be much less difficulty in either of these areas when completing the questionnaire as they approached the end of their undergraduate studies. This would have been reflected in their responses in the 2<sup>nd</sup> issue, which showed good internal consistency.

Thirdly, it may be that the combination of the focus which students apply to their studies in the final year and the focus of course tutors on the development of a reflective capacity, may result in a growing coherence in self-awareness within learning. The pilot study findings show that within the Reflection scale there is a *move away* from responses in category 4 (agree with reservation) and 5 (definitely agree) towards the lower scores in the 2<sup>nd</sup> issue. It is possible that this is evidence of a developing coherence in patterns of responses. The “Accounting in Context” module seeks to develop students’ reflective capacity and this includes class activities which are designed to illustrate different levels of reflection. By the end of the module, students are likely to be more aware and critical of their reflective capabilities. Similarly, the *move towards* in responses in categories 4 and 5 in the 2<sup>nd</sup> issue may be due to the students’ development of the

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<sup>7</sup> The Kember *et al* (2000) study does not indicate at which point during their studies the students completed the QRT.

attributes described by these statements as they approached the completion of their final year studies.

However, an argument against a growing coherence in responses is the relatively large proportion of responses falling into category 3 (only to be used if a definite answer is not possible). What is causing students to tick this box? There might be several possible reasons, such as :

- (a) difficulties in understanding the action and/or thinking described in the statements representing each item;
- (b) difficulties in relating the descriptions in the statements to the whole degree course and /or the “Accounting in Context” module;
- (c) a lack of self-awareness of how they go about their work; or
- (d) a reason which has yet to be identified.

Further enquiry is required in respect of all the above issues.

To conclude, the findings of the pilot study indicate that, to a great extent, the QRT operates as expected in terms of internal consistency and reliability, particularly so far as the Reflection and Critical Reflection scales are concerned. These are the two scales which are most relevant to our larger project and they appear to provide a good distribution of responses, albeit weighted towards the higher response categories of 3, 4 and 5. This is reassuring. However, there are a range of other issues, highlighted above, that require further investigation before the QRT can be adopted either as a research tool, or a pedagogic intervention, within undergraduate programmes.

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## **Appendix 1 – The Questionnaire for Reflective Thinking**

### **Guidance on completing this questionnaire<sup>8</sup>**

This is NOT a test. There are no 'right' or 'wrong' responses to the statements that follow.

A response is only 'right' if it reflects your *personal* reaction, and the *strength* of your reaction, as accurately as possible.

**Please circle the appropriate letter to indicate the level of your agreement with statements about your actions and thinking in this course so far i.e. years 1 and 2 or in your previous studies if you are a direct entrant.**

A - definitely agree

B - agree only with reservation

C - only to be used if a definite answer is not possible

D - disagree with reservation

E - definitely disagree

**NOW** please read through the statements and respond quickly.

1 When I am working on some activities, I can do them without thinking about what I am doing	A	B	C	D	E
2 This course requires us to understand concepts taught by the lecturer	A	B	C	D	E
3 I sometimes question the way others do something and try to think of a better way	A	B	C	D	E
4 As a result of this course I have changed the way I look at myself	A	B	C	D	E
5 In this course we do things so many times that I started to do them without thinking about it	A	B	C	D	E
6 To pass this course you need to understand the content	A	B	C	D	E
7 I like to think over what I have been doing and consider alternative ways of doing it	A	B	C	D	E
8 This course has challenged some of my firmly held ideas	A	B	C	D	E
9 As long as I can remember handout material for examinations, I do not have to think too much	A	B	C	D	E
10 I need to understand the material taught by the lecturer in order to perform practical tasks	A	B	C	D	E
11 I often reflect on my actions to see whether I could have improved on what I did	A	B	C	D	E
12 As a result of this course I have changed my normal way of doing things	A	B	C	D	E
13 If I follow what the lecturer says, I do not have to think too much on this course	A	B	C	D	E
14 In this course you have to continually think about the material you are being taught	A	B	C	D	E
15 I often re-appraise my experience so I can learn from it and improve my next performance	A	B	C	D	E
16 During this course I discovered faults in what I had previously believed to be right	A	B	C	D	E

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<sup>8</sup> © 2000 David Kember, Doris Y P Leung, Alice Jones, Alice Yuen Loke, Jan McKay, Kit Sinclair, Harrison Tse, Celia Webb, Frances Kam Yuet Wong, Marian Wong and Ella Yeung. Source of questionnaire: Kember *et al* (2000) "Development of a questionnaire to measure the level of reflective thinking", *Assessment & Evaluation in Higher Education*, 25(A), pp. 381-395.

## Appendix 2 – The wording of items within each scale

	<b>Scale</b>
<b>Item no.</b>	<b>Habitual action</b>
1	When I am working on some activities, I can do them without thinking about what I am doing
5	In this course we do things so many times that I started to do them without thinking about it
9	As long as I can remember handout material for examinations, I do not have to think too much
13	If I follow what the lecturer says, I do not have to think too much on this course
	<b>Understanding</b>
2	This course requires us to understand concepts taught by the lecturer
6	To pass this course you need to understand the content
10	I need to understand the material taught by the lecturer in order to perform practical tasks
14	In this course you have to continually think about the material you are being taught
	<b>Reflection</b>
3	I sometimes question the way others do something and try to think of a better way
7	I like to think over what I have been doing and consider alternative ways of doing it
11	I often reflect on my actions to see whether I could have improved on what I did
15	I often re-appraise my experience so I can learn from it and improve my next performance
	<b>Critical Reflection</b>
4	As a result of this course I have changed the way I look at myself
8	This course has challenged some of my firmly held ideas
12	As a result of this course I have changed my normal way of doing things
16	During this course I discovered faults in what I had previously believed to be right