Student Development - Examining Critical Understanding from the student's point-of-view.

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Abstract

Student learning is enhanced through widening learning, away from singular sources of information to a plethora of previous research. Indeed Miri et al (2007) discuss that through critical analysis and reflection, individuals display not only their understanding and knowledge of a subject area but deeper understanding of its values and application. Thus, the ability of students to succinctly document, discuss and highlight the prevalent issues in their area of research not only expands on learning but also fosters debate and enquiry. There is a need to understand deeper the different intrinsic limitations or considerations placed by students and through this be able to provide higher education that engages critical thinking and critical examination.

The study utilizes a quantitative questionnaire in the data collection process and was distributed to final year university students at a British University. It is envisioned that students on their final year of study would exhibit greatest levels of critical understanding and reporting. Data was collected over a 2-year cycle with two separate final year cohorts participating in the research.

It is hoped that through understanding student notions of criticality there are opportunities to enhance student learning alongside the impact of teaching practices. As this study is based upon data collected from students, there is an opportunity to explore what students perceive as important in achieving criticality. Ultimately this paper seeks to enhance teaching and learning approaches to facilitate the development of critical understanding.

Introduction

This paper examines the issue of critical analysis as part of student learning and understanding. Critical analysis is often viewed as a vital part of engaging higher order skills in student learning. Indeed Miri et al (2007) discuss that through critical analysis and reflection, individuals display not only their understanding and knowledge of a subject area but deeper understanding of its values and application. Moreover student learning is enhanced through widening learning, away from singular sources of information to a plethora of previous research. The pros and cons, the contrasting views and even the prevalent gaps that exist in academic theories are all vital knowledge that students require. Thus, the ability to succinctly document, discuss and highlight the prevalent issues extends student learning and similarly fosters debate and enquiry. Brookfield (2005) argues that critical thinking is an iterative yet continuous process. As such its ideology once learnt and embedded into an individual's thinking can further foster lifelong learning.

Trigwell and Shale (2004) highlight that much learning is often superficial and only skims the surface of detail and application and thus while promoting teaching lacks scholarship. Much has been debated on university graduates leaving with a degree but unable to fully comprehend, utilise and apply practically their learning in different real world settings (Willis and Taylor, 1999). These issues have highlighted a need to understand if students are learning their subject area in a purely descriptive manner or are they critically understanding issues. Are they able to digest the different forms of information given to them and apply thought and analytical processes to reach a knowledgeable conclusion and/or finding? There is a need to understand deeper the different intrinsic limitation or considerations placed by students to be able to provide teaching and learning that engages critical thinking and critical examination.

This paper intends to do this by examining current discourse of what equates to critical understanding, enabling a clear overview of the different methods, measures and to some degree approaches to foster this form of thinking. Embedding these issues into a survey instrument distributed to final year students on a business degree programme, provided a useful opportunity to examine what are pertinent factors as seen from the point of view students who have been in university for a considerable period of time. Indeed the depth and range of issues discussed and taught at the 3rd year of university is normally more rigorous than at 1st and 2nd years. This would further provide the study with more detailed data in the examination of criticality.

Research Focus

The key focus of the study is to review what constitutes critical understanding from current discourse and examine these measures against opinions from the student body. Therefore the study asks - What constitutes critical understanding?

With the research question in mind, the following areas are examined in this paper -

- Current discourse on criticality and critical understanding
- Student opinions on critical understanding
- Understanding and application of findings into enhancing learning and teaching

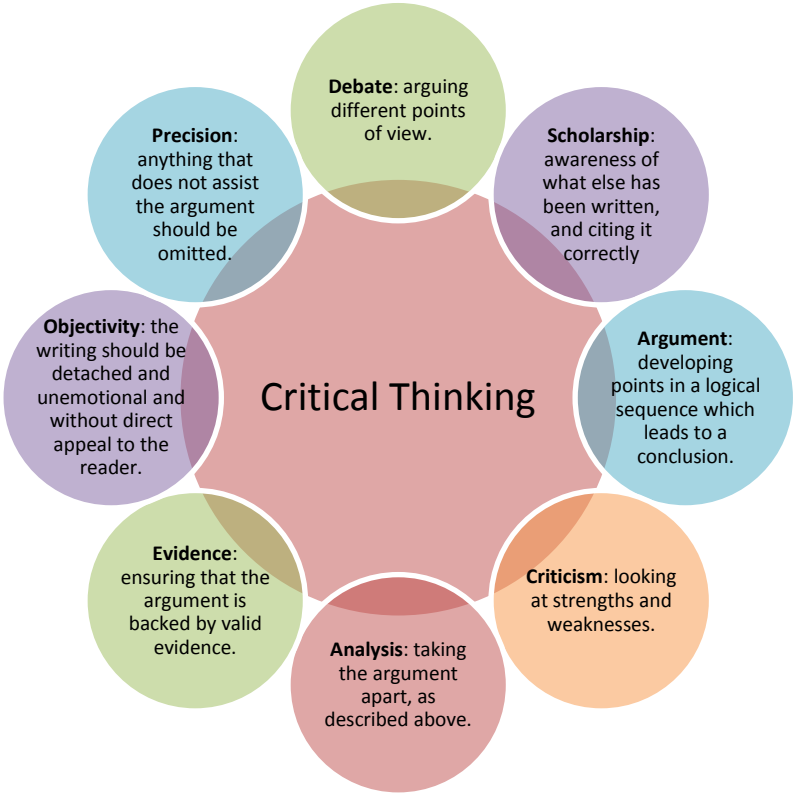
Current discourse in the field.

While description and comprehension are inevitably key skills in the context of learning, Brookfield (2011) and Miri et al (2007) indicate that criticality not only encompasses this but extends understanding towards contextualisation of individual occurrences or phenomena. The benefits gained from this expand to student understanding and the ability to practically apply. Fry et al (2003) extends this notion towards not only deep understanding but deep conceptualisation. As such students engage in critical analysis not only through thought but through succinct and clear communication of it.

To a certain degree, it could be thus argued that criticality involves not only the in-depth understanding but skill in communicating this. Indeed Fry et al (2003) add that in order for critical analysis to be truly valid, students need to master a range of skills, approaches and facts alongside developing behaviours appropriate to situations. Northedge (2005) contends that as part of this process students should substantiate their arguments through referencing or through digesting current discourse widely.

In contrast to other assessment methods, a structured or clear criteria to measure criticality is often absent. Brookfield (2011) and Ennis (1993) highlight how examining the quality of a critical review can be very subjective to the expertise of the marker. Assessing criticality can vary from academic to academic, which posit some inconsistencies with marks awarded. This suggests that while critical review is highly beneficial to students, its assessment is more complex. Nonetheless Northedge (2005) details eight principles that may lead to critical review and thinking (see Figure 1 below).

Figure 1. Northedge's Principles of Critical Thinking



Northedge (2005) indicates the importance of debate and argument where an issue is examined through reviewing different opinions and points of view alongside developing a logical structure that enables appropriate conclusions to be drawn. For these to be valid and truthful, Northedge (2005) posits the importance of scholarship, where an individual draws on knowledge of what has been written and of current discourse.

Likewise, criticism and analysis reflect the ability to identify the pros and cons of issues. Case studies as well as embedding all the different elements of debate, argument and scholarship all aid in the development of understanding.

The later elements in Northedge's (2005) model highlight the importance of self-reflection and clarity in arguments. Evidence to substantiate arguments and likewise objectivity is vital to ensure unbiased conclusions to be drawn. Ultimately precision where results and arguments are made only on specific understanding and are not over-arching but are instead appropriately valid.

Friedland (1996) discuss that through critical examination students would be able to identify for themselves contradictions as well as best practice in their subject area. The complexity of assessing criticality is buffered by its vast benefits and applicability across a wide range of subjects and students. This assessment approach and its loose structure means that students from different backgrounds, diversity and learning styles can learn from and benefit from critical examination of their subject area.

Likewise, language barriers are less affirmed as students from different backgrounds can widen their understanding through reviewing a wider range of literature and discourse (Brookfield, 2005). Thus, students decide on their path of critical review and embark on a journey that they have chosen. Where less confident students may review clearer and more straightforward sources, the learning outcome of understanding their subject area from different perspectives is still met. Critical review is further applicable in-group work, where different student opinions can be reflected in the submitted assessment.

Elliot (1996) argues that critical learning and review is something that has to be promoted and fostered within the classroom before it is reflected in the quality of assignments submitted. Indeed Thomson (2008) argues that critical reasoning can be viewed within a similar guise, where key terminologies and methods for arguing a case are indicative of critical understanding.

Methodology

Saunders et al (2015) highlight two major streams in the data collection and analysis process. These are in the form of qualitative or quantitative approaches. Qualitative approaches focus on understanding the underlying meanings and tries to review the detailed nuances that exist in the data. Qualitative data is often intangible, loose and unstructured.

Quantitative approaches on the other hand focuses strongly on tangible data and pays particular attention to numbers and concrete statistics. Quantitative approaches are often more focused on statistical testing, verification and the search for correlated linkages (Bryman, 2012).

Each stream has a particular focus - qualitative approaches seeking understanding and delve deeper into phenomena with quantitative approaches more keen to test the validity of hypotheses and uncover statistically significant findings (Saunders et al, 2015). Due to the inherent differences in ideological approaches, both have different methods of data collection. Qualitative data is often collected through interviews and focus groups where detailed and rich data can be gathered from respondents. Quantitative data is collected through the use of questionnaire surveys and the usage of numerical data such as financial performances or levels of satisfaction where accurate testing can be undertaken (Bryman, 2012).

In the area of education research, qualitative studies seem to dominate. Bryman (2007) and Evans (2013) for example review the growth of leadership development in HE and changes in assessment feedback. Orsmond et al (2010) utilised qualitative interviews in their study on student learning environments and methods to improve student feedback. Nonetheless it is also important to note studies that have sought to test and uncover clear issues within student learning. Davies (2002), for example, undertook a quantitative study that examined how simulations and learning technologies need to take a clear role in learning institutions. There is also a growing body of studies reviewing student satisfaction through the use of surveys (see Liaw, 2008; Gruber et al, 2010).

Thus, there is no one clear methodological approach. Previous discourse indicates that either qualitative or quantitative approaches can be applied dependent on the focus and overall aims of the study. For the purposes of this study it was decided that the utilisation of quantitative data collection methods and analysis would provide the most appropriate means forward. As the study intends to identify linkages or correlations with how students view criticality, quantitative approaches provide the best medium by which to uncover this. A questionnaire survey further provided the best approach to collect appropriate data for testing. The ability for a questionnaire to be distributed to wide respondent groups alongside its ease of administration and control (Bryman, 2012) provided a highly suitable medium to elicit opinions of students. Qualitative approaches such as interviews with students were considered but given the initial exploratory goal of this study alongside difficulties in getting students to speak openly and honest to their lecturer, this data collection method was discounted.

Moreover as previous studies have revealed (Liaw, 2008; Gruber et al, 2010) quantitative approaches do provide the opportunity for strong conclusions to be accurately drawn.

It was decided that an online survey was the best approach in distribution of the questionnaire. Given that all students at LJMU have individual email addresses, this method of distribution enabled accurate administration of survey responses. Table 1 below further displays a range of benefits that online surveys provide the study.

Table 1. Benefits of online surveys	*Source*
• Short response times and quick mail delivery • Lower costs of print and postage • Ability to target specific respondents based via individual email address	*Wiersma and Jurs (2009)* *Anderson and Kanuka (2003)*
• Filtering of questions • Easy collation and exporting of data	*Bryman and Bell (2007)*

Sampling Approach.

Bryman and Bell (2011) and Bryman (2012) indicate that most studies undertake sampling through either probability or non-probability methods. Probability sampling dictates that all respondents should have an equal and fair chance of being selected. Probabilistic approaches tend to be more robust where data collected in this manner enables better replication and less selection bias. Non-probability sampling utilises different criteria in the various approaches. Respondents can be selected based on convenience, purpose or quotas.

For the purposes of this study, the population of the study were Level 6 business management students from cohorts completing in 2014 and 2015. Different sampling approaches were considered to enable a reflective sample of respondents to be drawn from the population. Nonetheless it was decided that a sample would not be drawn but instead the entire population of 250 students would be surveyed. This would provide more robust data where the opinions of the consensus is analysed.

Ethical Considerations

Bryman and Bell (2011) discuss how important it is for every research to be considerate of ethical approaches to the data collection, analysis and dissemination process. One of their key tenets to ethical research is in the form of informed consent and the importance placed on how participants of any research need to be aware of the aims of the study and how their data is utilised. Placed alongside this importance is the need to ensure confidentiality. The two elements not only protect the respondent and researcher but creates an element of trust and understanding. Ultimately as Bryman (2012) states, the purpose of careful ethical consideration is to ensure that no party suffers any detriment as a product of the research study. Burns and Burns (2008: p35), for example, quite aptly state that "the advancement of knowledge and pursuit of information are not in themselves sufficient justifications for overriding ethical values and ignoring the interests of those studied and those who do not wish to be studied."

Thus for the purposes of this study, all respondents were informed of the aims and purposes of the research. This was undertaken through an attached information sheet alongside contact details of the researcher if further clarity was required. Moreover an informed consent sheet was also attached to be completed to ensure that potential respondents understood was the collected data would be utilised for and their right to withdraw and confidentiality.

All collected data was further anonymised, thereby keeping results away from any potential indicators of identity. Data collected through online surveys were also protected by industry grade data encryption standards.

Findings

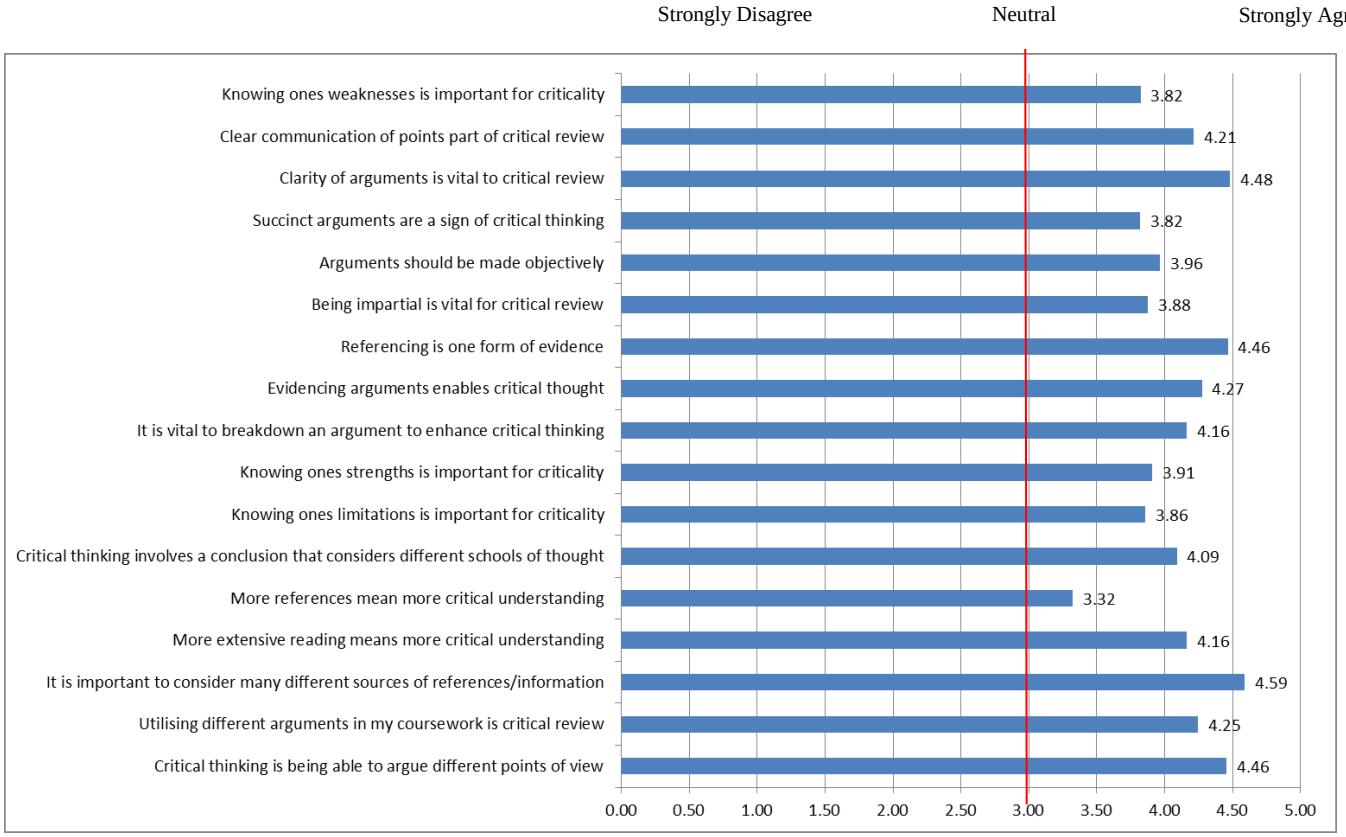
The questionnaire survey was distributed to final year students on the BA Business Management programme. A total of 250 survey requests were sent with a useable response number of 59 surveys. This equates to a response rate of 23%. While a higher response rate would have been beneficial, Visser et al (1996) highlight that a response rate of this level would still be able to provide valid and robust results.

Examining the means scores of statements that equate to critical thinking reveals a strong level of agreement with the majority of statements (see Figure 2 below). It is interesting to note that the statement 'more references equates to better critical understanding' to be the lowest scoring statement. Thus, from this it is plausible that students do not view the quantity and volume of references as equating to quality of critical arguments made. The finding provides valuable insight that will aid the development and achievement of learning outcomes. There has to be increased awareness by both the student body as well as lecturers that quantity does not lead to quality.

Indeed this finding is bolstered by the fact that the statement 'it is important to consider many different sources of references/information' has scored the highest mean score at 4.59. This posits that students understand and value the need to engage with different sources of information and digesting these to provide critical understanding and thought but are not factoring the volume of these. It is interesting to note that at Level 6 the student body displays a strong understanding of the importance of wider reading and are not distracted by the desire to overtly show the number of academic sources they have consulted.

Similarly, 'clarity of arguments is vital to critical review' and 'critical thinking is being able to argue different points of view' were the next set of highest mean scores (4.48 and 4.46 respectively). This suggests that and builds upon Fry et al's (2003) notion that critical analysis not only requires understanding but importantly clear and succinct communication of findings.

Figure 2. Levels of agreement on what equates to critical thinking



Deeper examination of demographic data on questionnaire responses reveals interesting an equal spread of respondents based on gender (see table 2). Similarly, age splits reveal a fair spread of students on the programme, with the majority of respondents being in the 21-23 age group and only one in the 27-29 group. Thus for the purposes of this study, there is a fair spread of demographic data to enable further testing against these values. It would be interesting to identify differences in critical thinking approaches as a product of gender or even age/maturity.

Table 2. Demographic Data

Gender	Count	Age Group	Count
Male	31	18 - 20	9
Female	27	21 - 23	41
Total	28	24 - 26	7
Missing	1	27 - 29	1
		Total	58

To enable more detailed testing of these results against demographic variables, a T-Test and Analysis of Variances (ANOVA) test was undertaken on SPSS. A T-Test examines differences

in mean scores between two groups, where an ANOVA undertakes a similar test with variables containing more than two groups (Field, 2013).

A T-Test was undertaken utilising gender as a splitting variable against the different statements considering what equates to critical thinking. The results revealed no significant difference between males and females with the exception of two statements (see table 3 below). These had a significance score of < 0.05 indicating differences between the gender groups.

Table 3. T-Test Against Gender

		N	Mean	
It is important to consider many different sources of references/information	Male	29	4.76	0.019
	Female	27	4.41	
It is vital to breakdown an argument to enhance critical thinking	Male	29	4.34	0.035
	Female	27	3.96	

Interestingly, the results indicate different views from males and females. The range of sources of information and the breaking down of an argument are more valued by males as opposed to female students. This posits an interesting finding as perhaps as Gurian (2010) highlights, female students learn differently from males and could therefore find importance in embedding understanding and experience into a critical debate. The finding does posit interesting consideration to classroom dynamics and facilitation of seminar learning especially with the use of case study or reading materials.

It is also vital to note the limited number of significant differences between gender. This suggests that within the classroom, apart from a few variables, male and female students learn and understand criticality in similar ways.

Table 4 – ANOVA against age groups

	df	F	Sig.
Utilising different arguments in my coursework is critical review	3	4.990	.004
Referencing is one form of evidence	3	3.828	.015

An ANOVA test was undertaken utilising age groups as the splitting variable against the different statements of what equates to criticality. Interestingly age differences were significant for the statements regarding utilising different arguments and referencing as a form of evidence. Unfortunately, further post-hoc testing could not reveal where these differences in mean scores

as a product of age lie. Nonetheless, it does suggest referencing and a range of arguments to have different interpretations dependent on age of students.

Williams and Cavillo (2002) indicate that more mature students are able to digest information differently from younger students owing to their different expectations and beliefs. The results could suggest that mature students with this level of understanding retain a more coherent stream of argument and discussion. Alternatively younger students are more open-minded to different answers or approaches to criticality. This is an interesting finding and perhaps would benefit from further in-depth research.

A bivariate analysis was undertaken on data collected on students' ranking of the importance of Northedge's principles. A bivariate correlation examines the effect that one variable has on the other, identifying positive or negative linkages between respondents ranking of items.

Figure 3 below indicates three statistically significant correlations. All three have negative correlations which suggests an inverse relationship between the ranks. Precision is inversely related to scholarship and objectivity. Criticism is inversely related to argument.

The results suggest that if students were to omit anything that did not assist their arguments this would have negative effect on the scholarship of their work and similarly objectivity. This is particularly interesting as it clearly indicates the thought process of final year students and their development of understanding. It indicates that students are well aware that omit arguments may provide a sound argument, yet this is to the detriment of awareness of the subject area and objectivity in writing. This finding also suggests that students display higher order understanding.

Criticism and its inverse relationship with argument indicates that looking at the pros and cons of an issue can restrict the logical sequence of points. This is particularly true as students often find difficulty in structuring their arguments when trying to provide all pros and cons on an issue.

These results provide some interesting notions of student engagement and signposts areas for consideration in assessment design. Similarly, it does further highlight the importance clear and succinct communication has on critical thinking and analysis.

Figure 3 – Bivariate Correlations of Northedge's principles of critical thinking.

	Debate - arguing different points of view.	Scholarship - awareness of what else has been written, and citing it correctly.	Argument - developing points in a logical sequence which leads to a conclusion.	Criticism - looking at strengths and weaknesses.	Analysis - taking the argument apart	Evidence - ensuring that the argument is backed by valid evidence.	Objectivity - the writing should be detached and unemotional and without direct appeal to the reader.	Precision - anything that does not assist the argument should be omitted
Debate - arguing different points of view.	1.000							
Scholarship - awareness of what else has been written, and citing it correctly.	-.161	1.000						
Argument - developing points in a logical sequence which leads to a conclusion.	.255	-.061	1.000					
Criticism - looking at strengths and weaknesses.	-.046	-.078	**-.346***	1.000				
Analysis - taking the argument apart	-.147	-.202	-.047	.047	1.000			
Evidence - ensuring that the argument is backed by valid evidence.	-.212	.032	-.219	-.212	-.196	1.000		
Objectivity - the writing should be detached and unemotional and without direct appeal to the reader.	-.255	-.169	-.148	-.050	-.268	-.085	1.000	
Precision - anything that does not assist the argument should be omitted	-.020	**-.293***	-.137	-.141	-.059	-.085	**-.333***	1.000

*. Correlation is significant at the 0.05 level (2-tailed).

Conclusions and Recommendations

The findings of the study provide some interesting notions on what students view as critical thinking. Generally, there is a strong consensus of what equates to and is important to ensure critical discussion – debate, understanding and clarity in communicating findings. The levels of agreement displayed in figure 2 further reinforce the desire and drive by students to ensure that the work they deliver reflects critical thinking. Moreover it also displays a large number of elements as highlighted by Northedge (2005) are already embedded within student learning approaches. This is rewarding a number of ways as it displays that not only do students comprehend what is asked of them but that teaching and learning on the programme is consistent with providing higher order skills, away from solely description of theory.

What is further interesting to note is the lack of gender differences in critical thinking. This provides a useful finding as the development of modules and learning materials can be undertaken as a cohort without discriminating or disadvantaging a particular group.

Nonetheless the findings do indicate a difference in the thought process of male vs female students – the breaking down of arguments and value of referencing. This is perhaps something that requires further in-depth research but provides insightful understanding that can be fed into the development of seminars and discussion groups. Indeed, this consideration would be particularly useful when segmenting students into smaller discussion groups during seminars. Would a mix of gender groups provide more interesting discussion within set tasks? Would a wholly male or female constituted group display equally interesting results when examining a range of case studies? The preliminary findings of this study indicate there could be – an area that once again would benefit from further research.

There has also been consideration that mature and older students would enhance discussion by embedding their life experiences and learning when working in tandem with younger students. The findings of this study reveal that this is less so. Instead, when reviewing criticality, age differences are limited. This finding, similarly contributes to seminar group development in that all age groups should be treated equally and that all should be provided with a suitable avenue for discussion. Likewise, the mix of individuals within groups during seminar tasks would benefit from diversity.

Similarly, in the development of curriculum, there needs to be focus upon writing skills and the ability of students to communicate critically. The findings here suggest that understanding in detail theories and topic areas is only a starting point. It is equally vital for students to learn how to communicate their understanding.

Ultimately the study, albeit small, does indicate some interesting notions, similarities and differences. What is also important is that it has highlighted some important considerations in the design of modules, the measures of critical thinking and in part, what students understand this to be. Broadly there is little difference to what current discourse indicates as critical understanding to what students think it is. The findings suggest that students currently apply critical thinking. Inevitably further research needs to be undertaken to more clearly and robustly delve into the differences highlighted by this research. Indeed, there are avenues to examine if there are disparate views on the part of academics to what they view as criticality as compared to student opinions.

Considering these caveats, the study would like to suggest the following recommendations that may enhance teaching and learning as well as nurture critical thinking:

- Reinforcing the importance of critical thought and how criticality can be achieved
- Ensure a gender mix and age group mix in the segmentation of groups to enable robust critique of case studies
- Final year students already display a high level of understanding of criticality. The development of more engaging material that enhances this would be beneficial.
- Advance writing and communication skills to enable students to disseminate their knowledge.

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