CHAPTER 2

TOWARDS AN UNDERSTANDING

OF CRITICAL THINKING

“Poirot," I said. "I have been thinking."
"An admirable exercise, my friend. Continue it.”
— Agatha Christie, *Peril at End House*

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2.1 Overview of Chapter 2

This chapter is an exploration of theories and definitions of critical thinking, with the intention to identify its underpinning foundations and applications for this study. It is evident that the development of different definitions, models or conceptions of critical thinking has proliferated in the literature. For the purpose of streamlining the terms used to refer to the *definition***,** *conception* and *theory* of critical thinking, this study uses the term 'model' to represent them. A **model** of critical thinking here is referred to as "a schematic description of a system, theory, or phenomenon that accounts for its known or inferred properties and may be used for further study of its characteristics" (Thefreedictionary, 2010).

It is evident that there are many different models of critical thinking which provide different definitions in the literature. It is essential to understand each of them, because while they have their unique aspects, there are common threads that weave them together explicitly or implicitly. With this in mind, section 2.2 examines various models of critical thinking and section 2.3 identifies common emphases and areas of agreement and disagreement for critical thinking. In the same sections, some of the issues under debate are also considered in order to fully understand critical thinking. The examination and review of models of critical thinking reinforce the rationale of researching students' perceptions of critical thinking. This leads to a review of relevant studies in section 2.4. Drawing from the consideration and review above, this study goes on to consider other issues that connect with critical thinking in section 2.5, especially epistemology development and group learning. Particularly, the study considers Barnett's (1997) identification of the social context as a condition for the development of critical thinking. This brings in the other research interest for the study, i.e. group learning, which will be discussed in Chapter 3.

2.2 An examination of models of critical thinking

In Chapter 1, it was concluded that critical thinking is a highly valued and desired outcome of HE and professional accounting education, although its nature is somewhat difficult to define. For a long time, critical thinking has been a disputed and confusing term. Educators and researchers working on critical thinking and students trying to understand it have been faced with a problem: there are numerous models of critical thinking offering different definitions in the literature. In this view, McPeck (1981) commented that the concept of 'critical thinking' is both "overworked" and "under-analysed" (p.2). In other words, there is no consensus in defining critical thinking even though many research studies have been undertaken. This is illustrated by the work of two key researchers: Paul and Lipman

Paul's work (2011) provides a framework to understand the history of the development of the critical thinking movement. According to Paul, this movement has had three identifiable "waves" since the early 1970s. Paul (2011) proposes that the first wave focused on the theory of logic, argumentation and reasoning and was dominated by philosophers. The second wave, focusing on "critical pedagogy", was represented by cognitive psychologists and covered a variety of different disciplines such as critical thinking in biology, business and medical health education. Lastly, the third wave referred to research work that overcomes the weaknesses of the first two waves. He argues that the first two waves represented two schools of thought about critical thinking. According to Paul (2011), one focused solely on the theoretical aspect and the other solely on the practical aspect of critical thinking, and particularly on its deployment within the curriculum. Therefore, he argues that critical thinking must be 'complete' in the third wave. Paul writes:

> The field needs a comprehensive theory of thinking and critical thinking. It needs a clear set of intellectual standards. It needs an integrated set of dispositions. It needs a comprehensive concept of logic which

> accommodates the role of emotion, intuition, imagination, and values in thinking. It needs to make clear the leading role of thinking in the shaping of human feelings and behavior. It needs to provide a framework into which can be set integrated theories of teaching and learning in the widest variety of human contexts. It must provide both for the universal elements in reasoning and those which are domain and context-specific (Paul, 2011).

However, Paul (2011) states that this is an area that few researchers are attempting to address. Paul's (2011) critical review of these three waves of the critical thinking movement clearly charts the reason for the proliferation of different models of critical thinking with different emphases and conceptions over time.

Lipman (1991, 2003) also discusses the development of the critical thinking movement at length (ibid, Chapter 2). He carefully examines the reasons behind every movement from the philosophy, education and pedagogy perspectives from the 1980s onwards. Similar to Paul's work, he suggests that critical thinking has its role in cognitive skills, informal logic, reflective scepticism, reasoning and judgment.

With the complex nature of critical thinking in mind, the two authors above confirm the fact that critical thinking is not a subject in which consensus can easily be reached. Therefore, it is worth exploring the ways in which critical thinking has been defined by different models in the literature: this will be done in the following sections.

2.2.1 Identifying models of critical thinking for further exploration - What constitutes critical thinking?

With the complex nature of critical thinking in mind, as discussed above, it is necessary to 'understand' critical thinking as much as we can. Drawing from Paul's (2011) work on the three waves of critical thinking research, these three

waves highlight different research agendas and different emphases in their application. These three different critical thinking "waves" can point to the relevant key theorists for the study to consider.

Table 2.1 below presents Paul's (2011) three waves of critical thinking and links to related key critical thinking theorists whose critical thinking models are discussed in section 2.3.3.

Table 2.1: Paul's (2011) Critical Thinking Waves and identifying possible related key critical thinking theorists

CT Waves	**Related critical thinking theorists**
1st wave (1970-1982) ▪ Formal & Informal Logic. ▪ Reasoning ▪ Argumentation	Aristotle, Dewey, Glaser, McPeck
2nd Wave (1980 – 1993) ▪ Critical thinking across the curriculum	Brookfield, Cottrell, Ennis, Delphi report, Lipman
3rd wave (1990- Present) ▪ Depth & Comprehensiveness in Theory and Practice	Barnett, Ennis, Paul & Elder

Paul's (2011) work was comprehensive if not complete, and can serve as a good reference for critical thinking models. Drawing from Paul's (2011) work above, it is evident that many critical thinking theorists with different emphases have emerged from different periods of time. However, it is not possible to examine all of the models of critical thinking that fit into the three movements in one chapter. In addition, trying to relate critical thinking theorists according to Paul's (2011) three waves is not an easy task. For example, Ennis's model of critical thinking developed across the second and third waves. This illustrates that some models are actually evolving over time and are not necessary static.

As a result, I only attempt to study selected critical thinking theorists, whom I believe have influenced the majority of today's educators and students. These critical thinking theorists are also frequently referred to and cited in the academic literature and textbooks, which implies that they are the key critical thinking theorists who are commonly known in HE.

This study, therefore, identifies five models for further review: Dewey (1910, 2004), Ennis (1987, 2011), the Delphi report (1990), Lipman (1991, 2003), Barnett (1997) and Paul and Elder (2008). It must be noted that the selection of these few models informs the study about the variation of ways in which critical thinking is understood and perceived in the literature. The aim is to draw out the defining natures of these selected models of critical thinking and identify the common emphases observed in the models, which are considered in detail in section 2.3. The selected models of critical thinking are examined in the following sections.

2.2.2 Dewey's (1910, 2004) model of reflective thinking

John Dewey defines critical thinking, or as he calls it, 'reflective thinking', as an active process, an activity that requires careful thought based on the grounds (reasons) on which one stands:

> Active, persistent, and careful consideration of a belief or supposed form of knowledge in the light of the grounds which support it and the further conclusions to which it tends (Dewey, 2004)

In his book *How We Think*, Dewey explains reflective thinking as the ability to suspend judgment, maintain a healthy scepticism and exercise an open mind (Dewey, 2004). This definition draws out many aspects of critical thinking and these are discussed below.

First, Dewey argues that critical thinking is an active process which requires students to think things through, raise questions and search for information to address their queries rather than learning passively from someone else.

Secondly, Dewey compares 'persistent and careful' thinking with unreflective thinking, in which one simply makes a quick decision without thinking 'carefully' about it. Dewey also argues that we need to 'persist a bit' in our thinking. As a result, he relates critical thinking with attitudes such as suspending judgment, maintaining a healthy scepticism and exercising an open mind. These are referring to dispositions of a critical thinker in the recent literature (for example, the Delphi report). Dewey uses the terms 'attitude' and 'disposition' interchangeably in his text.

Most importantly, Dewey relates belief and knowledge with experience, marked by 'acceptance or rejection of something as reasonably probable or improbable' (ibid, p.4). As a result, it is important to understand that critical thinking in this sense involves both intellectual and reflective ability to examine a problem. Students must be able to examine, question and reflect on what they have learned. Therefore, critical thinking is not just about finding a solution to the problem; it is also a reflection on the process of deriving the solution based on the knowledge the student has.

To capture the essence of the model, Dewey (2004) advocates reflection in community; he argues that "the experience must be formulated in order to be communicated" (p.6). He explains:

> To formulate requires getting outside of [the experience]. Seeing it as another would see it, considering what point of contact it has with the life of another so that it may be got into such form that he can appreciate its meaning… One has to assimilate, imaginatively, something of another's experience in order to tell him intelligently of one's own experience… (ibid, p.6).

In other words, he sees the importance of exchanging ideas with others. This c*ollaborative* reflection is the key for one to engage in critical thinking.

2.2.3 Ennis's (1987, 2011) model of skills, dispositions and reflective thinking

One of the widely used definitions of critical thinking is from Robert Ennis:

> Critical thinking is reasonable, reflective thinking that is focused on deciding what to believe or do (Ennis, 1987).

Robert Ennis emphasises 'reflective thinking' – reflection and reasonableness - and also adds 'deciding what to…do', implying that there is a decision-making element in the critical thinking process.

According to Ennis (1991), in deciding what to believe or do, one is helped by the employment of a set of critical thinking dispositions and abilities. In his latest revised work (Ennis, 1996; 2011), he suggests that this model has three basic broad dispositions:

1. Care that one's beliefs be true, and that one's decisions be justified; that is, care to "get it right" to the extent possible;
2. Care to present a position honestly and clearly, one's own as well as others';
3. Care about the dignity and worth of every person (a correlative disposition).

Note that Ennis's dispositions expand upon those of Dewey above. On further examination of his explanation, Ennis seems to emphasise 'caring' critical thinkers who are responsible for their beliefs and actions.

Besides dispositions, Ennis also identifies fifteen abilities for critical thinkers, which include abilities involving clarification; decision-making; inference, advanced clarification; supposition and integration. Until Ennis introduced the dispositions in his model, it can be concluded that his prior conception of critical thinking reflected a 'skills set' model. Compared with Dewey's model above, Ennis's model brings in additional aspects of critical thinking, i.e. abilities or skills.

2.2.4 Consensus statement of Delphi Report (1990)

Examining the models of critical thinking above has demonstrated the complex nature of critical thinking. Each model discussed above argues what is core to

critical thinking according to its founders. Drawing from each of the models of critical thinking, some of the elements mentioned above have considerable overlaps. For example, the emphasis on reflective thinking is evident in Dewey's and Ennis's models. In view of this overlapping concern, there was an attempt to synthesise the contributions from those models. As a result, the Delphi report (1990) emerged to achieve this objective. The Delphi report (1990) attempts to reach consensus for critical thinking among the theorists and itself offers a model of critical thinking which has attracted much attention in later critical thinking literature.

The Delphi report employs a powerful qualitative research methodology known as the Delphi Method: hence its name. This Delphi method requires the formation of an interactive panel of experts, who must be willing to share their expertise and work toward a consensus resolution about critical thinking. It is important to include this report in this chapter because several of the forty-six experts involved in this project have been considered and discussed in this chapter, namely Robert Ennis, Richard Paul and Matthew Lipman. The panellists worked toward the consensus by sharing their opinions and listening to others' perspectives in the process. One of the purposes of this project was to achieve a rich and worthy goal: guiding critical thinking assessment and curriculum development at all educational levels. Consequently, this report offers another model of critical thinking, drawing on the experts' consensus. Though the consensus was formulated to draw a common ground for critical thinking models before 1990, this report continues to be well acknowledged.

The final consensus statement was as follows:

> We understand critical thinking (CT) to be purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based. CT is essential as a tool of inquiry. As such, CT is a liberating force in education and a powerful resource in one's personal

> and civic life. While not synonymous with good thinking, CT is a pervasive and self-rectifying human phenomenon. The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal. It combines developing CT skills with nurturing those dispositions which consistently yield useful insights and which are the basis of a rational and democratic society (Facione, 1990, p.2).

There are several key aspects of critical thinking in this consensus. First, the experts agreed to include both a skill dimension and a dispositional dimension in critical thinking. This includes cognitive skills, which can be summarised as: interpretation, analysis, evaluation, inference, explanation and self-regulation. These are the core skills of critical thinking. Each skill has its own sub-skills (see Table 2.2 below) and the report attempts to explain each of them clearly with examples. It is important to note that the experts agreed that it is hard for anyone to apply them all. However, this should not be an excuse for not promoting them in the educational system (ibid, p.3).

Table 2.2: Delphi Report: Consensus list of CT cognitive skills and sub-skills (Facione 1990, p.6). Used with the permission of author.

Core skill	Sub-skills
1. Interpretation	Categorisation Decoding Significance Clarifying Meaning
2. Analysis	Examining Ideas Identifying Arguments Analysing Arguments
3. Evaluation	Assessing Claims Assessing arguments
4. Inference	Querying Evidence Conjecturing Alternatives Drawing Conclusions
5. Explanation	Stating Results Justifying Procedures Presenting Arguments
6. Self-Regulation	Self-examination Self-correcting

Next, the report also produced a consensus statement about the disposition of critical thinking. The panellists agreed that there is a critical spirit, "a probing inquisitiveness, a keenness of mind, a zealous dedication to reason, and a hunger or eagerness for reliable information which good critical thinkers possess but weak critical thinkers do not seem to have" (Facione, 1990).

Dispositions of the Good Critical Thinker

To the experts, a good critical thinker, the paradigm case, is habitually disposed to engage in, and to encourage others to engage in, critical judgment. She is able to make such judgments in a wide range of contexts and for a wide variety of purposes. Although perhaps not always uppermost in mind, the rational justification for cultivating those affective dispositions which characterize the paradigm critical thinker are soundly grounded in CT's personal and civic value. CT is known to contribute to the fair-minded analysis and resolution of questions. CT is

> a powerful tool in the search for knowledge. CT can help people overcome the blind, sophistic, or irrational defence of intellectually defective or biased opinions. CT promotes rational autonomy, intellectual freedom and the objective, reasoned and evidence-based investigation of a very wide range of personal and social issues and concerns (ibid, pp.12-13).

Drawing from the final consensus statement cited earlier, the dispositions of an ideal critical thinker include:

> habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair-minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit (ibid, p.2).

However, there was a division in opinion as to whether the affective dispositions are part of the meaning of critical thinking. Two-thirds of the panellists held the view that the affective dimension should be included in the meaning of critical thinking, believing that a person who has critical thinking skills but fails to use them should not be called a critical thinker. On the other hand, about one-third of them argued that a person who uses critical thinking unethically should still be called a critical thinker, but not a 'good' critical thinker. Therefore, the term 'good' used here has the connotation of morality rather than effectiveness as denoted in the former argument. Despite the division of opinion on this issue, almost all the experts agreed on the importance of the dispositions and suggested ways to cultivate them in students. In brief, the Delphi report (1990) managed to draw the agreement from the experts that skills and dispositions are two core elements in critical thinking.

2.2.5 Matthew Lipman's (1991, 2003) model of applied thinking: self-correcting, contextually bound.

Lipman (2003) argues that critical thinking is "thinking that facilitates judgement because it relies on criteria, is self-correcting, and is sensitive to context" (p.212). This definition seems to be short and succinct, but we need to unpack what Lipman means by 'judgement', 'criteria', 'self-correcting' and 'sensitive to context'.

First, Lipman (2003) argues that the outcomes of critical thinking are judgements (ibid, p.209). He explains that critical thinking is an applied thinking and its core product is judgement. According to Lipman, judgement includes problem-solving, decision-making and learning new things. Therefore, critical thinking produces 'good' judgement,

Lipman (2003) argues that critical thinking relies on criteria. A criterion in this case is defined as "a rule or principle utilized in the making of judgements" (ibid, p.213). Lipman also explains that criteria are reliable reasons (ibid, p. 213), they are bases of comparison (ibid, p.215), and as standards, are instruments for making a judgement, because standards are "the degree to which a given criterion must be satisfied" (ibid, p.217).

Lipman agrees with Dewey (2004) that one should constantly evaluate one's own thinking, seeking weaknesses and rectifying what was at fault: i.e. critical thinking is self-correcting. Like Dewey (2004), he also suggests that it can be effective in a community of inquiry when the members start to look for and correct one another's weaknesses. With this claim, Lipman (2003, Chapter 4) also advocates the communities of inquiry in the classroom, particularly the relationship between conversation, dialogue and thinking.

Lastly, critical thinking should be sensitive to context, i.e. it should recognise its particularities and uniqueness. In other words, it cannot be generalised from one context or domain to another.

Lipman (2003) also argues that critical thinking is crucial in professional education such as law and medicine. He explains that these two professions both involve the application of principles (criteria) to practice (judgment) and require sensitivity to the case (context) and commitment to continual improvement (self-correction). While he does not specifically mention the accounting profession in his text, what he describes is highly appropriate within this profession.

Ultimately, Lipman (2003) concludes that critical thinking is skilful thinking (p.217). In this view, he also suggests that, for education pedagogy, critical thinking should not work in isolation; instead it should be 'orchestrated' with other cognitive skills such as reasoning skills to draw meaning from judgement. He uses the orchestra as a metaphor: just as there are families of instruments that are needed to produce a splendid performance, so there are families of thinking skills such as reasoning skills, deductive skills and other skills such as reading and communication skills which make up 'good' critical thinking.

In summary, Lipman's (2003) model highlights two aspects that the other models discussed above do not emphasise. The first is the emphasis on contextual sensitivity, which means that critical thinking is uniquely applied in different contexts. The other aspect is that critical thinking is better facilitated in his 'community of inquiry'. These two aspects are valid considerations at any level of education, especially when it relates to a constructivist's model of learning.

2.2.6 Barnett's (1997) model of Critical Being

Barnett (1997) provides a good example of how the dispositional aspect of critical thinking could be extended. He introduces the idea of critical being and develops this conception of critical thinking by considering a range of domains and a range of levels of criticality. Barnett's (1997) Critical Being model is presented in Figure 2.1 below:

		Domains		
	Levels of criticality	***Knowledge***	***Self***	***World***
4	Transformatory critique	Knowledge critique	Reconstruction of self	Critique-in-action (collective reconstruction of world)
3	Refashioning of traditions	Critical thought (malleable traditions of thought)	Development of self within traditions	Mutual understanding and development of traditions
2	Reflectivity	Critical thinking (reflection on one's understanding)	Self reflection (reflection on one's own projects)	Reflective practice ('metacompetence', 'adaptability', 'flexibility')
1	Critical skills	Discipline-specific critical thinking skills	Self-monitoring to given standards and norms	Problem-solving (means-end instrumentalism)
	Forms of criticality	***Critical reason***	***Critical self-reflection***	***Critical action***

Figure 2.1: Barnett's (1997) Model : Levels, domains and forms of critical being (p.103). Extracted from Barnett, R. Higher Education: A Critical Business [online]. Buckingham: Open University Press. © (1997) Reproduced with the kind permission of Open University Press. All rights reserved.

Barnett (1997) argues that critical thinking must be contextually dependent. He suggests that there are three domains of critical thinking (p.65):

1. Knowledge - Propositions, ideas and theories, especially as they are proffered in the world of systematic knowledge;
2. Self - The internal world, that is oneself, a form of critical thought that is demonstrated in critical self-reflection;
3. World - The external world, a form of critical thought that is demonstrated in critical action.

In his model, Barnett (1997) presents four levels of criticality, ranging from critical skills to transformatory critique. He explains that critical thinking is "on the character of the individual's cognitive acts" (ibid, p.16), which can take the form of cognitive processes and assembly of skills. By contrast, critique is "a form of criticism about the discipline itself" (ibid, p.18). In simple form, critique takes a higher order form of thinking which involves reflection and critical thinking ability. Through these sequential levels, thought becomes more critical from one level to the next. This is similar to Paul and Elder's (2008) three levels of thought, and both models agree on the developmental aspect of critical thinking. However, Barnett (1997) argues that for one to move from the lowest to the highest level of criticality, social context must facilitate the development of critical thinking. Barnett (1997) refers to this as the "social context of critical thinking". He argues that the development of critical thinking happens in a social setting of learning.

In his model, Barnett (1997) also explains critical disposition:

> This term implies a much light-footed approach, an ability to size up the world in its different manifestations and the capacity to respond in different ways… A disposition, after all, is deep-seated. It suggests that we are in the presence of a person of a certain kind (ibid, p.87).

In this view, Barnett (1997) brings in the notion of critical spirit in relation to the critical disposition. He further explains that the critical spirit

> ...is not to be caught by talk of skills; by images of mere behavioural accomplishments, of techniques to get by with. Fundamentally, it is about the kinds of people, of persons, that we are trying in higher education to help to bring about (ibid, p.87).

Critical beings, according to Barnett (1997), are "critical persons who are more than just critical thinkers. They are able to critically engage with the world and with themselves as well as with knowledge" (ibid, p.1). In other words, the term

'critical being' refers to a person in totality; it should not be limited to any one domain from Figure 2.1 above but should encompass them all.

Barnett's (1997) model introduces something beyond the skill and dispositional aspects of critical thinking. He claims that current universities have narrowly concentrated on the domain of knowledge, i.e. the skills aspect of critical thinking. He argues that HEIs should strive to encourage students to critique knowledge, self and acting in the world, rather than focusing on skills that 'work'. This is one aspect that the earlier models fail to emphasise, i.e. the whole being of a person. However, Barnett's model of critical being can be very idealistic and it is not easy to adopt fully what Barnett advocates in his *ideal* model. Nonetheless, Barnett's model redirects the focus back to the 'being' – the critical thinkers now, rather the *critical thinking.*

2.2.7 Paul and Elder's (2008) model of the strong sense and the weak sense of critical thinking

Philosopher Richard Paul worked with psychologist Linda Elder to develop a critical thinking model that is built on three fundamental concepts: elements of reasoning, intellectual standards and intellectual traits. This model is illustrated in Figure 2.2 below.

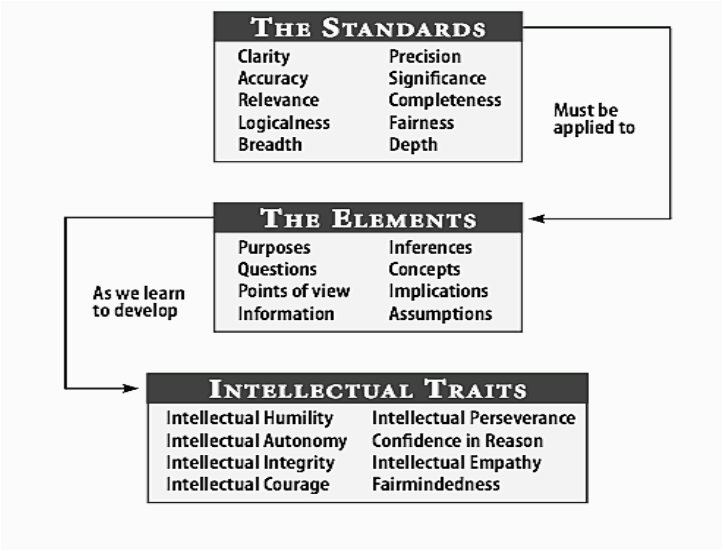

Figure 2.2: Paul and Elder's (2008) Critical thinking Model (p.19). Foundation for Critical Thinking Website at www.criticalthinking.org. Used with the permission of authors.

According to this model, all thinking can be divided into **elements**: purpose, point of view, assumptions, implications, information, inferences, concepts and question at issue. Paul and Elder (2012) explain:

> Whenever we think, we think for a purpose within a point of view based on assumptions leading to implications and consequences. We use concepts, ideas and theories to interpret data, facts and experiences to answer questions, solve problem and resolve issues (ibid, p.62).

All thinking can be measured against intellectual **standards** such as clarity, accuracy, precision, relevance, depth, breadth, logic, significance, completeness and fairness. Paul and Elder (2012) argue that they are necessary to ensure that the thinking is of high quality.

Paul and Elder (2012) also propose that all thinkers should foster intellectual **traits** such as intellectual humility, confidence in reason, intellectual empathy and intellectual integrity. Relating them to earlier models, these traits are similar to dispositions in essence but with different emphasis.

This model is distinct in that it defines critical thinking with the notion of a strong sense and a weak sense of critical thinking. To explain these strong and weak senses of critical thinking, it is necessary to consider fair-mindedness (Paul and Elder, 2002).

Paul and Elder (2002, p.17) use the word “sophist” to explain the weak sense of critical thinking. In other words, if the argument is missing certain important higher levels of thinking and values of critical thinking, winning for the sake of winning the argument without considering arguments for and against the subject matter – lacking in fair-mindedness – then it is a weak sense of critical thinking.

Being a philosopher, Paul’s model has been heavily influenced by the philosophical viewpoint, especially the moral concepts. Thus, in contrast to the weak sense, his strong sense of critical thinking includes fair-mindedness, so

that we would not use the critical thinking to gain unfair advantages over others (ibid, p.18). This is confirmed in his explanation of fair-mindedness:

> Fair-mindedness entails a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or selfish interests, or the feelings or selfish interests of one's friends, company, community, or nation. It implies adherence to intellectual standards (such as accuracy and sound logic), uninfluenced by one's own advantage or the advantage of one's group *(*ibid, p.21).

It appears that Paul and Elder's model is concerned with the moral motive of critical thinking, which may not be so evident in the other models discussed above. Ennis's caring dispositions, mentioned above, may echo the same concern but not as explicitly as Paul's model.

As mentioned earlier, alongside the emphasis on moral consciousness in the model, Paul and Elder (2008) also point out the skills dimension of critical thinking when they suggest that there are three levels of thought. Each level is associated with a particular level of skill, reflectivity and the weak or strong sense. For example, lower order thinking (level 1) is often unreflective; it requires low and mixed skill levels and is largely self-serving. On the other hand, the highest order thinking (level 3) is explicitly reflective; it requires the highest skill level and fair-mindedness. Paul and Elder further contend that we need both intellectual skills and intellectual traits in order to think at the highest level.

Another aspect of this model is the developmental stages of critical thinking. This is evident in Paul and Elder's earlier explanation of the levels of thought, which indicates that critical thinking can be developed from one stage to another. However, it is not clear how development takes place.

As in previous models of critical thinking, Paul and Elder (2008) argue that critical thinking requires an integration of cognitive and affective dimensions, related to the skill and dispositional dimensions.

By examining only the five key models above, it is evident that there are many ways of defining critical thinking, but they have some overlapping emphasis. With this in mind, section 2.3 shows how this study attempts to summarise what the theorists stress in their respective models of critical thinking.

2.3 Identifying common emphases of critical thinking

Drawing from the discussion above, this study identifies and proposes four common key themes or emphases embedded in the models previously considered. These are skills, dispositions, reflection and social context. Table 2.3 summarises the main emphases of each model of critical thinking, which are discussed below.

Table 2.3: Emphases identified in the review of the models of critical thinking

	Skills	Reflective dimension	Dispositions	Social Context
Dewey (1910,2004)		x		x
Ennis (1987, 2011)	x	x	x	
Delphi Report (1990)	x		x	x
Lipman (1991, 2003)	x	x		x
Barnett (1997)	x	x	x	x
Paul and Elder (2008, 2012)	x	x	x	

2.3.1 Emphasis on cognitive skills

A common observation of the models of critical thinking considered earlier was the emphasis given to skills and abilities in critical thinking. For example, Ennis (1987, 2011) also identified fifteen abilities relating to his model of critical thinking, such as clarification and decision-making. In addition, there is a long list of sub-abilities within these fifteen abilities. Indeed, his model of critical thinking has put emphasis on skills.

The Delphi report (1990) also produced a consensus statement that defined critical thinking in terms of cognitive skills in interpretation analysis, evaluation, inference, explanation and self-regulation (Facione, 1990). This shows that many critical thinking theorists agree that skill is one of the core components for critical thinking. Both Ennis (1987, 2011) and the Delphi report (1990) listed the variations of skills and their purposes, which can be evident in learning outcomes or module descriptors from HEIs. These include, for example, skills such as the ability to analyse, evaluate and discuss in relation to the subject studied.

2.3.2 Emphasis on the reflective dimension

Arguably, it is self-evident that the term 'critical thinking' involves thinking and reflection. Therefore, it is not surprising that some models of critical thinking emphasise reflection. As mentioned earlier, Dewey (2004) calls critical thinking 'reflective thinking', which involves suspending judgement, healthy scepticism and an open mind. Such reflectivity for Dewey is not a procedural step when one engages in thinking; it involves 'careful' thinking, as discussed earlier. In other words, his emphasis on reflection involves the element of disposition, though he does not explicitly mention this in his model.

Lipman (2003) argues that critical thinking is "thinking that facilitates judgement". Therefore, critical thinking to him involves thinking and reflection that helps in solving problems, making decisions and learning new things (ibid, p.210). Most importantly, Lipman (2003) advocates the self-reflexivity element in his model: that one should constantly evaluate one's own thinking to improve. Both Lipman and Dewey seem to place significant weight on this reflective aspect of critical thinking.

Ennis (1987) also includes reflective thinking in his model, together with his sets of skills for one to employ critical thinking. This shows that the element of reflection is another core element in critical thinking besides skills.

It is clear that critical thinking involves reflection. Some educators would argue that critical thinking is a higher order of thinking, and some make explicit reference to Bloom's (1956) taxonomy. This is understandable, as they consider that the mental processes (analysis, synthesis and evaluation) undoubtedly require "more/deeper/better' thinking compared to recalling and understanding information. Certainly, whether critical thinking should be equal to a higher level of thinking is another debatable issue. However, it is argued here that reflection is another common emphasis that is evident in many models of critical thinking. Further, it is argued that reflection is not merely a thinking process, but calls for certain dispositions when one engages in critical thinking. Therefore, disposition is another emphasis in many models and is considered next.

2.3.3.Emphasis on dispositions

Drawing from the models above, dispositions seem to suggest behaviours, characters or personalities for critical thinkers. Notably, this is a shift in focus from 'critical thinking' itself to the 'critical thinker'. Facione (2000) defines dispositions as "consistent internal motivations to act toward or respond to persons, events, or circumstances in habitual, yet potentially malleable ways" (p.64). Facione's (2000) definition is interesting, as he suggests that the motivation is a necessary condition for critical thinking skills and abilities. In other words, this term 'disposition' carries the notion of motivation rather than behaviours, characters or personalities in some models.

This emphasis on disposition is evident in Ennis's, Paul and Elder's, Barnett's and Delphi's models. All these models emphasise the traits (Paul and Elder's model), attitudes (Ennis's model, Delphi report) and whole being (Barnett's model) of a critical thinker. In additional, they agree that skill and dispositions are two separate things in critical thinking. For example, the Delphi report (1990) differentiates 'good' critical thinking from *purely* critical thinking skills and Barnett's (1997) model distinguishes critical thinking skills (disciplines related) from transformatory critique (critical being).

2.3.4 Emphasis on social context for critical thinking

Lastly, this review of critical thinking models suggests that the social context is another key emphasis that should not be ignored. Critical thinking cannot happen in a vacuum and something must mediate and warrant its occurrence (McPeck, 1981). Drawing from the models discussed earlier, Dewey (2004) mentions collaborative reflection in his model and Lipman (2003) suggests forming a community of inquiry. Barnett (1997) suggests that for one to develop the levels of criticality, a social condition is required. In other words, these theorists suggest that critical thinking develops better in a learning context that involves others. This is another key emphasis that cannot be ignored for the constructivist model of learning within HE. After all, drawing from the models above, critical thinking is not only engaged at the individual level, but also in a social setting.

2.3.5 Areas of agreement in critical thinking

It must be noted that the literature on critical thinking is mainly rooted in two primary disciplines, i.e. philosophy and psychology. Philosophers such as Dewey, Lipman, Paul and Barnett focus on the hypothetical *ideal* critical thinker: on the qualities and characteristics of this individual. On the other hand, the psychological approach, particular that taken by cognitive psychologists such as Ennis, tends to focus on how people actually think: therefore, they define critical thinking as a list of skills or procedures. These key emphases contribute interpretations and insights that others do not necessarily share or agree; however, when examined closely, common themes are present. In view of this, this study would like to suggest that the critical thinking that has been considered above, especially for educational purposes, could be summarised in four broad categories:

1. Critical thinking as skills;
2. Critical thinking as reflection;
3. Critical thinking as dispositions; and
4. Social contextual condition for critical thinking.

An understanding of these areas of agreement provides a better idea of the perceptions of critical thinking in this study. With this in mind, the next section (2.4) reviews relevant studies relating to students' perceptions of critical thinking.

2.4 Reviewing relevant studies on perceptions of critical thinking

Duchscher (2003) investigated female nurses' perceptions of critical thinking. Duchscher employed a combination of phenomenological and feminist research in a Canadian university to explore how five newly graduated baccalaureate female nurses perceived critical thinking. Duchscher highlighted that this study was unique because it explored the development of nurses' thinking by accompanying them on the journey of their first six months in nursing practice. Data was collected in two in-depth interviews. This study reported variations in the ways the participants perceived critical thinking. They are:

1. Critical thinking as the "big picture" – seeing beyond what was currently presented to them;
2. Critical thinking was dependent on experience and reserved for the experts, suggesting that only experts would engage in critical thinking;
3. Critical thinking was similar to the sequential and linear (nursing) process;
4. Critical thinking was triggered by events beyond their control, limited resources and an unknown or questionable entity.

Duchscher (2003) also reported that this study was consistent with knowledge development (Perry 1970; Belenky et al., 1986) and an open-minded disposition (Facione, 1990) and was mediated by dialogue and interaction (Brookfield, 1987). However, Duchscher (2003) concluded that the participants did not relate critical thinking with the disposition of inquiry. He suggested that this could be due to the participants' past educational, social, and cultural influences.

Phillips and Bond (2004) investigated thirteen second-year undergraduate management students' experiences of critical reflection in New Zealand. They were interviewed about their perceptions of critical thinking and were given an ill-structured problem and asked to "think aloud" as they worked their way through it. The term used in the study was 'critical reflection' rather than critical thinking, which highlights the reflective emphasis in the critical thinking model discussed in section 2.3. Four different views of critical reflection were reported, and they are explained and listed below:

1. Critical reflection is 'weighing up' – this involves making a simple comparison, analysing pros and cons, advantages and disadvantages, positives and negatives.
2. Critical reflection is 'looking at it from all the angles' – this involves discussion based on information to examine the situation.
3. Critical reflection is 'looking back on' – this involves standing back from the problems and seeing something differently.
4. Critical reflection is 'looking beyond what is there' – this involves generating new understanding based on a consideration of relevant knowledge (Phillips and Bond, 2004).

Philips and Bond (2004) related these four perceptions of critical reflection/thinking to other elements such as objectivity, knowledge, the relation of self and/or other(s) to the process, dispositional and affective elements and agency. Their work aimed to provide a holistic view of critical thinking, not only focusing on the perceptions formulated but also considering the person in totality. Their work also appeared to encompass those elements discussed earlier, such as skills, reflection and dispositions.

Studies have been conducted with international postgraduate students. Turner's (2006) study was a small-scale longitudinal study that qualitatively explored the learning experiences of nine students from Mainland China in a British business school. The students were postgraduate international students studying on a core module - International Business Management - and full-time MBA degrees. Students were interviewed over the course of one academic year.

One of Turner's findings reported that the absence of explicit discussions about critical thinking was striking because the participants discussed many other areas, including group-working, problem-solving and argumentation in essays, but did not bring critical thinking explicitly into the discussion. Turner (2006) explained that this could reflect ambiguity in the cultural translation of teaching, learning and assessment criteria.

Similarly, Huang (2008) also conducted a study of Chinese students' perceptions of critical thinking. The research objectives were to assess students' problems in applying critical thinking skills by investigating students' perceptions of critical thinking and lecturers' suggestions on applying such skills in tourism and hospitality subjects. Ten Chinese postgraduates studying Masters' degrees in Tourism and Hospitality Management at the University of Plymouth were interviewed in this project. In relation to the perceptions of critical thinking, these students reported three perceptions of critical thinking in this study: Critical thinking was perceived as thinking about the advantages and disadvantages of every theory used; as being critical of the research process; and students expressed that they had no knowledge of critical thinking. This study also reported that these students found difficulties in applying critical thinking because of language barriers and lack of understanding about critical thinking. Both Turner's (2006) and Huang's (2008) studies highlighted the cultural aspects of critical thinking with regard to international students in the UK.

Drawing from the review of these studies, it is evident that different individuals perceive critical thinking differently. These different perceptions might be due to different professions, cultures, disciplines and levels of education. This reinforces the importance of understanding students' perceptions of critical thinking in their learning.

Reviewing the models and studies of critical thinking such as the above shows that many researchers (for example, Moon's (2008) exploration and analysis of theory and practice in critical thinking) have drawn connections between critical

thinking and other issues that may not be explicitly considered in the models above. Two key issues identified are students' epistemological development and group learning, which is evident particularly in Barnett's (1997) model. These issues are considered next in section 2.5.

2.5 Reviewing other issues relating to critical thinking

The models of critical thinking above identify the issues of epistemological development and group learning in relation to critical thinking, but do not consider them explicitly or in much detail. In particular, Barnett's (1997) model extends the notion of critical thinking to critical being. Reviewing his model has drawn attention to the consideration of the issues of epistemology and group learning with critical thinking. Many researchers have observed the relationship and connection of these two issues with critical thinking, and they are discussed in the next sections (2.5.1 and 2.5.2).

2.5.1 Epistemological development and critical thinking

To understand the epistemological dimension, Hofer and Pintrich (1997) produced a review of the development of epistemological theories. In their article, they review the following epistemological models:

1. Perry's (1970) Scheme of intellectual and ethical development.
2. Belenky *et al.*'s (1986) Women's ways of knowing.
3. Kuhn's (1991) Argumentative reasoning.
4. Baxter Magolda's (1992) Epistemological reflection
5. King and Kitchener's (1994) Reflective judgment

For each model, Hofer and Pintrich (1997) examine the issues of methodology used to construct the model, the model itself, and their linkages with other variables, such as the cognitive construct and motivational factors. Since the word 'epistemology' denotes the nature of knowledge and knowing, it is no surprise to see its close link with critical thinking. Perry's, Baxter Magolda's and Belenky's models are interested in how personal epistemologies are related to

how students interpret and perceive their educational experiences. Conversely, Kuhn's and King & Kitchener's models are interested in how personal epistemologies influence thinking and reasoning processes.

To illustrate the connection with critical thinking, Baxter Magolda's (1992) model is considered in this section. Her work draws out the implications of students' epistemological beliefs on perceptions of teaching and learning. Her work on 'ways of knowing' (epistemological beliefs) aligns neatly with the stages and levels in Perry's and others' work (see Hofer and Pintrich's (1997) review article). She argues that though the terminology used is different, the 'trajectory' of the development path of students in her model also matches closely with the work of Perry, Belenkey *et al*. and King and Kitchener (Baxter Magolda, 2004).

Baxter Magolda (1992) identifies four ways of knowing:

1. Absolute knowing - knowledge exists in an absolute form: it is either right or wrong.
2. Transitional knowing – students begins to doubt the certainty of knowledge – students stand at a position where there is both partial certainty and uncertainty of knowledge.
3. Independent knowing – knowledge is uncertain and everyone has his/her own valid opinion and beliefs.
4. Contextual knowing – knowledge is now constructed and becomes valid on the basis of evidence in context.

The key point of Baxter Magolda's finding is that there is evidence of a continuum of development of epistemological beliefs in students. She noted that students generally progress from absolute knowing to contextual knowing by shifting forwards and backwards along the continuum. Such progression is mediated by 'epistemological crises' such as postgraduate education or work placement. These 'crises' occur when students encounter incidences where they need to see knowledge in different ways. Baxter Magolda (1992) also describes the development of personal epistemology from a social constructivist perspective which is context-specific. These are the reasons why

this study is placed within a postgraduate and group learning context, as discussed in Chapter 1.

According to Baxter Magolda, the 'ways of knowing' or epistemology affects how students approach their learning in relation to their view of the nature of knowledge, their role as a learner and the roles of their peers and tutors. For example, students with absolute knowing see knowledge as certain: therefore, they will obtain knowledge from tutors 'directly'; tutors 'transfer' their knowledge to the students; and their peers will share materials and explain what they have learned.

In this view, Baxter Magolda suggests that critical thinking is only possible with the development of epistemology. For instance, absolute knowing has no room for the development of critical thinking, as the students believe that knowledge is certain and can be transferred from one mind to another.

Drawing from Baxter Magolda's (1992) arguments above, when the students interact with their peers in group learning, they may see that knowledge is not certain and it can be valid for others based on certain context and beliefs. Group learning with others may create the 'epistemological crises' that help students to progress forward in the continuum, ideally towards contextual knowing when the development of critical thinking is possible.

Kimmel (1995) also highlights the consideration of epistemology development in relation to critical thinking within the accounting curriculum. He argues that by breaking critical thinking into identifiable affective, cognitive and behavioural components, educators can evaluate whether aspects of the critical thinking process are adequately addressed by the accounting curriculum. Kimmel (1995) proposes that attention should be given to the stages of college students' intellectual development in accounting programmes. He refers to Kitchener's (1986) work, which provides evidence that both maturity and educational training are required for thinking skills to move from one level to another.

Young and Warren (2011) document four critical thinking related issues faced in introductory accounting courses. Not surprisingly, the first obstacle listed is the variety of definitions of critical thinking. Second, Young and Warren (2011) argue that critical thinking is a developmental model, which students will acquire level by level. They quote Perry (1970), Baxter Magolda (1992) and King and Kitchener (1994) to support this view. The third issue is the rate at which critical thinking is developed. These issues are valid in accounting programmes, as it is apparent that most HEIs, whether colleges or universities, usually cover the subject level by level. This could be explained by the underlying assumptions for doing so: the HEIs hold the view that skills (in general, including critical thinking) are developed stage by stage, from the introductory level to higher levels. The fourth issue is that of assessment. If accounting subjects require students to learn by levels, then the assessment criteria must be suitable for that particular level. This presents a challenge in assessing critical thinking because the development of critical thinking may not necessarily be seen at that particular time and level of study.

In brief, the connection of epistemological development with critical thinking is evident in students' learning. This connection again highlights the significance of students' perceptions. Their perception of knowledge and epistemological beliefs may inform their perception of critical thinking. For example, if students see knowledge as 'right or wrong', then they will absorb knowledge as facts from a teacher who has them. In this case, critical thinking may not necessarily be 'engaged' by the students. In addition, together with the perceptions, this is another important component that can be considered in the Presage factor of the 3P model.

2.5.2 Introducing the social context of critical thinking: Group learning

This section attempts to draw links between critical thinking and the notions of social context considered. Two social contexts of learning theories, namely constructivist and social constructivist learning theories, are examined closely with the principles underlined by their founders, Piaget and Vygotsky.

Both Piaget's and Vygotsky's theories share the constructivist assumptions explained in Chapter 1, but consider the nature of social context and its relationship to learning. Table 2.4 below provides an overview of the two contrasting orientations to learning mentioned above before considering them in detail below. Particular attention is given to the premises of each orientation for knowledge, learning and thinking.

Table 2.4: Constructivist and Social Constructivist Learning Theories (amended from McGregor, 2007, Table 3.1, pp. 48-49)

	Constructivist	**Social Constructivist**
Key Learning Theorists	Piaget (1971)	Vygotsky (1978)
Prominent features	Disequilibrium brings about Assimilation Accommodation	Zone of proximal development (ZPD) Social origin of mental development
Knowledge is:	Schemata Acquiring knowledge that is scientific reality	Intra-psychological construct(s) or internalisation derived through social interaction.
How does learning happen?	Active experimenting with materials, objects and ideas. Developing own personalised understanding of world around them.	Through social interaction while engaging in problem-solving or task resolution. Actions = speech (inter and intra).
Implications for thinking	Implicit thinking through assumed processes. Inter-psychological reflection. Particular types (schemas) of thinking encouraged; cognitive outcomes valued.	Explicating thoughts to collaborate underpins more overt sharing of cognitive processes and strategies required to reach resolution.

Cognitive Development Theory: Jean Piaget (1971)

Piaget (1971) calls his general theoretical framework "genetic epistemology" because he is primarily interested in how knowledge develops in human organisms. The concept of cognitive structure is central to his theory. Cognitive structures are patterns of physical or mental action that underlie specific acts of intelligence and correspond to stages of child development. Cognitive structures change through the processes of adaptation: assimilation and accommodation. Assimilation involves the interpretation of events in terms of existing cognitive structures, whereas accommodation refers to changing the cognitive structure to make sense of the environment. Cognitive development consists of a constant effort to adapt to the environment in terms of assimilation and accommodation.

Piaget explores the implications of his theory for all aspects of cognition, intelligence and moral development. Many of Piaget's experiments focus on the development of mathematical and logical concepts. Although his theory has extensively been applied to teaching practice and curriculum design in elementary education, it is also applied with undergraduate and postgraduate learners.

An important implication of Piaget's theory is the acknowledgement of developmental levels in learning; hence, some call it cognitive development theory. His theory states that the teacher's role is to facilitate learning by providing a variety of experiences. "Discovery learning" provides opportunities for learners to explore and experiment, thereby encouraging new understandings. In addition, any opportunities that allow students of differing cognitive levels to work together often encourage less mature students to advance to a more mature understanding. He believes that cooperation between the members promotes the exchange of thought and knowledge. In such manner, it is believed that critical thinking is cultivated in that person. Cognitive development is facilitated by providing activities or situations that engage learners and require adaptation (i.e. assimilation and accommodation).

Piaget’s theory focuses on the individual and cognitive development through interaction with the environment (group learning, as for this study). By contrast, Vygotsky’s theory claims that social interaction leads to cognitive development. This is perhaps the reason why their works are so frequently compared and contrasted in the literature. However, it is believed that both theories play a central role in informing this study.

Social Development Theory: Lev Vygotsky (1978)

Vygotsky's theories stress the fundamental role of social interaction in the development of cognition (Vygotsky, 1978), as he believes strongly that the community plays a central role in the process of "making meaning." Unlike Piaget's notion that children's development must necessarily precede their learning, Vygotsky (ibid, p.57) argues that social learning tends to precede development stages.

Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals.

Vygotsky's theories have two main principles: the More Knowledgeable Other (MKO) and the Zone of Proximal Development (ZPD). The MKO refers to someone who has a better understanding or a higher ability level than the learner with respect to a particular task, process, or concept. Although many will assume that the MKO is a teacher or an older adult, this is not necessarily the case. Often, a child's peers or an adult's children may be the individuals with more knowledge or experience.

A second aspect of Vygotsky's theory is the idea that the potential for cognitive development depends upon the "zone of proximal development" (ZPD): a level of development attained when children engage in social behaviour. Full

development of the ZPD depends upon full social interaction. This is the key principle in his theory: he claims that full cognitive development requires social interaction. He also claims that the range of skill (in this case, critical thinking) that can be developed with adult guidance or peer collaboration exceeds what can be attained alone.

The discussion above informs the study to consider group learning. This is based on the premise that critical thinking is contextually dependent and collaborative in nature (Barnett, 1997, p.17). In this view, this study suggests that group learning serves the role of social context for critical thinking and is considered in the next chapter.

2.6 Conclusion of Chapter 2

The complexity and difficulty in reaching an agreed understanding of critical thinking is acknowledged, although it is necessary for clarity in understanding critical thinking and its deployment for the exploration and investigation conducted in this study. In view of this, various models of critical thinking commonly known by educators and students have been considered for the purposes mentioned above. The review of the selected models has also identified areas of agreement and common emphases in critical thinking.

In addition, a review of the relevant literature was also conducted to inform the research focuses for this study. Drawing from the literature review, this study identifies students' perceptions of critical thinking as a key area for this research inquiry. This is due to the fact that there is a lack of empirical studies in this area in the critical thinking literature. This observation and identification of the research area for this study hopes to contribute to the empirical literature in the related fields.

Other aspects relating to critical thinking, such as epistemological and social contextual issues, are also reviewed. This introduces the 'social context' aspect

of critical thinking. According to Barnett (1997), this is the "social context of critical thinking" where a social setting is required to necessitate the engagement of critical thinking. In this view, this study considers, in the next chapter, the role of group learning in necessitating the engagement of critical thinking in student learning.