CHAPTER 7

ANALYSING AND REPORTING THE RELATIONSHIPS AMONG THE FINDINGS

"The hardest thing of all
is to find a black cat in a dark room, especially if there is no cat."
— Confucius

Contents

7.1 Attempting to draw links among the findings

Chapters 5 and 6 analyse and present the findings, drawing from students' sharing and comments within their experiences in the group learning context. Both chapters cover the significant variations in the ways students perceived critical thinking and group learning, their stance on conflict and the correctness of views and ideas, their orientations to group learning, motivation, and critical responses. An overview of the findings reported in these two chapters is presented in Figure 7.1 below.

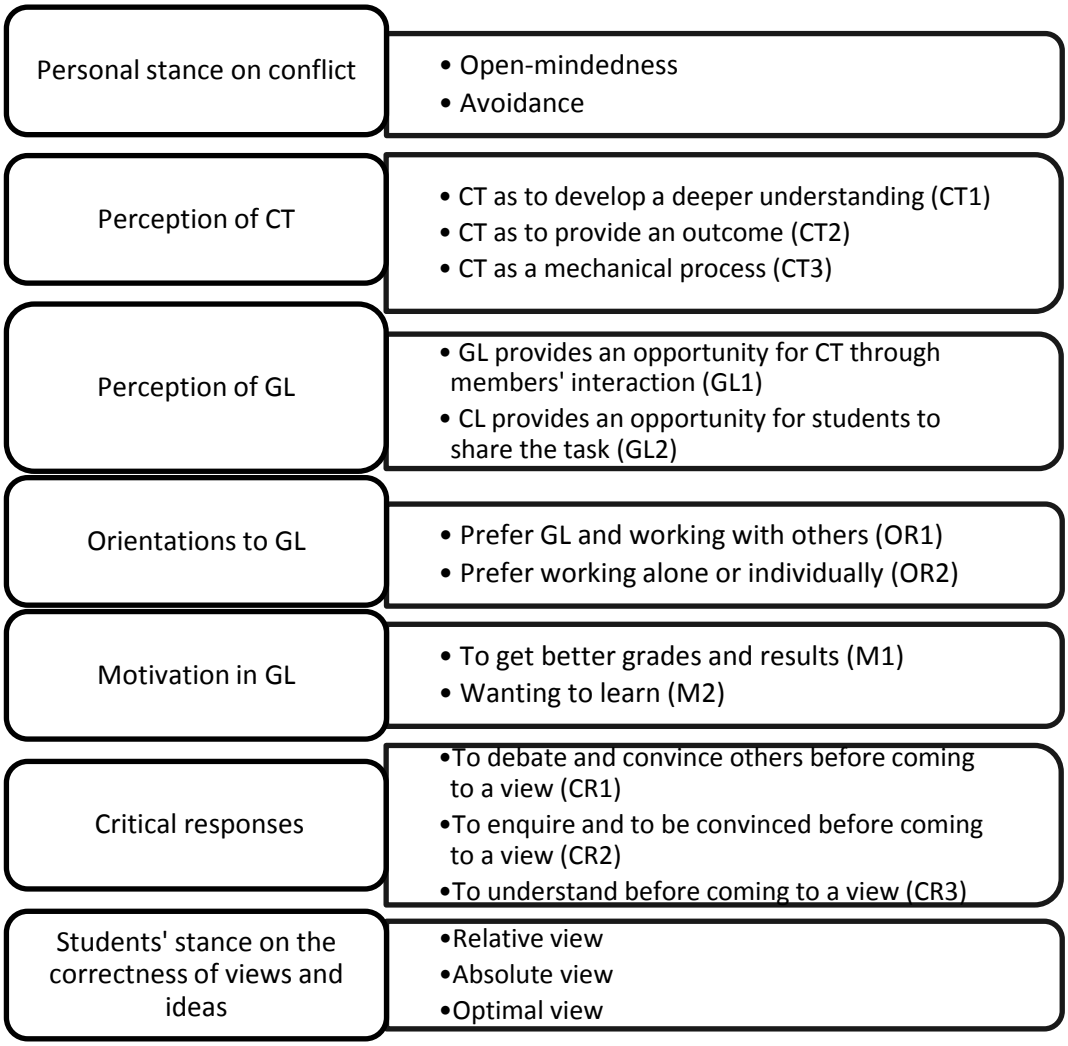

Figure 7.1 Summary of findings of the study

In Chapter 1, this study draws on Biggs's 3P model, which suggests that the three Ps (Presage, Process and Product) in the model are interrelated and there is ample evidence that the relationships are recognisable and predictable. Putting it into the context of this study, this constructivist model of learning assumes that personal and contextual conditions (perceptions and group learning) influence a student to respond in particular ways to learning. However, such interrelationships have been questioned in the literature: for example, Prosser and Trigwell (1999) raised questions about this assumed causal relationship. With this in mind, this chapter now considers relationships indicated by dotted arrows shown in the analytical framework in Figure 7.2 below.

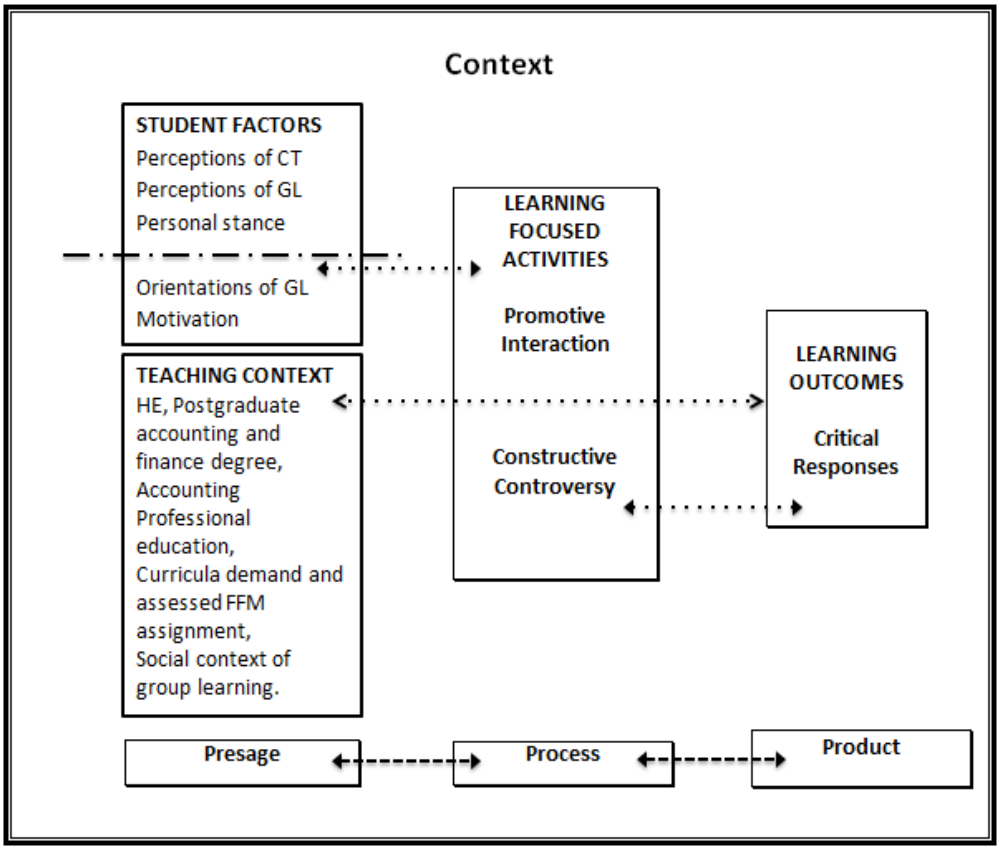

Figure 7.2: Analytical framework, the relationship

As mentioned in Chapter 4, matrices are used to explore the relationships between the findings. In this chapter, matrices are produced to look across all twenty students with their identified related stances, perceptions, orientations, motivation and critical responses. The matrices were used to facilitate the drawing of links with any relationships among the findings, particularly the congruent (or incongruent) relationships. With this in mind, the congruent relationships must be first recognised and described for the study in relation to the findings identified in Chapters 5 and 6. These congruent (and incongruent) relationships are now considered in the next section.

7.1.1 Congruent and incongruent relationship explained

The terms 'congruent' and 'incongruent relationship' are suggested for this study. Such relationships are considered first and foremost by the 3P model itself, which Biggs (1999) conceptualises as the linear relationship among the three Ps. The relationships among the three Ps are assumed to be recognisable and predictable. Biggs (1999) relates the approaches to learning and the learning outcome to explain this relationship. For example, deep approaches to learning promote meaningful learning; surface approaches result in minimum effort in learning. Such relationships refer to a coherent relationship which suggests that students' approaches to learning are strongly linked with the learning outcome (Prosser *et al.*, 2000). This congruent relationship is supported in other studies of different emphasis. For example, Entwistle and Ramsden's (1983) work shows that students' approaches to study are affected by their prior knowledge and learning context. Trigwell and Prosser (1991a) confirm the congruent relationship between students' perceptions of the learning environment, approaches to learning and learning outcomes. The abovementioned studies suggest that there is strong and coherent interrelationship among the three factors (Presage, Process, and Product) in Biggs's (1999) 3P model.

Meyer (1991, 2000) uses the terms 'consonance' and 'dissonance' to describe these relationships. Consonance means that there is a theoretically interpretable (typical or congruent) relationship (Cano, 2005) between the three P factors, as supported by the studies considered earlier. By contrast, a dissonant relationship is a theoretically uninterpretable (atypical or incongruent) one (Cano, 2005; Vermunt and Minnaert, 2003).

Dissonance study has attracted the attention of researchers who are interested in researching student learning, and the keen focus is evident in the special edition of *Studies in Higher Education* (vol.28(1) 2003), which is devoted to this topic. Meyer, Parson and Dunne (1990) focused on dissonant relationships, analysing the relations between perception and approach in terms of their relationship with student achievement. They found that congruent relationships break down in the case of failing students. They found none of the congruent patterns described above in terms of their perceptions and approaches. Meyer, Parson and Dunne (1990) described these incongruent relationships as disintegrated perceptions and approaches. In other words, this means that the expected theoretically coherent and congruent relationship fails to appear in a readily recognisable and interpretable form. For example, a surface approach is used with perceptions supporting a deep approach. Entwistle, Meyer and Tait (1991) later described the incongruent patterns as "bizarre and uninterpretable".

It must also be noted that dissonance studies generally employ quantitative techniques such as factor analysis, cluster analysis or a mixture of both (Cano, 2007). However, I have no intention to use any of these techniques to describe the congruent and incongruent relationships for the identified findings of the present study, as it is a qualitative study.

Being aware of the literature above and being mindful of the constructivist paradigm that the study embraces, the congruent relationships between the identified findings must first be described and justified for the study. Drawing

from the empirical evidence and discussion with regard to the predictable congruent relationship in Biggs's (1999) 3P mode, the congruent relationships are considered and presented in Figures 7.3 to 7.5. Students' stance as to the correctness of views and ideas is not considered here due to the fact that not *all* students describe their stance as clearly as possible compared with the other findings of the study.

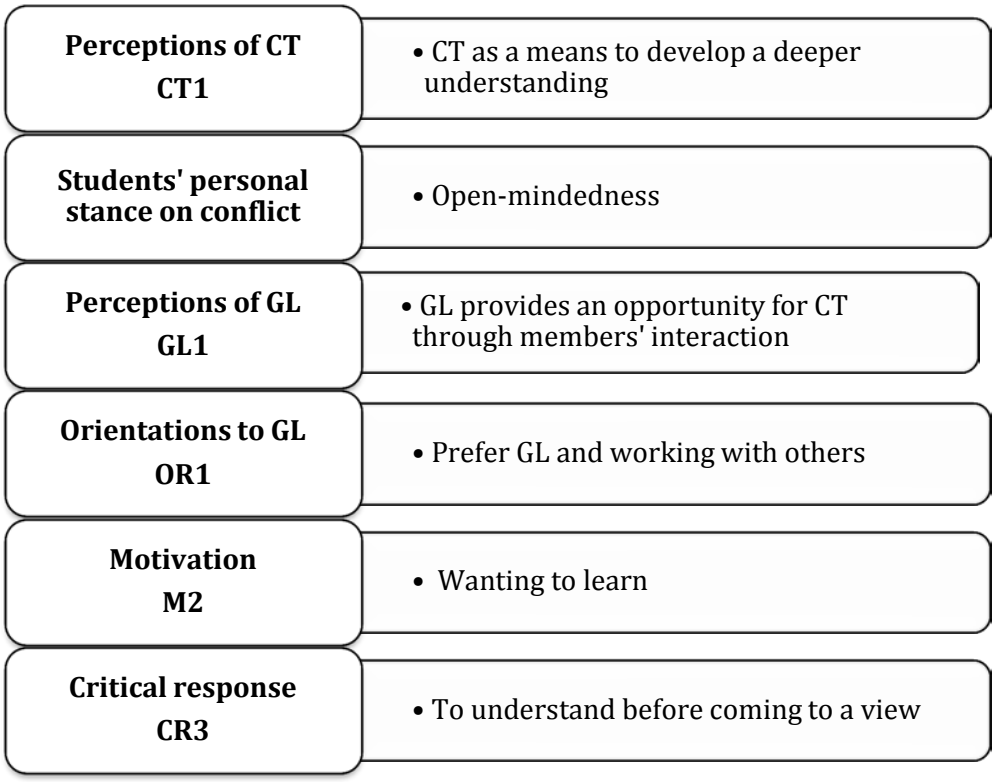

Figure 7.3: Congruent relationship for students with perception CT1

Figure 7.3 above describes a congruent relationship for students associated with perception CT1 (critical thinking as to develop a deeper understanding). With this perception, students should have an open-minded stance and be willing to work with others (OR1), so that group learning is perceived as a means to provide an opportunity for CT through members' interaction (GL1). The related motivation is intrinsic and they are motivated to learn (M2). Therefore, when conflicting views are presented during the interaction and discussion, they wish to understand first before coming to a view (CR3).

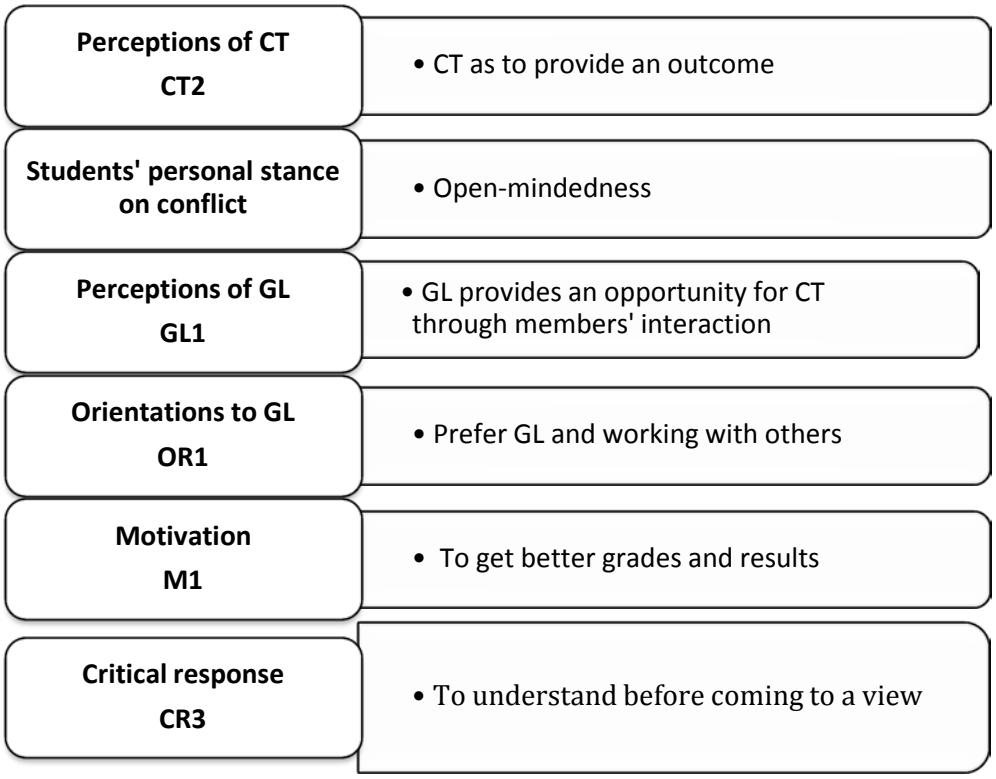

Figure 7.4: Congruent relationship for students with perception CT2

As for students associated with perception CT2 (critical thinking as to provide an outcome), the study found that students related the 'outcomes' to derive a better answer: improving on things, problem-solving and applying critical thinking (see Chapter 5). With this perception, students would therefore be open-minded and prefer to work with others (OR1) and perceive group learning as a means to provide an opportunity for them to apply critical thinking through members' interaction (GL1). With the open-minded stance, when a conflicting view is presented during the interaction and discussion, they would also be likely to seek understanding before coming to a view (CR3). However, unlike students with perception CT1 above, their motivation is mostly driven by the gaining of 'outcomes', i.e. better grades and results (M1). This congruent relationship is depicted in Figure 7.4 above.

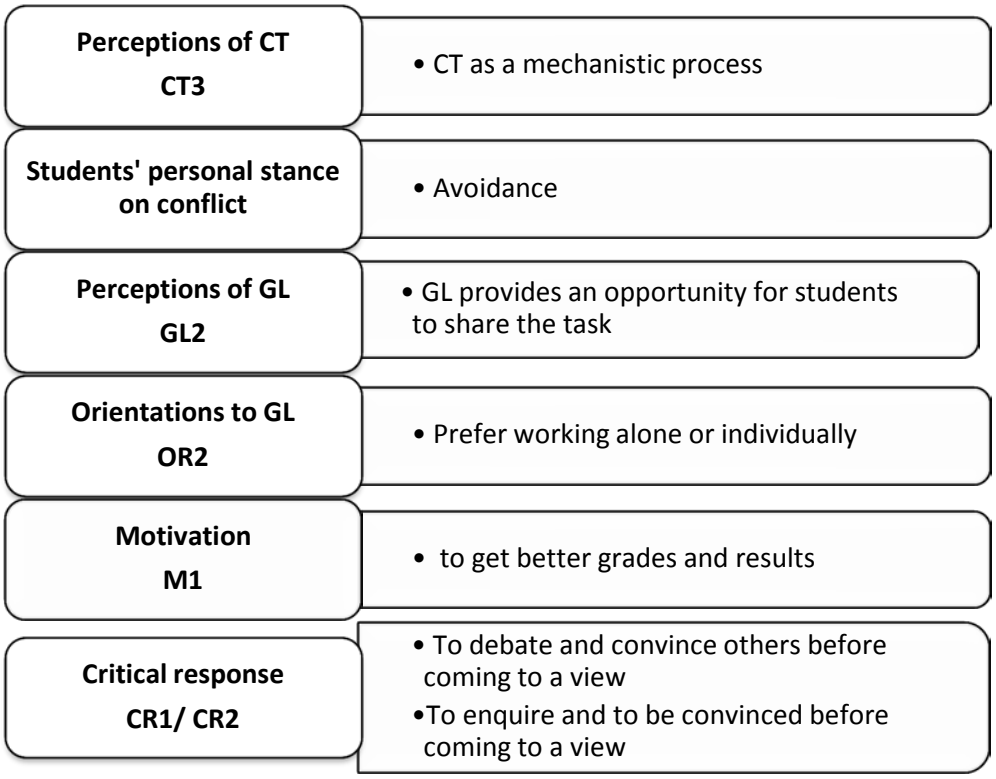

Figure 7.5: Congruent relationship for students with perception CT3

Lastly, Figure 7.5 describes the congruent relationship for students associated with perception CT3 (critical thinking as a mechanistic process). The study found that these few students perceived critical thinking as a systematic process in their learning. As a result, they would perceive group learning as a means to provide an opportunity for them to share the task (GL2), rather than for critical thinking. With little or no emphasis on critical thinking through members' interaction in their learning experience, they would probably prefer to work alone (OR2) and adopted an avoidance stance on conflict. Therefore, they would be motivated to get better grades and results (M1) rather than to learn. In this case, when conflicting views are presented during the interaction and discussion, they would also be likely to debate and convince others (CR1), and to enquire and to be convinced (CR2) before coming to a view. In other words, they would like to ensure that they had a better answer after debating with others and be convinced by the answer in order to get better grades and results.

The congruent relationships described above are summarised in Figure 7.6 below.

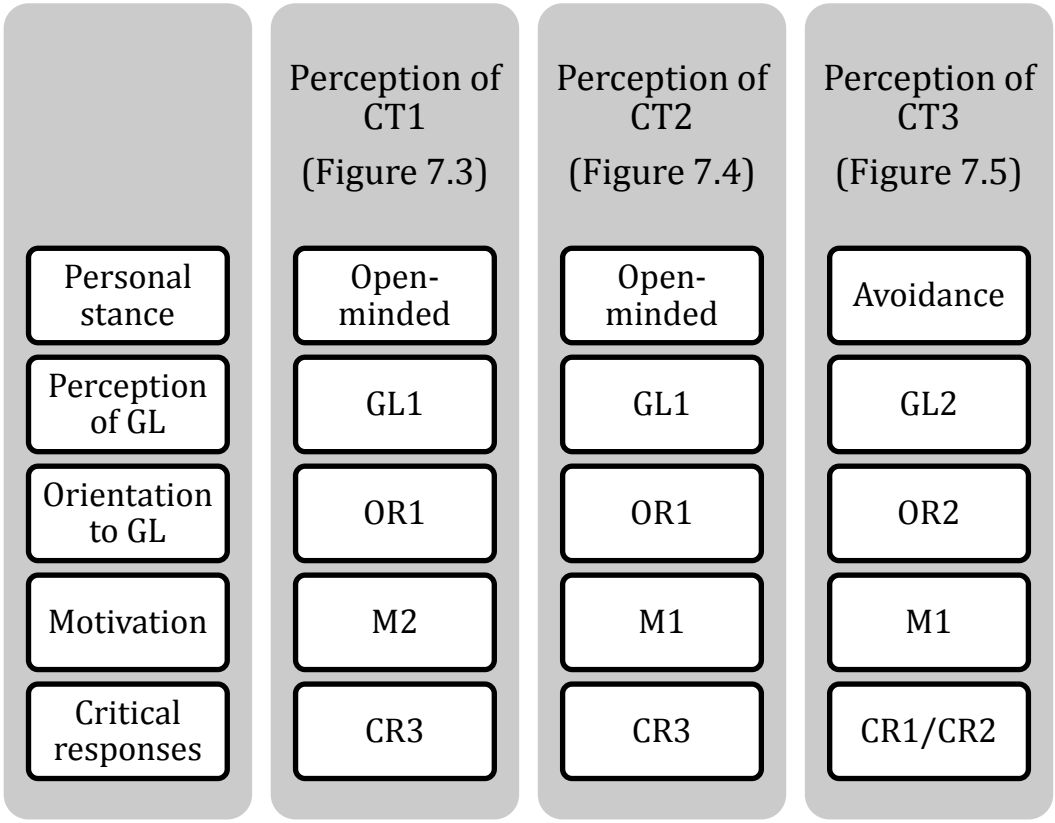

Figure 7.6: Summary of congruent relationships of the study

The constructivist position embraced by the study and its qualitative nature must be emphasised here. The analysis, therefore, does not aim to establish causal relationships between the findings. Drawing from previous research on the 3P model, and with the analytical steps set out above, I am more interested in exploring whether any relationship can be identified between the elements, as shown in the analytical framework of the study (Figure 7.2). To facilitate the exploration and analysis, the following approaches were employed to identify possible relationships between the findings of the study:

1. The first step is to explore any possible link between the identified findings using the perceptions of critical thinking as the basis of analysis. To do this, the study uses a 50% decision rule to determine the links

between the identified findings. For example, if 50% or more of the students with CT1 (critical thinking as to develop a deeper understanding) described an open-minded stance in the interviews, then there is a link between CT1 and open-minded stance.

2. The second step is to use the perception of critical thinking as a basis to investigate the congruent or incongruent relationship between the links established in step 1.

In summary, with the production of matrices, this study first attempts to identify any possible link between the findings, then to explore whether there are congruent or incongruent relationships for the identified links as set out in Figures 7.3 to 7.5 above.

Section 7.2 first considers the relationships drawn from the matrices, which consider all findings relating to all twenty students. Then section 7.3 examines further the relationship with the production of student profiles. Next, a brief discussion of the findings in this chapter is presented in section 7.4 before the study moves on to the discussion in Chapter 8. A summary of the chapter is also provided in section 7.5.

7.2 Identifying potential relationships from matrices

This section identifies and presents potential links and relationships among findings from earlier chapters. To achieve this, the matrices are developed and the potential links and relationships are identified after taking the steps set out previously in section 7.1.1.

Matrix 1 (Figure 7.7), which consists of all findings and is based on the perception of critical thinking, is used:

1. To draw out the links between the findings by applying the 50% decision rule.

2. To explore and identify any relationship by applying the congruent relationships described in Figures 7.3 to 7.5 above.

The analysis and results are considered in sections 7.2.1 and 7.2.2 respectively and a brief discussion is presented in section 7.2.3.

7.2.1 Drawing the links between identified findings of the study - Matrix 1 (Figure 7.7)

Matrix 1 : Perception of critical thinking as basis	CT1: Critical thinking as to develop a deeper understanding (n=11)											n	CT2: Critical thinking as to provide an outcome (n=6)						n	CT3: Critical thinking as a mechanistic process (n=3)			n
Personal stance	S1	S3	S4	S8	S11	S14	S17	S22	S24	S25	S27		S7	S12	S15	S20	S21	S23		S2	S10	S19	
Open-mindedness		x			x	x	x	x	x	x	x	8	x	x			x	x	4	x		x	2
Avoidance	x		x	x											x	x					x		
Perception of Group Learning	S1	S3	S4	S8	S11	S14	S17	S22	S24	S25	S27		S7	S12	S15	S20	S21	S23		S2	S10	S19	
GL1:GL provides an opportunity for critical thinking through members' interaction		x	x	x	x	x	x	x	x	x	x	10	x		x	x		x	4	x		x	2
GL2:GL provides an opportunity for students to share the task	x													x			x				x		
Orientation to Group Learning	S1	S3	S4	S8	S11	S14	S17	S22	S24	S25	S27		S7	S12	S15	S20	S21	S23		S2	S10	S19	
OR1: Preferred group learning and working with others		x		x			x	x	x	x	x	7	x	x	x	x	x	x	6	x	x	x	3
OR2: Preferred working alone or individually	x		x		x	x																	
Motivation	S1	S3	S4	S8	S11	S14	S17	S22	S24	S25	S27		S7	S12	S15	S20	S21	S23		S2	S10	S19	
M1:To get better grades and results	x	x	x	x		x	x		x	x		8		x		x	x	x	4		x		
M2: Wanting to learn				x	x			x	x				x			x						x	
M3: Not explicitly clear											x				x					x			
Critical Responses	S1	S3	S4	S8	S11	S14	S17	S22	S24	S25	S27		S7	S12	S15	S20	S21	S23		S2	S10	S19	
CR1: To debate and convince others before coming to a view						x					x			x				x		x			
CR2: To enquire and to be convinced before coming to a view							x						x		x	x	x		4				
CR3: To understand before coming to a view	x	x	x	x	x			x	x	x		8									x	x	2

Figure 7.7: Matrix 1: Identifying the links using perception of critical thinking as an analytical basis

Matrix 1 above, which is based on students' perceptions of critical thinking, was used to draw the potential links between the findings of the study by applying the 50% decision rule. It shows that students (n=11) with perception CT1 (critical thinking as to develop a deeper understanding) show links with:

1. Open-mindedness - 72.73% (8/11)
2. GL1 (GL provides an opportunity for critical thinking through members' interaction) – 90.91% (10/11)
3. OR1 (Preferred group learning and working with others) – 63.64% (7/11)
4. M1 (To get better grades and results) – 72.73% (8/11)
5. CR3 (To understand before coming to a view) – 72.73% (8/11)

In the same manner, the links for students (n=6) associated with perception CT2 (critical thinking as to provide an outcome) are:

1. Open-mindedness – 66.67% (4/6)
2. GL1 (GL provides an opportunity for critical thinking through members' interaction) – 66.67% (4/6)
3. OR1 (Preferred group learning and working with others) – 100% (6/6)
4. M1 (To get better grades and results) – 66.67% (4/6)
5. CR2 (To enquire and to be convinced before coming to a view) – 66.67% (4/6)

The results for students (n=3) with perception CT3 (critical thinking as a mechanistic process) are:

1. Open-mindedness – 66.67% (2/3)
2. GL1 (GL provides an opportunity for critical thinking through members' interaction) – 66.67% (2/3)
3. OR1 (Preferred group learning and working with others) – 100% (3/3)
4. No clear link for motivation
5. CR3 (To understand before coming to a view) – 66.67% (2/3)

The identified links can therefore be summarised as presented in Figure 7.8 below.

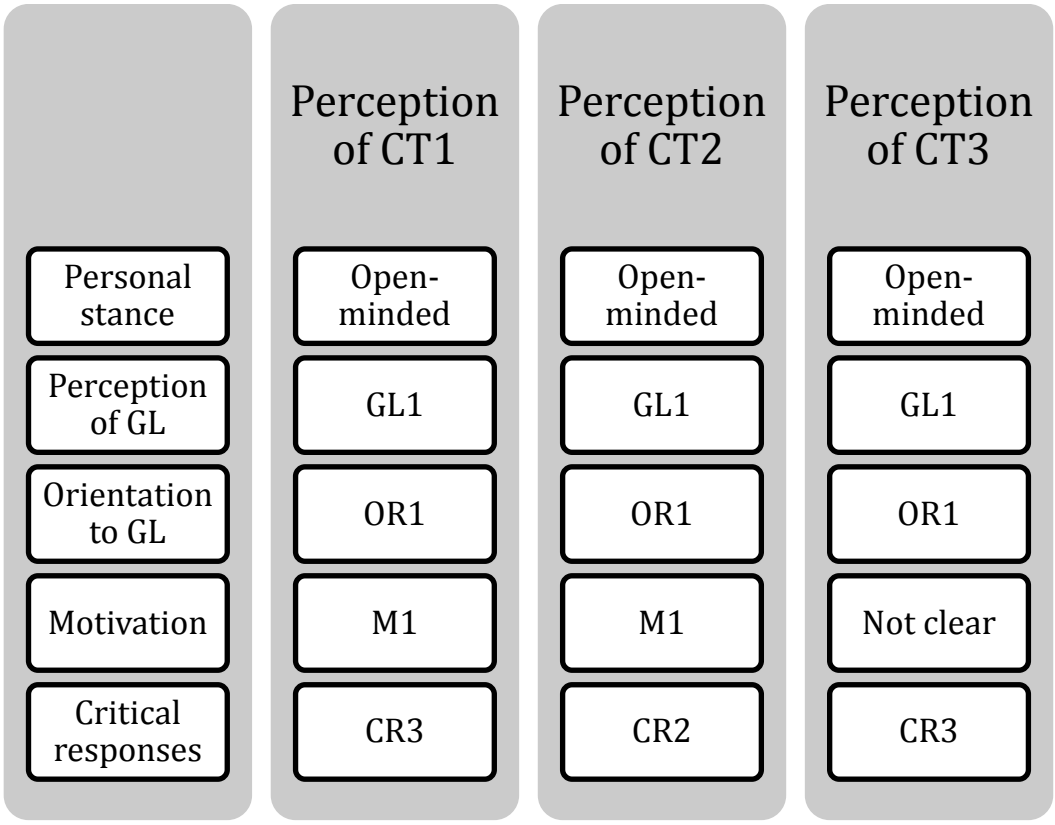

Figure 7.8: Summary of the identified links between the findings of the study

After identifying these identified links between the findings of the study based on students' perceptions of critical thinking, the next step is to see whether they align with the congruent relationships as described in Figures 7.3 to 7.5. Such congruent (or incongruent) relationships are considered next in section 7.2.2.

7.2.2 Identifying the congruent (or incongruent) relationships within the findings

In section 7.1.1, the congruent relationships were explained and described, drawing from empirical studies in relation to the 3P models. However, as the study adopts Biggs's (1999) 3P model and uses different elements for each factor (Presage, Process and Product) in the analytical framework, the congruent relationships between the perceptions of critical thinking and other findings

were proposed, explained and presented in Figures 7.3 to 7.5. In other words, congruent relationships were proposed here to reflect the relevant context of this study. To explain these relationships, the following sections will use Figures 7.3 to 7.5 to benchmark against the links identified in the previous section (7.2.1). By doing so, based on the three different perceptions of critical thinking, the congruent (or incongruent) relationships will become apparent.

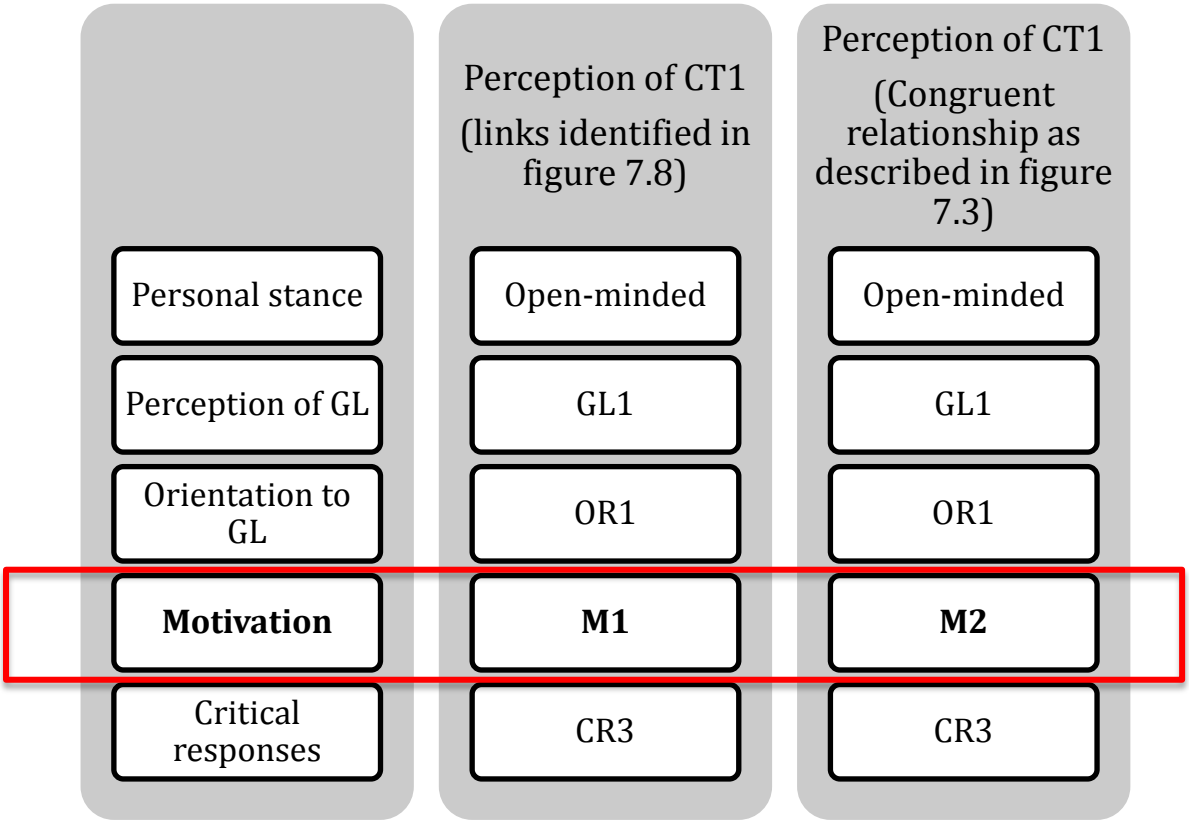

Figure 7.9: Identifying congruent relationships for the Perception of CT1

Figure 7.9 shows a mismatch of motivation for students with perception of CT1 (critical thinking as to develop deeper understanding). Using the 50% decision rule and analysing the students with perception CT1 using matrix 1 above, the study has identified a strong link (72.73%) between perception CT1 and M1 (to get better grades and results). However, this did not constitute the congruent relationship for perception CT1 as described in Figure 7.3. Arguably, if students perceived critical thinking as a means to develop deeper understanding, the 'expected' motivation would rather be intrinsic, i.e. wanting to learn (M2).

Therefore, the coherent relationship breaks down for students with perception CT1; hence, an incongruent relationship exists in this case.

Similarly, we can see a mismatch in critical responses for students with perception CT2 (critical thinking as to provide an outcome) as shown in Figure 7.10 below. Students who are open-minded would be likely to attempt to seek understanding before coming to a view (CR3) when a conflicting view was presented during the interaction and discussion with others. However, students in this study showed that they would be most likely to enquire further (for example, ask for proof and evidence: see variations reported in Chapter 5) to be convinced before coming to a view (CR2). This critical response (CR2) was not coherent with the open-mindedness stance on conflict. Therefore, an incongruent relationship is evident for students with the perception of CT2 in this study.

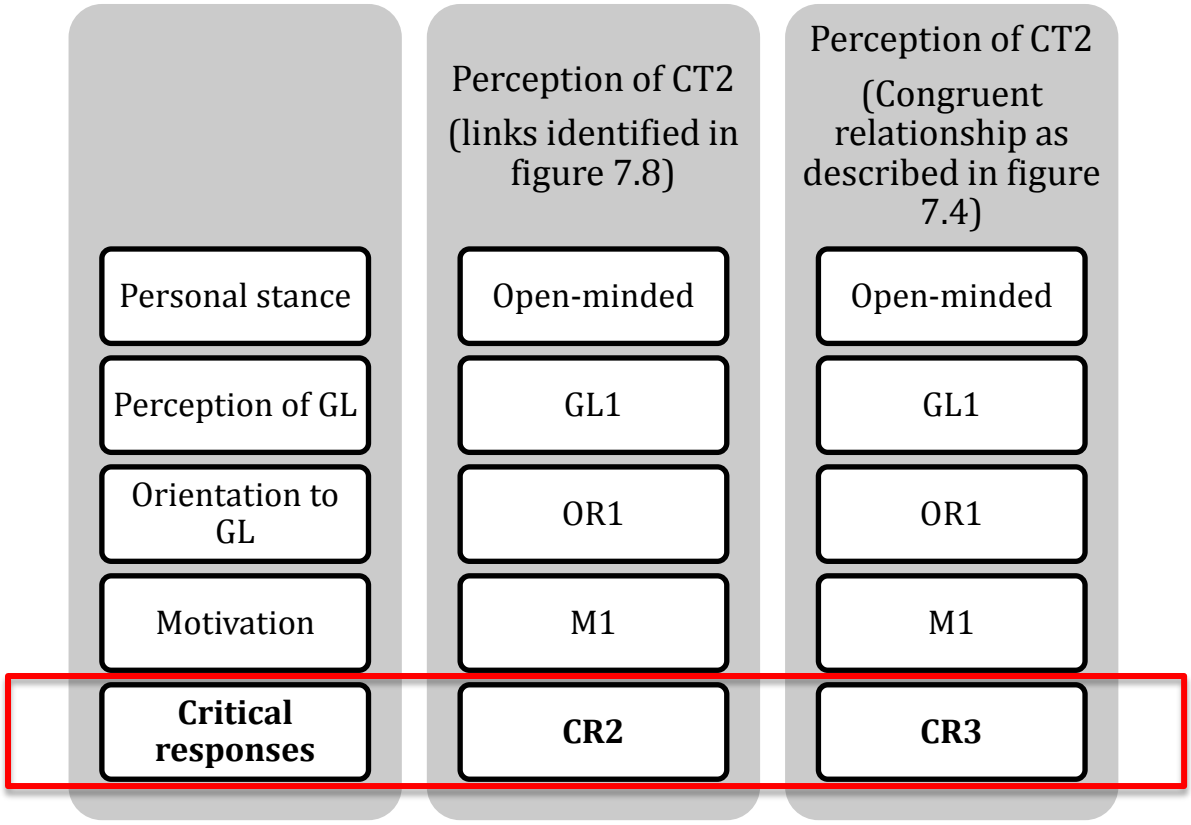

Figure 7.10: Identifying congruent relationship for the Perception of CT2

Lastly, an incongruent relationship was apparent for the perception of CT3 (critical thinking as a mechanistic process). Figure 7.11 below shows the mismatch for all findings except for motivation, which cannot be conclusive because there was no clear link shown in earlier analysis.

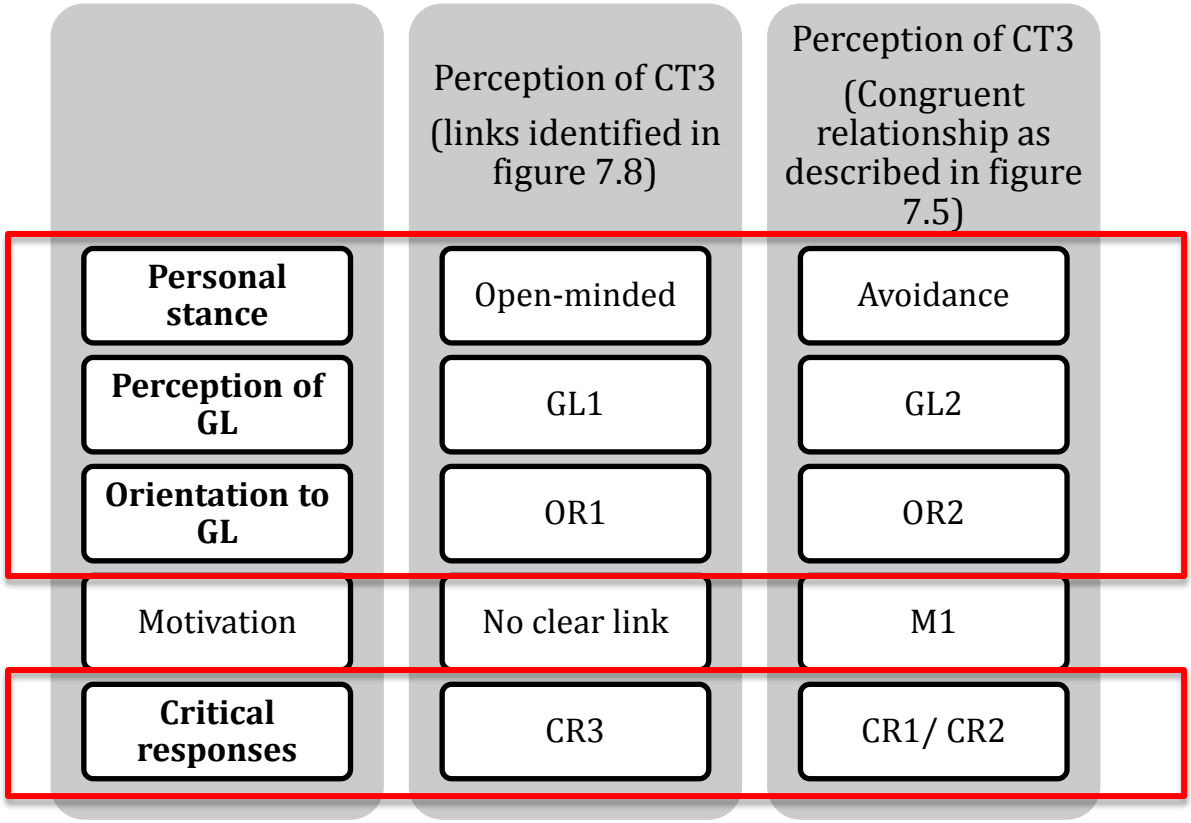

Figure 7.11: Identifying congruent relationship for the perception of CT3

Drawing from the analysis and findings above, it is evident that that there are apparent incongruent relationships between the perceptions of critical thinking and other findings of the study.

7.2.3 The need for further analysis of the identified relationships.

Through the development of matrices, the study has identified apparent incongruent relationships between the perceptions of critical thinking and other identified findings. The analysis seemed straightforward and achieved the objective of attempting to draw links and identify potential relationships between the findings. However, it did not provide any insight into the outcomes. In particular, the detection of the incongruent relationship with the perception of CT3, where most of the findings were mismatched and incoherent, drew my attention to the need for a deeper analysis to understand this phenomenon further. This shows the complexity of a qualitative study, where it is the individual student's perceptions, meaning-making and experiences that this study is interested to find out (see Chapter 4). Moreover, this study does not seek to establish or generalise causal links, but to examine the 'world' that the students experienced, and hence their perceptions and experience. This requires further analysis taking students as the unit of analysis. With this in mind, this study therefore utilises students' individual profiles (explained in Chapter 4) to examine whether the identified findings can be interrelated and whether potential relationships can be identified, even if they are not necessarily in congruent relationships.

The research objective is to enquire into postgraduate accounting and finance students' perceptions of critical thinking in the context of group learning. With this in mind, this study continues by considering ***outliers*** with the aim to draw some valuable insights. Student profiles and matrices are utilised for this purpose.

7.3 Further analysis of the relationships with student profiles

7.3.1 Outliers explained

The developments of students' profiles and their role in the data analysis stage have been explained in Chapter 4. One of the objectives of the study is to get the 'maximum variation' in the data as the study enquires into the students' perceptions in the context of group learning. This means that the selection of the unit of analysis will try to include "special instances – ones that are extreme, unusual, best or worse… a broad spectrum rather than a narrowly focused source of information" (Denscombe, 2007, p.26). Miles and Huberman (1994) called these instances "outliers", and it is their notion of "outliers" that is used in this study.

Miles and Huberman (1994, pp. 269-270) discuss outliers and write a section about "checking the meaning of outliers". They comment that:

> Remember, too, that outliers are not only people; they can be discrepant *cases*, atypical *settings*, unique *treatments*, or unusual *events*. You need to find the outliers, and then verify whether what is present in them is absent or different in other, more mainstream examples. (ibid, p.246, emphasis in the original)

The outliers in this study are those students who seem to depict incongruent relationships in Matrix 1. Meyer (2000), in his work on the bringing together of perceptions and approaches to study, identified a clash or gap between the two and introduced the term 'dissonance' to explain the case. Meyer (2000) also identified students using dissonant approaches as 'outliers'. He commented that they were most likely ignored during data analysis because this was expressed in statistical terms, i.e. a minority, lying on outlying edges of patterns of normal responses. In other words, they are not numerically significant, or are considered not to exist, or perhaps to be due to measurement error.

Instead of ignoring the outliers, Miles and Huberman (1994) point out the value of finding them:

> Any given finding usually has exceptions. The temptation is to smooth them over, ignore them, or explain them away. But *the outlier is your friend.* A good look at the exceptions, or the ends of a distribution, can test and strengthen the basis of findings. It not only tests the generality of the findings but also protects you against self-selecting biases, and may help you build a better explanation. (ibid, p.269, emphasis in the original)

In essence, identifying the outliers improves the rigour of the analysis and the study as a whole. To find the outliers easily, Miles and Huberman (1994) suggest having a well-ordered display, and then reviewing the main findings and the identified outliers and working on what they mean by reviewing what else we know about them. For this study, the production of matrix 1, therefore, can be used again to help in identifying the outliers, as the congruent relationships are already described and explained in section 7.1.1. The identification of these outliers led me to examine such relationships further by looking into the student profiles.

Miles and Huberman (1994) also comment on the value of analysing the outliers:

> In many cases outlier analysis strengthens an original conclusion ("the exception proves the rule"). But, be careful. Don't force it. Stay open to the idea that the outlier is telling you something useful and important about how your conclusion needs changing. (ibid, p.270)

This sums up the ultimate aim of this chapter, which describes the analytical process by identifying outliers and using the production of student profiles, and remains open to what they tell us about the incongruent relationships identified earlier. Moreover, this analytical process is consistent with the study's constructivist stance.

In brief, this section aims to explore further the relationships between the identified findings and the outliers. In sections 7.3.2 to 7.3.3, the procedures to identify the outliers are explained and presented in Matrix 2. Five students (outliers) are selected for further analysis with the students' profiles and the rationales of the selection are considered. The detailed analysis of the relationships with the student profiles for these selected students are then deliberated in sections 7.3.4 to 7.3.8 before a discussion of the findings of this analysis is considered in section 7.4.

7.3.2 Identifying outliers

Following Miles and Huberman's (1994) advice to identify the outliers by having a well-ordered display, Matrix 1 was replicated as Matrix 2 (see Figure 7.12 below) highlighting the outliers for the study. The shaded areas in Matrix 2 represented the congruent relationships described previously in Figures 7.3 to 7.5 according to the perceptions of critical thinking (CT1 – CT3). For example, the congruent relationships for CT1 with other findings, comprising open-minded stance, GL1, OR1, M1 and CR3 (see Figure 7.6), are reflected by the shaded areas in Matrix 2.

Outliers were then identified in matrix 2 by singling out which students displayed congruent relationships. From the Matrix 2, it can be observed that only students S22 and S24 revealed congruent relationships with regard to perception CT1. This can be examined by checking whether the crosses (x) were present in all the shaded areas for both students S22 and S24. In this case, it can be concluded here that the other nine students were displaying incongruent relationships, i.e. showing some aspects of mismatch. Hence, they were the outliers for the perception of CT1.

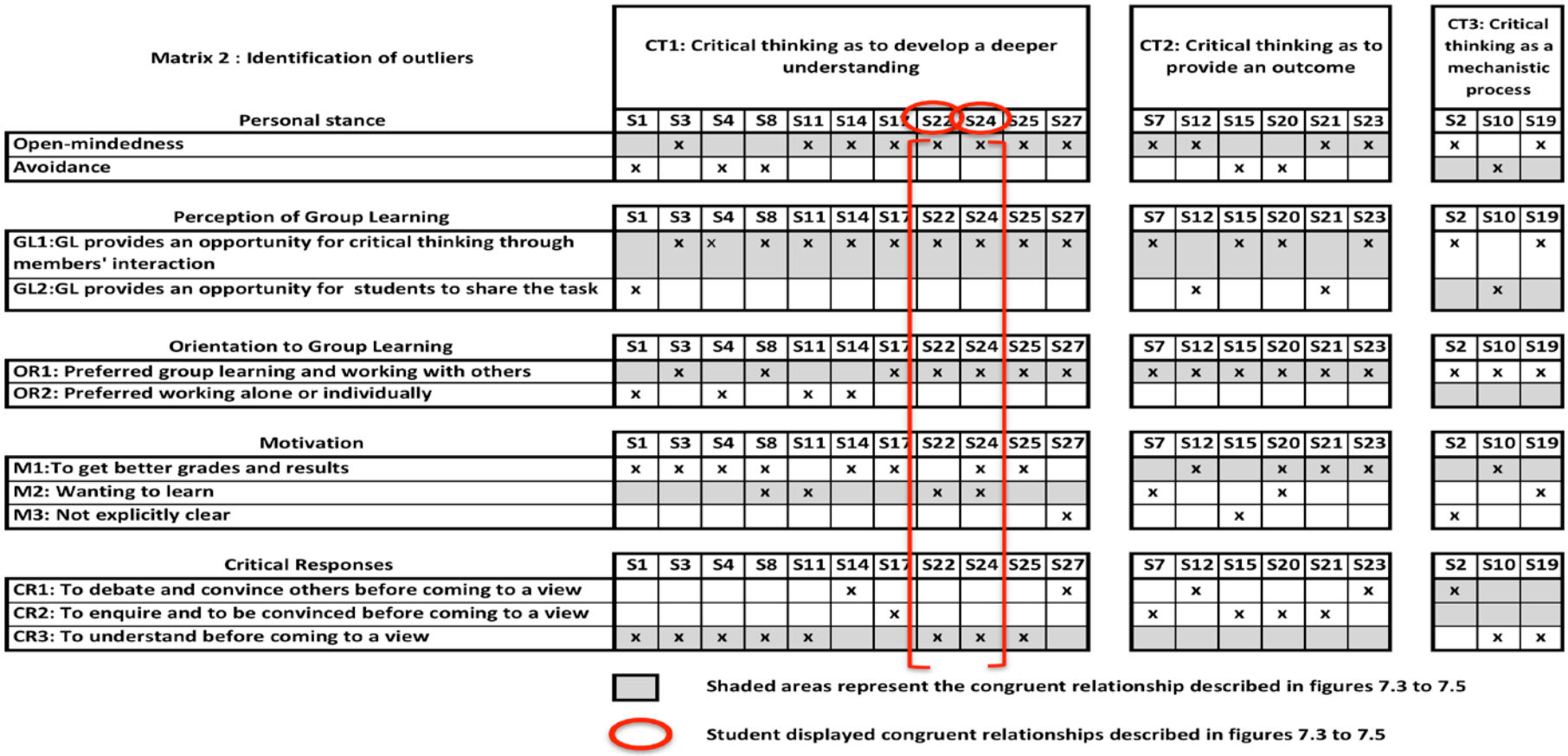

Figure 7.12: Matrix 2 - Identifying outliers

It can be also observed in Matrix 2 above that none of the students associated with the perception CT2 and CT3 displayed congruent relationships. For example, Matrix 2 showed that none of the students with perception CT2 had crosses for CR3. Similarly, there were no crosses in OR2 for the students with CT3. There were apparent incongruent relationships for students with both perceptions CT2 and CT3. As a result, all of them can be considered to be outliers.

In summary, the analytical process using the well-ordered display presented in Matrix 2 has identified that all students, except students S22 and S24, can be considered as outliers for further analysis. In other words, drawing from the observation in Matrix 2, the study found that the majority of the students can be identified as outliers by applying the congruent relationships summarised in Figure 7.6. As mentioned earlier, the outliers were identified in order to allow further testing of the incongruent relationships exhibited among the students. It must be noted that it is not the intention of the study to adopt a case study approach to examine all the eighteen identified outliers here, but it is open to explore any interesting stories hidden in the findings (Miles and Huberman, 1994). Being aware of this and to facilitate the further analysis and exploration, I have 'strategically' (Mason, 2000) selected five students for further analysis with the production of student profiles. The rationales for the selection of these students are considered in the following section 7.3.3.

7.3.3 Exploring the relationships with student profiles

The objective of undertaking another layer of analysis by examining the outliers is to test and strengthen the basis of findings, and at the same time to be open in the analytical process to allow for anything interesting to emerge (Miles and Huberman 1994, pp.269-270). With this in mind, any outliers identified from the three perceptions of critical thinking (CT1 to CT3) warrant further analysis. However, as mentioned earlier, it is not the intention of the study to examine all

eighteen outliers here: therefore, the selection of outliers must again be 'strategic' (Mason, 2002).

To facilitate this, it makes sense that at least one outlier from each perception of critical thinking (CT1, CT2, CT3) is selected. With this in mind, four students (S22, S11, S10, S14) were selected, who had agreed to participate in interviews and happened to be in the same group. Adhering to the requirements set out for the assignment and working together, these four students were required to meet at least four times as a group. They also went through the whole research process from the point at which their consent was sought, ending with their individual interviews. The rationale of choosing this group of four students for further analysis with their student profiles was ***not*** to ignore the context of their interaction and discussion as a group. Therefore, S22, who described a congruent relationship, was also included in the analysis with student profile.

To reiterate, the research objective was to enquire into the postgraduate accounting and finance students' perceptions of critical thinking in the context of group learning. The *context* of the study plays an important role, as it is placed in the centre of the analytical framework of the study (see Figure 7.2), signifying that the framework is heavily contextually dependent (as explained in section 3.6.3). Many prior studies, such as the works of Entwistle and Ramsden (1983) and Trigwell and Prosser (1991a), have also highlighted the role of learning context in a congruent relationship. As a result, this group of four students was selected with the aim of teasing out the intricate, multi-faceted relationships of their responses drawing from their respective unique group learning experiences.

However, these four students could not represent outliers for students with the perception of CT2. It can be noted that S11, S14 and S22 were associated with perception CT1, and S10 was associated with perception CT3. Therefore, one outlier must be selected from the perception of CT2. S20 was selected because

he showed the most mismatches in Matrix 2. S15 was not selected because motivation was not clearly identified in his interview.

In summary, after much careful and strategic deliberation, a group of four students (S10, S11, S14 and S22) and S20 were selected to demonstrate the value of using student profiles in generating more insights after deploying matrices, as discussed in section 7.3.2. Particularly, by using the development of student profiles, the relationships suggested from the matrices can be further tested, therefore adding rigour to the study.

An overview of the related stances, perceptions, orientations, critical responses and motivations associated with this group of four students and S20 is presented in Matrix 3 (Figure 7.13) below. Matrix 3 presents similar observations to those found in the overview of all twenty students earlier in section 7.3 (see Matrix 2, Figure 7.12). There are congruent and incongruent relationships in the matrix. In this matrix, S22 showed a congruent relationship described in this study and the other four students were outliers.

Matrix 3	Group				
	CT1			CT3	CT2
Personal stance	S11	S14	S22	S10	S20
Open-mindedness	x	x	x		
Avoidance				x	x
Perception of Group Learning	**S11**	**S14**	**S22**	**S10**	**S20**
GL1:GL provides an opportunity for critical thinking through members' interaction	x	x	x		x
GL2:GL provides an opportunity for students to share the task				x	
Orientation to Group Learning	**S11**	**S14**	**S22**	**S10**	**S20**
OR1: Preferred group learning and working with others			x	x	x
OR2: Preferred working alone or individually	x	x			
Motivation	**S11**	**S14**	**S22**	**S10**	**S20**
M1:To get better grades and results		x		x	x
M2: Wanting to learn	x		x		x
M3: Not explicitly clear					
Critical Responses	**S11**	**S14**	**S22**	**S10**	**S20**
CR1: To debate and convince others before coming to a view		x			
CR2: To enquire and to be convinced before coming to a view					x
CR3: To understand before coming to a view	x		x	x	

Note:
CT1: Critical thinking as to develop a deeper understanding
CT2: Critical thinking as to provide an outcome
CT3: Critical thinking as a mechanistic process
Shaded areas represent the congruent relationship described in figures 7.3 to 7.5
Student displayed congruent relationships described in figures 7.3 to 7.5

Figure 7.13: Matrix 3: Identifying the relationships using student profiles

In brief, the attempt to identify the potential relationships in previous sections was repeated with these five students. Outliers (except S22) were identified within this group of four students for perceptions CT1 and CT3, and S20 was identified for perception CT2. Each student had mismatched areas for further analysis; hence, another approach or layer of analysis is warranted. With this in mind, the study continues the analysis with individual students by considering their profiles in the following sections 7.3.4 to 7.3.8, with the aim of working towards a better understanding of students' perceptions of critical thinking in the context of group learning. It also attempts to show how the congruent and incongruent relationships were further tested and analysed with the production of student profiles.

7.3.4 Student profile – S11

S11 - Student mentioned he was not a "massive fan" of GL and he thought that members played a key role in GL.
Perception of CT
CT1: Critical thinking as to develop a deeper understanding
Personal stance
Open-mindedness
Perception of GL
GL1:GL provides an opportunity for critical thinking through members' interaction
Orientation to GL
OR2: Preferred working alone or individually
Motivation
M2: Wanting to learn
Critical response
CR3: To understand before coming to a view

In his profile, S11 explicitly claimed that he was not a massive fan of GL. S11 revealed in his comments that he adopted an open-minded stance in his learning, and particularly that he would be happy to 'listen to everyone's points of view' (S11, M, 407). He also shared that he was not a dominating person in the group.

> '*Are you a sort of imposing … imposing kind of person?* No, no, I won't force anything on … if I'm not happy with what they've said I'll say and if they're not happy well I'm happy to listen to people saying that they think I'm wrong. I don't mind.' (S11, M, 846)

S11 saw group learning as a learning environment that provides an opportunity for critical thinking through members' interaction and discussion. This perception was revealed when he was asked about whether group learning could help in developing critical thinking. He explained that group learning extended his critical thinking by 'adapting' into others' thinking.

> '*So what is your view about the relationship, yes, between group learning and critical thinking?* Um, **I think it extends critical thinking**. It extends the way you think, I think, to be honest. Um, obviously individually you think your own way … you've got your own way that might have been adapted from previous interactions of members, but then if you've got … if you're actually working in a group your thinking is **adapted** to other people's thinking, so, um, yes, I don't think **… I think critical thinking can be used individually obviously, but I think it can be developed, um, in a group because you've got other opinions and … etc.**' (S11, M, 764)

He then further explained what he meant by adapting to others' thinking. According to S11, it was adapting to one another's ways of learning and understanding because everyone in the group had different ideas.

> '*Can you explain adapting to others' learning? Adapt with others' learning?*
> Um, well everyone's going to have their own methods of learning, methods of understanding, their own opinions on different matters, um, and you've got to adapt to it by having discussions, um, trying to get across something you might think is really easily understandable … trying to get that across to someone else which then might make you think is not as easy as you think to understand, you know. Um, not much other than that to be honest, I don't think.' (S11, M, 771)

However, S11 explained this better in another comment. This time, he explained how he would change and adapt to others' approaches when their ideas were better or more efficient than his. It was 'doing his own way with a bit of addition of others' better ways of doing" (S11, M, 497). This again aligns with his critical response CR3: in order to understand what others' ideas about, he would reflect on the alternative perspectives in order to adapt and learn from them (S11, M, 610).

This critical response was evident when he shared that he was reflecting on his own and others' perspectives when there were differing opinions. He explained that considering an alternative way of doing things would enhance his learning.

> '*Can you tell me how group learning enhances your work?*
> Um, well as I mentioned a few times like obviously when you had an answer you weren't sure of you could check it with someone else and be happy … **you could all differ in opinion and then decide which … you know, all make … learn more from that**. Um, other things? Um, obviously in a group … **I think**

> **you learn about the way other people think about work. I don't know, you've got your own mindset on how to approach a problem** and possibly … I'm not sure if it was the case here, but I've had it before **where other people have approached the work differently and it's made me think 'I could approach it like that', and made me change the way I do things in the future, you know.** Um, I'm not sure if it was in this specific coursework, but it's definitely happened before where **other members have approached something differently and it's been more efficient or better way than I think I would have done it and then it's made me change future work.'** (S11, M, 478)

> '*OK. I would like to probe more about that situation … why would you want to change?*
> Because it's … well because there's better ways of doing it than probably than you … than I've got, there's probably better ways than most people … **there's different ways and if you can do your own way with a bit of addition of other peoples' better ways of doing things I think you can get a … overall you're going to make it better … better learning definitely'** (S11, M, 493)

It was understandable that his perception of critical thinking is to develop a deeper understanding through interaction with others. His comments affirmed his stance, perceptions, orientation and motivation underlying the importance of members' interaction to encourage critical thinking in his learning. However, surprisingly, S11 shared that he preferred to work alone.

Probing further, he saw this group learning experience "like a normal coursework really, just discussing to get the answers that everyone understood and everyone was happy with…" (S11, M, 797). Perhaps in this view, he would prefer to work on his own rather than in a group. The main reason for this orientation seemed to suggest that he preferred not to deal with organising and liaising with group members.

> '…and **I'm always happier to work on my own** because I can put my own time aside, I **don't have to like worry about what other people can do, what times they can fit in**, I can fit it around my own schedule, you know? That's the only reason really, to be honest.'(S11, M, 292)

When he was questioned further, S11 revealed another reason for this preference to work alone. He brought up the issue of free riders, which he felt was not fair to him. He felt that group work did not fully reflect the effort that

he contributed, especially when the result did not match with the same effort he put into individual work.

> '*So if I ask you this question … assuming everything is perfect between working alone and working in a group … which is your preference?*
> Um, I still rather work alone because [ ] … obviously you put the effort … you want to put whatever effort you put in … you want it to represent your work, whereas I think in group work sometimes it doesn't represent as much because you put your effort into your part, um, and say … it didn't happen in our group, but if it did happen with a group member who didn't put as much effort in, it's going to represent your coursework not looking as good even though you've put the same amount of effort in as you would have done working individually, which I think is a bit unfair to be honest. ' (S11, M, 341)

He further explained this by pointing out the different attitudes held by his group's members toward the assignment as a group. Two members would do what was just good enough and left it to S11 and another member to make it up to the standard he was happy with.

> '*So in this case, do you feel everyone put in the same effort?*
> Um, probably not, probably two of us were happier as I've said to get everything … as long as we … we wanted to make sure the work was as good as possible and possibly the other two members were happy to do their work and leave it with us to make it good or make it up to the level we need. Don't know the reason behind that, but I'd say two of us put in slightly more effort than others, but it was never an issue because it was our choice that we wanted to do extra work to get it up to that standard. Um, so, no, it was never an issue. It's not an issue I've got with the members or anything like that, um, because I'm happy to do it. I'd rather I get a good piece of work and put more effort in than just do … all of us … us all do the same and produce an average standard of work, you know.' (S11, M, 357)

In summary, S11's profile provides some insights and explanations for the incongruent relationship with his orientation to group learning. It also highlights the important aspect of context in learning. This is an interesting observation which will be considered fully in Chapter 8.

7.3.5 Student profile – S14

S14 - Student mentioned she was not a fan of GL. Feedback was important for her in learning.
Perception of CT
CT1: Critical thinking as to develop a deeper understanding
Personal stance
Open-mindedness
Perception of GL
GL1:GL provides an opportunity for critical thinking through members' interaction
Orientation to GL
OR2: Preferred working alone or individually
Motivation
M1:To get better grades and results
Critical response
CR1: To debate and convince others before coming to a view

S14 has a similar profile to S11, except that she revealed a different critical response and motivation. Reading S14's interview transcript, her profile showed that she was a responsible student who valued the role of feedback in learning. First, she was an open-minded student who welcomed discussion and was open to any feedback, even criticism about her ideas and views. Like S11, she also affirmed that she was not a person who was dominating and imposing, and hence that she adopted an open-minded stance on conflict.

> 'Um, **I would never assume that I'm right, that's why I like discussion** and if someone disagrees with what I've got then **I am open to any sort of feedback, sort of criticism,** because I think that's what … widens your understanding of why … like you … like what … like why I'm wrong or why I'm right, um, so I would never assume that I'm right. I'm not the kind of person that would be like "Right, this is the answer" and that's that, because I like to have … **I like to open up questions and that to the group…** '(S14, F, 587)

S14 perceived critical thinking as being about developing a deeper understanding of a subject matter by analysing and questioning feedback (S14,

F, 704). Feedback, for her, played a key role in critical thinking and group learning: hence, in her profile, she frequently cited this issue of feedback in her comments. For example, she compared another group learning experience with this one, where she found that members in this group disagreed with her views without giving any reasons.

> '… I've done a module, um, well I'm doing a module at the moment and we've had to do a group presentation and, um, I **had an idea and someone else disagreed and then came forward with why they disagreed, so it made it a lot easier to understand** … OK, maybe I'm right, but that's my opinion, everybody's got their own opinion, **so it was helpful in the fact that I had feedback on why they disagreed, whereas in the FFM, they disagreed, but didn't say why.** They didn't really give me any feedback on what they thought: they were just like "Oh no, I think it's wrong", but then couldn't be bothered, so told me I was right, so they kind of didn't really help themselves really, but …' (S14, F, 235)

This emphasis on having feedback in group learning was reiterated in her comments about her expectation of the role of group members in group learning. This also revealed that she also shared the same perception of group learning as S11: that group learning provided an opportunity for critical thinking through members' interaction.

> '*What kind of responsibility of roles that they should bring up?* Well you've got the like … the responsibility of actually turning up and I don't know … **I think giving feedback is a big thing** that we didn't have in our group, um, **discussions** as well. We kind of … we would have a discussion, but we never really got anywhere, so … and **everybody needs to share their opinion**, because even though it may not be the one … the opinion that we use, it was nice to … it would be … well because we didn't really have many opinions given, it would have been nice to have more varied ideas from every group member rather than just me and the other guy saying this, this and this and people agreeing, because maybe if they didn't agree and they may have had a better idea, but they didn't share it, they just agreed and were like "Yes, OK, that's fine", so I think everybody needs to provide their opinions and what they feel.' (S14, F, 435)

It was clear that as she related this feedback to critical thinking, she would employ feedback to do "even better" (S14, F, 704). However, though she saw the importance of having feedback, she would want to prove to the other

members that her points were right when her views or ideas were challenged. She would explain her points, "push it" and make her members understand her points (S14, F, 639). This critical response (CR1: To debate and convince others before coming to a view) seemed to contradict her stance and perception of critical thinking and group learning. But this could be explained from her profile, which indicated that she would welcome any feedback on her points of view.

Probing further and with further interpretive analysis, this incongruent relationship could be due to S14's perception of the other members in the group. It appeared that she felt two members in the group were 'laid back' and were not motivated to get a good mark for the assignment. S14 commented that she and one other member of the group worked the most, and the other two members were "laid back", and "didn't care". She felt that she had done almost 75% of the group work (S14, F, 134).

> 'OK, um, I think to me it wasn't a good group experience, um, especially with the sort of … like the way it … well like we had **two laid back** members and things like that, um, but I think the one member that I did do … that we did get on and we did a lot of it, that … because there was … it wasn't just me individually there was like a group as well … the two of us, that was very productive. Um, I think it just depends on the members' attitudes, um, because we did have **two members that probably didn't care about what they did and stuff like that**. It was difficult, but I think overall it was … we managed to pull it off in the end (laugh), so it was … although it wasn't the greatest experience it worked in the end, so…'(S14, F, 909)

It was also evident that she had issues with the other two members' attitudes towards the work they were assigned and their motivation in this FFM assignment. Unlike the other two members she mentioned, she was motivated to get good marks for this assignment. As a result, she would work hard to get a good result even though she needed to do extra in the group.

> '… um, and the other person … me and the other person we worked very well together and we both wanted to do well, so we would put in lots of effort whereas **the other two members just wanted to pass, so we felt what they gave us wasn't at the standard that we wanted to get, so we almost rewrote what they'd done to be at a higher level for what we wanted**, so it was very

> like … I like to try my hardest and what they had provided me I wouldn't want to hand in, so I … it was almost like I re-did it to make it at a higher level, because **they weren't too bothered about what they wanted to hand in, like the mark they wanted**, so…' (S14, F, 49)

Furthermore, the ideal group learning for S14 would be about equal work, required accountability and contribution from members in the group: group learning was about members playing key parts to make it work (S14, F, 139). Due to her perception of ideal group learning, she did not like this present group learning: therefore, she said she preferred to work on her own. This is another area that was identified as an incongruent relationship in the matrix, but it appears to be quite logical from her profile.

When she was asked what she disliked about group learning, S14 explained that she felt she did most of the job as if the assignment had been an individual piece of work.

> '*So what's the reason that you don't like it?*
> I don't know, I just … (laugh) … I feel like, um, because I'm very **… I like to do my best at everything, so I feel like a lot of times in group work I tend to do the majority of work** and it is … like, um, we had … I think it was two international students on my course and there was a few sort of language barriers with different interpretations of things and, um, because I am English … I was the only sort of English member of my group and **they were like "Oh you understand it better, you do it", so I felt like I was doing the majority of work, so in that sense it was like I probably did 75% of the work** and they only did 25, so it was difficult in that, but I don't know, **I'd rather do individual assignments and it's me … then you don't have to rely on other people because sometimes they can't be as prompt as you want them to be and …** (S14, F, 123)

Drawing from S14's comments, it can be seen that she brought up quite a few times that there were differences among the members in terms of motivation and attitude to work in the group. She mentioned that two members only 'wanted to pass' and were not aiming for high marks in this FFM assignment (S14, F, 61). Again, this was her perception of her group members' motivation, which helped to explain how she responded in this group learning context. In

addition, she felt that they might not have the same objectives as a group. This was mainly due to the different approach in handling the assignment.

> '*Mmm, so how do you feel that … um, as a group … is there any sort of same objective … same mindset … same kind of attitude to achieving goal and …?* Um, I think there wasn't much similar, we were … like me and the other member was very … we weren't as laid back. **Half of my group were very like "We'll just let it happen, we've got plenty of time**", whereas I wanted to get it done and be like … just sort of on time with things, whereas **other members were like "Oh it's fine, we've got loads of time**", whereas we didn't, so it was … **we were all very different in the way we worked**. I like to get it done early, whereas a lot of my group liked to … last minute and get it done then, so we were … we kind of had the same objectives to get to … like we all wanted to pass, but it was the way that we got there. Some were very laid back and then … but I wanted to get it done… (S14, F, 68)

With regard to the issue of motivation, it can be observed here that S14 was motivated to get high marks; she also revealed that she wanted this FFM assignment to be perfect and fair in group learning:

> 'It would have been nicer for the other two to play more of a role in the group. I felt it was very … like me and the guy that done all the work, I think it was quite unfair, **but I wasn't willing to not do the work and receive a poorer grade,** so **I wanted to get … to do … to receive a good grade**, so I felt like I had to put the work in to make up for the work that they weren't doing, so I don't know. Like … I'm … it's probably my problem … my fault in a lot of it, **but I like to do the best**…' (S14, F, 312)

From the matrices, it appears that there was an indication of incongruence within her stance, perceptions, orientation and motivation. Nonetheless, again, the examination of this student's profile seems to provide an explanation for such incongruence.

7.3.6 Student profile – S22

S22 - Student described herself a confident learner. She mentioned that GL was just part of a norm, part of education.
Perception of CT
CT1: Critical thinking as to develop a deeper understanding
Personal stance
Open-mindedness
Perception of GL
GL1:GL provides an opportunity for critical thinking through members' interaction
Orientation to GL
OR1: Preferred group learning and working with others
Motivation
M2: Wanting to learn
Critical response
CR3: To understand before coming to a view

S22's profile suggested that she was a confident learner who could take charge of her own learning. S22 also had a very similar profile to S11, except that she preferred to work with others in group learning. S22 was also open-minded, a student who could accept arguments from her group members (S22, F, 468). She preferred to work with others, seeing group learning as providing an opportunity for critical thinking through members' interaction. S22 provided a congruent relationship in relation to the perception of CT1.

It was apparent that she saw members as the key to critical thinking. She felt that the arguments and challenges from members would push her to do more to engage in critical thinking. She stated that her idea of an effective group was a group with members who were active participants and were able to challenge her during group learning.

> '*So what is an effective group to you?*
> As I said before it's … if **every member is participating** you get **challenges from members** of the group and, um, you tend to discuss issues, you don't have people who will be just saying "Yes, yes, yes" to whatever you are saying, so I think that is an effective group.' (S22, F, 829)

S22 expressed that she preferred to work with others. This orientation to group learning can be explained by a few reasons she shared in her interview. First, her profile showed that she saw group learning as part of education, and as a common way of learning in HE. Second, S22 thought that working on individual work might promote "selfishness" and "competition" in learning. She explained that others might refuse to help because of the competitive nature in class.

> '*Do you think group learning actually helps you to learn?*
>
> It does, absolutely*. In what way?* I think as an individual you can learn in a different way, you go and study and do … you do an assignment, but somehow … somehow, um, if maybe … if I was working as an individual … if I asked somebody a question about something there's a bit of **selfishness** because maybe **a person wouldn't want to tell me because they want to excel in their work**.'(S22, F, 648)

She went on to say that there would be incidences of 'transference of knowledge' during group learning. Not only she could learn from others, group learning also gave her the confidence that they would get a better mark (for the FFM assignment) when members were all fully contributing. S22 mentioned earlier that to be an effective or functioning group, everyone must "agree to disagree" (S22, F, 585) and contribute in group learning.

> '… but now as a group as I said before, there is **transference of knowledge** which is much better and it's not like I'm on my own. I'm not sure what I'm doing is right. As a group of course there is, you know, there is sort of a **balancing factor**, you could be wrong as a group, all of you, but the sense that each one of you … if it's a very functioning group, **they've contributed maximum, it gives you confidence that you have got a better mark.** (S22, F, 656)

In summary, S22 expected members to 'agreed to disagree' (S22, F, 585) because she mentioned that they were all different in their attempts at the assignment. She liked the discussion with other members, even though there

were conflicting views; this was mainly because she could learn by understanding other members' ideas through interaction (S22, F, 352). In this sense, she thought group learning could encourage critical thinking. She confirmed that the discussion, disagreements and arguments in group learning helped her to engage in critical thinking.

> '*OK, so what is your view about the relationship between group learning and critical thinking?* I think, um, group learning makes, um … it **brings out critical thinking in individuals.** It actually …In what ways? As I say it's … there is **argument** in a group, there is sort of, um, research going on and these things they can make one sort of … **they can push you to think much better or maybe to analyse in a better way** because in these **challenges from group members** … if it's in a … an effective group it brings out critical thinking, but if it's not an effective group whereby you do have passive members of group who doesn't participate, then you wouldn't have this critical thinking.' (S22, F, 814)

Therefore, it was not surprising to note that S22 perceived critical thinking as a means to develop a deeper understand through interacting with others. In addition, S22's perception of critical thinking tied nicely with her critical response (CR3), i.e. to understand one's ideas by reflecting on one's own and others' perspectives; she liked to think about her own and others' perspectives when her views were challenged in group learning. To reiterate, critical thinking for S22 was "…to be able to **analyse and try to argue on the basis of the information** that you are given, not just to accept**, but to analyse and argue and give very constructive argument on any information**" (S22, F, 788). In this notion, group learning provided an opportunity for critical thinking through members' interaction. She did not have to agree with others before further understanding the basis and argument of the presented views. Therefore, when there was a conflict in group learning, she would take time to reflect on her own ideas first, as she explained:

> 'Um, it's because somebody has challenged me during a discussion. I usually point out "**Can you give me time to go and look at this?** To go and look at what you are saying …", then maybe we can reach a compromise.' (S22, F, 427)

She reaffirmed her perception of critical thinking and critical response by emphasising how important it was for her to interact with others and understand further their views and perspectives.

> 'When … assuming if you put forward some points or views, right, and someone is challenging you and debating you …Mm-hm**…** how would you feel and what kind of actions would you take?' Um, you see some of these, um, discussions when somebody's challenging me on what I'm thinking, um, I do tend sort of to try to sort of, um, **check again with myself to see is this constructive?** Um, somebody can say maybe what you are doing is wrong because of A, B, C, D, and **they could be saying it in the right way** and **it's all up to me maybe to assess what they are saying** and maybe I could be wrong, that's true, then **I check what I'm doing as well**.' (S22, F, 412)

Overall, S22's profile provided a congruent relationship for her stance, perceptions, orientation and critical response. Even her motivation as *wanting to learn* related well with the rest of the findings. It is evident that her comments above showed that S22 was a student who was eager to learn with others and willing to engage with critical thinking in her learning.

7.3.7 Student profile – S10

S10 - Student described himself a strategic learner, aiming to fulfil the requirements of the assignment and ticking what was right for the answers.
Perception of CT
CT3: Critical thinking as a mechanistic process
Personal stance
Avoidance
Perception of GL
GL2:GL provides an opportunity for students to share the task
Orientation to GL
OR1: Preferred group learning and working with others
Motivation
M1:To get better grades and results
Critical response
CR3: To understand before coming to a view

S10 shows a rather interesting profile. He was identified as a strategic learner who aimed to achieve learning objectives by fulfilling the requirements. S10 was the only student to reveal an avoidance stance because he shared that he did not "really care" and let his group "do whatever they want to do" and he "just wanted to get the assignment over with" (S10, M, 403). He perceived group learning as an opportunity for him to share the task, i.e. the FFM assignment. This perception of group learning (GL2) can be observed in the following comments.

From the very beginning, S10 shared about how they worked as a group, giving the indication that he saw group learning like a jigsaw puzzle, putting different parts together. He shared that they divided the FFM assignment according to their expertise.

> 'Um, well we chose, like, what we needed to do because of our background. Some of the group members, they had a background in, for example, in like number crunching part of the assignment, so they took responsibility of calculating. Some of us have more background in theoretical parts, so we knew like … we'd done assignments or essays like in the past, because I'm … um, accounting and economics undergrad from here, so I knew the theoretical part that X (tutor) like was going to require for the assignment, so I said "I'm going to do that part of the thing" and somebody … after that … after I've done the theoretical somebody will send the calculation. **We had to like assemble everything, like put the puzzle together, so that was the main idea basically**.' (S10, M, 23)

When asked about his perception of group learning, S10 responded that it was just a tool to get the final answer, 'nothing to learn extra'; it was a duty for him rather than for learning.

> '*Can you tell me what do you understand by group learning?* Group learning? Only rings a bell in my head. It just … people are coming up with **new shortcuts to get to the final answer. (**Laugh) That's it, **it's nothing like learn extr**a, it's like a … **how to get to the final answer**. I don't know. I look at the **group learning like a duty more than a learning,** you know. It's more like a task you've got to do rather than you're supposed to learn from this**, but I don't learn from the group learning a lot…**'(S10, M, 539)

Drawing from his profile, S10 perceived that group learning was about completing the assignment strategically: a 'short cut' to get an answer. Therefore, it was no surprise that S10 saw group learning just as a gathering of students to complete the assignment rather than for learning. This also explained his orientation to group learning, preferring to work with others so that he could share the task in hand. Such an inference can be supported by the fact that he thought this FFM assignment was not "exciting" enough to "learn extra" (S10, M, 608).

S10 shared his perception of critical thinking (CT3) as a mechanistic process. Critical thinking was "like seeing advantages and disadvantages" and "saying what was right and wrong" (S10, M, 848); he took critical thinking as a systematic approach by weighing up the problem at hand.

In this mechanistic view of critical thinking, S10 also shared that he did not know how to apply critical thinking in group learning: therefore, he thought group learning couldn't help him to engage in critical thinking (S10, M, 831). In addition, S10's stance and the perceptions of critical thinking and group learning did not encourage him to *learn* in this group setting. Consequently, when his views were challenged or disagreed with, he was not keen to deal with it further. He would simply *quickly* check whether their ideas were "relevant, helpful for the assignment and time saving". This showed that he did not really concern himself with critical thinking compared with his group members S11, S14 and S22. It also aligned with his profile as a student who learned 'strategically'.

> '… I'm quite fast on that one. I just **quickly** check in my head if … basically saying like "Is it **relevant or not relevant**?", then I just **quickly** like evaluate what they say and if it makes sense I can always say "OK, yes, carry on, tell me more about it" and if I see it going somewhere, yes, I say "Yes, you're right, let's move on from there". I don't like change … like a sheep … like the Russian all in one go because somebody says something, but I try to take it on board, you know, **because if you hear a good idea you should use it, you should use that idea, so …'**

> *You don't question the idea?* Yes, if you … as I said**, if you see it like going somewhere, like, um, if it's going to help you, why not like take it on board**? Because most of the time it's clear, like "Is it going to help you or is it going to take you down more?" … "**Is it going to save you time or is it going to cost you time?", you just pick on … you just pick it up quickly.**' (S1o, M, 670)

Then, he expressed that, in the end, he got "so tired and bored with the assignment and just wanted to finish it rather than to learn it" (S10, M, 560). It was evident that the motivation for S10 was about good grades and better final results rather than learning.

S10 also revealed some interesting comments about his learning experience. He shared that the group had a checklist to tick off the tasks they did for the group (S10, M, 106). As well as checking for the solutions, they seemed to care about whether they had answered according to the requirements and according to what the tutors wanted to see.

> '*OK. I'd like to probe more on the group discussion when you have done all your parts and you come together, can you tell me the whole process?* Um, we had a list … **checklist** at the beginning of the day. As we … **like we were doing a task we'd tick them off**, by the end of the day we just met together, "OK, who's done what?" and we'd check … if it's 100% completed we said "OK, leave it, move on then, move onto a new thing". If it's like 80% something finished we had to just say "No, you've got to stay here for an extra half an hour, complete that, because we've got to come back and make a new fresh start tomorrow", so that was the main idea, like our checklist was quite specific, nothing to go hover around the subject, it was like dead to the point. Um, at the end of the day we just came up with a … like "Are we happy with the result? Does the answer make sense? Does the … like numbers look alright? Does the, um, **are you going to be thinking like tutor A & B** (his tutors) are going to be happy with the outcome? Like … are we like talking about specific to what they want or is it a requirement of the assignment?" and if we were happy everyone just voted.' (S10, M, 103)

This emphasis concerning the tutors was noted again when he explained how he learned more from the tutor's feedback compared to the group learning (S10, M, 549).

S10 also shared that he was confident in his group members' ability and knowledge; he could rely on them for the answers they provided for the group. He explained that the members were 'good' and they were one of the best groups in the class (S10, M, 247). He did not question their ideas because they were straightforward; he just wanted to do it quickly.

> '*You don't question the idea?* Yes, if you … as I said, if you see it like going somewhere, like, um, if it's going to help you, why not like take it on board? *Because* ***most of the time it's clear****, like "Is it going to help you or is it going to take you down more?" … "Is it going to save you time or is it going to cost you time?", you just pick on* ***… you just pick it up quickly****.'* (S10, M, 678)

S10 revealed a CR3 which could tie in nicely with his avoidance stance and his 'strategic' approach to learning. However, the level of understanding achieved for S10 when there was conflict in the interaction and discussion was questionable. Drawing from these comments and responses above, it appeared that S10's profile provided congruent relationships among the findings.

7.3.8 Student profile – S20

S20 - Student constantly mentioned about getting better or best answers in the interview. He appeared to link many aspects in this learning with this notion of 'getting better/best answer'.
Perception of CT
CT2: Critical thinking as to provide an outcome
Personal stance
Avoidance
Perception of GL
GL1:GL provides an opportunity for critical thinking through members' interaction
Orientation to GL
OR1: Preferred group learning and working with others
Motivation
M1:To get better grades and results M2: Wanting to learn
Critical response
CR2: To enquire and to be convinced before coming to a view

S20 constantly mentioned getting a better or the best answer in the interview. The ultimate motivation in this learning experience was to get the best answer for FFM. This was evident in his responses to different questions posed in the interview. First, this profile was evident in his perception of critical thinking to provide an outcome (CT2), i.e. a better answer.

> '*OK, just take some time to reflect back. Just sum up the whole learning experience relating back to group learning and critical thinking.*
> Critical thinking, um, sometimes when you come up with errors and try to find or tackle a problem with a different way of … **different solutions to get to that answer** or maybe **trying to get a better answer** compared to the others, so critical thinking will be useful for us in the … i**n the environment of the group, so to just come up with better answers.**' (S20, M, 669)

Next, he mentioned finding the 'best possible answer' in their interaction and discussion for the FFM assignment.

> '*Can you tell me about your group assignment?*
> 'Um, group assignment … first of all we did about the topic as we did, we shared … so all of us did the same cashflow together … separately and then we **compared the answers**, so then we came up with the **different result** and we tried to resolve the situation based on the logical thinking… we sit and we just discuss and **we try to come up with the best possible answer**.' (S20, M, 1)

Similarly, this aim was evident in a comment about group learning as well.

> *'OK. Um, what do you think are the key factors for a group to learn?*
> I think trial and error. Um, sometimes we try something and then we find the error, then we go back and we try to fix it to **come up with the best possible answer**.' (S20, M, 68)

As a result, it was no surprise to see that the motivation for this student's learning was to get a better grade and better results (M1). This profile also provided the explanation for his orientation towards GL, where he preferred to work with others (OR1)

> *'Do you enjoy working with others?* **Yes**, it's very interesting because most of the time you were doing the things alone, but sometimes when you do with other people **you learn more**. It's a good opportunity to **learn more and also use a good interaction**.'(S20, M, 136)

'Would you do it by yourself if you have a chance? **Definitely not**.

Can you tell me why? Because as I said, I don't have that much experience. If I write it myself I would have come up with loads of **… loads of errors** which I think … it would be very hard for me to fix it, but when **I do it with the group I will learn more things from them** as well because of … their background is much, much greater. **No matter how much I try it wouldn't be a perfect answer** because at the end of the day all want … we want a **better result, better grades**, so for the sake of **the better grades** we want to do it better (laugh). (153)

Drawing from his responses above, there was indication that he would like to learn (M2) in group learning, but further probing showed that he was more concerned with getting the perfect answer and achieving a better grade (M1).

S20 agreed and saw the value of group learning in providing the opportunity for critical thinking through members' interaction (GL1), but again his desire to get the best answer was apparent in his replies below.

'*Mmm. OK. Um, do you feel that … do you feel that this sort of bouncing ideas around … interactions, discussions helps you to learn more or …?*
Um, the group learning, um, I **think the group learning is the most useful way of learning** I think in my suggestion because **I don't believe in individual because individual is not perfect.** Even in nowadays everything becomes more complex as we have more group … **we have more opinions and more options** …we are putting into wanting, **so we will have a better view and better answers for everything.'** (S20, M, 376)

'*What is so good about group compared to individual*
Um, **more knowledge. More different thinking, different views, different analysation [analysis?], different critical thinking, everything is different** about each person and as long as these people can get … get along with each other, they will have a **great outcome**.'(S20, M, 382)

Despite what can be observed above in relation to interaction and critical thinking, rather than being incongruent with the open-minded stance, he seemed to adopt an avoidance stance when there was a conflicting view in group learning.

'So let's say you put forward your view and it has been challenged, yes, so what … how would you feel and what would you do?

> Yes, I try to prove the point that maybe my point is correct, but if they have a better argument and they try to convince me that **I'm wrong then I'm wrong**. I mean **there is no reason to be defensive**. There is nothing personal. We just … **we're trying to get to the best answer that we can.**'(S20, M, 241)

Apparently, the motivation to get the best answer and not to be defensive was the reason why S20 sought concurrence with the rest of the group when there was a conflict. The avoidance stance that he adopted is evident in the event whenever he was doubtful about his own views and ideas.

> *'If both of you are not very sure about each other's view or answers … yes, so how … how to resolve that?* How to resolve that? There is other … there are two other parties in the group, so we try to discuss it with them. If we are not sure … **sometimes if you are not sure about something, better not to use it,** that's usually … **that's the truth**, you know, you never … **when you have doubt in something, better not to use it because later you will be questioned and you cannot answer the question**.'(S20, M, 274)

To understand his avoidance stance further, it appeared from his response that it was a calculated risk.

> '*So is this how you, um, making your decisions in your everyday work or in your learning? If you doubt something, you will just drop it?*
> If you see there is a doubt … that there is a degree of doubt how much, um, having a doubt about something? If you have a high doubt about something … about some point, then you will not use it. … yes, I will do it because **I make my decision based on that assumption because there's a high probability that I'm correct about something, so … but if I'm not sure about something I better not take the risk because sometimes you have to see whether it's worth taking the risk or not.**' (S20, M, 283)

In terms of his critical responses, when there was an argument in group learning, he liked to enquire further and be convinced before coming to a view (CR2). In an earlier response, S10 also pointed out that he could easily accept the fact that he was wrong if the members had a better argument and they could convince him that he was wrong.

> 'Yes, I **try to prove** the point that maybe my point is correct, but if they have a better argument and **they try to convince me that I'm wrong then I'm wrong**.' (S20, M, 241)

Similarly, to reach a final conclusion for the FFM, he looked for *concrete* evidence and proof in order to be convinced about the presented views and perspectives in group learning.

> '*In what sense that you all came to the final solution?* Um, for example, based on the **evidence** … for example, let's say depreciation on the cashflows. This is a basic … more … one of the greatest things that they have, so all of us were discussing whether we should put it or not, so we go back to the textbook … we go back to the book and **we go by something concrete as evidence** that it should not be in the cashflow, for example, so that's the great point for us because we know exactly that we shouldn't use it because **we have something concrete as evidence** that supports our arguments.'(S20, M, 212)

This critical response could be the motivation to get the best answers: hence, the close link with his profile. Drawing from the analysis above, it appeared that S20's profile provided a sensible explanation for the relationship between the perception of critical thinking of CT3 and the other findings. In this sense, S10 also responded in a congruent relationship based on his profile.

7.4 Findings: Congruent and incongruent relationships reside with the learners' perceptions and the complexity of learning context

Drawing from the discussion and consideration in this chapter so far, with the identification of outlier(s) from the matrices, the study found that incongruent relationships could be considered as congruent ones after further analysis using student profiles. This finding was evident in the five students strategically selected above after undertaking further analysis for this purpose.

Most importantly, the analysis revealed that there are other contextual expects that mediate the students' responses. This highlights the complexity of the learning contexts in students' learning. The group of four students provided evidence for this finding. To illustrate the case, take two aspects from the overall findings of the study to consider their relationships. The analysis showed that students' perceptions of critical thinking might or might not inform how they responded in the context of group learning. For example, students' perceptions

of critical thinking of CT1 might not necessarily provide congruent relationship with all students' critical responses. In S22's case, the perception of critical thinking (CT1) tied in nicely with the student's critical response (CR3). However, this was not the case for S14, who revealed a different critical response (CR1); S14's critical response also seemed to contradict her open-minded stance. This could be her stance on the correctness of the answer as discussed in Chapter 6. S14 might have an idea about the answer for the assignment that she sought to debate with her group members during the interaction and discussion. Moreover, S14's profile showed that she valued feedback from others in any learning experience. Therefore, she responded with CR1. Though S22's case might provide the explanation for the correlation between two, it does not necessarily apply to all students with the same perception of critical thinking.

Similarly, there was no clear congruent relationship between students' perceptions of group learning and their orientation to group learning in the present study. For instance, all open-minded students (S11, S14, S22) perceived that group learning would provide opportunities for critical thinking through members' interaction; nonetheless, only S22 preferred to work with others, and this contrasted with S11 and S14, who preferred to work alone. This was mainly due to their perceptions of group members. S22 hoped to get challenges from the other group members; on the other hand, S11 and S14 felt that their members were not contributing to the group. As a result, they would rather work alone in future.

The importance of students' perceptions in this social context of group learning was reinforced in this group of four students. When they were probed about their experience of this particular group learning, students reported different experiences even though they were working together in the same group for the duration of this study. For example, S11 mentioned that they did the work together, without dividing and splitting the tasks.

> 'Um, we ended up deciding that we'd all pretty much do it together, so we didn't actually split up sections for each person because we all needed to

> understand it, um, and **we all had enough time really to sit down and, um, well do it together**. We had enough meetings to **not have to go and split it up**. Um, other than that … other than the meetings … um, there's not much else really.'(S11, M, 40)

However, S11's experience contrasted with the reports from the rest of the members. For example, S14 clearly stated that they had divided the work equally, each one doing his/her individual assigned task.

> 'OK, um, it was very, um, there was four of us, but it was very … we were kind of split into two, um, in the way that we like … we did our learning. Um, I felt that we just kind of **split the work up sort of equally rather than like all do it together**, we all did separate individual parts, so I went away and done my part and then that was what we did.'(S14, F, 8)

However, motivation seemed to explain most of the students' profiles. For example, S14 wanted to work alone because she believed she could do better alone than in the group. Similarly, S10 thought group learning was to help him complete his assignment; therefore, he preferred group learning. His aim was to get the assignment done and pass it with a good grade. However, though students' motivation provided explanations for some of the stances, perceptions and orientations, it is not conclusive that congruent relationship can be identified among them. In other words, it is not possible to conclude that students with an open-minded stance are intrinsically motivated by wanting to learn.

This shows that it is not straightforward to identify and provide congruent and incongruent relationships, taking account of the complexity of the learning environment. The analysis in this section brought up some other considerations that play a vital role in student learning, such as the important role of learning context and the perceptions of others (other group members). Nonetheless, this study found that incongruent relationships among stances, perceptions, orientations and critical responses could possibly be congruent ones only after examining the students' individual profiles.

7.5 Summary of Chapter 7

This chapter draws links and examines possible potential relationships between all the findings identified in Chapters 5 and 6. Many empirical studies (Biggs, 1999; Trigwell and Prosser, 1991) assume that congruent and incongruent relationships exist in Biggs's 3P model. In other words, these relationships are recognisable and interpretable (Meyer, 2000). Drawing from the evidence from previous studies in this area, this study attempts to explore potential relationships among the identified findings. To achieve this, the study approaches the identified findings from two different angles. The first one is to describe the congruent relationships and identify links among them in order to examine the complexity of the relationships across all twenty students. Using a well-ordered display, i.e. the matrices, outliers (or incongruent relationships) are identified. With these outliers, the second angle then narrows down the scope by examining further these outliers' comments and responses with student profiles.

The results of the second layer of analysis using the student profiles above support Prosser and Trigwell's (1999) emphasis on the constitutionalist perspectives of learning, where there is an internal relationship between students and the world and they are not constituted independently of one another (ibid, p13). The two-stage analysis adopted in this study revealed that, though some potential relationships can be deduced and established, it was not easy to establish relationships among all the findings. In addition, the fact that only one or two students appeared to show congruent relationships does not warrant firm conclusions. Moreover, it was evident that students could perceive matters very differently even though they were participating in the same group. This in itself reveals the complexity of one's perceptions in learning experiences.

In summary, this study discovered that possible and potentially congruent relationships among the findings could ***only*** be found by examining the individual profiles, but this is not an easy task. Apparent incongruence within a

matrix may actually become congruence when more is understood about the student and the context via the individual profile. Further interpretive analysis with the five students above, particularly the four students who interacted in a group for a particular task, not only confirms that congruent relationships are not easily drawn out in this complex learning, but also highlights the complexity of this social context of group learning. Drawing on all these observations and the findings from Chapters 5 to 7, this study now turns to the discussion in Chapter 8.