Negotiating Self- and Peer Feedback on Teamwork Competencies with the Use of Reflective Journals in Higher Education

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UCL
Doctor in Education

2018

DECLARATION

I, **Hui-Teng Hoo** confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

ABSTRACT

A common practice to develop teamwork competencies in students is to form teams, organise team activities, and have students assess and give feedback to themselves and/or their teammates. Students' reaction to and interaction with self- and peer feedback are rarely explored. The purposes of this study are to create and test out the efficacy of a methodical pedagogy for building and developing teamwork competencies in higher education, as well as understand what students' thoughts, feelings and intentions are when they reflect on their self- and peer feedback, so as to prepare them to be "team-ready". This pedagogy included planned interaction opportunities for teams; post-interaction self- and peer assessment of and feedback on teamwork competencies criteria adapted from Stevens and Campion (1994); and internal negotiation of self- and peer feedback for self-reflection modelled after Kolb's (1984, 2014) experiential learning cycle via written reflective journals. Participants were 173 university undergraduates taking a cross-cultural management course at a Singapore university. The data included 519 sets of self-feedback, 519 sets of peer feedback, and 519 reflective journals across three time points. A mixed methods approach was taken - quantitative data analyses included central tendency measures of self and peer teamwork competencies ratings, SPSS TwoStep Cluster Analysis of peer-evaluated teamwork trajectories, and Cluster Validation with SPSS multivariate analysis of variance (MANOVA); and qualitative data analyses of open and axial coding of reflective journals were done using NVivo software to derive codes and categories from the journals.

Results indicate an overall improvement in teamwork competencies over three time points. Features of what students reflect on their learning of self and peer feedback were discovered. Major implications for practices related to teamwork and the development of teamwork competencies in higher education are discussed.

IMPACT STATEMENT

From a practical standpoint, the findings from this study have important implications for teamwork practices in higher education. Systematic effort devoted to the development of teamwork competencies in university curricula calls for developing teamwork competencies crucial for workforce readiness. This study exemplifies a methodical approach with demonstrated findings about the approach and answers the question that students do improve their teamwork competencies through the cyclical process of internal negotiation of self- and peer feedback on their teamwork competencies.

The methodical pedagogy that encompassed internal negotiation of self and peer feedback through written reflective journal was effective in developing teamwork competencies through interaction, action, and negotiation. The framing of assessment and feedback in this methodical way offers a concrete and explicit way of clarifying the distinct roles of assessment design, standards, and feedback (Tan, 2013). Beyond the undergraduate setting which was the focus in this study, researchers and educators can attempt to replicate and extend this methodical approach to other courses in both undergraduate and graduate programmes using the following guidelines to aid reflection-in-action, reflection-on-action, and reflection-for-action for a written reflective journal that have served the students in this current study well:

1) Make reference to teamwork competencies,
2) Label affect so as to manage emotion,
3) Set one to two goals and be specific with implementation intentions, and

4) Monitor performance of intentions to ensure gap closure between intentions and performance.

These guidelines necessitate students to use metacognition, the awareness and understanding of one's own thought processes, to improve the quality of feelings, thoughts, and actions and the relationship among them so as to set realistic goals for teamwork competencies and to achieve them. Not meant to be a mechanistic response to educators' instruction, these guidelines are means to support students in productive ways to guide them to use feedback from themselves and their peers to develop their learning and to improve their embodiment of teamwork competencies – competencies which are vital for effective functioning of teams in organisations and societies.

ACKNOWLEDGEMENTS

I owe a debt of gratitude to my thesis supervisor, Associate Professor Kelvin Tan for his inspiring supervision and thought-provoking suggestions at all stages of this thesis. Special thanks to Assistant Professor Christopher Deneen, who agreed to be my co-supervisor in the last two years of this work so that I could have another pair of eagle eyes to watch over the quality of my thesis.

I owe it to Dr. Gwyneth Hughes at the Institute of Education (IOE), University College London (UCL) for sharing her great insights during her supervision of my Institution-focused study at IOE UCL. That study is my first foray into "real" research during the first lap of my EdD programme at UCL.

I express deepest appreciation to my supervisors and colleagues at Nanyang Business School, Nanyang Technological University — Professor Gillian Yeo for her support in my professional development; Professor Soon Ang for believing in my capability to complete this journey and for supporting me through the process of role transformation from administrator to educator to researcher; Professor Kok Yee Ng, Associate Professor Christine Koh, Dr. Catherine Wu, and Ms. Goh Sok Ling for helping me in many ways beyond conducting research; and Associate Professor Geraldine Chen, Assistant Professor Thomas Rockstuhl, and Dr. Tan Mei Ling for their guidance which I could not have depended less on when I needed to bounce ideas around and refine my ideas.

To my biggest source of strength and support, Sean, my loving husband. I extend my most heartfelt thanks for his patience and trust throughout this journey. It would not do justice not to mention my furkids, Snowy and Truffle, who are my bundle of joy and great stress relievers on both productive and unproductive writing days.

I dedicate this work to my students who were willing to share their teamwork experiences with me, without whom this study would not be possible.

Thank you, all.

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Chapter 1: Introduction

1.1 Statement of the Problem

Teams are vital to the functioning of organisations and societies (Salas, Rico, & Passmore, 2017). Take a moment to visualise dysfunctional inter-professional surgical teams and multi-national peacekeeping collaboration teams that fail to harmonise efforts, connect effectively and manage conflicts — then one can begin to imagine the magnitude of catastrophic outcomes. The importance of teamwork cannot be underestimated.

At work, teamwork is recognised as an essential, not just desirable, employability skill because collaborative tasks are the norm in organisations (Lawler, Mohrman, & Benson, 2001; Riebe, Girardi, & Whitsed, 2016). Work arrangements involving teams are seen as more efficient and effective than individual work (Hoegl & Gemuenden, 2001). Collaboration has become an essential aspect of professional work especially in the current work milieu where professionals need to undertake multifaceted tasks demanding communication with others in diverse group settings. The demand for and of teams is unlikely to diminish as work in the “post-industrial era” requires more collaboration and coordination than ever, both within and between work units (Chen, Donahue, & Klimoski, 2004). Therefore, the importance of developing collaborative skills to prepare graduates for the workplace cannot be over-emphasized.

The promotion of teamwork competencies has thus come to the forefront in educational institutions, to equip students with knowledge, skills, and abilities through the practice of teamworking in the schoolhouse. Before we scale to the level of organisations and societies, teamwork competencies should be built and developed within higher education, the realm in which we graduate students from school to organisation. In higher education, teamwork is an important competency for many reasons, not the least of which include work, educational and accreditation requirements.

For work, organisations have repeatedly emphasized the need for graduates to be "team-ready". Hence, teamwork has now become a familiar aspect and basic component of the pedagogical repertoire of higher education. Research has shown that teamwork or collaborative learning allows for interactions among students and produce new understandings through discussions, debates, resolutions, and group decision-making to reach new and mutually agreed-upon perspectives (Brutus & Donia, 2010; Johnson, Johnson, & Smith, 2014; May & Gueldenzoph, 2006; Ohland et al., 2012). These skillsets are now required in the workplace.

For educational purposes, apart from the opportunity to develop key employability skills that are highly valued by students and employers, forming students into teams to perform tasks provides a more efficient way of teaching and assessing students especially when institutes of higher learning are confronted with large cohorts and tightly-squeezed budgets (Cumming, 2010). Besides the institution- and teacher-centric consideration of placing students in

teams, collaborative team learning strategies are also gaining a stronghold in higher education because of other benefits. Some empirical evidence to illustrate these benefits include the fact that these collaborative teams are well-accepted by students (Hughes, Toohey, & Velan, 2008) and that there is an increase in students' teamwork knowledge and skills (Chen et al., 2004), as well as student motivation, self-efficacy, and sense of responsibility (Bartle, Dook, & Mocerino, 2011).

For accreditations, standards of accreditation require university programmes to assess, measure, report and support with evidence that students are given opportunities in their programmes to work in teams on collaborative tasks and to learn from peers so that graduates are prepared for the team-based workplace. Accreditations are vital indicators of the quality of university programmes. Hence, many high-quality institutions adhere to accreditation standards by which university professional degrees such as engineering, health (Accreditation Board for Engineering and Technology, Inc., ABET Engineering Accreditation Commission, 2004; Commission on Accreditation for Dietetics Education, 2002), accounting and business (AACSB Association to Advance Collegiate Schools of Business, 2013; European Quality Improvement System, 2016) (Loughry, Ohland, & Moore, 2007) come under audit by academic and professional personnel from peer schools and professional bodies.

However, merely putting students in teams does not promise the benefits of teamwork. Collaborative learning and teamwork-based tasks can be

perplexing and exasperating for both students and teachers (Wosnitza & Volet, 2014). A rise in team-based learning saw a corresponding surge in students' dissatisfaction with teamwork (Bolton, 1999; Oakley, Hanna, Kuzmyn, & Felder, 2007).

Some of this dissatisfaction stems from drawbacks such as "free riding" or "social loafing"[1] — when one or more team member does not or does little to contribute to the team task (Brooks & Ammons, 2003; Dingel & Wei, 2014; Karau & Williams, 1993; Latane, Williams, & Harkins, 1979; Meyer, Schermuly, & Kauffeld, 2016; Tucker, 2013; Weaver & Esposto, 2012) as well as the manifestation of "domineering" behaviour by one or a few who marginalise "weaker" teammates (Peterson & Peterson, 2011; Sellitto, 2009). The concerns with distributive justice of team project grades have also been raised by students who felt that not all contributions were equal and hence giving the same project grade to all is not just (Clarke & Blissenden, 2013; Kidder & Bowes-Sperry, 2012), especially to social loafers. Although reporting the loafer is one measure to counter social loafing, helping students to learn skills to work effectively together may be more sustainable and teachers could pay more attention to the latter.

Also, interpersonal conflict, lack of effective communications, and poor role definition in teams can lead to negative experiences and outcomes that

[1] Social loafing – a phenomenon researched more than a century ago by Ringelmann (1913) and a term first coined by Latane, Williams, & Harkins (1979) in their seminal work on causes and consequences of social loafing – describes the tendency for individuals to expend less effort when working collectively than when working individually. According to Latane et al. (1979), causes of social loafing include attribution and equity (lack of trust and propensity to attribute laziness to others could have led one to work less hard in a group); submaximal goal setting (perception of group task as optimizing and not maximising); and lessened contingency between input and outcome (inputs and rewards are not aligned to expectations). Regarded as a social "disease", Latane et al. (1979) highlighted the negative consequences for individuals and organisations because social loafing reduces efficacy which hurts businesses and lowers benefits for all.

potentially affect students' understanding and participation in subsequent teamwork (Cumming, Woodcock, Cooley, Holland, & Burns, 2015; Maiden, Perry, Barbara, & Bob, 2011). Therefore, despite the increased exposure to team-based projects with opportunities for collaboration and interaction, students do not necessarily develop teamwork skills (Natishan, Schmidt, & Mead, 2000; Willey & Gardner, 2009) because often, challenges such as task and interpersonal conflicts are not identified and resolved. It is not uncommon to find that teamwork deployed in the classroom is a "lopsided model emphasizing opportunity over guidance" (Bolton, 1999: 233). Often, there is lesser rigor in educators' efforts to provide students with systematic guidance and practice as well as processes to measure and to provide feedback. In short, teamwork pedagogy needs attention so that the teamwork learning outcomes are achieved.

As Oakley et al. (2007: 270) aptly pointed out, "students are not born knowing how to work effectively in teams, and if a flawed or poorly implemented team-based instructional model is used, dysfunctional teams and conflicts among team members can lead to an unsatisfactory experience for instructors and students alike". It is thus important for students to be aware of team dynamics, and manage team challenges. The focus on task output vis-à-vis the teamwork process makes it difficult for students to go beyond a task output orientation. Which is to say, teamwork pedagogy needs to hone in on nurturing students' psychological and communicational capabilities (Riebe et al., 2016) as well as "accountability, open participation and discourse, empowerment,

reflection, and critical praxis" (Ding & Ding, 2008: 470) so that we, at the institutes of higher education, nurture graduates to be team-ready.

1.2 Purpose of the Study

My interest in and engagement with students' teamwork competencies stemmed from my dual roles as the director of the Office of Accreditation and Assurance of Learning of a business school and as an undergraduate course instructor. The first role in accreditation shaped the way I planned and implemented my curriculum in the second role as instructor. My two roles have allowed me to see both the benefits and the challenges of teamwork in higher education through my colleagues' and my own courses. I shall elaborate further below.

For Accreditation

My business school is accredited by the Association to Advance Collegiate Schools of Business (AACSB), which provides internationally recognised and specialised accreditation for business and accounting programmes at the bachelor's, master's, and doctoral level. The school is subjected to five-year reviews by a four-person peer review team, made up of dean-equivalents from other business schools in different countries, which appraises the business school on its educational achievements appropriate to AACSB international accreditation standards. One of these standards, assurance of learning (AOL), requires business school programmes to document systematic processes for determining programme learning goals and these learning goals are to be measured directly in courses. AOL is similar to

an outcome-based educational approach which has widespread backing from governments and accrediting bodies (Deneen, Brown, Bond, & Shroff, 2013) and is catching on fast with universities in the region such as Hong Kong and Singapore.

My business school has identified 10 learning goals, and each bachelor's and master's programme "distributes" these learning goals across its stable of courses. One of these 10 learning goals is teamwork skills. Essentially, what this means is that instructors who have chosen to measure the learning goal of "teamwork skills" are required to set up a rubric of teamwork skills, to inform students of the assessment, and to explain the criteria in the rubric before the assessment is carried out. Students should receive feedback on the scored rubric of teamwork skills.

As the custodian of the accreditation office, I ploughed through hundreds of course outlines for the business school every year and noticed that many courses measured the learning goal, teamwork skills. The reason for this prevalence is that the use of group or team tasks in courses is a norm and instructors typically tie teamwork skills rubric to their assessment of team tasks so that they can deal with the challenges[2] of teamwork. Instructors shared similar challenges that the literature has identified: free riding is one of many

[2]My work with accreditation and assurance of learning in the business school requires me to go through course outlines and to speak with instructors on the creation and use of rubrics for assessments. Whenever I come across group components of assessment, I would take the chance to check with the course coordinators/instructors how they ensure every student in the group contribute to the group project and why they use the teamwork skills rubrics. Interesting conversations usually emerge on issues such as poor role definitions, free-riders, domineering personnel in team, students' "cry" for distributive justice of grades, conflict between and among members, communication difficulties, and students' plea to do away with teamwork because of prior bad experiences with teams, particularly with exchange students because local students feel that their exchange peers are "always away", making communication difficult and teamwork challenging.

causes for student dissatisfaction and hence the clamour for distributive justice of grades (Brooks & Ammons, 2003; Dingel & Wei, 2014; Meyer et al., 2016; Tucker, 2013; Weaver & Esposto, 2012); domineering behaviour by one or few in the team (Peterson & Peterson, 2011; Sellitto, 2009); interpersonal conflict, lack of effective communications, and poor role definition in teams that result in negative experiences and outcomes that potentially affect students' understanding and participation in subsequent teamwork (Cumming et al., 2015; Maiden et al., 2011).

To mitigate teamwork challenges, instructors typically administer a peer evaluation of teamwork questionnaire toward the end of the course, whereby students rate their peers on a list of teamwork criteria. The aggregated peer scores of each student are then used by the instructors to moderate the group grade of those members whose peers scored low in the questionnaire; while for those with extremely high peer scores, bonus points are accorded. This method is a good check against social loafing or dominance in the team process of collaborative learning, and addresses the distributive justice mentioned in teamwork literature. However, these peer evaluation of teamwork questionnaires are mostly given at the end of the course, so students do not get the chance to learn from their peers' evaluations and develop their teamwork competencies within the same course, with the same teammates who can monitor their development or lack thereof. Most assessment of teamwork competencies is summative rather than formative so that the potential of this pedagogy is not fully tapped.

In addition, almost all the evaluation of teamwork skills is done solely by peers and not by peers and self, which is a pity. Assessment drives learning, and since the pedagogy for peer evaluation is set up with rubrics to assess a student's teamwork skills, the same rubrics can be used for self-evaluation and development, alongside peer evaluation.

For My Course

Similar to my colleagues, when I took on the role of course coordinator in the year 2011 for a cross-cultural management course offered by the business school, I took on the typical features of peer assessment of teamwork questionnaire. The peer assessment of teamwork questionnaire was used to identify outliers in teams, to investigate the causes, and then to adjust the marks of these outliers according to their alleged performance or lack thereof, within the team. I found that, over time, students were not differentiating the scores among their peers, and I gathered several anecdotal reasons from students and colleagues. One, the questionnaire was given toward the end of the course and by that point, there was nothing much that could be done with the team or the individuals, and so the act of rating one's peers was perfunctory. Two, students sometimes did not give their peers low scores because they were their friends and so, even if their peers were not pulling their weight as active team members, students did not follow through and mark them down accordingly in the questionnaire.

There are several learning points here. The peer evaluation was done too late in the course. Summatively, the tool generated a mark based on each

student's contribution to the team project, but there was no chance for students to develop their teamwork competencies based on the scores. Other than the opportunity to "get back" at the free rider and/or the domineering team member via the questionnaire, the one-off questionnaire approach served little developmental purpose. There was no opportunity for students to identify their own dysfunctional teamwork behaviour to allow them to put appropriate strategies in place to improve themselves and receive peer feedback again. Then, there is the possibility of students "colluding" by giving all their peers high scores to prevent their instructors from taking punitive measures. As an end-of-course peer evaluation, there was no prescribed action of self-reflection on peer feedback or on one's perceived self-performance or self-assessment.

To address the above deficiencies in the use of peer evaluation of teamwork competencies, I introduced three major changes to teamwork and assessment tools in my course in 2014. The first two changes relate to formative iterations of peer evaluation and inclusion of self-evaluation in assessment and feedback. I went beyond a one-time course-end summative peer evaluation of teamwork competencies to a formative three-time self- and peer evaluation and feedback of teamwork competencies. By asking students to rate their peers thrice in the duration of a course, my method allowed the feedback they received at each time point to feed into their subsequent team interactions, and there was the chance of getting feedback again from the same team members over the timespan of the course. With the introduction of self-assessment, students are required to rate themselves using the same criteria of teamwork competencies on which they rated their peers. The aim of self-

assessment is two-fold: 1) to heighten students' self-awareness of their own teamwork competencies, and 2) to juxtapose self and peer evaluation of teamwork competencies so as to uncover blind spots (known to peers but not to self) and hidden areas (known to self, unknown to others) that require attention in strategizing and acting so as to improve one's teamwork competencies.

To facilitate the aims of self-assessment, I brought in the third change in the teamwork assessment of the course — reflective journals. Students are required to reflect on self- and peer evaluation of their teamwork skills in a reflective journal guided by Kolb's (1984) experiential learning cycle after each round of self- and peer feedback. There are three in total. While the self and peer evaluations are not assessed, the reflective journals are. Each of the three reflective journals, completed after receipt of self and peer evaluations, was formatively assessed by the instructor. Feedback to students consist of grades and comments. A grading format with a 10-point scale based on "thoroughness and thoughtfulness of students' self-reflections rather than the actual performance" (Molinsky, 2013: 688) was used (See sample in Appendix A). The thoroughness of students' reflective journal was anchored on two dimensions of Kolb's (2014) experiential learning cycle – concrete experience and reflective observation. I looked at students' recognition of strengths and weaknesses as identified by self and others; ability to draw connection between experience and peer feedback; and ability to compare the past and recent performance to assess improvement or the lack of (this third criterion applies to reflective journal 2 and 3). The thoughtfulness of students' reflective journal

was anchored on the other two dimensions of Kolb's (2014) experiential learning cycle – abstract conceptualization and active experimentation. I looked at students' ability to draw on key concepts, frameworks and ideas related to their experiences and their plans for future team interaction. The purposeful continual assessments are meant to nudge students to deliberate on their self- and peer feedback so that they learn from both the teamwork experience and the experience of giving and receiving feedback.

Essentially, students make meaning of experiences by interpreting them. These interpretations are self- and co-constructed with peers' observations to guide judgment and action. Reflection on one's teamwork skills through self- and peer assessment and feedback becomes an explicit feedback loop incorporated to enable students to compare and contrast valuable information about their teamwork competencies as well as to act on this information. This is internal negotiation, through which individuals negotiate differences or similarities in their self- and peer feedback.

The Study

As Carless, Salter, Yang, and Lam (2011) and Nicol, Thomson, and Breslin (2014) expounded, students need to engage in dialogue about monitoring their own work and progress with criteria and standards of judgment so as to discriminate what is quality performance and how to enact it. This study shares a similar goal with these studies of dialogic feedback (Beaumont, O'Doherty, & Shannon, 2011; Carless et al., 2011; Crimmins et al., 2016; Nicol, 2010; Nicol et al., 2014; Yang & Carless, 2013), of reconciling the different

perspectives of students and peers (or teachers) in the feedback process. While the goal is similar, the mode and process are different.

In this study, the mode of dialogic exchange is different from what is presented in existing works, which anchor the dialogue as interaction between self and others in physical or virtual settings. Reflection is the mode for negotiation of self-assessment and peer feedback, short of peers talking to one another. The argument is that the latter may not be as effective because of potential issues such as face-threatening and fear of reciprocal effect, especially when it comes to negative reviews. In fact, any meaningful face-to-face dialogue should only proceed after reflection has taken place.

In contrast to conventional dialogic feedback, an internal negotiation is time-free and space-free, allowing for continual reflectivity with past and current information. Enabling an internal discourse of negotiating self- and peer feedback for the purpose of building understanding goes to the heart of the inner reflective process.

My study was thus framed by the novel investigation of how students internally negotiate self- and peer feedback of their teamwork competencies with the use of written reflective journals to improve their teamwork competencies. I aimed to find out if these interventions to build teamwork competencies in students are effective in terms of their improvement in teamwork competencies scores as assessed by their peers. In addition, I want to find out if there are different clusters of teamwork competencies growth trajectories in students. And if so, what strategies did each cluster apply in their

internal negotiation, and in particular, what distinctive strategies did the higher peer-rated cluster of students use.

Hence, five questions are addressed in this study.

1.3 Research Questions

1. Do students improve their teamwork competencies through a cyclical process of internally negotiating self- and peer feedback on their teamwork competencies?

2. In what ways do students internally negotiate self- and peer feedback on their teamwork competencies?

3. What, if any, are the different profile types of teamwork competencies growth trajectories in students during their teamwork process?

4. What strategies of negotiation do students, in each trajectory cluster, use to improve their teamwork competencies?

5. What distinctive strategies are used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

Before proceeding to the methods of inquiry, I define key terms that are used in this study.

1.4 Definition of Terms

Terms such as team, teamwork, reflection, dialogic feedback and negotiation are used to describe the conditions and processes by which students manage self- and peer feedback and are used variously in the studies. While there may be differences in the context in which they are applied, the terms have considerable commonality and I will define them and how they are used in this study before we proceed to the next chapter (a more detailed list of words/phrases and their definitions can also be found in the Glossary).

A **team** is a set of two or more individuals interacting adaptively, interdependently, and dynamically towards a common and valued goal (Salas, Dickinson, Converse, & Tannenbaum, 1992). Unlike groups, teams have task interdependency, task and role structure as well as a limited time span in which to perform (Salas, Burke, & Cannon-Bowers, 2000). In this study, a team is made up of five or six students who work together with the aim of accomplishing several team tasks.

Teamwork is a multi-dimensional construct that is defined as a set of interrelated competencies — or sets of knowledge, skills, and abilities — that facilitate two or more individuals within a team to interact adaptively, interdependently and dynamically toward a shared and valued goal (Salas et al., 2000). It is difficult to quantify teamwork because it can be inferred from a multitude of knowledge, skills and abilities (Britton, Simper, Leger, & Stephenson, 2015). In this study, teamwork is quantified by the teamwork

competencies delineated by Stevens and Campion (1994) and they include conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination.

Reflection is defined as the conscious awareness and questioning of personal experience, a search for alternative explanations and interpretations, and identification of areas of improvement (Scott, 2010). Reflection is also "best understood as a process of metacognition that functions to improve the quality of thought and of action and the relationship between them" (Ash & Clayton, 2009). In this study, written reflection is the mode for negotiation of self-assessment and peer feedback, through which students develop self-awareness when reconciling self- and peer feedback, and then identify areas for improvement and strengths to leverage.

Dialogic feedback refers to "an interactive exchange in which interpretations are shared, meanings negotiated and expectations clarified" (Carless et al., 2011: 397). This study shares a similar goal with studies of dialogic feedback (Beaumont et al., 2011; Crimmins et al., 2016; Nicol, 2010; Yang & Carless, 2013), of reconciling the different perspectives of students and teachers or peers in the feedback process. While the goal is the same, the mode and process are different. In this study, "dialogic feedback" is used as an intrapersonal and not interpersonal negotiation process in which one discusses self- and peer feedback by considering the perspectives, positions and interests of oneself and one's peers.

In this study, **negotiation** refers to an intrapersonal self-awareness process to deal with self- and peer feedback on one's teamwork competencies. Negotiation can be on shared or opposed views as Fisher and Ury (2011) suggest, so one takes cognitive and discursive approaches to processing compatible and incompatible information from self and peer feedback. The term "negotiation", used in this study, pools two key propositions: 1) "communication designed to reach an agreement when you and your other side have some interests that are shared and others that are opposed" (Fisher & Ury, 2011); and 2) an intrapersonal self-awareness process (Fox, 2013) that advocates that the most significant negotiations we have, the ones that govern the quality of our lives and the impact of our actions, are the ones we have with ourselves.

1.5 Methods of Inquiry

Epistemology and Research Methods

It is vital to identify the relationship between the epistemological foundation of research and methods employed for research to be truly meaningful. This scrutiny includes the role of the researcher in the study, what drives this interest, how these might interact with the research process, as well as which methods of inquiry best meet the objectives of the study (Darlaston-Jones, 2007).

The constructionist view, to which I subscribe, influenced the choice of my research methods. **Constructionism** is the term coined by Seymour

Papert in the 1980s (Papert, 1987; Papert & Harel, 1991). To apply a preconceived definition is against the concept of constructionism because constructionism demands everything to be understood by being constructed (Papert & Harel, 1991). This fits well with the use of the reflective journal which requires students to make sense and reconcile self- and peer perspectives on their teamwork competencies before they can construct meaning on current actions and plan for future teamwork behaviours:

> "*Constructionism – the N word as opposed to the V word – shares constructivism's connotation of learning as "building knowledge structures" irrespective of the circumstances of the learning. It then adds the ideas that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity…"* (Papert & Harel, 1991: 1).

While similar to Piaget (1972)'s theory of learning, constructivism (that students learn by constructing knowledge), Papert (1987) believes that learning is also facilitated by constructing actual artefacts – be it a theory or a computer programme — objects which can then be shared and discussed with others (Kretchmar, 2015) in the process of learning. Besides abstract learning of concepts, Papert (1987) values the concrete learning, meaning-making processes by which learners work within their context to distinguish between discriminating, using, generalising, and synthesising of concepts (Hoyles & Noss, 1987). Problem defining and goal development, followed by problem-solving, become part of a learning curriculum. Students learn through designing, which involves the development of problems and goals themselves

(Papert & Harel, 1991). The problem does not come from the instructor but the learner.

In the same way, to define Stevens and Campion (1994)'s knowledge, skills and ability (KSA) requirements for teamwork to students without allowing them to experience, observe, reflect, adjust, and experiment in the real-world context through team-working would be depriving them the chance to construct and make sense their teamwork experience. So in this study, students define their problems and goals concerning their teamwork competencies when they engage in teamwork. These do not come from the instructor.

The power of the constructionist view thus lies in its application — in the potential of the idea that started as an observation of team behaviour to influence and shape team behaviour. Students codify their experience, observations, reflections, adjustments, and experimentations in the creation of an entity — a written journal — so that improvable propositions of their teamwork competencies become ongoing discussion and experimentation. This codification is modelled using Kolb's (1984) experiential learning cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. The processes, by which students come to make sense of their experience by negotiating the feedback from self and peer on their teamwork competencies, illuminate the construction and transformation of knowledge, skills, and ability requirements of teamwork.

Epistemological Implications of Negotiation for Data Collection and Analysis

> *"…the biggest obstacle to success in negotiation is not the other, however difficult they might be. It is ourselves."*
> — *William Ury, 2013*

Clarification of the term "negotiation" is essential to explain the epistemic stance and the methods of investigation. "Methods of investigation form a practice that carries with it the knowledge needed to have a result faithful to the chosen epistemology" (Tennis, 2008: 106).

I will unpack the term "negotiation", which manifests in several ways. Negotiation is defined as "a communication designed to reach an agreement when you and your other side have some interests that are shared and others that are opposed" (Fisher & Ury, 2011). Negotiation is also defined as an intra-personal self-awareness process (Fox, 2013). Fox (2013) advocates that the most important negotiations we have, the ones that determine the quality of our lives and the impact of our actions, are the ones we have with ourselves. While most negotiation literature stresses that negotiation requires one to learn to communicate well and to influence other people, Fox (2013) extends the requirements of negotiation to include learning to negotiate with yourself. Negotiating with yourself is like an inner tug-of-war between shared and opposed information.

In this study, "negotiation" took the form of an intra-personal self-awareness process (Fox, 2013) to negotiate self- and peer feedback on one's teamwork competencies. Negotiation can be on shared or opposed views as

Fisher and Ury (2011) suggest, so one takes cognitive and discursive approaches to processing compatible and incompatible information from self- and peer feedback.

Students then reported their self- and peer feedback of teamwork competencies in written reflective journals. They juxtaposed and dwelled on the self- and peer feedback to determine the similarities and differences between them, stepped back and argued for and against the feedback, provided reasons for the argument, made informed decisions on what were the learning takeaways and planned for experimenting with the learning takeaways. As Boud (2000) argues, unless students are able to use feedback to produce improved work, in this case teamwork competencies, neither they nor those who give them feedback will know that it has been effective.

The ability of reflection to promote transformative learning (Mezirow, 1991) builds critically reflective practitioners (Thompson & Pascal 2011) who are sensitised to themselves, others and the environment. Critically reflective practitioners also use appropriate inputs from interactions to form their perspectives, behaviours, readiness for application, and commitment to action (Boud, Keogh, and Walker 1997). Negotiation is thus presented as a tool of inquiry for evaluating self- and peer feedback, and a means of transformation of learning when decisions on what are the learning takeaways and plans for experimenting on the learning takeaways are applied.

In iterative three-rounds of self- and peer assessment and feedback of teamwork competencies, learning takes place on multiple levels:

1. Students learn about the criteria of teamwork competencies when they assess self and others. Repetition of self- and peer ratings can help students remember and recall what teamwork competencies are.
2. When a student assesses others, he or she may start to think of his or her own teamwork competencies and how they relate to those teamwork criteria.
3. The receipt of both self- and aggregated peer feedback on teamwork competencies provides a "reality-check" for students so that they know how others perceive their teamwork competencies.
4. Juxtaposing the self- and peer feedback on teamwork competencies allows a student to argue for and against the similarities and/or differences in ratings, thereby going beyond superficial interpretations of one's teamwork competencies from a single perspective, be it self or peer.
5. Reflecting on the arguments then allows students to plan for how to approach future teamwork experiences.
6. Text-based reflections generate written resources that can be used for both formative and summative assessment and feedback for student learning.

Learning at the first two levels is what Nicol et al. (2014) term as peer review, a reciprocal process whereby individuals produce feedback reviews on the work of peers and receive feedback reviews from peers on their work. Nicol et al. (2014)'s work extended prior research that primarily examined the benefits

that result from the receipt of feedback reviews and the merits of producing feedback reviews. To extend these levels of learning, this study illuminates individuals' "metacognitive process that creates a greater understanding of both self and situation so that future actions can be informed by this understanding." (Sandars, 2009: 685). Specifically, individuals construct their reflections based on their team experiences, rationalise the multi-source feedback from self and peers, and plan and monitor their action steps following the negotiation of that feedback.

Context

The context of using a course to set up teams and for students to assess and provide comments on their own and their fellow team members' teamwork competencies addresses Black and Wiliam (1998)'s concern with ecological validity, that is, of having procedures that can be built routinely into learning contexts. Participants were 173 university undergraduates from various disciplines of studies taking a cross-cultural management course at a university in Singapore.

Design

Systematic inquiry of learning necessitates "methodological, functional and conceptual development" (Strijbos & Sluijsmans, 2010: 265) in self- and peer assessment and feedback, as well as to extend the pedagogy by including a prescribed process. In this study, students were introduced to the criteria of teamwork competencies, and the procedures on how to evaluate themselves and others were explained and practised. Apart from giving and receiving self-

and peer assessment and feedback of teamwork competencies as commodities, students were required to conduct an inner negotiation by which the feedback from self and peers was negotiated internally so as to refine and calibrate students' own judgements. This inner negotiation surrounding self- and peer feedback is codified in reflective journals guided by Kolb's (1984) experiential learning model of concrete experience, reflective observation, abstract conceptualisation and active experimentation.

Specifically, the series of interventions was composed of questionnaires — self-assessment, peer assessment, and peer feedback based on teamwork competencies (Stevens and Campion, 1994, 1999) — and written reflective journaling modelled after Kolb's (1984, 2014) experiential learning cycle, all completed three separate times within a 14-week undergraduate semester. Self and peer assessment, followed by self and peer feedback, were completed and disseminated in Weeks 5, 9 and 13 of the 14-week semester. Thereafter, students had to complete reflective journals in Weeks 6, 10 and 14 accordingly. Details can be found in Chapter 3.

Data Analyses

The data set included 519 sets of self-feedback on teamwork competencies ratings, 519 sets of peer feedback on teamwork competencies ratings, and 519 reflective journals. Data analysis, which focused on answering the research questions, occurred in six stages:

1) Determining whether students improved their teamwork competencies with repeated use of self-feedback on their teamwork competencies over time;

2) Determining whether students improved their teamwork competencies with repeated use of peer feedback on their teamwork competencies over time;
3) Examining features of how individuals negotiate self- and peer feedback on their teamwork competencies;
4) Identifying, if any, different profile types of peer-evaluated teamwork competency trajectories in individuals during their teamwork process;
5) Inspecting factors predicting each teamwork competency growth trajectories; and
6) Studying the distinctive strategies used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies over time.

A mixed methods approach was taken. Quantitative data analyses included central tendency measures of self and peer teamwork competencies scores, SPSS TwoStep Cluster Analysis of peer-evaluated teamwork trajectories, Cluster Validation with SPSS multivariate analysis of variance (MANOVA). Qualitative data analyses took the form of open and axial coding of reflection journals on NVivo software to derive categories and codes for students' reflection journals.

Findings

Results indicate an overall improvement in teamwork competencies over three time points for the sample. Salient features of how students went about their reflection journals were discovered. The quantitative analysis of 173 students' peer ratings of teamwork competencies over three time points

generated two different profile types of teamwork competency growth trajectories. The features that emerged from students' reflective journals were assembled into these two profile types or clusters. Inspection of the features in each cluster revealed factors that predicted teamwork competency growth trajectories in two different, empirically derived clusters. Distinct strategies taken by the cluster with comparatively higher scores are illuminated — positive affect labelling, goal intentions, awareness of performance.

1.6 Organisation of Chapters

The remainder of this thesis is organised as follows. The second chapter reviews the literature on teams and teamwork; self- and peer assessment and feedback; reflective learning, and the premise for this study. Chapter 3 then delineates the methods and methodology that frame this study — how 173 students negotiated self- and peer feedback of their teamwork competencies with the use of reflective journals over a period of 14 weeks. Chapter 4 highlights key findings that draw out essential information from both quantitative and qualitative data. Chapter 5 extends with a discussion of the findings, and the implications for practice. The thesis concludes with Chapter 6, which presents this study's contributions, and limitations that offer caution as well as open avenues for future research.

Chapter 2: Literature Review

2.1 Introduction

This study on the negotiation of self- and peer feedback on teamwork competencies using reflective journals in higher education requires a few bodies of literature: 1) teamwork competencies, 2) self and peer assessment, and 3) reflective practices to provide the context for the research. These three bodies of literature will lay the foundation knowledge for this study. Essentially, they address the "what", "how", and "why" of the proposed pedagogy respectively — what are teamwork competencies, how can they be developed, and why reflective journals are a means to develop teamwork competencies.

What are teamwork competencies? The first and most prominent body of literature centres on the **constructs and practices of teamwork competencies** which lie within the wider teamwork research. Theoretical frameworks, definitions of constructs and practices of teamwork competencies are useful contexts to situate this study in the existing body of knowledge and to justify the choice of teamwork competencies constructs used in this study.

How can teamwork competencies be developed? To explore ways in which students build their teamwork competencies, the second body of literature focuses on the pedagogical practices of developing teamwork competencies in higher education through the **use of educator, self and peer assessment and feedback on teamwork competencies**.

Why incorporate reflective journals in the development of teamwork competencies? The third body of literature, which reviews the **reflective practices of teamwork competencies in higher education,** is key to this research because it draws the literature on teamwork competencies, measures of teamwork competencies, and pedagogical practices of developing teamwork competencies together, of which reflective practice is one, yet rarely used, pedagogical practice for developing teamwork competencies in higher education.

This chapter concludes with a discussion of how reflective practices of addressing self and peer feedback on teamwork competencies can come together for a coherent use in this study and supports the epistemic position I take herein — constructionism.

2.2 Constructs and Practices of Teamwork Competencies

Before I delve into the constructs and practices of teamwork competencies, I will first contextualize teamwork competencies within research on teams. It is important to start with the understanding of what a team does and when it behaves as a team (McIntyre & Salas, 1995). Salas et al. (1992) describe a team as a set of two or more individuals interacting adaptively, interdependently, and dynamically toward a common and valued goal. Unlike groups, teams have task interdependency, task and role structure, as well as a limited time span in which to perform (Salas et al., 2000).

Teamwork is a multi-dimensional construct that is defined as a set of interrelated competencies — or knowledge, skills and abilities — that facilitate two or more individuals within a team to cooperate interdependently and dynamically toward a shared and valued goal (Salas et al., 2000). It is difficult to quantify teamwork because it can be inferred from countless of knowledge, skills, and abilities (Britton et al., 2015). For example, does effective teamwork refer to a successful team output produced by a team of individuals, or should effective teamwork refer to the development of a good relationship among a team of individuals? Such uncertainty in what constitutes high-quality teamwork can hamper educators and students' abilities to monitor and report on development and performance of individuals' teamwork. Therefore, a measurement instrument that clearly identifies the teamwork performance criteria and/or behavioural indicators of excellence in teamwork (Britton et al., 2015) is necessary so that educators can incorporate in curricula and assess teamwork as a learning outcome within their curricula.

But as Britton et al. (2015) claim, research suggests that there is often confusion concerning how teamwork is measured and assessed, making it difficult to develop teamwork competencies in higher education. The pedagogy of teamwork in higher education lacks guided practice to develop teamwork competencies, and teamwork assessment and feedback stops short of students' continual learning from the feedback to develop teamwork competencies.

In the recent decades, several instruments (Britton et al., 2015; Crutchfield & Klamon, 2014; Druskat, 2000; Erez, Lepine, & Elms, 2002; Hastie, Fahy, & Parratt, 2014; Hastie, 2017; Hirschfeld, Jordan, Feild, Giles, & Armenakis, 2006; Hogel & Gemuenden, 2001; Loughry et al., 2007; McIntyre & Salas, 1995; Stevens & Campion, 1994, 1999; Strom & Strom, 2011) have been created for measuring and evaluating teamwork competencies.

Amongst these instruments, the two most widely cited are the Comprehensive Assessment of Team Member Effectiveness (CATME) tool (Loughry, Ohland, & Woehr, 2014; Ohland et al., 2012) and the Stevens and Campion (1994, 1999) teamwork competency — knowledge, skills and abilities (KSAs) — management system.

The prominence of CATME in scholarly research is exemplified by 144 citations of Loughry et al. (2007)'s original article in Google Scholar at the time of this writing. CATME (Loughry et al., 2007; Loughry et al., 2014; Ohland et al., 2012) has two versions of Likert scale-based and behaviourally anchored ratings scales for self- and peer evaluation. These are very elaborate scale items, 87 items that measure 29 types of team member contributions with three items each. These fall into five categories: 1) contributing to the team's work; 2) interacting with teams; 3) keeping the team on track; 4) expecting quality; and 5) having relevant knowledge, skills, and abilities. A shorter version of the measurement tool has 33 items which could lessen the potential for questionnaire fatigue in students participating in multiple assessment exercises. Hastie et al. (2014) examined CATME for its rollout in the medical

setting and found several limitations in the tool. Primarily, many of the CATME items are not well-defined, impeding students' understanding of expectation; the lack of clear definition also undermines the validity of students' ratings; and the assessment process is controlled through the CATME website which does not allow for alteration. These limitations are worth considering when choosing a sustainable measurement tool for the development of teamwork competencies in students of higher education.

One of the most widely used measures of teamwork competencies in the field is Stevens and Campion (1994, 1999)'s teamwork competency management system, also referred to as the Teamwork Knowledge, Skills, Abilities (KSAs) Test. The prominence of this measure in scholarly research is exemplified by 914 citations of Stevens and Campion's (1994) original article in Google Scholar at the time of this writing. This measure of teamwork competencies, which is widely used in human resource and management (Kozlowski, Grand, Baard, & Pearce, 2015; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008; Mathieu, Tannenbaum, Donsbach, & Alliger, 2014), is also highlighted in higher education settings (Chen et al., 2004). In the higher education setting, importance is placed on developing team-based competencies for students before they enter the workforce. Based on the Stevens and Campion (1994, 1999) studies, teamwork knowledge, skills and abilities (KSAs) test predicted peer and supervisor ratings of both teamwork effectiveness and overall performance in organisations. These studies showed a high correlation between the teamwork KSAs test and employment aptitude

tests (*r* = .81), suggesting that teamwork KSAs are related to actual performance in organisations.

The Stevens and Campion (1994, 1999) set of teamwork KSAs identifies and measures five teamwork competencies — conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination — and 14 specific KSAs that are applicable to different types of teams and team tasks. Compared with CATME, there is an obvious reduction in time commitment on the questionnaire ratings, which means that students are more likely to be engaged when completing their evaluation and to give more attention to the qualitative comments (Britton et al., 2015).

Since Stevens and Campion (1994, 1999)'s teamwork competencies are widely cited in the literature, I decided to explore the similarities between these teamwork competencies and those delineated by other scholars. I juxtaposed and analysed the teamwork competencies and drew parallel teamwork competencies in Table 1. Table 1 presents an analysis of key teamwork competencies that have been proposed by scholars (Britton et al., 2015; Crutchfield & Klamon, 2014; De Wit, Greer, & Jehn, 2012; Druskat, 2000; Erez et al., 2002; Hirschfeld et al., 2006; Hogel & Gemuenden, 2001; Loughry et al., 2007; McIntyre & Salas, 1995; Stevens & Campion, 1999; Strom & Strom, 2011).

Table 1: An Analysis of Key Teamwork Competencies

Teamwork Competency	**Definition**	**Previous Research**
Conflict management	Recognize source of conflict and implement appropriate conflict resolution strategy.	Stevens & Campion 1999; Issa, 2012; deWit, Greer & Jehn 2012; Delaney, Fletcher, Cameron, & Bodle 2013; Crutchfield & Klamon 2014; Britton, Simper, Leger & Stephenson 2015
Collaboration; Collaborative problem solving	Identify situations for participative team collaboration and problem solving where an obstacle is met.	Stevens & Campion 1999; Druskat 2000; Hogel & Gemuenden 2001; Erez, Lepine & Elms 2002; Strom & Strom 2011; Britton, Simper, Leger & Stephenson 2015
Communication	Communicate openly and supportively using appropriate communication platforms.	McIntyre and Salas 1995; Stevens & Campion 1999; Heathfield 1999; Hogel & Gemuenden 2001; Hirschfeld, Jordan, Giles & Armenakis 2006; Loughry, Ohland & Moore 2007; Strom & Strom 2011; Issa 2012; Crutchfield & Klamon 2014
Goal setting & management	Establish specific and challenging goals and make work procedures apparent to team members.	Stevens & Campion 1999; Druskat 2000; Crutchfield & Klamon 2014; Britton, Simper, Leger & Stephenson 2015
Planning & task coordination; Distribution of work; Workload sharing; Work cooperatively and time management	Keeping self and the team on track with team task, including role assignment and corresponding expectations.	Stevens & Campion 1999; Hogel & Gemuenden 2001; Erez, Lepine & Elms 2002; Loughry, Ohland & Moore 2007; Delaney, Fletcher, Cameron, & Bodle 2013; Crutchfield & Klamon 2014; Britton, Simper, Leger & Stephenson 2015

Taken together, these findings support the use of Stevens and Campion (1994, 1999)'s measure of teamwork competencies to raise individual's attention as to how they can function effectively as team members. In addition, the finding that the teamwork KSAs are related to actual teamwork performance criteria suggests that the systematic development of these KSAs in higher education settings would contribute to workplace readiness (Chen et al., 2004).

Therefore, for pragmatic operationalization in the classroom, it would be valuable to consider this set of pre-determined and validated teamwork competencies for deployment in teaching, measuring, and assessing teamwork competencies in the curriculum.

As Oakley et al. (2007: 270-271) aptly summed up, “students are not born knowing how to work effectively in teams”. Teamwork requires its members to possess essential competencies to function effectively in the team. Be it Stevens and Campion (1994, 1999)’s measure of teamwork competencies or those of other scholars, these are measurements that are pre-determined without input from students. Rubrics for assessment, in this case on teamwork competencies, can be co-created by students and educators so that students develop a shared understanding of criteria and standards to reflect the nuanced understandings that educators use, and how they might be applied. Identifying and using appropriate criteria to discern whether one’s own work and/or that of others meets requirements is a means to build evaluative judgment (Tai, Ajjawi, Boud, Dawson, & Panadero, 2017). Through the process of creating and refining criteria for current as well as future-related tasks, students can “come to know how to manage the ambiguities inherent in criteria” (Tai et al., 2017) when applied in different units and contexts.

Whichever the case, pre-determined measures of teamwork competencies without student input or student-determined measures of teamwork competencies, an important question that follows from the above would be the uses of these teamwork competencies and whether the usage

builds and develops students' teamwork competencies. I will review literature with the aim of answering this question.

2.3 Agentic Assessment and Feedback on Teamwork Competencies

Here, I identify agentic assessment and feedback on teamwork competencies as individuals who determine, assess, provide, and receive feedback on quality of work.

Teacher Assessment and Feedback on Teamwork Competencies

How do teachers assure students' learning of teamwork competencies? They could introduce students to teamwork competencies and assess their understanding of these competencies through a test. This would raise students' knowledge of teamwork competencies. It would also help teammates who hold similar team-related knowledge of teamwork competencies to anticipate the actions and needs of their teammates and to respond effectively (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995; Mathieu et al., 2014; Smith-Jentsch, Campbell, Milanovich, & Reynolds, 2001).

Smith-Jentsch et al. (2001) define the mental model of teamwork as an individual's understanding of the components of teamwork that are critical for effective team performance and the relationship between those components. "Mental models to teamwork are expected to influence the manner in which individuals organise concrete observations of team behaviour in their minds, assess the quality of those observations, and attribute underlying root causes

to performance trends" (Smith-Jentsch et al., 2001: 180). With the teamwork mental models guiding the manner in which individuals collaborate within their team, it is expected that individuals can function more effectively in teams because they are cognizant of teamwork components and teamwork criteria against which they will observe and be observed, thereby developing their cognition on effective teamwork. Stevens and Campion (1999) mentioned the availability of an appropriate measure of teamwork competencies as criteria for assessment can help reduce problems associated with teamwork. These criteria can help one identify knowledge and skill gaps, "increase reflection and generalization to new situations, promoting self-assessment and greater metacognitive self-awareness" (Topping, 1998: 256).

The knowledge of teamwork competencies, however, does not translate to students' ability to act out these teamwork competencies when placed in a team. Teamwork is a complex construct to teach and study (Salas et al., 2000) because it is co-constructed with members of the team. Teamwork competencies are also co-constructed and developed so they cannot exist within a single individual or the self. This situates the need for self and at least one peer working in a team toward a common goal(s) that the team sets out to achieve (Cannon-Bowers et al., 1995; Salas et al., 1992; Salas et al., 2017). In addition, not all teams are created equal, and teams perform a variety of tasks under different situations. Beyond cognitive and declarative knowledge-testing, the question is, how else can teachers measure teamwork competencies?

Unlike a team's final outputs, which are presented to teachers, teamwork processes are not easily accessible by teachers if much of the teamwork is done outside the classroom. Team members or peers are more likely to see their teamwork competencies in action while teachers see teamwork in more limited settings (Hughes & Jones, 2011), unless team activities are part of the in-class lesson design. Even if teachers can observe students working in teams in the classroom, there could be a Hawthorne effect. That is, there could be a high chance that students feel they need to become animated performers so as to impress the teacher during the brief session with the team (Strom & Strom, 1999).

While the teacher cannot assess the learning of teamwork competencies, the teacher can engineer situations in which opportunities for students to learn and to develop learning autonomy are maximized (Black & Wiliam, 2009). To prepare students for long-term learning, teachers could orchestrate activities that require students to get used to "making complex judgments about their own work and that of others and for making decisions in the uncertain and unpredictable circumstances in which they will find themselves in the future" (Boud & Falchikov, 2006: 402). This capacity to be an assessor of learning is the emphasis of lifelong learning in sustainable assessment literature. The focus on the contribution of assessment to learning is beyond a teacher-driven assessment and feedback and beyond the timescale of a course (Boud, 2000; Boud & Soler, 2016). It includes the capability "to evaluate evidence, appraise situations and circumstances astutely, to draw sound conclusions and act in accordance with this

analysis…through the acknowledgement of the centrality of judgment as a process" (Boud & Falchikov, 2007: 19-20). This capability is further elaborated in a recent study by Tai et al. (2017) who refer to it as evaluative judgment – the capability to make decisions about the quality of work of oneself and others. In other words, if more students in higher education could develop the capability to make evaluative judgments, they are well positioned to operate as a functioning reflective team member.

The key components of developing informed judgment from the perspectives of students are discussed in the next sections as peer and self-assessment and feedback where students are seen as "active constructors of feedback information" (Nicol, 2010: 503) to both themselves and their peers.

Peer Assessment and Feedback on Teamwork Competencies

Peer assessment and feedback on teamwork competencies are useful because peers have a direct window to the dynamics of their team members and are "better placed than academics to know the relative contributions" of their peers in teamwork (Freeman & McKenzie, 2002: 553) in more natural settings. Thus, assessment of teamwork competencies may, in comparison, be better accessed by peers than teachers.

Peer assessment is defined as "an arrangement in which individuals consider the amount, level, value, worth, quality or success of the products or outcomes of learning of peers of similar status" (Topping, 1998: 250). Peer assessment of teamwork is not about assessing product of a team or an

artefact, but about assessing the processes involved in working as a team. Topping (1998) refers to such peer assessment as the assessment of “skilled professional behaviours”.

Appraising fellow learners’ work is not new. From primary to higher education, teachers would make their students exchange work with one another to hold the work of their peers against a set of criteria and standards.

Much of the research in the peer assessment realm concentrates on reliability of peer marking and comparisons of peer-educator marking, often through quantitative studies. In their meta-analysis of 48 quantitative peer assessment studies, Falchikov and Goldfinch (2000) compared peer and teacher ratings and found that peer assessments closely resembled teacher assessments when judgments were based on well-defined and understood criteria. Providing criteria of quality helps students build “guild knowledge” (Sadler, 1989) to differentiate between levels of performance for their work and that of others, as well as a sense of what it means to produce quality work. In a recent meta-analysis paper, Li et al. (2016) looked at empirical studies on peer and teacher ratings agreement published since 1999 and found that the agreement is high (r = .63). This result does not differ much from what was reported in the meta-analysis by Falchikov and Goldfinch (2000) with an agreement of r = .69.

In the context of teamwork, peer assessment requires students to assess team members’ contributions. Used in higher education, peer

assessment of teamwork aims to achieve three learning objectives: 1) to increase awareness and adoption of teamwork competencies, 2) to provide opportunities for students to build skills on making judgment, and 3) to mitigate free-riding or social-loafing effects.

Uses of Peer Assessment:

(1) To Increase Awareness and Adoption of Teamwork Competencies

Recognizing that team members are best informed to assess their fellow members' contributions, educators often require students to rate their peers. It is not enough to put students together and expect that they will automatically know how to work in a team (Rousseau, Aubé, & Savoie, 2006; Salas et al., 2000). Teamwork calls for adaptive interaction and interdependence between and among members to work toward a common goal. What constitutes teamwork competencies and how one can develop them needs to be made explicit to help students acquire teamwork competencies. Instructors typically use a set of teamwork competencies that serves as criteria for evaluation of teamwork competencies.

(2) Opportunities for Students to Build Judgment-Making Skills

Peer assessment can be effective in building and sustaining professional skills in judging the work of others, in relation to standards, and in relation to oneself (Boud, 2013; Boud & Falchikov, 2007; Clark, 2009; Falchikov & Goldfinch, 2000; Hattie & Timperley, 2007; Nicol, 2010; Nicol et al., 2014; Sadler, 2010; Tai et al., 2017; Topping, 2005; Willey & Gardner, 2009, 2010). Peer assessment provides students the opportunities to engage with criteria and standards of work, to reflect upon their own understandings of work quality,

to learn vicariously from good quality work, to enhance understandings, and to communicate their understandings to others (Nicol et al., 2014; Roscoe & Chi, 2007; Sadler, 1989).

(3) To Mitigate Free-Riding or Social-Loafing Effects

To prevent students from putting in less effort when working on team tasks than when working on individual tasks (Erez et al., 2002), educators often use peer assessment of team members' teamworking behaviours as a mechanism to deter free riding. This mechanism increases students' perceptions that their behaviour and performance are being monitored and there are consequences for failing to meet team expectations, thereby mitigating free-riding or social-loafing effects.

Research on peer assessment of teamwork competencies is largely used for purposes of distributive justice, which is to say, to ensure that the individual marks of team members are reflective of students' merits and contributions based on their peers' assessment (Goldfinch, Raeside, Judy, & Robert, 1990; Conway & Kember, 1993; Cheng, Warren, Winnie, & Martin, 2000). For example, a peer assessment questionnaire to determine team members' individual marks is issued to each team member. Students who are perceived to have contributed less than average were given a relatively smaller percentage of the group mark, while those who are perceived to have contributed more than average are given larger percentages. In some cases, students get more than 100% of the group mark. Goldfinch, Raeside, Judy, and Robert (1990) created a two-part weighting factor which was adapted by Conway and Robert (1993), and the latter's model was adopted by Cheng and Warren (2000) in the pursuit of distributive justice of marks for all team members.

These practices of peer assessment in pursuit of grade distributive justice are often conducted at the end of the unit to get an evaluation of team members' effort for the team project. Often, the problem raised with summative assessment and feedback (or the lack thereof) is that it does little to help students within the same instructional unit (Carless et al., 2011) unless this summative assessment is used formatively to guide students or educators in their effort in subsequent instructional units. Otherwise, this practice of peer assessment of teamwork competencies does little to help students gain concrete feedback on what they have done right and where they need to make improvements to better their teamwork competencies.

In contrast, where peer assessment and feedback of teamwork take a formative approach, students' teamwork competencies do improve over time. Peer feedback of teamwork can be as useful as the instructor's because peers see performance and behaviours of team members that are not apparent to the instructor outside the classroom. There is much to learn from the process of peer assessment of others' teamwork competencies which conjures reflection (Nicol et al., 2014) on one's own teamwork competencies; and from process of composing feedback of peers' teamwork competencies. The outcomes of these processes are that they cue thoughts about alternative ways of going about the team task (Erez et al., 2002) and make available a mirror to individuals on how they have performed in a given situation.

In a quasi-experimental design with 389 undergraduate students, Brutus and Donia (2010) introduced a centralized web-based peer-evaluation system

that captures peer evaluations in quantitative and qualitative formats and allows for anonymous feedback to peers. Results show that the efficacy of students in groups, as observed and rated by their peers, increased over time. Besides underscoring the benefit of a centralized peer evaluation system for assessment and development of teamwork competencies, the findings show that student performance in repeat assessment groups is significantly higher than in students who were only evaluated once.

In their sequel study with 352 students, Donia, O'Neill, and Brutus (2015) duplicated the success of formative assessments and feedback of peer evaluation in individual group effectiveness when students were exposed to repeated peer evaluation. In addition, they found that repeated use of the peer evaluation system increases students' confidence in providing feedback. If peer assessment is a skill to be learned, composing peer feedback is a complementary skill to master.

Evans (2013)'s systematic review of assessment feedback in higher education highlights the usefulness of peer feedback in supporting learning (Carless et al., 2011; Davies, 2004; Prins, Sluijsmans, Kirschner, & Strijbos, 2005; Topping, 2005; van der Pol, Admiraal, & Simons, 2010; Xiao & Lucking, 2008). Also, McConlogue (2015: 1505) reports that "the process of composing peer feedback has been a neglected aspect of peer assessment". Given that the "construction of feedback is more cognitively demanding than receiving it, the construction of feedback is likely to heighten significantly the level of student engagement, analysis and reflection with feedback processes" (Nicol, 2010:

514). Peer feedback should thus be an integral part of assessment design and not neglected. After all, the efficacy to give feedback is also a skill fundamental to the workplace, where graduates need to give feedback to others — be they subordinates, peers, or superiors — in multi-source feedback exercises organized by the human resource departments of firms.

These works do not suggest how students improve on their teamwork competencies beyond the use of repeated peer evaluations, and so the thought processes of students when they receive their peer evaluation remains unclear. Thus, there is scope for exploration of students' thoughts, feelings, and intentions upon receiving peer evaluation; whether there were attempts to reconcile self- and peer evaluation; and their action steps to improving themselves in the future based on the feedback provided.

Nevertheless, it seems from these studies that peer assessment and feedback on teamwork competencies is an effective approach for developing teamwork competencies if done formatively with assessment and feedback. That is, there is a feedback loop in which students are given the chance to work to improve their peer feedback before they are assessed again within a certain time frame. This raises the potential of using peer assessment and feedback multiple times within a course as well as beyond a course experience so that the capability is enhanced through repeated use. Experiencing the benefits of peer feedback would encourage students to create formative feedback processes for themselves using peers, colleagues, and friends, and later colleagues when they join the workforce (Boud, 2000).

Formative or summative, peer assessment may have its weaknesses including undesirable social effects such as peer pressure and favouritism (Raes, Vanderhoven, & Schellens, 2015). Peers do not want to give low ratings because their project is already completed or they fear reciprocal effect, that is, low ratings given to their own performance by others. There could also be a genuine lack of knowledge of peers' contributions (Weaver & Esposto, 2012) because the rater did not make the necessary observations. Moreover, peer assessments are often anchored on outcomes of collaborative work rather than collaborative peer learning (Willey & Gardner, 2009).

The educator's role in setting the stage for an effective peer assessment and feedback is thus critical. For collaborative peer learning to take place, educators can bring students on board a shared mental model of expert teamwork competencies to educate and repair understandings of peer assessment and feedback. When students work with the criteria of teamwork competencies and standards by which they rate their peers, they get the chance to address teamwork challenges. These challenges include the aforementioned distributive justice, social loafing, domineering and other behaviours counter-productive of teamwork. Studies (Boud, 2013; Brutus, Donia, & Ronen, 2013; Nicol et al., 2014) have shown that repeated exposure to an expert model of teamwork competencies and to peer feedback can help students improve their teamwork competencies.

At the same time, there are also doubts about whether students' knowledge and expertise can offer valuable feedback (Simpson & Clifton,

2016). Others reproached it is the instructors' responsibility to give feedback, not students' (Weaver, 1995; Weaver & Cotrell, 1986). Indeed, it cannot be assumed that peer assessment is more authentic, relevant and valid than teacher assessment. As the meta-analysis study by Falchikov and Goldfinch (2000) has shown, "the nature of the assessment task will influence validity of peer assessment, with assessments carried out in traditional academic areas within the classroom (e.g., essays, tests, presentations) having better validities than those in areas of professional practice (e.g., intern performance, counselling skills, teaching practice)" (Falchikov & Goldfinch, 2000: 304).

Yet, in the realm of teamwork competencies — assessment could potentially fall into the areas of professional practice (that of teamwork skills) within the academic areas (subjects) — it is arguable that students are in the position to evaluate their peers based on their interaction outside the classroom for team tasks, and this interaction is not observable by instructors unless planned for in the classroom or filmed while team interaction is taking place. Also, students need to practise giving feedback in higher education before they are "thrown to the deep end" in the workplace.

By traditional methods, effective peer assessment can be time-consuming to administer (Cheng & Warren, 2000), especially when there is repeated use within a course. Hence it is necessary to look into a technology-enhanced feedback system which affords opportunities for flexible feedback provision (Yang & Carless, 2013) and supports the pedagogical process of formative peer assessments. A web-system developed for efficiency in

gathering student ratings and comment on their peers, peer score and comment aggregation, peer feedback to teammates and compilation of scores and peer feedback for instructor moderation (in case of culturally-insensitive remarks) would be a great incentive for instructors to use formative peer assessments. Fortunately, there are a number of commercialized confidential web-based templates available for self- and peer assessment of student teamwork such as Self and Peer Assessment Resource Kit (SPARK) (Freeman & McKenzie, 2002), and the recently upgraded SPARK^{PLUS}, as well as Comprehensive Assessment of Team Member Effectiveness (CATME) (Ohland et al., 2012).

Other limitations of peer assessment and feedback include studies that found that peer evaluations may actually thwart group effectiveness and individual efficacy in teamwork (Bacon, Stewart, & Silver, 1999), and multi-round peer assessment has been shown to be counter-productive to team dynamics (Vashdi, Bamberger, & Erez, 2013). These remain to be challenged with new pedagogical explorations and findings. Such pedagogical explorations could be an extension of peer assessment and feedback to include self-assessment.

Self- and Peer Assessment and Feedback on Teamwork Competencies

Besides peer assessment and feedback on teamwork competencies, the inclusion of self with peer assessment and feedback on teamwork competencies have added advantages that are presented in the literature.

Broadly, self-assessment can be defined as an evaluative practice by which students assess their own work or behaviour. Self-assessment positions students as the drivers of their own learning and provides them with valuable practice. Self-assessment practices (Boud, 2000; Boud & Molloy, 2013; Molloy & Boud, 2013; Sadler, 1989; Tan, 2007) help learners develop self-referential and self-regulatory skills (Hughes, 2014), and build the capability of making judgments about subsequent work of self and others (Molloy & Boud, 2013). Self-regulation is "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition" (Pintrich & Zusho, 2002: 250). Closely related to self-regulation, self-assessment is widely recognised as a hallmark of competent disciplinary practice that is concerned with individuals' abilities to set goals, adopt strategies for meeting goals and monitor progress toward goals (Boekaerts & Corno, 2005; Panadero & Alonso-Tapia, 2014; Zimmerman, 2002). Potentially, this could shift learners' goal orientation beyond merely performing to include learning through practice and the process of ipsative assessment and feedback (Hughes, 2011) — comparing current performance with previous performance to illuminate how effective one has responded to developmental feedback.

Falchikov and Boud (1989) asserted that self-assessment should be criterion-referenced so that individuals can compare their own work against the set of criteria and standards. Hence Valle and Andrade (2015: 1006) developed a finer definition of self-assessment as "a formative, task-specific process during which students first generate feedback on the quality of their work by assessing the extent to which it meets explicitly stated criteria and expectations and then, through a process of revision, use their self-generated feedback to improve the quality of their work and deepen their learning." These "explicitly stated criteria and expectations" take the form of teamwork competencies in this study, and "self-generated feedback" is referred to as self-feedback here.

Given that one of the aims of higher education is to enable students to build the capability to make judgements of their own work (Boud & Falchikov, 2007), there is extensive literature on self-assessment in higher education that demonstrates how self-assessment activities can meet this aim (Boud, 2000, 2013; Boud, Lawson, & Thompson, 2013, 2015; Boud & Molloy, 2013; Boud & Soler, 2016; Boud & Walker, 1998; Falchikov & Boud, 1989; Hoo & Hughes, 2017).

Although the benefits of self-assessment are apparent, there are also limitations. According to Hattie and Timperley (2007), while effective learners create internal feedback and cognitive routines to guide their learning, less effective learners have minimal self-assessment capability and depend more on external factors, such as the teacher, for feedback. Also, the less effective

learner rarely incorporates feedback in ways that will enhance his or her future learning.

Improvement in work outcomes as a result of repeated practice in self-assessment may not be apparent initially and there could be an initial fall in self-assessment of work because as the judgment of work quality improves, students become more attuned to the assessment criteria and may take a more stringent stand than they did in the first self-assessment (Hoo & Hughes, 2017). However, with better understanding of the expectations of the work assigned, students may achieve learning gains over time (Boud et al., 2013; Hoo & Hughes, 2017). Self-assessment and feedback is a skill. And, as with any skill, it takes effort and time to develop.

There is also dispute about the use of self-assessment and its validity (Lejk, Wyvill, & Farrow, 1996), which may be flawed by inflation bias as a result of social desirability (Anderson, Warner, & Spencer, 1984). Conversely, there could be self-effacing bias, under which students rate themselves lower than what they really think they deserve. Other limitations to self-assessment could include blind spots — when individuals are not aware of something that others are — of teamwork competencies not accessible to oneself. Hence, bringing peers into the assessment of teamwork competencies would be useful to help individuals better understand their own teamwork competencies in relation to others'. After all, teamwork is about co-construction and working with others. Students need practices to evaluate their own performance as well as to measure how their evaluation compares with that of their peers.

Boud, Cohen, and Sampson (1999) have argued for self-assessment in combination with peer assessment as opposed to peer assessment per se so that students develop awareness of their level of competencies. It is only with such awareness that students can plan for and act for further learning — to know, to judge, and to act (Barnett, 2009). Taken together, the empirical support for self- and peer assessment and feedback on teamwork competencies is relatively strong.

The key limitation of this evidence is that it assumes that students learn from the assessment and feedback process without any deliberate pedagogical intervention to reflect on and codify the learning. Self- and peer assessment are by no means just activities that students go through, but also an experience in themselves that students have to contend with in order to benefit and learn from. These experiences are rich and offer much to be reflected upon. Recent research on self-reflection in addition to self- and peer assessment and feedback shed light on the effectiveness of this intervention. The review of research on reflection is thus relevant for this study, and is as follows.

2.4 Reflective Practices on Teamwork Competencies

To date, most empirical works on teamwork competency-building in higher education are confined to peer assessment and feedback as well as self- and peer assessment and feedback. There are a few studies that reported an added pedagogical intervention — a prescribed reflection to bridge the experiences of self- and peer evaluation on teamwork competencies.

Before I delve into the specifics of these few studies, I present a review of the theory and research of reflection on experiences, its uses and how it is applicable to and beneficial in the development of teamwork competencies so as to lay the grounds for the differences reflection can make to improve teamwork competencies beyond self- and peer assessment and feedback.

Reflection is defined as the conscious awareness and questioning of personal experience, a search for alternative explanations and interpretations, and identification of areas of improvement (Scott, 2010). Reflection is "best understood as a process of metacognition that functions to improve the quality of thought and of action and the relationship between them" (Ash & Clayton, 2009).

Theories of Reflection on Experience

Drawing on the foundational theories of John Dewey (1933) and the subsequent extension of these theories by Donald Schön (1979) and David Kolb (1984), I present the foundation and developments in theory and research on experience and reflection, and how these works suggest the importance of reflection on experience.

John Dewey, one of the foundational scholars of experiential education provided the foundation for human learning and development through reflection. Dewey (1933: 9) defined reflection as "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends". Dewey

(1933) referred to reflection in several phases — at the start in anticipation of the experience, during the experience to deal with a vast array of inputs and coping with the feelings that are generated, and following the experience during the phase of reflection — as conscious reflective activity.

Donald Schön extends the human learning and development through reflection to doing by drawing the link between reflection and action. To Schön (1983: 281), reflection is a "continual interweaving of thinking and doing". In his focus on professional knowledge and development, Schön (1983) argues that professionals are often not able to describe the basis on which they act because the theory that guides their practice tends to be tacit. To make their 'knowing-in-action' explicit, Schön (1983: 26) suggests that professionals take on two modes of reflection: reflection-in-action and reflection-on-action. Reflection-in-action works on what is happening in a person's processes, decision-making and feelings at the time of the experience, which could be an interaction or event. Reflection-on-action works on sifting over a previous event to take into account new information or perspectives available in conjunction with one's own processes, feelings, and actions. Schön (1983) contends that reflection-on-action results in the development of a new frame that contributes to the acquisition of professional knowledge. A reflective practitioner thus "reflects on the understandings which have been implicit in [one's] action, which [one] surfaces, criticizes, restructures, and embodies in further action" (Schön, 1983: 281).

David Kolb draws on the work of prominent scholars — notably Carl Jung, Carl Rogers, Jean Piaget, John Dewey, Kurt Lewin, Mary Parker Follett, Paulo Freire, and William James — who gave experience a central role in their theories of human learning and development to develop a cyclical model of the experiential learning process that encompasses experiencing, reflecting, thinking, and acting. Kolb's model of reflection on experience emphasizes that "knowledge results from the combination of grasping knowledge and transforming experience" (Kolb, 1984: 41). The model portrays two dialectically related modes of grasping experience — concrete experience (experiencing) and abstract conceptualization (thinking) — and two dialectically related modes of transforming experience — reflective observation (reflecting) and active experimentation (acting). In a recursive process of touching all bases of experiencing, reflecting, thinking, and acting; one becomes responsive to the learning situation. Concrete experience becomes the basis for observations and reflections. These reflections are distilled into abstract concepts from which there are implications for actions. The implications work as guides for testing new experiences (Armstrong & Fukami, 2009).

Benefits of Reflection

Distilled from these theories, reflection holds the potential to extract meaning from lived experiences (Dewey, 1933; Fink, Knight, & Michaelsen, 2004; Hammill, Best, & Anderson, 2015; Kolb, 1984; Moon, 2006; Schön, 1983) to inform future actions. Learning, occurs not just as a result of an experience, but also, in testing it against further experience. Reflection allows one to distil "rational knowledge from the mess of human experience" (Jordi, 2010: 182),

and links “experience and emotions to the neural pathways of the brain where information and ideas are stored and can be recalled”. (Fink et al., 2004: 97). The reflective process involves the interaction between both cognition and affect. It includes a return to the experience, a mental re-visitation of the context and a conjuring of the situation as the events unfold. As part of this recall which remains as memory for learning, feelings experienced may be a mixture of positive and negative emotions, which will add further richness to the reflection for learning.

Call for Reflective Journals

Given these benefits of reflecting on experience, many scholars and practitioners, such as Schön (1983); Chen et al. (2004); Hobson, Strupeck, Griffin, Szostek, and Rominger (2014); Hughes et al. (2008); Kemery and Stickney (2014), have also started to explore the use of reflective journals for students to reflect on their teamwork experiences with the objective of improving their teamwork competencies.

“A critical reflection process that generates, deepens, and documents learning does not occur automatically — rather, it must be carefully and intentionally designed” (Ash & Clayton, 2009: 28). Just asking students to reflect is not sufficient (Welch, 1999). One way to distil insights gathered from reflection in experiential learning is to codify them in writing — in journals. As Ash and Clayton (2009) argued, the capacity to reflect has to be intentionally developed, using instruction, modelling and coaching.

Journaling gives learners an experience of dealing with situations that are not 'straightforward' or 'ill-structured' (Moon, 2006). Reflective journaling is a useful tool for surfacing process-based situated learning (Rogers, 2001; Wilson, Howitt, & Higgins, 2016), for reflecting in action, on action (Schön, 1983) and for action (Eraut, 1995). In an educational setting, space and time can be created for reflective journaling to take place (Clark, 2009) so that students may distil "rational knowledge from the mess of human experience" (Jordi, 2010: 182) of teamwork. Written journals allow learners to apply powerful cognitive and metacognitive strategies such as generating examples to illustrate abstract concepts or monitoring their own comprehension to identify and overcome impasses (Moon, 2006; Nuckles, Hubner, & Renkl, 2012).

Application of Reflection on Teamwork Experiences

Given the benefits of a pedagogical intervention like written reflective journals, I found four works — Chen et al. (2004); Hobson et al. (2014); Hughes et al. (2008); Kemery and Stickney (2014) — that prescribed reflection to bridge the higher education students' experiences of self- and peer evaluation on teamwork competencies.

Chen et al. (2004) designed an undergraduate-level course to assist students in acquiring teamwork competencies — knowledge, skills and abilities (KSAs) from Stevens and Campion (1994, 1999) — to meet the challenges of working in organisational teams. Stevens and Campion (1994)'s teamwork KSAs included conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and

task coordination. These teamwork KSAs were used in a quiz for knowledge acquisition of teamwork competencies. Separately, the authors developed their own teamwork competencies based on observation of videotaped students' team behaviour in assessment centres. The teamwork competencies they developed include items such as 1) orients team to problem-solving situation, 2) organises and manages team performance, 3) promotes a positive team environment, 4) facilitates and manages task conflict, and 5) appropriately promotes perspective. Multiple sources of feedback — self and peer assessment of these teamwork competencies as well as course instructor's feedback after reviewing the team's videotaped performance — were obtained. Taking on board these different sources of feedback, students were required to write reaction papers in which they reflected on their experience as well as the feedback they received, and generated developmental goals in areas that needed improvement. This is a thorough exercise of assessment, feedback and reflection to guide effective teamwork behaviour. It is not clear, however, the intentionality to use different criteria of teamwork competencies to guide the quiz and teamwork application.

Hughes et al. (2008) studied teamwork in undergraduate medical teams by providing students with an eMed-Teamwork system to gather peer feedback for assessing and developing teamwork skills. Feedback submitted to the system was available to the recipients for formative purposes and forms part of the student's and the recipient's portfolios for subsequent summative assessment. Students submitted comments to the system on their own group contributions, known as 'self-comments' which are seen only by instructors.

Hughes et al. (2008) reported that feedback provided by students was "thoughtful and constructive", and that the system has proven to be effective for developing teamwork skills. However, it is not apparent if the reflective practice in Hughes et al. (2008) was guided, based on a theoretical approach, or if it was a free-response reflection. A theoretical approach could have given the reflection some focus on reflection-in-action, reflection-on-action (Schön, 1983) and reflection-for-action (Eraut, 1995).

Hobson et al. (2014) showed that a comprehensive pedagogy for teaching behavioural teamwork and teamwork skills with 148 MBA students could improve students' teamwork skills. This pedagogy included self- and peer assessment and feedback on teamwork skills over two time points, and reflection via identification of three to five prominent strengths and three to five areas for improvement, as well as a detailed plan to make desired improvements. Results from self- and peer evaluation showed a statistically significant increase in overall teamwork. Students' responses to end-of-course questions concerning teamwork were also very favourable. Yet, acknowledged by the authors, the assessment instruments used in the study have not been subjected to rigorous psychometric evaluation.

Kemery and Stickney (2014) took a multifaceted and multilevel approach to teamwork learning and assessment. This approach included a teamwork knowledge test, peer and self-evaluation of teamwork behaviour at two time points, and a reflection component by which students considered their ratings and team feedback, and wrote a development plan based on specific targets

for behavioural improvement. The teamwork knowledge test is based on Stevens and Campion (1994, 1999)'s five factors: conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination. Students were then exposed to the learner partner rating scales (LPRS) instrument, which was developed to measure students' teamwork behaviours. The instrument measured five dimensions of teamwork behaviour: 1) preparation, 2) contribution to discussion, 3) attendance of class and team meetings, 4) creation of a positive learning environment, and 5) communication. Students prepared peer ratings to then produce LPRS ratings for each team member, and each team member explained the ratings to his/her team members. A developmental plan followed the explanation and was shared with team members in the next class. As with the design by Chen et al. (2004), items for the instrument of self- and peer assessment and those of the teamwork knowledge test were not the same. If the instruments were the same, it could have reinforced students' understanding of the criteria of teamwork competencies and developed their skills and accuracy in evaluating self and others given the multiple exposures — test of criteria and use of criteria for self- and peer assessment.

2.5 Need for Further Research

The preceding literature review has documented the significant theoretical and empirical advances in the literature on the development of teamwork competencies through self- and peer assessment and feedback on teamwork competencies as well as reflection on self- and peer assessment and feedback on teamwork competencies. This literature review also suggests a number of areas in which research on reflection on self- and peer evaluation of teamwork competencies remains lacking.

First, research has focused on self and peer assessment and feedback as 1) checks to ensure distributive justice for allocation of team marks, and 2) practices to help students build and develop teamwork competencies without examination of how students deal with their teamwork experiences to make improvements in their own teamwork competencies.

Second, although research on the use of written reflection as a pedagogical intervention to help students gain awareness and identify areas of improvement has empirically proven effective in many contexts, using written reflection to build and develop teamwork competencies has not been widely considered in self- and peer evaluation literature.

Finally, the incorporation of an internal negotiation between self- and peer feedback in reflective journals is untapped, and presents a significant step toward helping students build self-regulatory capacities to manage feedback,

and accordingly work on weaknesses and leverage strengths to develop their teamwork competencies.

Below, I elaborate on each of these gaps in the literature and how this current study addresses them.

Examining Self- and Peer Assessment and Feedback Practices

A promising development elaborated in recent literature (Anson & Goodman, 2014; Boud & Molloy, 2012; Cathey, 2007; Cestone, Levine, & Lane, 2008; Chen et al., 2009; Dingel & Wei, 2014; Falchikov & Goldfinch, 2000; Nicol et al., 2014; Nicol & Macfarlane-Dick, 2006; Ohland et al., 2012; Strijbos & Sluijsmans, 2010; Topping, 1998; Tucker, 2013; Weaver & Esposto, 2012) and underpinning this study, is the paradigm shift of feedback from a teacher-centric model (in which an expert assesses, 'tells' or corrects the errors of a learner) to a student-centric model (in which students appreciate feedback and make judgement of their own work based on their own and others' perspectives).

This ability to appreciate and judge one's work based on one's own and others' perspectives is the self-regulated learning capability. Self-regulated learning includes the development of self-evaluative skills so that "the student comes to hold a concept of quality (in this case teamwork competencies) roughly similar to that held by the teacher, is able to monitor the quality of what is being produced during the act of production itself" (Sadler, 1989: 121) for self and others. This then brings us to the use of peer assessment, which is one of the means to developing self-regulated learning — sustainable assessment and

feedback (Boud & Falchikov, 2007; Boud & Molloy, 2012; Carless et al., 2011). Assessment of peers' competencies makes available a mirror to individuals on how they perform in similar situations and conjures a reflection of one's own competencies (Nicol et al., 2014).

The use of self- and peer feedback has shown to be effective in building and sustaining professional skills in higher education students (Boud, 2013; Boud & Falchikov, 2007; Clark, 2009; Falchikov & Goldfinch, 2000; Hattie & Timperley, 2007; Nicol et al., 2014; Sadler, 2010; Topping, 1998; Topping, 2005; Willey & Gardner, 2009, 2010). These professional skills include students' capability to make evaluative judgments about both their own work and that of others. By giving and receiving feedback to and from peers, students build "guild knowledge" (Sadler, 1989; Sadler, 2009) which allows them to differentiate between levels of performance of their own and others' work. Students develop objectivity about standards that can then be applied to their own work (Nicol et al., 2014; Nicol & Macfarlane-Dick, 2006). By engaging students with standards of team behavioural items through self- and peer evaluations (Dominick, Reilly, & McGourty, 1997), students become exposed to the criteria and examples of desired behaviours. McClendon, Burke, and Willey (2010) also reported in their study that regular use of self- and peer assessment in different situations encouraged and promoted peer learning and engagement with teams. Students are seen as "active constructors of feedback information" (Nicol, 2010: 503) for both self and peer; and are volitional agents in the assessment feedback process (Molloy & Boud, 2013).

As documented above, the majority of research regarding self- and peer assessment and feedback reports that multiple exposures and practices of self- and peer evaluation increase students' self-efficacy in evaluating their peers and improves the quality of the evaluations they provide (Brutus et al., 2013; Dominick et al., 1997; Willey & Gardner, 2010). What is more, students' level of teamwork knowledge and skills is also improved with multiple exposures (Brutus & Donia, 2010; Brutus et al., 2013; Chen et al., 2004). Indeed, students have provided positive comments on the benefits of self- and peer assessment and feedback when these assessments are successfully adapted to account for individual performance within cooperative learning group assignments (Gupta, 2004). These are desired outcomes of self- and peer evaluation of teamwork competencies.

The literature on self- and peer assessment and feedback appears poised to significantly contribute to our understanding of why it is useful to use this pedagogy for developing teamwork competencies in students. Yet, its full potential has not been realized. The above literature indicates that until now, research has focused on self- and peer assessment and feedback as practices to help students build and develop teamwork competencies without overt examination of how students deal with the teamwork experiences to make improvements in their teamwork competencies. In particular, I suggest that there is a need for research to uncover what students do with self- and peer assessment and feedback on their teamwork competencies that enables them to build and develop their teamwork competencies.

This current study addresses this lack of research and examines the role of an internal negotiation between self- and peer feedback to make sense of the feedback via self-reflection. That is, one conducts self-reflection through an inner negotiation of perspectives gathered from oneself and others, short of talking to others physically or virtually. The rationale for using self-reflection is discussed in the next section.

Considering Internal Dialogic Negotiation of Self- and Peer Feedback

In the current learning milieu, feedback is extended from unilateral to co-constructed (Boud, 2013) and from monologue to dialogue (Boud & Soler, 2016; Nicol, 2010). The term 'dialogic feedback' suggests an interactive exchange in which interpretations are shared, meanings negotiated, and expectations clarified (Carless et al., 2011: 397). Dialogic forms of feedback have been expounded by many scholars (Beaumont et al., 2011; Carless et al., 2011; Crimmins et al., 2016; Hounsell, 2007; Nicol, 2010; Telio, Ajjawi, & Regehr, 2015; Yang & Carless, 2013).

Nicol (2010) proposes that feedback should be conceptualized as a dialogic two-way process that involves teacher-student and peer-to-peer interaction with a focus on student engagement in the feedback process. Hounsell (2007) also agrees that "high value feedback" is dialogic in nature and argued for the feedback to go beyond identifying strengths and weaknesses of students' work, but to also include dialogue on improvements that go beyond the immediate task. Beaumont et al. (2011) advocated a dialogic feedback cycle of three phases for an assignment: 1) preparatory guidance with knowledge of criteria of assessment, 2) in-task guidance with peer assessment, and 3) feedback and performance feedback, which is standards-related and involves action points to feed forward to preparatory guidance. The cycle continues to scaffold the development of independent learning through teacher-led preparation, peer assessment and final performance feedback.

Yang and Carless (2013) recommend a framework of feedback triangle that seeks to analyse feedback practice coherently in order to promote dialogic feedback and to foster self-regulated learning. This feedback triangle is focused on the content of feedback (the cognitive dimension), interpersonal negotiation of feedback (the socio-affective dimension), and organisation of feedback (the structural dimension). The interplay of these three building blocks is as follows: Students actively use feedback from peers and tutors to self-regulate their performance (cognitive dimension), engage in trusting relationships between participants (socio-affective dimension), and use the scheme of a multi-stage assignment (structural dimension) where evidence from the first stage help to improve the next (Yang & Carless, 2013: 292). The socio-affective dimension shows sensitivity to students' emotional responses and their psychological needs, which go beyond the intellectual needs of feedback content within a planned formative feedback structure.

Crimmins et al. (2016) find that a written, reflective, and dialogic strategy for assessment feedback enhanced the student/teacher relationship as well as students' learning process because students interpreted the feedback, developed insights, and discussed assessment strategy and techniques. Just as recent, Telio et al. (2015) and Ajjawi and Boud (2017) highlighted the importance of relational and interactional feedback, which lends credence to the perspective of feedback dialogue. Ajjawi and Boud (2017) suggest a shift away from seeing feedback as input or commodity to exploring feedback as a dialogic process focusing on effects, through an innovative methodological approach to analyse feedback dialogues in situ between the tutor and the

student in medical education via written text. Feedback is given in the written mode, which preserves face in an exchange that can be face-threatening for the tutor and the student. Such dialogic processes can be further explored between student and peers.

One striking feature across these reviewed studies on dialogic feedback relates to the concept of a dyad, be it teacher-student or peer-to-peer interaction. These studies of dialogic feedback focused on a dialogic feedback process between student and others (teacher and/or peer) in physical or virtual settings. Specifically, dialogue is characterized by at least two sources — self and peer or self and teacher. I concur with these authors, and add that individuals can also engage in similar objectives of dialogic feedback that is an internal discourse of negotiating self- and peer feedback, a discourse in which interpretations of one's and one's peers' perspectives are negotiated and expectations clarified by oneself — intrapersonal as opposed to interpersonal.

To fill this knowledge and practice gap in the literature, this study articulates the notion of internal negotiation of self- and peer feedback — from an external into an internal process in which one negotiates self- and peer feedback by considering the perspectives, positions, and interests of oneself and one's peers. I describe below how negotiation is used in this study.

"Negotiation" was selected because it pools two key propositions: — 1) communication is designed to reach an agreement when two or more parties have some shared and opposing interests (Fisher & Ury, 2011), and 2) an

intrapersonal self-awareness process (Fox, 2013) that advocates that the most important negotiations are the ones we have with ourselves which determine the quality of our lives and the impact of our action. In this study, "negotiation" took the form of an intra-personal self-awareness process to negotiate self- and peer feedback on one's teamwork competencies. Negotiation can be centred on shared or opposed views, as Fisher and Ury (2011) suggest. In the case of negotiation in reflection, one takes cognitive and discursive approaches to processing compatible and incompatible information from self- and peer feedback, which include searching for interpretations and explanations, and then identifying areas of improvement.

The concept of negotiation used in this study situates well with the earlier formulations of reflection theories by Dewey, Schön, and Kolb. These foundational scholars of reflection on experience refer to reflection as conscious reflective activity in several phases, including reflection-in-action, reflection-on-action, and reflection-for-action. In this study, situated within the phases of reflection-on-action and reflection-for-action lies the negotiation of self- and peer feedback on teamwork competencies. Given self- and peer feedback on teamwork competencies, one negotiates the feedback by searching for interpretations and explanations to the perspectives presented in the two types of feedback, and then identifying areas for improvement.

A final concern I have on reflection practices pertains to the actual implementation, short of telling students to reflect and expecting them to do so. "A critical reflection process that generates, deepens, and documents learning

does not occur automatically — rather, it must be carefully and intentionally designed" (Ash & Clayton, 2009: 28). Merely asking or instructing students to reflect is not sufficient (Welch, 1999). The capacity to reflect has to be intentionally developed, using instruction, modelling and coaching. One way to distil insights gathered from reflection in experiential learning is to codify them in writing — in journals. Thus, I elaborate below the need for a written reflective journal to codify learning in writing.

Exploring Written Reflection as a Pedagogical Intervention

A written reflective journal is a representative epistemic stance of constructionism that I hold — constructionism demanding everything to be understood by being constructed (Papert & Harel, 1991) in actual artefacts. Apart from abstract learning of concepts, a written reflective journal involves meaning-making processes by which learners work within their context to distinguish between the discrimination, use, generalisation, and synthesis of concepts (Hoyles & Noss, 1987).

As the above literature review highlights, the majority of research has focused on demonstrating that self- and peer feedback on teamwork competencies are helpful in improving teamwork competencies. With self- and peer assessments in teamwork experiences, reflection will occur in some ways by which one's awareness of one's performance is raised when benchmarked against criteria or peer performances. But until reflection becomes an explicit part of the formal curriculum, it remains as "intellectualising reflection", a purely

cognitive process which is “a futile attempt to tame a potentially powerful process” (Boud, 1999: 125).

The gaps identified in works that do not have reflection requirements after self and peer assessment and feedback are addressed by certain authors (Chen et al., 2004; Hobson et al., 2014; Hughes et al., 2008; Kemery & Stickney, 2014) who introduced reflection as a pedagogical intervention in their study on teamwork competencies. When space and time are created for reflective journaling to take place, individuals will actively engage in the assessment and feedback outputs to distil teamwork competencies knowledge, strategize deep learning strategies for teamwork competencies, and act and react on their teamwork competencies. Reflection requires a link to action so that the benefits of reflection are not lost. As Welch (1999) pointed out, it is insufficient to tell students to reflect. Reflection needs to be “purposeful and strategic” (Eyler, Giles, & Schmiede, 1996: 16), and students need structure and guidance to help them derive meaningful learning so that reflection does not become “descriptive accounts of experiences or venting of personal feelings” (Ash & Clayton, 2009: 29). However, what is largely absent in the studies that embraced reflection on self- and peer feedback on teamwork competencies is a structured and guided theoretically-based reflective journal.

I therefore propose that there is a need to explore the use of a structured and guided written reflective journal to negotiate self- and peer feedback on teamwork competencies. Drawing on the psychometrically-validated instrument on teamwork competencies (Stevens & Campion, 1994), which

provides criteria for teamwork competencies to guide teamwork application, and a theoretically-based experiential learning reflective journal structure (Kolb, 1984), I chart some ways forward by placing the internal negotiation of self- and peer feedback on teamwork competencies in a structured and guided format as the core process of engaging with feedback to improve learning.

2.6 Summary and Outlook

In summary, my review of the literature on self and peer feedback of teamwork competencies has identified three specific needs for further research: 1) To examine self- and peer assessment and feedback practices; 2) To consider internal negotiation of self- and peer feedback; and 3) To explore written reflection as a pedagogical intervention.

In order to address these needs, I have developed within this dissertation an integrative pedagogical model of negotiating self- and peer feedback on teamwork competencies with the use of written reflective journals. This model depicts the effects of students' use of internal negotiation of self- and peer feedback on teamwork competencies to learn from the feedback. Evidence of the learning from the internal negotiation is coded in a theoretically-based written reflective journal.

Anchored on sustainable feedback practices, this model explicitly aligns with the four sustainable feedback characteristics expounded by Carless et al. (2011: 405) –

1) Assessment task design must facilitate engagement over time (14 weeks) in which feedback from varied sources is generated (self- and peer feedback on teamwork competencies), processed, and used to enhance performance at multiple stages of assignments (different team activities).
2) Students must be involved in dialogues about learning so as to raise awareness of quality performance (internal negotiation of self- and peer feedback through a negotiation process).
3) Feedback processes must be facilitated (written reflective journals) through which students are stimulated to develop capacities in monitoring and evaluating their own learning.
4) Student capacities for ongoing lifelong learning should be enhanced by supporting student development of skills in goal-setting and planning their learning (reflective journal incorporated Kolb's (1984) experimental learning stage of active experimentation with goal setting).

An overview of the pedagogical model is presented in presented in Table 2.

Table 2: Study anchored on Four Sustainable Feedback Characteristics of Carless et al. (2011)

Carless et al.'s (2011:405) Four sustainable feedback characteristics	**This study**
Assessment task design must facilitate engagement over time in which feedback from varied sources is generated, processed, and used to enhance performance on multiple stages of assignments.	Engaged self and peer assessment and feedback based on criteria of teamwork competencies (Stevens & Campion, 1994) at multiple stages of assignments across 14 weeks.
Involve students in dialogues about learning so as to raise their awareness of quality performance.	Involved students in internal negotiation of self- and peer feedback through a negotiation process.
Facilitate feedback processes through which students are stimulated to develop capacities in monitoring and evaluating their own learning.	Facilitated written reflections through which students engaged in the negotiation of self- and peer feedback.
Enhance student capacities for ongoing lifelong learning by supporting student development of skills for goal-setting and planning their learning.	Enhanced student capabilities to plan for action after negotiating self- and peer feedback via a written reflection that incorporated Kolb's (1984) experimental learning stage of active experimentation with goal setting.

Chapter 3: Study Design

3.1 Introduction

This chapter focuses on developing the research design. I begin with a section on methodology and detail the methods that I used in the study, namely 1) context and participants, 2) data collection procedures and measures, and 3) data analysis. Critical awareness of methods such as participant recruitment, potential bias in self and peer ratings as well as potential inhibitions against authentic reflections are also addressed here.

3.2 Methodology

I took on a constructivist ontological position with the belief that reality is created by individuals in groups, hence the use of qualitative and quantitative approaches to research so as to address the primary research question of how students negotiate self- and peer feedback on teamwork competencies with the use of reflective journals.

The quantitative approaches of self and peer scores on validated measurement of teamwork competencies (Stevens and Campion, 1994, 1999) provide the basis for individuals to make judgment on the similarities and differences in scores on a Likert scale. These scored judgments were complemented by qualitative comments written by self and peers. A further development from these self and peer scores and comments was the metacognitve self-awareness exercise of reflective journaling where individuals

were required to juxtapose those self and peer scores and comments, reflect on team experiences and plan for what they could do in future team interactions. The reflective journals were written documents which form a valuable source for qualitative research (Creswell, 2014). The qualitative research design components were informed by the epistemological implications of negotiation (refer to Chapter 1), an essential element in this study design, for data collection and analysis to understand the processes by which students come to make sense of their experience in teams by negotiating the feedback from self and peer on their teamwork competencies.

Due to the importance of deploying both quantitative and qualitative methodologies, this study was designed as a mixed-method study. The sections that follow describe my methods in greater depth.

3.3 Context and Participants

The context of using a course to set up teams and for students to assess and provide comments on their own and their fellow team members' teamwork competencies addresses Black and Wiliam (1998)'s concern of ecological validity, that is, of having procedures that can be built routinely into learning contexts. Participants were 173 university undergraduates from various disciplines of study taking a cross-cultural management course at a university in Singapore. These 173 students formed a convenience sample from the five classes that I taught in two semesters of the 2016 academic year. Participation, which was voluntary, hit a rate of 87.8%. The mean age of the students was

22.76 years (SD = 1.83 years), with a range from 19 to 31 years old. Fifty-two percent (52%) of the students were female and 48% were male.

Critical Awareness of Methods: Participant Recruitment

Participants were students in my classes. This is a convenience sample, thus the notion of power relations in data collection in which the researcher (me) is a source of authority needs to be democratized. A copy of a consent form for student participation and approval by the Institutional Review Board (IRB) at Nanyang Technological University was given to students for selection of opt-in or opt-out.

There was parity of course treatment between those who opted-in and those who opted-out. No student was deprived of the suite of pedagogical interventions and feedback on all assessments were returned to students for their learning. It was only in the last week of the course, Week 14, that I sought students' permission to use their data for research purposes. The reason for the late disclosure was to mitigate experimental demand effects (McCambridge, de Bruin, & Witton, 2012) of participants inferring the purpose of what the researcher is trying to examine, or expects finding, and responding so as to help confirm the researcher's hypothesis (McCambridge et al., 2012; Mummolo & Peterson, 2017).

In Week 14 of the course, I went through the IRB form with students. Students were informed of the objectives of the study — to examine how

students internally negotiate self- and peer review through teamwork competencies. They were also informed that their permission was sought to assess and review their reflection journals so as to gain insights and understanding on their learning and development regarding their teamwork competencies. Written consent and participants' signatures were obtained if they wished to participate in the study.

It was indicated on the consent form that participants had the right to refuse or withdraw without compromising their course performance. To prevent students from feeling the pressure to consent to the research, a third-party individual issued and collected the opt-in or opt-out Research Permission Form (see Appendix B for Research Permission Form) from students. During this time, the instructor stayed away from the process. This third-party individual held on to the forms so that students' options were not revealed to me, the instructor-cum-researcher, until after grades were determined and submitted to the University Examination Office. The initiation of students' consent form hand-over took place after I forwarded to the third-party individual an email from the University Examination on the successful completion of mark entry and necessary documents which did not allow any further changes to be made by me, the course coordinator.

Students may experience discomfort associated with this study because their reflective journals exposed content about self- and peer evaluation of their teamwork competencies, as well as their responses to these evaluations. Those were considered private details of students' life experiences during the

time of the course which required disclosure for researchers' analysis. To mitigate such discomfort, researcher had to be clear in informing participants of the purpose of the study; assure students of confidentiality and anonymity, that is, no reference would be made to students' names and personal details in the process of analysing and reporting the data (participants were assigned numbers or aliases) (Creswell, 2014). It was clearly stated in the permission form that participants were free to withdraw from participation in this study, at any time, through a written notice to the researcher or the third-party individual.

3.3 Data Collection

3.3.1 Procedure

Students worked in teams of five or six members on a three-month (14-week) project. Students were randomly assigned to their teams, and the teams did not have formally appointed leaders. Each team had four team activities to complete, which included two team experiential learning activities, a written assignment, and a video production.

In the two team experiential learning activities, students were given time off from allotted class time to conduct out-of-classroom learning. These took place in weeks 5 and 13 of the 14-week semester. These activities took the team interaction from the "work" context to a social setting of their choice, such as Singapore's national heritage and religious sites, preceded or followed by a meal with the team. To ensure that students did engage in these activities,

students had to take a picture of the team at the cultural site and the place they had their meal as well as report on how they prepare for, apply and adjust strategies in their cross-cultural interactions on Facebook closed group platform.

The written assignment was to create a story of a challenging intercultural interaction, due in week 8. The video production with presentation required students to produce a video of the story of challenging intercultural interaction they created; this was due in week 12.

Table 3 summarises the team activities in this course.

Table 3: Team Activities/Deliverables, Data Sources and Collection Schedule

Week	**1 - 4**	**5**	**6**	**7**	**8**[1]	**9**	**10**	**11**	**12**	**13**	**14**
Team Activity		Team experiential learning 1			Story				Video production & presentation	Team experiential learning 2	
Data Source											
Self- & Peer Feedback		Time 1				Time 2				Time 3	

[1] *Semester Break*

I collected two sets of data at three points in time.

First Set of Data: Self- and Peer Feedback

The first set of data comprises three rounds of self- and peer feedback. This feedback, collected via online questionnaires, was given within a week of submission of team assignments, as shown in Table 3. A module of the course,

conducted in Week 3, was dedicated to defining teams, teamwork, and the criteria of teamwork competencies used in the course. Students were also briefed that the self- and peer assessments were anchored on teamwork competencies based on team processes, i.e. “skilled professional behaviours” (Topping, 1998) and not on the end products of their team tasks. The reasons for the focus on team processes, specifically behaviours, and not the end product of the team project are that individuals have the opportunity to learn from the process of giving and getting formative feedback so as to build and develop their teamwork competencies. Students were reminded to be honest in both self and peer evaluation so that learning from the feedback would be meaningful. As the instructor, I shared with students 2 basic criteria in giving feedback – specific and constructive. I gave students the example that instead of indicating that a peer is a good team player, they should be specific in giving incident(s) of how their peer has exhibited behaviour that warrant the comment that he/she is a good team player.

At each of the three time points — Time 1 (Week 5, after the completion of the first team experiential learning), Time 2 (Week 9, after the submission of the team’s written assignment of a story of intercultural challenge), and Time 3 (Week 13, after the completion of the video production and second team experiential learning) — students completed self- and peer evaluations of teamwork competencies.

The aggregate scores and comments from peers were released to students after the instructor had reviewed them to ensure there were no

inappropriate comments such as caustic remarks and profanities. If there were inappropriate comments, the instructor would edit those comments. Thus far, there was only one occasion in which a student used an inappropriate word that was deleted from the feedback to his peer.

Critical Awareness of Methods: Potential Bias in Self and Peer Ratings

As part of this course, students were encouraged to be open to the experience of receiving and giving feedback because the class environment mimics the workplace, a setting in which one provides feedback to peers and subordinates, and receives feedback from peers and superiors. Black and Wiliam (1998) refer to such a setting as having ecological validity, that is, procedures are built routinely into learning contexts. Similarly, Boud (2000) emphasizes the creation of a course climate in which giving and receiving feedback is a part of the teaching and learning processes.

To manage the potential bias of self-enhancing and self-effacing situations where students over-rate or under-rate their own or their peers' teamwork competencies, students have been briefed that the scores of teamwork competencies carry no weight in the course assessment. Although the teamwork competencies scores carry no weight in the course assessment, the teamwork competencies scores were means to the ends of reflecting and acting on their reflection. In this regard, there is a high chance of students taking the self-scoring of teamwork competencies seriously because students needed to qualify their scores in their reflection vis-à-vis those from their peers. As for the peer ratings, students were reminded to be honest in their peer

evaluation and comments so that the exercise is mutually beneficial for both self and peers.

Second Set of Data: Reflective Journal

The second set of data came within a week of receipt of each piece of self- and peer feedback when students completed their reflective journal. Written journal is the selected mode for reflection because writing forces time to be taken for reflection. In itself, writing is a learning process that offers a means of surfacing, articulating and rethinking our conceptualization of self, others and the environment from different stimuli. These different stimuli present perspectives for negotiating one's way of being, acting and relating to self, others, and the environment (Cunliffe, 2016).

There were three corresponding reflective journals after receiving self- and peer feedback in the 14-week semester. Table 4 illustrates the schedule of data collection. The temporally-based framework of pedagogical interventions (Marks, Mathieu, & Zaccaro, 2001) advanced here is designed to explore and explain how students can work on their teamwork competencies through the interventions of team activities — self- and peer feedback after each key team-related course deliverable — culminating in a written reflective journal as an honest self-appraisal conducted in conjunction with peers' appraisals. According to Boud and Walker (1998: 205), reflective journaling is "one of the hallmarks of an effective promoter of reflection".

Table 4: Team Activities, Data Sources and Collection Schedule

Week	**1 - 4**	**5**	**6**	**7**	**8**[1]	**9**	**10**	**11**	**12**	**13**	**14**
Team Activity		Team experiential learning 1			Story				Video production & presentation	Team experiential learning 2	
Data Source											
Self- & Peer Feedback		Time 1				Time 2				Time 3	
Written Reflective Journal			Time 1			Time 2					Time 3

[1] *Semester Break*

The design of an assessment or intervention has a profound effect on how students learn (Gibbs & Simpson, 2004). A good intervention design involves at least two-stage assignments in which two or more related tasks form the assessment for a course. Black and McCormick (2010: 499) also highlight the need for "linking learning with assessment, within a pedagogical framework". The multi-stage assignments allow for outcomes from previous team-based experiences to become inputs for the next experience (Gibbs & Simpson, 2004). Such a temporal approach allows students to be engaged in different types of team activities with similar goals of cultivating teamwork competencies and improving team performance.

Critical Awareness of Methods: Potential Inhibitions of Authentic Reflections

Written reflective journals which are graded pose two main issues which may inhibit authentic reflections: 1) fundamental tension between reflection and assessment, and 2) social desirability pressure.

In this study, the written reflective journals were graded, so students may write "to the test". Therefore, there is a fundamental tension between reflection and assessment. "Reflection thrives on doubt while assessment celebrates certainty" (Boud, 1999: 123), so there is the danger of assessment obliterating the practices of reflection. Besides the tension between assessment and reflection, there is also the possibility of tension created by social desirability pressure. Students may censor their reflections and fail to engage with their felt experience (Boud & Walker, 1998). Moon (2006) also raised a valid question on whether students report real processes that they underwent or produce a reconstruction of the processes which is unauthentic. Hence, there is potential bias in reflective journals because of the social desirability pressure to which individuals may succumb, knowing that their instructor will be viewing their journals.

To mitigate this threat, students were reminded at the start of each reflection exercise that they were not graded on how well they have worked in or adapted to team settings, so as to rid the "extrinsic motivational contaminants" (Strom & Strom, 2011: 248) of grading associated with teamwork competencies. Grading was based on the "thoroughness and thoughtfulness

of students' self-reflections rather than on actual performance" (Molinsky, 2013: 688). As seen from their reflection journals, students appeared to be candid in their reflections — reporting both the strengths and weaknesses identified by themselves and their peers. What followed was a negotiation of how they reconciled their self- and peer evaluations, as well as how they were aspired or were inspired to perform or behave differently in subsequent team interactions.

3.3.2 Measures

Table 5 shows the measures used in this study.

Table 5: Measures and Data Collection

Data	Format	Completed by	Frequency
Teamwork competencies (Steven & Campion 1994, 1999)	Questionnaire	Self	3
Teamwork competencies (Steven & Campion 1994, 1999)	Questionnaire	Peers (Project team members)	3
Reflective journal (Kolb 1984, 2014)	Written journal	Self	3

Teamwork Competencies: Measured by Self and Peer

Researchers and practitioners have used different tools and mechanisms of peer assessment and feedback. I evaluated several peer assessment mechanisms (Chesluk et al., 2015; Freeman & McKenzie, 2002; Garbee et al., 2013; Kemery & Stickney, 2014; LePine et al., 2008; Loughry et al., 2014; Rousseau et al., 2006; Stevens & Campion, 1994, 1999; Strom & Strom, 1998), based on the context of the students' teamwork activities. I eventually sized down to two widely-used tools: the comprehensive

assessment of team member effectiveness (CATME) tool (Loughry et al., 2014; Ohland et al., 2012) and the teamwork competency - knowledge, skills and abilities (KSAs) - management system (Stevens and Campion, 1994, 1999).

CATME has two versions of Likert scale-based and behaviourally-anchored rating scales for self- and peer evaluation. These are very elaborate scales, 87 items for the long version and 33 items for the short version, which can potentially lead to questionnaire fatigue in students given that they needed to assess up to 5 peers over 3 time points. After considering the time commitment to complete the relatively lengthier CATME questionnaire, I chose to use the 14 teamwork KSA items from Stevens and Campion (1994). A reduced time commitment on the questionnaire ratings meant that students were more likely to be engaged when completing their evaluations and to give more attention to the qualitative comments (Britton et al., 2015).

The Stevens and Campion (1994, 1999) teamwork competency management system is widely used in human resource and management studies (Chen et al., 2004; Kozlowski et al., 2015; LePine et al., 2008; Mathieu et al., 2014). Based on the Stevens and Campion (1994, 1999) studies, an individual's performance on teamwork knowledge, skills and abilities (KSAs) test predicted peer and supervisor ratings of both teamwork effectiveness and overall performance in organisations. These studies showed a high correlation between performance on the teamwork KSAs test and employment aptitude tests (r = .81) suggesting that teamwork KSAs are related to actual performance in organisations.

The systematic development of the conceptual framework of teamwork knowledge, skills and abilities (KSAs) by Stevens and Campion (1994, 1999) and its use in higher education settings could contribute to the workforce readiness of graduates. Thus these teamwork KSAs were used to define the content domain of the self- and peer evaluation of teamwork competencies. Such standards-based framework is important to enable students to view their own and others' work in the light of acceptable practice (Boud & Falchikov, 2006).

The Stevens and Campion (1994, 1999) framework provides three foci:

1. It stresses that the attributes are KSAs (i.e. learnable behaviours, mental abilities, etc.) rather than personality traits or dispositions.
2. The framework includes only those attributes that are at the individual team member level of analysis, as opposed to the group level.
3. The framework focuses on teamwork KSAs, rather than task work or technically-related KSAs. While task-work KSAs are important for teamwork, they are not unique to team settings.

Self-assessment and peer assessment that use rubrics to describe the key elements of a strong performance can give students specific feedback criteria of teamwork competencies about their work, which helps to direct their own learning and enhance their understanding. Reflection on one's teamwork skills through self-assessment and peer feedback are explicit feedback loops to enable individuals not only to compare and contrast valuable information about their teamwork competencies, but also to act on this information. This is

similar to Schön (1979, 1983)'s ideas on reflection-on-action and Boud (2001)'s viewpoint of what it takes to be a reflective practitioner. In his view, one needs to be:

> "…more deliberate and conscious of the process and more aware of the decisions being made by others and ourselves. It is through exposing these decisions to scrutiny that assumptions behind them can be identified and a conscious decision to act from a new perspective can be taken" Boud (2001: 13).

Teamwork Competencies — Superordinate and Subordinate Items

The set of 5 key teamwork competencies by Stevens and Campion (1994) form an expert mental model of teamwork that is useful in guiding the manner in which individuals work collaboratively within a team. For this study, students completed 3 identical questionnaires (closed and open responses), as shown in Table 6 (Self and Peer Evaluation 1, 2, and 3) which were set up in weeks 5, 9, and 13 of a 14-week semester. These questionnaires were given and collected using an online platform. Table 6 shows the teamwork competency superordinate and subordinate items.

Table 6: Teamwork Competency Rubrics

INTERPERSONAL COMPETENCY – Knowledge, Skills & Abilities (KSAs)	**Rating 1 to 5**	**Strengths**	**Areas for Improvement**
Conflict Resolution KSAs *<Name of team member> has* 1. The KSA to encourage desirable and discourage undesirable team conflict. 2. The KSA to use an appropriate conflict resolution strategy. 3. The KSA to employ an integrative (win-win) negotiation strategy.			
Collaborative Problem Solving KSAs *<Name of team member> has* 4. The KSA to utilise the appropriate type of participation. 5. The KSA to recognise the obstacles to collaborative group problem-solving. 6. The KSA to implement appropriate corrective actions.			
Communication KSAs *<Name of team member> has* 7. The KSA to communicate supportively. 8. The KSA to listen actively and non-evaluatively. 9. The KSA to maximise consonance between verbal and nonverbal messages.			
SELF-MANAGEMENT COMPETENCY – Knowledge, Skills, & Abilities (KSAs)			
Goal Setting and Performance Management KSAs *<Name of team member> has* 10. The KSA to help establish specific, measurable, achievable, realistic and timely (SMART) team goals. 11. The KSA to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance. 12. The KSA to provide good quality contribution.			
Planning and Task Coordination KSAs *<Name of team member> has* 13. The KSA to establish task and role expectations of individual team members and to ensure a proper balance of workload in the team. 14. The KSA to synchronise activities, information, and task interdependencies between self and team members. 15. The KSA to keep team members informed of one's availability and provide an alternative for unavailability.			

Teamwork Competencies — Reliability

The focus on rating only superordinate items improved the practicality of use, and did not compromise reliability. Reliability analysis of the five superordinate items of the teamwork at Time 1, Cronbach's alpha = .91; Time 2, Cronbach's alpha = .93; and Time 3, Cronbach's alpha = .95.

A reliability coefficient of .90 or higher is considered “excellent” for the set of teamwork competencies, providing evidence that the items are closely related as a set of items for the construct, teamwork competencies, and adding validity and accuracy to the interpretation of the data (Creswell, 2014).

Teamwork Competencies — Likert Scale: 1 to 5

In the closed questionnaires, students rated themselves and their peers (four to five teammates) on their teamwork competencies, which included knowledge, skills, and abilities as a team member. The closed questions were placed on a Likert scale of 1 to 5: (1) strongly disagree; (2) disagree; (3) neither agree nor disagree; (4) agree; (5) strongly agree.

Teamwork Competencies — Strengths and Areas for Improvement

Written feedback has the potential of “unhurried reflection” (Yang & Carless, 2013) which can be retained for reference. In the open questionnaires, each student commented on his or her own as well as teammates’ strengths and areas for improvement. Recipients of peer feedback did not know the identity of those who produced the feedback. The scores and comments from peers were anonymous and aggregated when received by each student. See Table 6 for the columns dedicated to comments.

Since the research goal of this study was to examine a broad range of teamwork competencies for identification and enhancement over time, students

were only required to rate themselves and their peers on the 5 superordinate competencies — conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination — instead of a total of 15[3] teamwork sub-competencies. These 15 sub-competencies are made up of 3 teamwork sub-competencies which served as descriptors for each super-competency. Since the questionnaires were a means to the end namely, reflecting on the self- and peer evaluations, I decided that a small number of items that were focused on key teamwork competencies, were less likely to make participants feel overwhelmed and fatigued over three time points.

The data thus obtained from the questionnaire was:

1. Self-evaluation of teamwork competencies — conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination — over three time points in Weeks 5, 9 and 13; and
2. Peer evaluation of teamwork competencies — conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination — over three time points.

[3] Stevens and Campion (1994) have 14 items of KSA requirements for teamwork but I have 15 items. I split the 2 items in Collaborative Problem Solving KSAs to 3 items so as to make the item clearer. This would not affect the evaluation by self or peer because the evaluation is done at the superordinate competency and not the subordinate competency items.

Teamwork Competencies — Centralized Peer Evaluation System

DeNisi and Kluger (2000) conducted a meta-analysis of feedback-effective intervention to examine how to improve feedback interventions in 360-degree appraisals. Among their findings, they recommended that feedback be delivered by computer instead of in person. In this study, the quantitative ratings and qualitative comments provided by self and peer were gathered via a centralized peer evaluation system, (eUreka rubrics system) which I designed and created jointly with the University Centre for Information Technology Services (CITS) in 2013. I was then inspired by the Self and Peer Assessment Resource Kit (SPARK) developed by Dr. Keith Willey from the University of Technology, Sydney. SPARK, now SPARK^{PLUS}, is an online self and peer assessment and feedback platform which allows students to rate their own and their peers' contributions to a team task or to individual submissions. The impetus for the online e-rubric system was to encourage the use of rubrics for assessment and to reduce the limitations of paper-based systems of assessing with rubrics which involve arduous data entry and calculations to generate scores or adjustment factors in the case of peer evaluation on teamwork contribution. In their proposed framework of dialogic feedback processes, Yang and Carless (2013) also suggest that technology-enabled feedback is a promising direction that affords prospects for flexible assessment and feedback provision.

Teamwork Competencies — A Cyclical Process of Assessment and Feedback

As a dynamic competency, teamwork requires continued application, review and attention to deficiencies and strengths so that students can learn to be more effective team members (Britton et al., 2015; Brutus & Donia, 2010). Brutus et al. (2013) asserted “maturation effects” from repeated use of peer feedback and argued for the possibility that students improve their group-related skills naturally.

In their study on the acquisition of complex skills by medical students, Henderson, Ferguson-Smith, and Johnson (2005) also suggested that longitudinal and reiterative practice in giving and receiving feedback in a range of contexts is essential. However, what transpired between and within episodes of repeated exposure to support the use of peer feedback is not discussed. To understand what exactly students do to close the learning loop of feedback, this current study introduces written reflective journals as an intervention to find out what students do when they receive feedback and between receiving feedback and their subsequent team interaction.

Written Reflection Journals

To close the learning loop of feedback, the intervention of written reflective journals was introduced so that students reflected on self- and peer evaluation of their teamwork competencies at three distinct time points. Written journals allow learners to apply "powerful cognitive and metacognitive strategies such as generating examples to illustrate abstract concepts or monitoring their comprehension to identify and overcome impasses" (Nuckles et al., 2012: 178).

These reflections were assessed to encourage engagement; as Gibbs and Simpson (2004: 8) asserted; "you have to assess everything that moves in order to capture students' time and energy". Also, as Welch (1999) points out, it is insufficient to tell students to reflect. Reflection needs to be "purposeful and strategic" (Eyler et al., 1996: 16) and students need structure and guidance to help them derive meaningful learning so that reflection does not become "descriptive accounts of experiences or venting of personal feelings" (Ash & Clayton, 2009: 29).

Structure and guidance came in the form of Kolb's Experiential Learning Cycle (Kolb, 1984; Kolb, 2014) and Schön's link between reflection and action (Schön, 1983):

a. Concrete experiences, reflection-in-action (record self and peer feedback, and recount critical incidents);
b. Reflective observation, reflection-on-action (reflect on these critical incidents, compare and contrast self- and peer feedback);

c. Abstract conceptualisation (discuss how similarly or differently one would perform now in retrospect); and
d. Active experimentation, reflection-for-action (create an action plan to address weaknesses and leverage strengths, and discuss the degree of success in undertaking proposed actions in subsequent journals).

With the aggregated peer scores from the closed questionnaire and comments on one's teamwork competencies from the open questionnaire, each student embarked on his or her reflective journal, structured using Kolb's Experiential Learning Cycle which combines experience, metacognition, cognition, and action (Kolb, 1984; Kolb, 2014). Students took on the role of reflective practitioner to appraise self and peer evaluation of teamwork competencies. Kolb's (2014) experiential learning model was used to help students grasp the experience of teamwork, and to transform the experience into a meaningful understanding of how to work effectively in teams. The power of this pedagogical approach is that the potential of an observation made by oneself and/or one's peers of one's teamwork competencies transforms to influence and shape one's teamwork competencies in subsequent team interactions. "Knowledge is continuously derived from and tested out in the experiences of the learner" (Kolb, 1984: 27).

Written Reflection Journals — Instructions and Questions

The instructions and questions of the journals were as follows, and can also be found in Appendix C — Reflective Journals 1, 2, and 3. Listed below

are excerpts of key questions that were meant to guide students through the process of reflective journaling.

1. **Concrete Experience**

   Describe critical incident(s) that took place.

2. **Reflective Observations**

   a. Describe your thoughts and your feelings about the critical incident(s) and the team experience thus far.

   b. Compare and contrast your teamwork competencies scores and comments provided by yourself and your peers. What are your learning takeaways?

   c. (In Journals Two and Three only) How successful was your application of active experimentation plan devised in Journal One and/or Two?

3. **Abstract Conceptualization**

   Based on what you have learned about your teamwork competencies from yourself and your peers, describe what you would have done (a) differently, and (b) similarly?

4. **Active Experimentation**

   How would you plan for future actions/interactions within your team to improve your teamwork competencies?

3.4 Data Analysis

The data included 519 pieces of self-feedback on teamwork competencies ratings, 519 pieces of peer feedback on teamwork competencies ratings, and 519 reflective journals. These came from 173 participants, each of whom provided three pieces of self-feedback, three of peer feedback and three reflective journals over three time points, respectively.

Data analysis occurred in six stages and focused on answering the research questions posed at the outset of the study. Table 7 sets out the stages, data, data types, measures, data analysis and the corresponding research question for which each stage provided results. The six stages are as follows (also see Table 7):

1. Do students improve in their self-feedback on their teamwork competencies over time;
2. Do students improve in their peer-feedback on their teamwork competencies over time;
3. Examining features of how individuals negotiate self- and peer feedback on their teamwork competencies;
4. Identifying, if any, different profile types of peer-evaluated teamwork competency trajectories in individuals during their teamwork process;
5. Inspecting factors predicting each teamwork competency growth trajectories; and

6. Studying the distinctive strategies used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies over time.

Table 7: Overview of Data Analysis

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Questions
1	Self-feedback on teamwork competencies over 3 time points	QT QL	Questionnaires of self-teamwork competencies (Stevens & Campion, 1994, 1999). **Measures of Central Tendency** at 3 time points. **Repeated Analysis of Variance (ANOVA)** to determine significant differences between time points.	Trajectories of teamwork competencies self-scores over 3 time points. Significant difference between self-scores at Time 1 and Time 2, Time 1 and Time 3, and Time 2 and Time 3.	Do students improve their teamwork competencies through the cyclical process of internally negotiating self- and peer evaluation of their teamwork competencies?
2	Peer feedback on teamwork competencies over 3 time points	QT QL	Questionnaires of peer teamwork competencies (Stevens & Campion, 1994, 1999). **Measures of Central Tendency** at 3 time points. **Repeated Analysis of Variance (ANOVA)** to determine significant differences between time points.	Trajectories of teamwork competencies peer scores over 3 time points. Significant difference between peer scores at Time 1 and Time 2, Time 1 and Time 3, and Time 2 and Time 3.	

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Questions
3	Reflection Journal negotiating self- and peer feedback on teamwork competencies over 3 time points	QL	Reflection journal based on Kolb's experiential learning model. **Coding of reflection journals** on NVivo software.	Features of how individuals negotiate self- and peer feedback on their teamwork competencies.	In what ways did students internally negotiate self- and peer feedback on their teamwork competencies?
4	Peer evaluation of teamwork competencies over 3 time points	QT	Questionnaires of peer teamwork competencies (Stevens & Campion, 1994, 1999). SPSS **TwoStep Cluster Analysis** of peer-evaluated teamwork competencies growth trajectories. Cluster Validation with SPSS **Multivariate Analysis of Variance (MANOVA) Analyses.**	Self-ratings are not used for comparison because of their inherent flaws. Different profile types of peer-evaluated teamwork trajectories.	What, if any, are the different profile types of teamwork competency growth trajectories in individuals during their teamwork process?
5	Reflection Journal negotiating self and peer feedback on teamwork competencies (in each teamwork trajectory)	QT	**Descriptive statistics** of features of reflection journals in each cluster. Each set of teamwork trajectories: Pearson's partial **correlation** between peer evaluation of teamwork competencies at Time 3 (T3) and other negotiation features (variables), adjusting for teamwork competencies at Time 1 (T1).	Comparison of mean and standard deviation of each feature between clusters. Factors predicting teamwork competencies in each growth trajectory cluster.	What strategies, in each growth trajectory cluster, are associated with improvement in their teamwork competencies?
6	Reflection Journal negotiating self and peer feedback on	QT	6 sets of multivariate analysis of variance (**MANOVA**) were conducted separately using cluster as the	Factors predicting significant differences in how students in	What distinctive strategies are used by students, who

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Questions
	teamwork competencies (compare between teamwork trajectories)		independent variable and each of 6 groups of dependent variables: 1. references to teamwork competencies, 2. affect, 3. awareness of performance and non-performance, 4. goal intentions, 5. implementation intentions, 6. gap closure.	each growth trajectory improved their teamwork competencies. Distinctive features of negotiation in reflective journal of students who obtained higher teamwork competencies over time.	obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

#QT: Quantitative, QL: Qualitative

3.4.1 Trajectories of Self- and Peer-Evaluated Teamwork Competencies Scores

The first and second stages of analysis (see Table 8) form a preamble to the other research questions in this study. In order to examine if reflective journals were useful for students to improve their teamwork competencies, the question of whether there was improvement needed to be ascertained. Measures of central tendency were obtained to track the trajectories at the three time points for self- and peer evaluation of teamwork competencies.

In addition, a repeated analysis of variance (ANOVA) was used to determine if the mean self-evaluated teamwork competency scores differed statistically between time points, Time 1 and Time 2, Time 1 and Time 3, and Time 2 and Time 3. The same repeated ANOVA was performed on mean peer evaluated teamwork competency scores.

Table 8 summarizes the two steps taken, to determine the trajectories of improvement and significant between each time point of scores across three time points.

Table 8: Data Analysis Stages 1 & 2

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Question
1	Self-feedback on teamwork competencies over 3 time points	QT QL	Questionnaires of self- teamwork competencies (Stevens & Campion, 1994, 1999). **Measures of Central Tendency** at 3 time points. **Repeated Analysis of Variance (ANOVA)** to determine significant differences between time points.	Trajectories of teamwork competencies self- scores over 3 time points. Significant difference between self-scores at Time 1 and Time 2, Time 1 and Time 3, and Time 2 and Time 3.	Do students improve their teamwork competencies through the cyclical process of internally negotiating self- and peer evaluation of their teamwork competencies?
2	Peer feedback on teamwork competencies over 3 time points	QT QL	Questionnaires of peer teamwork competencies (Stevens & Campion, 1994, 1999). **Measures of Central Tendency** at 3 time points. **Repeated Analysis of Variance (ANOVA)** to determine significant differences between time points.	Trajectories of teamwork competencies peer scores over 3 time points. Significant difference between peer scores at Time 1 and Time 2, Time 1 and Time 3, and Time 2 and Time 3.	

#QL: Qualitative; QT: Quantitative

3.4.2 Features of Negotiation between Self and Peer Feedback

The third stage of analysis (see Table 9), focused on answering the second question, examined how students internally negotiate self- and peer feedback on their teamwork competencies.

Table 9: Data Analysis Stage 3

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Question
3	Reflection Journal negotiating self- and peer feedback on teamwork competencies over 3 time points	QL	Reflection journal based on Kolb's experiential learning model **Coding of reflection journals** on NVivo software	Features of how individuals negotiate self- and peer feedback on their teamwork competencies.	In what ways did students internally negotiate self- and peer feedback on their teamwork competencies?

#QL: Qualitative

A sequential and iterative procedure following Miles, Huberman, and Saldaña (2014) and Saldaña (2016) streamlining codes-to-theory model for qualitative inquiry was used. Four key phases of this procedure — opening coding and recoding, axial coding and re-categorizing, establishing reliability and coding, and aligning codes and categories to theory — are delineated as follows.

Phase One: Open Coding and Recoding

The first phase started with open coding of written reflections to identify first-order concepts. There were three coders: myself, an associate professor with a background in business negotiation, and a graduate research assistant. Each of us started with 30 randomly selected reflection journals (10 students with 3 reflection journals each), applied open and in vivo coding of the various

ways students appeared to be negotiating self- and peer evaluation of their teamwork competencies. We then compared notes, reconciled differences in our codes, and recoded the 30 journals. I deemed we achieved construct saturation when no new codes were identified (Strauss and Corbin, 1998). We created a preliminary list of codes. This was a manual process, done on the hard copies of these 30 journals.

Phase Two: Axial Coding and Re-categorizing

I applied axial coding (Strauss and Corbin, 1998) by assembling similar codes (for example, positive emotions and negative emotions) into more abstract categories (for example, affect) and developing themes (for example, reaction to peer feedback) for these categories. I moved iteratively between the data and the constructs to refine insights and develop conceptual themes (Saldana, 2016). The process was both inductive and deductive. The codes were created through an inductive process, and during this process, I moved iteratively between the data, emerging codes, assessment and teamwork literature to clarify the construction of the categories, develop the conceptual categories, and refine the codes (Saldana, 2016).

Phase Three: Establishing Reliability and Coding

The adjusted coding scheme from the second phase was used for subsequent coding. The reliability of coding was established in this phase.

The graduate research assistant and I read the same 30 reflection journals (10 students with 3 reflection journals each) again and independently

applied the updated coding list in our coding. This time around, we used NVivo, a qualitative data analysis computer software package produced by QSR International. NVivo is considered an ideal tool for working in a team since it facilitates combining the coding of individuals for a team project as well as for making inter-rater comparisons.

With interrater comparison, I applied query on reliability of coding using Cohen's kappa and obtained Cohen's kappa of .79 as the reliability of coding. Kappa's statistic strength of agreement is substantial when the value is between .61 and .80, and almost perfect when the strength is between .81 and 1.0.

Phase Four: Aligning Codes and Categories with Theory

The next step was to code all the remaining responses. To make sense of students' experience in negotiating self- and peer feedback on teamwork competencies, I continued to analyse the journals through an iterative process that involved coding, observing patterns, and organising concepts in a systematic order from which I could then categorize (Miles et al., 2014). Where major categories could be compared and consolidated to form themes or concepts, an assertion or theory was derived (Saldaña, 2016).

In this phase, four categories (reference to teamwork competencies, reaction to peer feedback, next action steps following negotiation of self- and peer feedback on teamwork competencies, and degree of success of actions) with a total of 13 codes corresponding were identified as follows in Table 10. A more detailed list of categories and codes can be found in Appendix D.

Table 10: Categories and Codes of Students' Reflection Journals

Category	**Code**
Reference to Teamwork Competencies	1. Conflict resolution 2. Collaborative problem-solving 3. Communication 4. Goal setting and performance management 5. Planning and task coordination
Reaction to Peer Feedback	6. Positive affect 7. Negative affect
Next Actions following Negotiation of Self and Peer Feedback	8. Goal intentions 9. Implementation intentions (how) 10. Implementation intentions (when)
Degree of Success of Actions	11. Awareness of teamwork performance 12. Awareness of non-performance 13. Gap closure (between awareness of non-performance and performance)

The derivation and explanation of these codes are elaborated in Chapter 4: Results.

3.4.3 Profile Types of Teamwork Competency Trajectories

In stage four of data analysis (see Table 11), I turned my attention toward the question of whether there were different profile types of teamwork competency growth trajectories among individuals.

Table 11: Data Analysis Stage 4

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Question
4	Peer evaluation of teamwork competencies over 3 time points	QT	Questionnaires of peer teamwork competencies (Stevens & Campion, 1994, 1999). SPSS **TwoStep Cluster Analysis** of peer-evaluated teamwork competencies growth trajectories. Cluster Validation with SPSS **Multivariate Analysis of Variance (MANOVA) Analyses.**	Self-ratings are not used for comparison because of their inherent flaws. Different profile types of peer-evaluated teamwork trajectories.	What, if any, are the different profile types of teamwork competency growth trajectories in individuals during their teamwork process?

#QT: Quantitative

The TwoStep Cluster Analysis on IBM SPSS Statistics 24 was used to identify different profile types of teamwork competency growth trajectories. The Cluster Analysis is an exploratory tool designed to reveal natural clusters within a data set that would otherwise not be apparent.

It consists of two stages: 1) pre-clustering the records into many small sub-clusters by constructing a cluster features tree, and 2) clustering the sub-clusters resulting from the first stage into a desired number of clusters — a

probabilistic hierarchical Cluster Analysis (Chiu, Fang, Chen, Wang, & Jeris, 2001). The TwoStep Cluster Analysis automatically chooses the "best" number of clusters by examining the Schwarz's Bayesian Information Criterion (BIC) values. The "best" cluster solution has the smallest BIC.

In this study, Cluster Analysis allows for the grouping of a set of observations in such a way that observations in the same group are more similar to each other than to those in other groups. Peer feedback scores over three time points served as data for the Cluster Analysis. This analysis yielded two distinct clusters, which represent different profile types of teamwork competency trajectories. These clusters are hereafter named Cluster H-H (high-high performance in peer-evaluated teamwork competencies scores) and Cluster M-H (medium-high performance in peer-evaluated teamwork competencies scores). The assumption that I labelled M-medium and H-high was based on peer-evaluated teamwork competencies score that M denoted peer scores below four and H denoted peer scores four and above. I will test in Chapter 4 the statistical appropriateness of such an assumption.

Gender and Age Effects on the Clusters

To determine if there were significant gender and age differences on the two empirically-derived clusters, separate chi-square test of independence were conducted. Results revealed no significant gender difference χ^2 (1, N = 173) = 1.28, p = .259, (*ns*) and no age difference χ^2 (10, N = 173) = 6.10, p = .807 (*ns*).

The results of the mean differences between the two variables (see Table 12) and their levels of significances also showed that both clusters had equivalent groups with fair attribution of causality assessed (Cohen, Manion, & Morrison, 2013). The mean value of the target variables — gender and age — for Cluster H-H does not differ significantly from the mean value on each target variable for Cluster M-H.

Table 12: Test of Significance of Difference between Means

	Cluster H-H (n = 68)		Cluster M-H (n = 105)		Test of Significance of Difference	
	M	*SD*	*M*	*SD*	*Δ*	*p*
Gender (0 = female, 1 = male)	.57	.50	.49	.50	.09	.16
Age	22.53	1.94	22.90	1.76	.-38	.63

3.4.4 Factors Predicting Teamwork Competency Trajectories

In stage five of the data analysis (see Table 13), an extension to stage three of just knowing how students internally negotiate self and peer feedback on their teamwork competencies stretched to how students with different growth trajectories internally negotiate self and peer feedback on their teamwork competencies.

Table 13: Data Analysis Stage 5

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Question
5	Reflection Journal negotiating self and peer feedback on teamwork competencies (in each teamwork trajectory)	QT	**Descriptive statistics** of features of reflection journals in each cluster. Each set of teamwork trajectories: Pearson's partial **correlation** between peer evaluation of teamwork competencies at Time 3 (T3) and other negotiation features (variables), adjusting for teamwork competencies at Time 1 (T1).	Comparison of mean and standard deviation of each feature between clusters. Factors predicting teamwork competencies in each growth trajectory cluster.	What strategies, in each growth trajectory cluster, are associated with improvement in their teamwork competencies?

 # QT: Quantitative

This required differentiating features or factors of how students in each teamwork competency growth trajectory cluster internally negotiated self and peer feedback on their teamwork competencies. I ran the analysis on IBM SPSS Statistics 24 for the purpose of determining the empirical relationship among the list of features which are the independent variables, and the dependent variables of peer-scored teamwork competency performances at the final time point (Time 3). I controlled for Time 1 because individuals have

different starting points at Time 1. This analysis showed that there are different reflective processes which students in the different empirically-derived clusters — Cluster H-H and Cluster M-H — take that are associated with their improvement in teamwork competencies over time.

3.4.5 Comparison of Clusters with Different Trajectories

In this sixth stage of data analysis (see Table 14), I inspected similarities and differences between individuals of the different teamwork competency trajectory clusters on how they negotiated their self and peer feedback on their teamwork competencies.

Table 14: Data Analysis Stage 6

Stage	Data	Data Type#	Measures/ Method of Analysis	Data Analysis	Research Question
6	Reflection Journal negotiating self and peer feedback on teamwork competencies (compare between teamwork trajectories)	QT	6 sets of multivariate analysis of variance (**MANOVA**) were conducted separately using cluster as the independent variable and each of 6 groups of dependent variables: 1. references to teamwork competencies, 2. affect, 3. awareness of performance and non-performance, 4. goal intentions, 5. implementation intentions, 6. gap closure.	Factors predicting significant differences in how students in each growth trajectory improved their teamwork competencies. Distinctive features of negotiation in reflective journal of students who obtained higher teamwork competencies over time.	What distinctive strategies are used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

 # QT: Quantitative

I used multivariate analyses of variance (MANOVA) to assess the differences in reflective practices between the empirically-derived teamwork

competency performance clusters. Exploration is done on multivariate analysis of variance with with performance clusters (peer ratings of teamwork competencies) coded as independent variables. The dependent variables are references made to teamwork competency, positive and negative affect, implementation intentions (how), implementation intentions (what), goal intentions, awareness of performance in teamwork competencies, and gap closure.

Findings that revealed significant differences across the performance outcomes of peer evaluation of teamwork competency, i.e., $p < .05$, were examined and discussed.

Results of the six stages of data analysis are presented in the next chapter.

Chapter 4: Results

4.1 Introduction

In the following section, I present an overview of the five key findings that spoke most clearly to my research questions.

1. Do students improve their teamwork competencies through a cyclical process of internally negotiating self and peer evaluation on their teamwork competencies?

   There was an overall improvement in teamwork competencies over the three time points for the sample. Measures of central tendency for self-scores and peer-scores of teamwork competencies over three time points were charted for the entire sample (see Section 4.2). This finding suggested that the proposed cyclical model of developing teamwork competencies through team activity, self- and peer assessment, and negotiation of self- and peer feedback via reflection journals helped students improve their teamwork competencies over time.

2. In what ways did students internally negotiate self and peer feedback on their teamwork competencies?

   Salient features of how students went about their reflection journaling were discovered. The features of how individuals negotiated self- and peer

feedback of their teamwork competencies were derived from the qualitative analysis of 519 journals from 173 students' reflections. Four categories with 13 codes were identified:

a. Teamwork competencies - conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination;
b. Reaction to peer feedback – positive affect and negative affect;
c. Goal intentions and implementation intentions – goal intentions, implementation intentions (how), and implementation intentions (when); and
d. Awareness – awareness of teamwork performance, awareness of non-performance, and gap closure between intention and performance.

3. What are, if any, the different profile types of teamwork competencies growth trajectories in individuals during their teamwork process?

The quantitative analysis of 173 students' peer ratings of teamwork competencies over three time points generated two different profile types of teamwork competency growth trajectories over three time points, hereafter referred to as Cluster H-H (high-high) and Cluster M-H (med-high).

a. Cluster H-H (high-high) was characterised as a group of students with comparatively higher initial peer scores and who continued to receive higher peer scores over time.

b. Cluster M-H (med-high) showed up a group of students with relatively lower initial peer scores and who continued to improve with higher peer scores over time.

4. What strategies of negotiation do students, in each trajectory cluster, use that are associated with improvement in their teamwork competencies?

   The features that emerged from students' reflective journals were assembled into these two clusters – Cluster H-H and Cluster M-H. Inspection of the features in each cluster revealed factors that predicted teamwork competency trajectories in the two different empirically-derived clusters – Cluster H-H and Cluster M-H, in relation to teamwork competencies at Time 3. Key features included 1) Cluster H-H students were found to be conscientious at creating implementation intentions in their reflective journals for how to achieve their goals at Time 1 following initial peer ratings and comments, and 2) Cluster M-H students paid more attention to their awareness of non-performance at Time 1 as well as awareness of performance at all three time points, in addition to stating explicit goal intentions at Time 1.

5. What distinctive strategies are used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

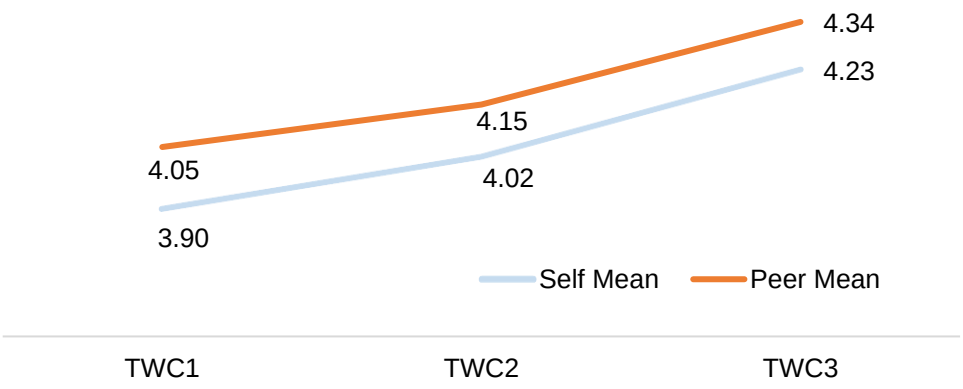
I examined the factors that predicted significant differences in how students in each cluster improved their teamwork competencies. In addition to that examination, I explored the distinctive strategies used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies in reflective journals. The distinctive strategies are: 1) positive affect labelling, 2) setting goal intentions, and 3) monitoring performance. The implications of using these distinctive strategies offer guidance to both educators and students.

Details of these results are presented in the ensuing sections.

4.2 Trajectories of Self- and Peer Scores of Teamwork Competencies

Measures of central tendency were obtained to track the trajectories at the three time points for self- and peer evaluation of teamwork competencies. The results in Figure 1 illustrate the maturation process of the students as they progressed through teamworking.

Figure 1: Teamwork Competency Scores by Self and Peer (N_{self} = 173)



Test of Statistical Significance for Self-Evaluated Teamwork Competency Scores across Time

A repeated ANOVA with Greenhouse-Geisser correction determined that mean self-evaluated teamwork competency scores differed significantly between time points ($F(1.18, 305.35) = 39.02$, $p < .05$). Post hoc comparisons of estimated marginal means using the Bonferroni correction revealed that the mean levels in self-evaluation of teamwork competency scores between Time 1 and Time 2 (3.90 ± .48 vs 4.02 ± .49, respectively), Time 1 and Time 3 (3.90 ± .48 vs 4.23 ± .52, respectively), and Time 2 and Time 3 (4.02 ± .49 vs 4.23 ±

.52, respectively) were significantly different. Therefore, students do perceive significant improvements in their self-evaluated teamwork competency scores between the time points.

Test of Statistical Significance for Peer Evaluated Teamwork Competency Scores across Time

A repeated ANOVA with Greenhouse-Geisser correction determined that mean peer-evaluated teamwork competency scores differed significantly between time points ($F(1.77, 304.13) = 41.08$, $p < .05$). Post hoc comparisons of estimated marginal means using the Bonferroni correction revealed that the mean levels in peer evaluation of teamwork competency scores between Time 1 and Time 2 (4.05 ± .43 vs 4.15 ± .42, respectively), Time 1 and Time 3 (4.05 ± .43 vs 4.34 ± .44, respectively), and Time 2 and Time 3 (4.15 ± .42 vs 4.34 ± .44, respectively) were significantly different. Therefore, students do perceive significant improvements in their peer evaluated teamwork competency scores between the time points.

The improvement in the teamwork competencies, scored by self and peer, is a preamble to all other research queries in this study to explore how and why students made improvement in their teamwork competencies over time.

Correlations between corresponding self and peer evaluation of teamwork competencies, for example, both self-score and peer-score of teamwork competencies at Time 1, 2 and 3, are significant at $p < .01$ and the

correlations increased over time: *r* = .38, .65, and .67. This shows that the self and peer ratings of teamwork were getting closer and more similar over time.

Table 15: Correlations between Self and Peer Evaluation of Teamwork Competencies

	Peer-scored Teamwork Competencies T1	Peer-scored Teamwork Competencies T2	Peer-scored Teamwork Competencies T3
Self-scored Teamwork Competencies T1	**.38****	.33**	0.13
Self-scored Teamwork Competencies T2	.42**	**.65****	.41**
Self-scored Teamwork Competencies T3	.32**	.51**	**.67****

***. p < .01*

4.3 Features of How Individuals Negotiate Self- and Peer Feedback

Given my interest in identifying how individuals negotiate self and peer feedback on their teamwork competencies, I took a qualitative investigation of the content of students' reflective journals using NVivo software. The reflective journals provided insights to the ways in which students negotiated self- and peer feedback of their teamwork competencies; how they planned for their next actions following the negotiation of their self and peer assessment, and how successful they were in their actions in response to the self- and peer feedback on their teamwork competencies.

Features of Negotiation

Features of how individuals negotiated self- and peer feedback on their teamwork competencies were derived from the qualitative coding of 519 journals from 173 students. Four categories with 13 codes were identified:

a. Reference to teamwork competencies — conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination;
b. Emotive reaction to peer feedback — positive affect and negative affect;
c. Next actions that following negotiation of self and peer feedback — goal intentions, implementation intentions (how), and implementation intentions (when); and
d. Degree of success of actions —awareness of teamwork performance, awareness of their non-performance, and gap closure.

a. Reference to Teamwork Competencies

Conflict resolution is defined as encouraging desirable and discouraging undesirable team conflict, using an appropriate conflict resolution strategy, and/or employing an integrative win-win negotiation strategy (Stevens & Campion, 1994). Students who were mindful of conflict would also indicate plans or actions taken to resolve conflict; for example, one student explained:

> For the Conflict Resolution KSAs, … I learned that one of the ways to deal with conflict is that we have to learn to keep an open mind, and treat every feedback that our peers give us as an opportunity to improve ourselves, reflect on ourselves and think how we can actually do better instead. In the event if we beg to differ the opposing views, it is vital to talk things out nicely and allow the other party to understand your point of view before we come to a common consensus.

Collaborative problem-solving is defined as utilizing the appropriate type of participation, recognizing the obstacles of collaborative group problems, and implementing appropriate corrective actions (Stevens & Campion, 1994). Students typically applied collaborative problem-solving when they needed to obtain consensus on an issue. For example, one student indicated how he or she would plan for collaborative problem solving as follows:

> For our future adventures, I would like to have a better conversation about where we, as a group, would like to go. My hope is that each of us will come up with 3 different places that they had in mind and then we would decide by attending the one that we all agree on collectively. I believe that this will not only preserve fairness in our decision process, but it will also bring many options to the table. I have a feeling that our next destination will be great if we followed this practice.

Communication is being able to communicate supportively, listen actively and non-evaluatively, and maximize consonance between verbal and nonverbal messages (Stevens & Campion, 1994). Students appeared to be more aware of what good communication traits were after reflecting on their interactions with others. One student revealed:

> It has been pointed out to me that I could afford to be more aware of my non-verbal messages, tonality to be specific. After having put some thought into this, I recognize that my extroverted nature might also be slightly domineering. Unintentionally, I may have come across as disregarding people's feelings or I may not have given my teammates opportunity to talk, due to my loud nature. Now that I have been made aware of this, I will be more discerning when I converse with others. I have to learn to be more gentle in speech, such that I do not appear over-bearing.

Goal setting and performance management is to establish specific, measurable, achievable, realistic and timely (SMART) team goals; to monitor, to evaluate, and to provide feedback on both overall team performance and individual team member performance; and provide good quality contributions (Stevens & Campion, 1994). Apart from observing goal setting and performance management knowledge, skills, and abilities (KSA) in themselves, students were able to notice this KSA in others:

> In our group, Ben [*name has been changed*] did (a) very good job in setting the goal for our GEL (Group Experiential Learning) to ensure we had an enjoyable time. After we decided the location for our first GEL, Ben is the one who came out with a concrete, detail(ed) plan for GEL. He even prepared the map of Chinese garden and researched about

> which of the scenery is the most beautiful and the place that we must visit in the Chinese garden. He also brought us to a nice restaurant in … (an) area that I never expected. He (is) always very thoughtful and bought a mooncake for us especially for Carl [*an exchange student whose name has been changed*] to try."

Planning and task coordination is about establishing task and role expectations of individual team members and ensuring a proper balance of workload in the team; synchronizing activities, information, and task interdependencies between self and team members; and keeping team members informed of one's availability and providing an alternative for unavailability (Stevens & Campion, 1994). When students reflected on planning and task coordination knowledge, skills, and abilities (KSA), many have alluded to as well as cited the definition of this KSA. As one student wrote:

> I would put in considerable effort in synchronizing activities, information, and task interdependencies and keeping team members informed of my availability and provide alternative for unavailability. I would also find out members' preferences, tastes, likes and dislikes so as to come to a group consensus. For example, I can get everyone to send each other our timetables so as to see where we have common free time and or dates to meet up. … Creation of mobile messaging (WhatsApp) group and Google Drive Sharing.

b. Emotive Reaction to Peer Feedback

Students reacted to and reflected on their peer feedback and team interaction with both positive and negative affect. Affect is an "umbrella term encompassing a broad range of feelings that individuals experience, including

feeling states, such as moods and discrete emotions, and traits, such as trait positive and negative affectivity" (Barsade & Gibson, 2007: 38). Moods refer to the global positive or negative feeling that tend to be diffused and not focused on a specific cause (Barsade & Gibson, 2007), such as feeling pleasant (positive) or irritable (negative). Emotions refer to the psychological and physiological sense of being affected emotionally by an event and are target-specific states (Barsade & Gibson, 2007; Frijda, 1988) such as joy (positive) and anger (negative). In this study, affect is used to encapsulate both moods and emotions as expressed by students in their reflective journals.

Positive affect refers to the "extent to which a person feels enthusiastic, active and alert" (Watson, Clark, & Tellegen, 1988: 1063). Positive affect is manifested in one's choice of words for their emotional state in the team interaction, as one student shared:

> It was heartening to see that even though we did not know each other well, we still wanted to make it a good trip for all of us, not just because we had to do it.

Another student also exclaimed:

> I enjoyed every single minute of the day and I learnt that I have to have more trust in my groupmates, especially for the locals, as they brought us exchange students to a magical place!

Negative affect refers to the "extent to which a person reports feeling upset or unpleasantly aroused" (Watson & Tellegen, 1985: 221) and subsumes "a variety of averse mood states, including anger, contempt, disgust, guilt, fear, and nervousness" (Watson et al., 1988: 1063). Like positive affect, these are

manifested in the use of unpleasant emotional words, for example, one student recounted:

> This incident was frustrating for me at that point in time given that I am someone with high uncertainty avoidance. I was irritated since we could not settle on something for a reasonably long period of time.

While another declared:

> I am guilty of Fundamental Attribution Error (FAE) as I wrongly assumed my group members were not looking forward to the outing as much as I was because of their introverted and individualistic personalities.

c. Next Actions That Followed Negotiation of Self and Peer Feedback

Qualitative analyses — by which these students planned their next actions following the negotiation of their self- and peer assessment of their teamwork competencies — elucidated two actions:

1. Goal intentions, which specify what students want to achieve; and
2. Implementation intentions, which comprise the behaviour students would perform in pursuit of their goals.

Goal intentions specify a certain end point or outcome. According to theory of planned behaviour (Ajzen, 1985, 2011; Gollwitzer & Moskowitz, 1996), goal intentions specify a certain end point, be it behaviour or outcome. The act of forming a goal intention provides a sense of commitment that obligates an individual to realize the goal (Gollwitzer, 1999). In their reflection journals on how they would plan for future inter/actions with their team to better their teamwork competencies, students had varying degrees of concreteness in their

plans, which could be as brief as stating a goal: “I intend to be a better team member”. ***Goal intentions*** specify what one wants to achieve (Sheeran, Webb, & Gollwitzer, 2005). These intentions are the “what” of intentions but not the “how” or the “when”.

Research points to several reasons why drawing up a list of personal goals is often ineffective because goals are poorly structured, vague, abstruse, or too distant from the present state to serve as meaningful guides (Austin & Vancouver, 1996). Hence, those who do not develop specific action plans for how they will initiate their goals are ineffective in their goal pursuit (Gollwitzer, 1999). To ensure that goals are effective, recent research suggests that endowing goals with specific implementation intentions can greatly heighten success, because implementation intentions link the desired behaviour with contexts and allow for automatic responding as to how and when to behave to achieve one’s goals (Friedman & Ronen, 2015; Wieber, Thürmer, & Gollwitzer, 2015).

Implementation intentions are “subordinate to goal intentions and specify the when, where and how of responses leading to goal attainment” (Gollwitzer, 1999: 494). Implementation intentions involve specifying the behaviour(s) one will perform in the service of the goal and the situational context in which one will enact the behaviour (Gollwitzer, 1993). Thus, forming implementation intentions increases the likelihood of attaining one’s desired outcomes compared with the formation of goal intentions on its own (Sheeran et al., 2005). With implementation intentions, actions become self-regulated

and there is a conscious intent to direct one's behaviour to facilitate goal progress (Koestner, Lekes, Powers, & Chicoine, 2002) via automatic processes (Gollwitzer, 1993).

Implementation intentions were observed in the students' journals, apparent in the Kolb's experiential cycle modes of abstract conceptualization and active experimentation. Implementation intentions were presented as specific action steps (how) and/or were accompanied by a timeline for fulfilling the intentions (when). Implementation intentions were conceived as a source of commitment for reducing intention-behaviour gaps (Wieber et al., 2015).

Gollwitzer (1993) claims the distinction between goal intentions and implementation intentions rests in the assumption that the latter make a difference. In Gollwitzer's (1993) studies on completion of tasks over Christmas break, goal intentions that were not supplemented with implementation intentions showed rather low rates of completion of the goal-intended tasks. People who fitted out their goal intentions with implementation intentions were comparatively more successful in goal achievement. In the past two decades since Gollwitzer (1993), numerous empirical studies have also demonstrated that forming implementation intentions increases the rate of goal attainment in various domains. Some of these domains are academic (completing assignments), work-related (composing a curriculum vitae), health (establishing a healthy diet and taking vitamin C), or even centred on mundane tasks (collecting coupons) (Friedman & Ronen, 2015; Gollwitzer, 1999; Koestner et

al., 2002; Sheeran & Orbell, 1999; Sheeran et al., 2005; Webb & Sheeran, 2008; Wieber et al., 2015).

From the qualitative analyses of the reflection journals, some students did indicate the "how" and "when" of their intentions. They were specific in how and when they could be a better team member, writing such things as:

> During my next few lessons, I plan to ask my teammates questions like, "How was your day?", "What do you do in your spare time?", "What are the other modules you're taking?" This would be great conversation starters and I could take the conversation further from there.

Such intentions are coded as ***implementation intentions (how)*** and ***implementation intentions (when)*** which involve specifying the behaviour one will perform in the service of the goal along with the situational context and time in which one will enact it (Gollwitzer, 1999).

As demonstrated in their reflection journals, students made goal intentions and/or implementation intentions of varying scope and magnitude.

d. Degree of Success of Actions

Analyses revealed awareness of and closure of gaps related to goal intentions, implementation intentions, and fulfilment of those intentions. The results represent a three-way interaction among self- and peer feedback, and negotiation between self and peer feedback on teamwork competencies.

In instances where students were evaluated to have demonstrated worthy teamwork behaviour, they reported an appreciation of what high quality teamwork actions were — an ***awareness of performance***. For instance, one student revealed:

> I feel I communicate with my group in a supportive way, withholding negativity and judgement. I also actively listen and ask questions engaging all members of the group in conversation. The comments my team left me reflect that I am outgoing and eager to listen and learn from them.

In other instances, students were evaluated to be weaker in certain aspects of their teamwork competencies, and they reported corrective actions and their progress or lack of progress in subsequent journals — an ***awareness of non-performance***. For example, another student wrote:

> I am glad that I was wrong as it has taught me not to quickly stereotype or judge others based on their personality. I was confused at that time and did not understand why my group members behaved in a different way as to what I expected. It affected my decision-making to employ integrative negotiation strategies as I felt like I did not know what would be best for my group members.

In addition to an awareness of the quality of their work or performance, students also "develop(ed) a store of tactics or moves which can be drawn upon to modify their own work" (Sadler, 1989: 119), so as to ***close the gap.*** They reported a repertoire of strategies drawn from their self- and peer evaluation of their teamwork competencies to regulate their teamwork behaviours. As one student shared:

> … based on the feedback provided by my peers, it says that I was quite proactive and took initiative in completing tasks, and was also able to share opinions and knowledge with the team. I think these are all positive feedback that has shown that the active experimentation plan was taking effect.

Another student reflected:

> Open mindset towards others without negative stereotypes — Successful. When I queried others for ideas, I did not have any associations of stereotypes in my head which allowed me to objectively evaluate and review without prejudice.

Converting Qualitative to Quantiative

These qualitative categories and codes were extracted from NVivo software and then converted to quantitative data by counts of frequency for analysis.

4.4 Cluster Profiles of Teamwork Competency Trajectories

I conducted a cluster analysis to determine the empirical configurations of students' teamwork competency as perceived by peers using SPSS two-step procedure. The two-step Cluster Analysis performed on peer feedback scores over three time points yielded two clusters of peer evaluation[4] of teamwork competency.

4.4.1 Cluster Profiles

I refer to these empirically-derived clusters based on peer evaluation of teamwork competencies over time as Cluster H-H (high-high) and Cluster M-H (med-high). The assumption that I labelled M-medium and H-high was based on peer-evaluated teamwork competencies score that M denoted peer scores below four and H denoted peer scores four and above. A one sample test was done to determine if the means of peer-scored teamwork competencies of each empirically-derived cluster at times 1, 2 and 3 were statistically different from the score value of 4. There is a significant difference in mean score between

[4] A two-step Cluster Analysis performed on self-feedback scores over three time points yielded similar trends of two clusters of self-evaluation of teamwork competency with $N = 71$ for Cluster H-H and $N = 102$ for Cluster M-H.

each peer-scored teamwork competencies and the test value of 4 ($p < .05$). Hence, it is appropriate to label the Cluster of M-H with mean peer scores of 3.83, 3.92, and 4.13 as M-H since 3.83 and 3.92 would be significantly lower than 4 and label Cluster of H-H with mean peer scores of 4.37, 4.49, and 4.67 as H-H since all mean scores were significantly above 4.

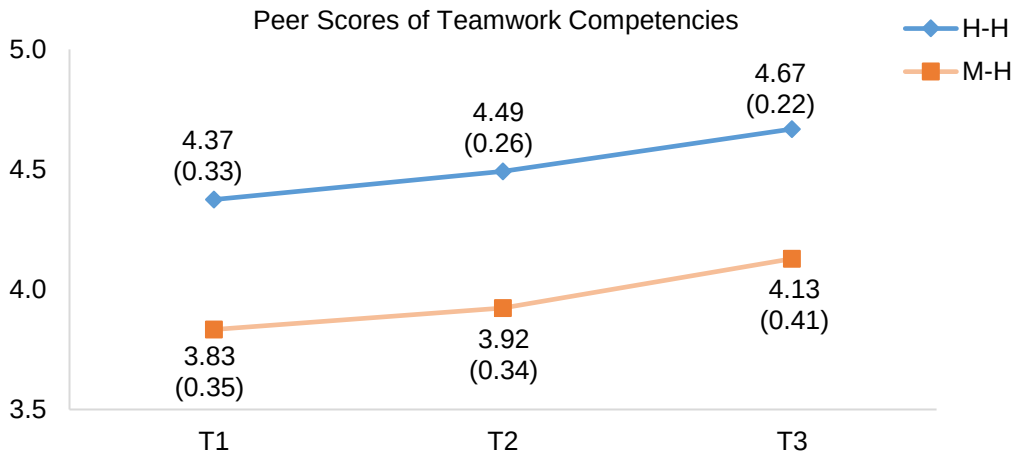
Cluster H-H consisted of 39.3% of students (n=68) and Cluster M-H consisted of 60.7% of students (n=105). Both clusters had upward trajectories of improvement in peer scores of teamwork competencies.

The trajectories of peer scores of teamwork competencies in Cluster H-H and Cluster M-H are shown in Table 16 and Figure 2 below. Both clusters showed significant improvement in mean peer scores of teamwork competencies over three time points ($p < .05$). Between the two clusters, Cluster H-H has a higher average mean than Cluster M-H over three time points. The standard deviation of Cluster H-H has also decreased over the three time points — Time 1= 0.33, Time 2 = 0.26, Time 3 = 0.22 — which meant that students in this cluster have not only improved over time, but the variability in scores within Cluster H-H decreased because the data are clustered closely around the mean peer scores as they hit the ceiling.

Table 16: Cluster H-H and M-H Peer Scores of Teamwork Competencies

Cluster	**Peer Scores of Teamwork Competencies (Time 1)**		**Peer Scores of Teamwork Competencies (Time 2)**		**Peer Scores of Teamwork Competencies (Time 3)**	
	M	***SD***	***M***	***SD***	***M***	***SD***
Cluster H-H *(N = 68)*	4.37	0.33	4.49	0.26	4.67	0.22
Cluster M-H *(N = 105)*	3.83	0.35	3.92	0.34	4.13	0.41

Figure 2: Trajectories of Peer Scores in Cluster H-H and Cluster M-H



Note: Figures in parentheses denote standard deviation.

This data suggests that teamwork competencies can improve over time (Biggs & Tang, 2007) when taught and assessed (Britton et al., 2015; Brutus & Donia, 2010; Brutus et al., 2013; Donia, O'Neill, & Brutus, 2015; Donia, O'Neill, & Brutus, 2018) regardless of how high or low one's initial scores (received from others) were. One of the most recent empirical studies by Donia et al. (2018) also showed that when they extended the peer evaluation from three to six times, and the results showed that all students benefited with equal gains from repeated exposure to peer evaluation of teamwork system regardless of their starting point because "the system revealed gaps that commensurate with each students' starting point" (Donia et al., 2018: 95). With deliberate interventions of self- and peer feedback, negotiation of self- and peer feedback, and reflection on one's teamwork competencies, students can improve their teamwork competencies over time.

4.4.2 Cluster Validation with Multivariate Analyses of Variance (MANOVA)

To examine whether the clusters M-H and H-H differed according to their reported features of negotiation, a multivariate analysis of variance (MANOVA) was performed, using the different clusters as independent variables and the features of the negotiation between self and peer evaluation of teamwork competencies as dependent variables. These features are references made to teamwork competencies, positive and negative affect, implementation intentions (what), implementation intentions (how), goal intentions, gap closure, awareness of performance, and awareness of non-performance. Results indicate a multivariate significant effect $F(27, 145) = 1.77$, $p < .05$. There was a statistically significant difference in the features of negotiation of self- and peer evaluations of teamwork competencies between the two clusters.

4.5 Significant Negotiation Features in Each Cluster

The features of how students negotiated self and peer feedback of their teamwork competencies were curated for the two cluster profiles of the teamwork competency growth trajectories — Cluster H-H (high-high) and Cluster M-H (med-high). Pearson's partial correlation was run to assess the relationships between all negotiation features of each cluster and its corresponding peer-ratings of teamwork competencies at Time 3 after adjusting for peer ratings of teamwork competencies at Time 1. Descriptive statistics and inter-correlations are presented in Tables 17 and 18. The results provide information on the features with the strongest predictive validity of the students' performance at Time 3 after 14 weeks of collaborative teamwork.

4.5.1 Cluster H-H

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***awareness of non-performance at Time 2*** and *teamwork competencies at Time 3*, $r = -.29$ ($p < .05$). The negative correlation could be attributed to the initially high ratings that were given to Cluster H-H students. These students were thus less aware of non-performance issues because they were not pointed out by peers and were not apparent to individuals since they were already demonstrating good teamwork competency to begin with.

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***implementation intentions (how) at Time 1*** and *teamwork competencies at Time 3*, $r = .32$ ($p < .01$). Cluster H-H students were consciously creating implementation intentions for how to achieve their goals at Time 1 following their first peer ratings and comments.

Table 17: Descriptive Statistics and Correlations among Negotiation Features and Peer-rating of Teamwork Competencies at Time 3 (Cluster H-H)

	Controlled for Teamwork Competency Score at Time 1	Cluster H-H (*N* = 68)		
		M	SD	r(TWC3)
1	Negative Affect Time 1	0.76	1.11	0.08
2	Negative Affect Time 2	1.16	1.65	0.04
3	Negative Affect Time 3	1.25	1.45	0.11
4	Positive Affect Time 1	1.91	1.87	0.14
5	Positive Affect Time 2	2.16	2.18	0.23
6	Positive Affect Time 3	3.00	2.87	0.20
7	Awareness of non-performance Time 1	1.53	1.60	-0.20
8	Awareness of non-performance Time 2	2.25	2.21	-0.29*
9	Awareness of non-performance Time 3	1.28	1.39	-0.18
10	Awareness of performance Time 1	1.01	1.29	-0.02
11	Awareness of performance Time 2	2.91	2.23	0.00
12	Awareness of performance Time 3	3.40	2.42	-0.05
13	Goal Intentions Time 1	2.93	1.86	0.14
14	Goal Intentions Time 2	3.04	1.62	0.12
15	Goal Intentions Time 3	2.76	2.12	0.00
16	Implementation Intentions (How) Time 1	1.38	1.45	0.32**
17	Implementation Intentions (When) Time 1	0.51	1.06	0.11
18	Implementation Intentions (How) Time 2	1.37	1.43	0.09
19	Implementation Intentions (When) Time 2	0.46	0.87	-0.06
20	Implementation Intentions (How) Time 3	0.99	1.31	0.15
21	Implementation Intentions (When) Time 3	0.13	0.45	-0.10
22	Gap Closure Time 1	0.01	0.12	0.03
23	Gap Closure Time 2	1.09	0.82	0.17
24	Gap Closure Time 3	1.37	1.17	0.10
25	Reference to Teamwork Competencies Time 1	5.57	4.42	0.04
26	Reference to Teamwork Competencies Time 2	6.71	6.26	-0.04
27	Reference to Teamwork Competencies Time 3	6.25	6.03	-0.06

**. p < .05*
***. p < .001*
TWC = teamwork competencies

4.5.2 Cluster M-H

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***awareness of non-performance at Time 1*** *and teamwork competencies at Time 3*, $r = .35$ ($p < .01$). Cluster M-H students demonstrated awareness of their non-performance, this could be a result of non-performance incidents that were flagged by their peers and acknowledged by individuals after their team had team-based learning at Time 1.

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***awareness of performance at Time 1****,* ***Time 2*** *and* ***Time 3*** and *teamwork competencies at Time 3*, $r = .26$ ($p < .01$); $r = .28$ ($p < .01$); and $r = .26$ ($p < .01$). Cluster M-H students' awareness of their performance showed that those who were consciously looking for performance validation from themselves and others progressed more significantly in their peer score of teamwork competencies at time 3.

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***goal intentions at Time 1*** and *teamwork competencies at Time 3*, $r = .23$ ($p < .05$). Cluster M-H students were intentional in setting goals at Time 1 after receiving peer feedback.

Pearson's partial correlation showed that there was a statistically significant linear relationship between ***gap closure at Time 2*** and *teamwork*

competencies at Time 3, $r = .22$ ($p < .05$). Cluster M-H students tracked their performance and made explicit the gap that was closed between Time 1 and Time 2, following feedback from peers.

Table 18: Descriptive Statistics and Correlations among Negotiation Features and Peer-rating of Teamwork Competencies at Time 3 (Cluster M-H)

Controlled for Teamwork Competency Score at Time 1		Cluster M-H (*N* = 105)		
		M	SD	r(TWC3)
1	Negative Affect Time 1	0.95	1.21	0.11
2	Negative Affect Time 2	1.13	1.31	0.02
3	Negative Affect Time 3	1.74	2.56	-0.16
4	Positive Affect Time 1	1.55	1.70	0.17
5	Positive Affect Time 2	1.83	2.36	0.03
6	Positive Affect Time 3	2.09	2.36	0.08
7	Awareness of non-performance Time 1	1.30	1.55	0.35**
8	Awareness of non-performance Time 2	1.87	1.56	0.03
9	Awareness of non-performance Time 3	1.71	1.82	-0.05
10	Awareness of performance Time 1	0.89	1.55	0.26**
11	Awareness of performance Time 2	2.12	2.31	0.28**
12	Awareness of performance Time 3	2.73	2.87	0.26**
13	Goal Intentions Time 1	2.74	1.82	0.23*
14	Goal Intentions Time 2	2.56	1.53	0.16
15	Goal Intentions Time 3	2.17	1.46	0.07
16	Implementation Intentions (How) Time 1	1.08	1.17	0.09
17	Implementation Intentions (When) Time 1	0.43	0.73	0.15
18	Implementation Intentions (How) Time 2	1.20	1.24	0.16
19	Implementation Intentions (When) Time 2	0.29	0.60	0.10
20	Implementation Intentions (How) Time 3	0.76	1.16	-0.08
21	Implementation Intentions (When) Time 3	0.10	0.36	-0.14
22	Gap Closure Time 1	0.04	0.24	0.08
23	Gap Closure Time 2	0.84	0.91	0.22*
24	Gap Closure Time 3	1.11	1.12	0.16
25	Reference to Teamwork Competencies Time 1	4.42	4.28	0.15
26	Reference to Teamwork Competencies Time 2	6.50	6.25	0.13
27	Reference to Teamwork Competencies Time 3	5.36	5.76	0.18

**. p < .05*
***. p < .001*

TWC = teamwork competencies

4.6 Negotiation Features that Differentiated Teamwork Competency Trajectories

To determine the factors that differentiate the two teamwork competency trajectories, 6 sets of MANOVA were conducted separately using cluster as the independent variable and each group of dependent variables — 1) references to teamwork competencies, 2) affect, 3) awareness of performance and non-performance, 4) goal intentions, 5) implementation intentions, and 6) gap closure. Results on statistically significant and non-significant differences between the two clusters were delineated.

4.6.1 Cluster Differences in Reference to Teamwork Competencies

To examine the cluster differences in terms of the reference to teamwork competencies, MANOVA was conducted using cluster as the independent variable, and reference to teamwork competencies at three time points as the dependent variables. Results indicate that the two clusters were not significantly different in their reported reference to teamwork competencies, $F(3, 169) = 2.18$, $p = .09$

Follow-up ANOVA show that there was also no statistically significant difference between the two clusters for reported reference to teamwork competencies. See Table 19 for the differences in cluster means and standard deviations of reference to teamwork competencies.

Table 19: Differences in Cluster Means and Standard Deviations of Reference to Teamwork Competencies

Features	Cluster H-H (*N* = 68)		Cluster M-H (*N* = 105)		*F*(1,171)	*p*	*ŋ*2
	M	*SD*	*M*	*SD*			
Reference to Teamwork Competencies Time 1	5.57	4.42	4.42	4.29	2.94	.089	.017
Reference to Teamwork Competencies Time 2	6.71	6.26	6.51	6.25	0.04	.837	.000
Reference to Teamwork Competencies Time 3	6.25	6.03	5.36	5.76	0.95	.332	.005

Overall, Cluster H-H students made more reference to teamwork competencies than Cluster M-H students. This could be closely correlated to Cluster H-H students' awareness of teamwork competencies. Cluster H-H students, who also recorded higher awareness of performance, were making reference to their teamwork competencies in negotiating how they have evaluated themselves versus how their peers evaluated them based on the dimensions of the teamwork competencies.

4.6.2 Cluster Differences in Affect

To examine the cluster differences in terms of the reported affect, MANOVA was conducted using cluster as the independent variable, and negative affect and positive affect at three time points as the dependent variables. Results show that the two clusters were statistically not significantly different in their reported affect, $F(6, 166) = 1.39$, $p = .22$.

Follow-up ANOVA shows that positive affect at Time 3 showed significant difference between the two clusters ($p < .05$), see Table 20.

Table 20: Differences in Cluster Means and Standard Deviations of Affect

Features	Cluster H-H (*N* = 68)		Cluster M-H (*N* = 105)		*F*(1, 171)	*p*	*ŋ2*
	M	*SD*	*M*	*SD*			
Negative Affect Time 1	0.76	1.11	0.95	1.21	1.06	.305	.006
Negative Affect Time 2	1.16	1.65	1.13	1.31	0.02	.900	.000
Negative Affect Time 3	1.25	1.45	1.74	2.56	2.08	.151	.012
Positive Affect Time 1	1.91	1.87	1.55	1.70	1.70	.194	.010
Positive Affect Time 2	2.16	2.18	1.83	2.36	0.88	.351	.005
Positive Affect Time 3	3.00	2.87	2.09	2.36	5.23	.023	.030

Cluster H-H students showed more positive affect than did Cluster M-H students because they were already demonstrating high levels of performance of teamwork competencies, affirmed by their peers, at the start of their teamwork experience, and continued to improve over time.

On the other hand, Cluster M-H students did not start off as high in their peer ratings of teamwork competencies. This could explain why they were experiencing and recording more negative affect and less positive affect when compared with Cluster H-H students. Also, Cluster M-H students tend to bring back negative affect about the past to their most recent reflective journal and negotiation of self and peer evaluation of teamwork competencies which could explain why they were consistently more negative. Thus, even at the third reflection journal, while Cluster H-H students were experiencing high positive affect, Cluster M-H students were significantly less positive in their recorded positive affect.

4.6.3 Cluster Differences in Awareness of Performance and Non-Performance

To examine the cluster differences in terms of the reported awareness of performance and non-performance, MANOVA was conducted using cluster as the independent variable, and awareness at three time points as the dependent variables. Results show that the two clusters were statistically significantly different in their reported awareness of performance, $F(6, 166) = 2.33$, $p < .05$.

Follow-up ANOVAs found that only awareness of performance at Time 2 showed statistically significant difference between the two clusters ($p < .05$), see on Table 21.

Table 21: Differences in Cluster Means and Standard Deviations of Awareness

Features	Cluster H-H (*N* = 68)		Cluster M-H (*N* = 105)		*F*(1, 171)	*p*	*ŋ2*
	M	*SD*	*M*	*SD*			
Awareness of Non-Performance Time 1	1.53	1.60	1.30	1.55	0.85	.359	.005
Awareness of Non-Performance Time 2	2.25	2.21	1.87	1.56	1.79	.183	.010
Awareness of Non-Performance Time 3	1.28	1.39	1.71	1.82	2.81	.096	.016
Awareness of Performance Time 1	1.01	1.29	0.89	1.55	0.33	.570	.002
Awareness of Performance Time 2	2.91	2.23	2.12	2.31	4.94	.028	.028
Awareness of Performance Time 3	3.40	2.42	2.73	2.87	2.49	.117	.014

Cluster H-H students showed greater awareness of performance than did Cluster M-H students, and there is significant difference between awareness at Time 2 between the two clusters.

Cluster H-H students were generally more aware of their performance than Cluster M-H students. Such awareness of performance is crucial for taking steps to leverage effective performance behaviour to do better or to consider alternatives to doing well so that one continues to improve over time, as the Cluster H-H students did.

At the same time, awareness of non-performance showed an interesting trend for Cluster M-H. Cluster M-H students reflected lesser on their non-performance than did Cluster H-H students at Time 1 and Time 2 but reflected more on their non-performance at Time 3. Although Cluster M-H students had improved in their peer-scored teamwork competencies over time, they expressed the highest awareness of their non-performance at Time 3. This could be attributed to the summing-up of their awareness of non-performance over time in the last reflection journal for the course at Time 3, a point at which they concluded what they had learned about themselves through negotiation of self- and peer feedback.

4.6.4 Cluster Differences in Goal Intentions

To examine the cluster differences in terms of the reported goal intentions, MANOVA was conducted using cluster as the independent variable, and goal intentions at three time points as the dependent variables. Results show that the two clusters were statistically not significantly different in their reported goal intentions, $F(3, 169) = 2.08$, $p = .11$.

Follow-up ANOVAs found that there was a statistically significant difference between the two clusters for recorded goal intentions at Time 2 ($p = .05$) and Time 3
($p < .05$), see Table 22.

Table 22: Differences in Cluster Means and Standard Deviations of Goal Intentions

Features	Cluster H-H ($N = 68$)		Cluster M-H ($N = 105$)		$F(1, 171)$	p	$\eta 2$
	M	*SD*	*M*	*SD*			
Goal Intentions Time 1	2.93	1.86	2.74	1.82	0.41	.522	.002
Goal Intentions Time 2	3.04	1.62	2.56	1.53	3.90	.050	.022
Goal Intentions Time 3	2.76	2.12	2.17	1.46	4.75	.031	.027

Overall, Cluster H-H students were explicating their goal intentions in their reflections following the negotiation of self- and peer evaluation of teamwork competencies. At Times 2 and 3, there were significant differences in the reporting of goal intentions between the clusters.

Over the three time points, Cluster H-H students were more explicit in making goal intentions in their journals. According to Gollwitzer (1999), the act of forming a goal intention provides a sense of commitment that obligates an individual to realize the goal. If that were the case, then it was more probable that Cluster H-H students were realizing their goals and therefore making good progress with their teamwork competencies.

4.6.5 Cluster Differences in Implementation Intentions

To examine the cluster differences in terms of the reported implementation intentions, MANOVA was conducted using cluster as the independent variable and implementation intentions at three time points as the dependent variables. Results show that the two clusters were not statistically significantly different in their reported implementation of intentions, $F(6, 166) = .72$, $p = .64$.

Follow-up ANOVAs found that there was also no statistically significant difference between the two clusters for recorded implementation intentions, see Table 23.

Table 23: Differences in Cluster Means and Standard Deviations of Implementation Intentions

Features	Cluster H-H (*N* = 68)		Cluster M-H (*N* = 105)		*F*(1, 171)	*p*	*η*2
	M	*SD*	*M*	*SD*			
Implementation Intentions (How) Time 1	1.38	1.45	1.08	1.17	2.33	.128	.013
Implementation Intentions (How) Time 2	1.37	1.43	1.20	1.24	0.67	.415	.004
Implementation Intentions (How) Time 3	0.99	1.31	0.76	1.16	1.39	.241	.008
Implementation Intentions (When) Time 1	0.51	1.06	0.43	0.73	0.40	.528	.002
Implementation Intentions (When) Time 2	0.46	0.87	0.29	0.60	2.31	.130	.013
Implementation Intentions (When) Time 3	0.13	0.45	0.10	0.36	0.19	.660	.001

Across the three time points, Cluster H-H students were explicating their implementation intentions in their reflection following the negotiation of self- and peer evaluation of teamwork competencies. On the other hand, Cluster M-H students' reflection journals revealed lesser implementation intentions than those of Cluster H-H.

4.6.6 Cluster Differences in Gap Closure

To examine the cluster differences in terms of the reported gap closure, MANOVA was conducted using cluster as the independent variable, and gap closure at three time points as the dependent variables. Results indicate that the two clusters were not statistically significantly different in their reported gap closure: $F(3, 169) = 1.91$,

$p = .13$.

Follow-up ANOVA shows that there was also no statistically significant difference between the two clusters for recorded implementation intentions. See Table 24 for the differences in cluster means and standard deviations of gap closure.

Table 24: Differences in Cluster Means and Standard Deviations of Gap Closure

Features	Cluster H-H (*N* = 68)		Cluster M-H (*N* = 105)		*F*(1,171)	*p*	*ŋ2*
	M	*SD*	*M*	*SD*			
Gap Closure Time 1	0.01	0.12	0.04	0.24	0.57	.453	.003
Gap Closure Time 2	1.09	0.82	0.84	0.91	3.35	.069	.019
Gap Closure Time 3	1.37	1.17	1.11	1.12	2.04	.155	.012

Across the three time points, Cluster H-H students were making more references to gap closure than Cluster M-H students were in their reflective

journals. This could be attributed to the higher awareness of performance by Cluster H-H students which made the gap closures more apparent.

4.6.7 Summary

The significant differences in features of negotiation between Cluster H-H and Cluster M-H students were: 1) positive affect, 2) goal intentions, and 3) awareness of performance.

These features of negotiation unveiled some key principles for the cognitive, metacognitive, and affective considerations for engaging in and reflecting on teamwork. Further exploration of each feature and triangulation of the three features is taken up in Chapter 5: Discussion.

Chapter 5: Discussion

5.1 Introduction

Although much progress has been made in the literature on the development of teamwork competencies through self- and peer assessment and feedback, this study has identified three important gaps in this literature.

First, despite the pervasive use of collaborative learning in courses at institutes of higher learning, self- and peer assessment of and feedback on teamwork competencies remain largely for the purpose of moderating an individual team member's team score to ensure distributive justice, because not all contributions are equal and giving the same group assignment grade to all is not just (Clarke & Blissenden, 2013; Kidder & Bowes-Sperry, 2012). This serves more as a check against free riding or dominance conditions by one or a few members of a team, and is typically carried out as a summative assessment (Brooks & Ammons, 2003; Dingel & Wei, 2014; Meyer et al., 2016; Tucker, 2013; Weaver & Esposto, 2012). Recent research to make assessment of and feedback on teamwork competencies formative considered repeated exposures (Boud, 2013; Brutus et al., 2013; Nicol et al., 2014), and hence maturation, of teamwork competencies criteria but missed out on the developmental opportunities for students to rationalise and work on the feedback in depth through reflection and reporting on their experiences.

Second, prior research which included reflective journaling on teamwork experiences (Hobson et al., 2014; Hughes et al., 2008; Kemery & Stickney,

2014; Willcoxson, 2006), was not structured with a theoretical base that premises guided reflection for an internal negotiation between self and peer.

Third, there is a lack of empirical research on the incorporation of an internal negotiation between self- and peer feedback in reflective journals although this could help students to build self-regulatory capacities, to manage feedback, to work on weaknesses, and to leverage strengths to develop their teamwork competencies.

To address these gaps, this study created a methodical pedagogy for the building and development of teamwork competencies in students of higher education so as to equip graduates with the teamwork competencies necessary to function effectively not just in school, but also subsequently in the workplace. This pedagogy included 1) planned interaction opportunities for team members, 2) action to evaluate self and peers based on psychometrically-tested teamwork competencies criteria deployed as rubrics for evaluation and reference in developing teamwork competencies, and finally 3) negotiation of self- and peer feedback for self-reflection in the form of a written reflective journal. Findings of this study — which were based on field data (students working in teams) from multiple sources (self-reported teamwork competencies, peer-reported teamwork competencies, and self-reflection based on negotiation of self- and peer feedback on teamwork competencies), at multiple points in time (three points over a duration of 14 weeks), and across 173 students — largely support this methodical pedagogy, and answer my research questions, which are:

1. Do students improve their teamwork competencies through a cyclical process of internally negotiating self- and peer feedback on their teamwork competencies?

2. In what ways do students internally negotiate self- and peer feedback on their teamwork competencies?

3. What, if any, are the different profile types of teamwork competency growth trajectories in individuals during their teamwork process?

4. What strategies of negotiation do students, in each trajectory cluster, use to improve their teamwork competencies?

5. What distinctive strategies are used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

The findings of this study also contribute to existing knowledge. Here are the contributions in brief, and details are presented in the ensuing sections

First, the use of reflective journals, which in this study was key to understanding how students developed their teamwork competencies, extends prior work and empirical findings that focused on assessment of and feedback on teamwork competencies. The inclusion of ***reflection in the pedagogy of***

developing teamwork competencies provides insights on how students experience teamwork, including their thoughts, feelings, and wants both during and after their team experiential learning sessions.

Second, the reflective journaling modelled after Kolb's (1984, 2016) experiential learning model required students to take an negotiation approach for self-reflection, which in this study is referred to as the ***internal negotiation*** between self and peer evaluation of one's teamwork competencies.

Third, I found that students' reflective journals opened up the black box on how students reflected on their experiences and converted these experience to experiential learning. There were a few key features of negotiation that were found to be useful for guiding students to achieve higher ratings or acknowledgement from peers on their teamwork competencies. These included goal intention, awareness of performance, and affect. Students who were explicit in setting ***goal intentions***, monitoring ***performance***, and labelling ***positive affect***, were found to have a trajectory of improvement that is high to begin with, and scaled higher in their peer-scored teamwork competencies over a 14-week period.

The finding of interactions among these key features of internal negotiation — positive affect labelling, goal intentions, and awareness of performance — is a new contribution to the literature on reflective teamwork processes. ***Affect labelling***, essentially the acknowledgement of emotions, showed that responding to self- and peer assessment and feedback is non-

clinical but an emotive act. ***Goal intentions*** — which refer to future valued outcomes and imply discontent with one's present condition and a desire to attain an object or outcome — are related to affect in that goals set the primary standard for self-satisfaction with performance (Locke & Latham, 2006). Feelings of success, which come from ***awareness of performance*** and/or fulfilment of goals, conjure positive affect and enhanced well-being, which in turn promotes the setting of more goals that reflect personal interests and values (Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 2001).

Taken together, these findings suggest that the use of reflective journal for students to internally negotiate their self- and peer feedback on teamwork competencies can contribute significantly to the body of research on why some students function more effectively (as shown in higher peer-rated teamwork competencies over time) than others. Specifically, students are more effective in building their teamwork competencies when they negotiate their experiences by giving attention to positive affect, goal intention, and awareness of performance.

Educators who wish to use effective pedagogy to develop teamwork competencies in higher education students can model this pedagogical approach. This study has supported the proposed model of negotiating self- and peer feedback on teamwork competencies through the use of written reflection journals and contributed to existing knowledge with implications for practice in the following ways.

5.2 Reflection — Beyond Self- and Peer Feedback

Research Question 1: Do students improve their teamwork competencies through a cyclical process of internally negotiating self- and peer feedback on their teamwork competencies?

Measures of central tendency for self-scores and peer-scores of teamwork competencies over three time points revealed an overall improvement in teamwork competencies for the cohort of students in this study. Correlations between corresponding self and peer evaluation of teamwork competencies are significant at $p < .01$ and the correlations increased and grew in strength over time at r = .38, .65, and .67. These findings suggested that students who have undergone the prescribed cyclical pedagogical model of developing teamwork competencies through a continuous series of team activities, self- and peer assessment, and negotiation of self- and peer feedback via reflection journals do indeed improve their teamwork competencies, and acquire a better alignment between self- and peer evaluation scores of their teamwork competencies over time.

The data of increasing teamwork competencies over time confirmed the findings from many other studies that students' judgments can be calibrated and improved through continuing opportunities for self- (Boud et al., 2015; Nulty, 2011) and peer (Brutus & Donia, 2010; Donia et al., 2015; Nulty, 2011; Willey & Gardner, 2010) assessment and feedback. There are also extant studies that report learning gains through self- and peer assessment and

feedback on knowledge and skills (Hoo & Hughes, 2017; Ion & StÎngu, 2014; Nicol et al., 2014; Willey & Gardner, 2010).

Although feedback can act as a main trigger for engaging in reflective thinking (Nicol & Macfarlane-Dick, 2006), the capacity to reflect is not automatic (Kathpalia & Heah, 2008). Hence, the inclusion of a prescribed written reflection journal is necessary. Current scholarly works of self and peer assessment and feedback on competencies are confined to self-assessment and feedback, or peer assessment and feedback, or a combination of self- and peer assessment and feedback, but they do not include written reflection to bridge, or negotiate, the self- and peer assessment and feedback. Too often, reflective activities are an add-on or afterthought, which takes away the power of repeatedly experiencing, reflecting, thinking, and acting, which are strategic steps in active learning. What is novel in this study is the pedagogical approach that includes reflective practices on self- and peer feedback, an approach that demonstrably improved teamwork competencies.

This study has gone further than the existing scholarly positions on successful outcomes of self- and peer assessment and feedback on teamwork in that it identified conditions that made the processes of teamwork pedagogy richer and more productive, and it extended the existing conceptual and empirical works on developing teamwork competencies in higher education that have not been studied extensively in the realm of self- and peer assessment and feedback.

Implications for Practice

Strengths of this study include its use of self- and peer assessments, its deployment of psychometrically tested instruments (Stevens and Campion, 1994), its application of guided reflection and feedback grounded in educational theories (Kolb, 1984), and its introduction of reflective journal as a tool for negotiation of self- and peer feedback (Moon, 2006). The reflective journal is a useful mechanism for fostering the process-based situated learning (Rogers, 2001; Wilson et al., 2016) of reflecting in action, on action, and for action.

5.3 Internal Negotiation

Research Question 2: In what ways do students internally negotiate self- and peer feedback on their teamwork competencies?

Answers to the second research question of how exactly students negotiate self- and peer feedback on their teamwork competencies were uncovered through the qualitative analysis of 519 written reflective journals from 173 students. Four categories with 13 codes were identified:

1. Teamwork competencies – conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination;
2. Emotive reaction to peer feedback – positive affect and negative affect;
3. Intentions – goal intentions, implementation intentions (how), and implementation intentions (when); and
4. Awareness – an awareness of teamwork performance, awareness of non-performance, and gap closure between intentions and performance.

5.3.1 Reference to Teamwork Competencies

Students need to be aware of what is expected of them so they can adapt their learning strategies to the assessment requirements and thereby improve their performance (Jonsson, 2014). Findings with reference to teamwork competencies delineated in the rubrics for self and peer evaluation suggest that it is possible to convey expectations to students through the use of rubrics

(Jonsson, 2014). Students who participated in this study were appreciative of these expectations and drew on the criteria and standards of teamwork competencies to reflect on and negotiate their self- and peer assessments. With clear criteria set out for what it takes to be competent in the team setting, students were able to focus their energy and effort on teamwork competencies comprising conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination (Stevens and Campion, 1994). This set of five key teamwork competencies forms an expert mental model of teamwork that is useful for guiding the manner in which individuals work collaboratively within a team.

Conflict resolution is defined as encouraging desirable and discouraging undesirable team conflict, using an appropriate conflict resolution strategy, and/or employing an integrative win-win negotiation strategy (Stevens & Campion, 1994). Students who were mindful of conflict would also indicate plans or actions taken to resolve conflict.

Collaborative problem-solving involves utilizing the appropriate type of participation, recognizing the obstacles of collaborative group problems, and implementing appropriate corrective actions (Stevens & Campion, 1994). Students typically applied collaborative problem solving when they needed to obtain consensus on an issue.

Communication is being able to communicate supportively, listen actively and non-evaluatively, and maximize consonance between verbal and

nonverbal messages (Stevens & Campion, 1994). Students appeared to be more aware of what good communication traits were, after reflecting on their interactions with others, and through evaluating self and others.

Goal Setting and Performance Management is to establish specific, measurable, achievable, realistic and timely (SMART) team goals; to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance; and to provide good quality contribution (Stevens & Campion, 1994). Apart from observing goal setting and performance management knowledge, skills, and abilities (KSA) in others, students were able to observe and reflect on this KSA in themselves.

Planning and task coordination is about establishing task and role expectations of individual team members and ensuring a proper balance of workload in the team; it also encompasses synchronizing activities, information, and task interdependencies between self and team members, as well as keeping team members informed of one's availability and providing an alternative for unavailability (Stevens & Campion, 1994). When students reflected on planning and task coordination knowledge, skills, and abilities (KSA), many alluded to as well as cited the definition of this KSA.

The very act of assessing with criteria intrinsically (self-assessment) and extrinsically (peer assessment and feedback) involves application of the criteria, judgment, decision-making, and reflection, which accounted for why students made reference to these teamwork competencies in their reflection

journals. The iterative cycle of completing three identical questionnaires for oneself and three similar questionnaires for each of one's teammates allowed students the opportunity to practise identifying the teamwork competencies. Thus, naming these teamwork competencies and negotiating feedback in respect to them is not surprising. Just as Brutus et al. (2013) asserted "maturation effects" from repeated use of peer feedback, I argue for the possibility that students improve their knowledge on teamwork competencies with repeated use — both giving and receiving — of self- and peer feedback on their teamwork competencies, as well as the resultant negotiation of this self- and peer feedback.

Additionally, developing judgment in assessing one's work requires practice and time. Students' engagement with the expectations and standards or rubrics on which their assessments are based (Andrade, 2000, 2001; Andrade, Du, & Wang, 2008; Jonsson, 2014) helps them to see their own work with sufficient distance and to be able to apply the standards for judgment (Boud et al., 2013) in a "direct authentic evaluative experience" (Sadler, 1989: 119). This accentuates the benefits of asking students to engage with the work of others besides their own with objective criteria and standards; to do so is to equip students to regulate their own learning.

Implications for Practice

For students to effectively assess themselves and others based on a set of competencies, they need to become acquainted with the criteria and standards by first understanding their meanings in the context in which they

would be used, then practising assessing with the criteria and standards as well as receiving feedback based on them.

5.3.2 Emotive Reaction to Peer Feedback

The act of being assessed has considerable emotional resonance (Boud & Falchikov, 2006). Self- and peer assessment of teamwork are not solely cognitive processes, but highly emotive activities that can generate a wide variety of emotions in individuals. Similarly, reflection on peer feedback activates both the cognitive and affective dimensions. For the affective dimensions, both positive and negative affect were displayed in students' negotiation of self- and peer feedback.

Affect is used as an "umbrella term encompassing a broad range of feelings that individuals experience, including feeling states, such as moods and discrete emotions, and traits, such as trait positive and negative affectivity" (Barsade & Gibson, 2007: 38). In this study, affect is used to encapsulate both moods and emotions as expressed by students in their reflective journals.

Positive affect refers to the "extent to which a person feels enthusiastic, active and alert" (Watson et al., 1988: 1063). In this study, positive affect was manifested in students' choice of words (within their reflective journals) for their emotional state in the team interactions. *Negative affect* refers to the "extent to which a person reports feeling upset or unpleasantly aroused" (Watson & Tellegen, 1985: 221) and subsuming "a variety of averse of mood states, including anger, contempt, disgust, guilt, fear, and nervousness" (Watson et al., 1988: 1063). Like positive affect, these unpleasant emotional states were

manifested in the words students used to describe and process their teamwork experiences in their reflective journals.

Despite different trajectories of peer-evaluated teamwork scores, students in both clusters had highly correlated positive feelings across times 1, 2, and 3. This empirically affirmed what Boud and Walker (1998) postulated in their conceptual write-up that positive feelings can lead to self-affirmation, increased self-efficacy and greater clarity in understanding the practice to build a good foundation from the assessment and feedback experience. This, in turn, can stimulate and spur more positive emotive outcomes from assessment and feedback. Indeed, students in both clusters of growth expressed positive feelings in their reflections and continued to do so over time. Such positive affect could be attributed to the progressive growth of peer-evaluated teamwork competencies, which affirmed their teamwork capabilities and generated positive feelings.

Although Lipsett, Harris, and Downing (2011) found that negative emotions inhibit individuals from reflecting on and assimilating their feedback, which will thwart plans for learning and change, this study showed otherwise. Students in this study labelled negative affect in their written reflections, and negotiated self- and peer feedback so as to rationalise the causes and effects of such affect through reflective observation and constructive ideas for what they ought to do next. In fact, the cathartic expression prompted by journal-writing may help students work through their feelings to gain emotional insight (Moon, 2006).

Although self- and peer assessment and feedback seemed transactional, they are in fact emotional practices. A person's emotional state upon receiving peer feedback cannot be dismissed, and they should not. Students labelled and managed their emotions through their reflection and negotiation of feedback. Their ability to label emotions, positive or negative, demonstrates awareness of their affect which, as various psychological and neuroscience research (Brooks et al., 2017; Burklund, Creswell, Irwin, & Lieberman, 2014; Hou & Cheng, 2012; Pennebaker, 1997) has shown, improves mental and physical health. With improved emotional and physical health, students are in a more optimal state to engage with their teams and develop teamwork competencies.

Implications for Practice

Intellectualising and emotionalising reflections are both foundational to encourage students to be candid with their thoughts and feelings so that they can rationalise the way forward to improve the grounds for their reflection.

The learning milieu of the classes in this study accepted the expression of feelings and students were reassured that emotions are a natural part of learning (Boekaerts, 2010). Instead of treating reflection as an intellectual exercise that may leave students in emotional disarray, students were free to "emotionalise" their reflections. They expressed themselves in conditions of trust and safety because they knew that the expression of emotion would not lead to adverse consequences for them (Boud & Walker, 1998). Hence,

students were very open in expressing their emotions, both positive and negative. This is a possible take-up by educators in their classrooms.

5.3.3 Goal Intentions and Implementation Intentions

As proposed by Carless et al. (2011: 405), educators can enhance student capacities for ongoing lifelong learning by supporting student development of skills for goal setting and the planning of their learning.

In this study, students demonstrated the capability to set goals and elaborate on these goals with implementation intentions. When writing in their reflection journals on how they would plan for future actions and interactions with their team to improve their teamwork competencies, students had varying degrees of concreteness in their plans. These degrees of concreteness were observed to include both “goal intentions” and “implementation intentions”.

Goal intentions specify a certain end point or outcome, what one wants to achieve (Sheeran et al., 2005). These intentions are the “what” of intentions, but not the “how” or the “when”. According to theory of planned behaviour presented by Gollwitzer and Moskowitz (1996) and Ajzen (1985, 2011), goal intentions specify a certain end point, be it a behaviour or an outcome. The act of forming a goal intention provides a sense of commitment that obligates an individual to realize the goal (Gollwitzer, 1999).

However, research also points to reasons why drawing up a list of personal goals is often ineffective because goals may be poorly structured, vague, or too distant from the present state to serve as meaningful guides (Austin & Vancouver, 1996). Therefore, people who do not develop specific

action plans for how they will initiate their goals are ineffective in their goal pursuit (Gollwitzer, 1999).

To ensure goals are effective, recent research suggests that endowing goals with specific implementation intentions can greatly heighten success, because implementation intentions link the desired behaviours with contexts and allow for automatized responding for how and when to behave to achieve one's goals (Friedman & Ronen, 2015; Wieber et al., 2015).

Implementation intentions are "subordinate to goal intentions and specify the when, where, and how of responses leading to goal attainment" (Gollwitzer, 1999: 494). Implementation intentions involve specifying the behaviour one will perform in the service of the goal and the situational context in which one will enact it (Gollwitzer, 1993). Thus, forming implementation intentions "increases the likelihood of attaining one's objectives compared with the formation of goal intentions on their own" (Sheeran et al., 2005: 87). With implementation intentions, actions become self-regulated and there is a conscious intent to direct one's behaviour to facilitate goal progress (Koestner et al., 2002) through automatic processes (Gollwitzer, 1993).

Implementation intentions were observed in the students' journals, specifically, in the Kolb's (1984) experiential cycle modes of abstract conceptualization and active experimentation. Students were seen making explicit connections between their current experiences and future experiences, abstracting from specific incidents to plan for implementation intentions as

specific action steps (how), and/or creating timelines for fulfilling their intentions (when). Implementation intentions were conceived as a source of commitment for reducing gaps between intention and behaviour (Wieber et al., 2015).

As demonstrated in their reflection journals, students made goal intentions and/or implementation intentions of varying scope and magnitude. A notable absence in the current literature on reflection of teamwork competencies is this meaningful push from goal setting to implementation intentions to imagined steps that one would take to achieve the goal. This study showed that students do engage in outlining specific steps, which are implementation intentions, to achieve their goals in their reflection journals, and that they should be nudged in this direction for reflecting and acting on their teamwork competencies.

Implications for Practice

Specific instructions on intentions could be built into the reflection journal, particularly in the active experimentation section of the Kolb's (1984) experiential learning model. Students should define the "what", "how", and "when" of their intentions. The "what" of intentions are the goals to improve one's teamwork competencies; the "how" are the behaviours one will perform in pursuit of the goal; and the "when" is the situations or contexts in which one will enact these behaviours.

5.3.4 Awareness of Degree of Success

The findings revealed students' awareness of their quality of performance and/or non-performance of teamwork competencies as well as gap closures, which relate to goal intentions, implementation intentions, and fulfilment of those intentions. Students are aware of their strengths and limitations as they monitor their behaviour in terms of their goals.

When it comes to awareness, students can be "clued-in" and guided to develop the capability to monitor and be aware of the quality of their own work. This capability "to possess an appreciation of what high quality work is, that they have the evaluative skill necessary for them to compare with some objectivity the quality of what they are producing in relation to the higher standard" (Sadler, 1989: 119) can be built through students' negotiation of self- and peer feedback on their teamwork competencies in their reflection journals. In instances where students were evaluated to have demonstrated worthy teamwork behaviours, they reported an appreciation of what high quality teamwork actions were so that they could buttress such actions in future team interactions — this is an ***awareness of performance***. Where they were evaluated to be weaker in certain aspects of their teamwork competencies, students compared and contrasted the observations of their peers with their own (rationalizing, exploring, negotiating) to ascertain the areas in which they did not perform optimally — ***awareness of non-performance***.

While an awareness of performance and non-performance is essential so that students know which areas of teamwork competencies are their strengths and weaknesses, they also need to know how to ***close the gap*** between non-performance and desired outcomes. In this study, students have shown that they "develop(ed) a store of tactics or moves which can be drawn upon to modify their own work" (Sadler, 1989: 119) so as to close the gap**.** They reported a repertoire of strategies they drew upon from their self- and peer evaluations to regulate their teamwork behaviours and competencies. By doing so, students focused their energies on working well with the team than rather than adopting avoidance strategies.

Implications for Practice

The design of the tasks in this study facilitated feedback processes through which students were "pushed" by way of the course requirements to develop capacities in monitoring and evaluating their own learning, and through which they became involved in inner negotiations about learning so as to raise their awareness of quality performance (Carless et al., 2011). Such awareness is a precursor to the next actions of building one's teamwork competencies. This awareness should be primed constantly until it becomes a function of one's habit.

5.3.5 Summary

It is worth noting that the results represent a three-way interaction among self-feedback, peer feedback, and negotiation between self- and peer feedback on teamwork competencies. The curated features of the reflective journals provide reference for educators to guide students in a reflective practice that moves toward a contextual way of engaging with teamwork and developing teamwork competencies through the negotiation of self- and peer feedback. This engagement is contextual because each student, with his or her own cultural values, personality, and background, will have his or her unique experience of and takeaway from teamwork.

Notwithstanding, the following features stood up as pertinent to the cause of developing teamwork competencies via negotiation of self- and peer feedback:

1) Reference to teamwork competencies,
2) Emotional display and management,
3) Exposition of goal intentions and implementation intentions, and
4) Awareness of performance, awareness of non-performance and gap closure between intentions and performance.

The task for educators is to determine how to illuminate these features and integrate them within a guided reflective process modelled after Kolb's (1984) experiential learning model of concrete experience, reflective observation, abstract conceptualization, and active experimentation.

At any stage of reflection, students should be encouraged to make reference to the fundamental traits for assessment and feedback on teamwork competencies so that they address their own and their peers' evaluations of their strengths and weaknesses in some or all of the traits. Teamwork competencies are central to the negotiation exercise. In the reflection stages of concrete experience (reflection-in-action) and reflective observation (reflection-on-action), students should reveal the awareness of their performance or non-performance of their teamwork competencies as they draw upon critical incidents. Writing about their performance or non-performance is important so that students will organise themselves to continue to exhibit good teamwork behaviours and/or work on the areas that need improvement. At the active experimentation stage (reflection-for-action), students should be specific with goal intentions and implementation intentions so that they can close the gaps between their initial intentions and subsequent performance. As for emotional display and management, Kolb's (1984) theory has been criticized for not paying enough attention to context and emotion (Boud, Keogh, & Walker, 1985). Hence, legitimating affect as a crucial component of learning and encouraging emotional display in reflection would complement Kolb's experiential learning theory. The caveat, of course, is emotional display in moderation and with appropriate self-management.

5.4 Strategies for Improving Teamwork Competencies

Research Question 3: What, if any, are the different profile types of teamwork competencies growth trajectories among students during their teamwork process?

Research Question 4: What strategies of negotiation do students, in each trajectory cluster, use to improve their teamwork competencies?

Research Question 5: What distinctive strategies are used by students, who obtained higher teamwork competencies scores, in their internal negotiation of self- and peer feedback on teamwork competencies?

Answers to research questions 3 and 4 provide the premise for discovering the answers to research question 5. Firstly, different profile types or clusters of teamwork competencies growth trajectories among students were identified and named as Cluster H-H and Cluster M-H. From these clusters, I explored the negotiation features of each of these clusters and delved into the distinctive features used by Cluster H-H students, who consistently obtained higher teamwork competencies scores than Cluster M-H students, in their internal negotiation of self- and peer feedback on teamwork competencies.

Cluster H-H and Cluster M-H students were significantly different in these features of their negotiation of self- and peer feedback on teamwork competencies, evident in their reflective journals:

1) labelling positive affect,
2) setting goal intentions, and
3) monitoring performance, specifically, awareness of performance in teamwork competencies.

Cluster H-H students demonstrated greater use of these features in their reflections over three time points as compared with Cluster M-H students. Thus, despite having initial high peer scores of teamwork competencies, Cluster H-H students continued to scale higher in two subsequent peer ratings. I refer to these features henceforth as their strategies to improve one's teamwork competencies.

5.4.1 Labelling Positive Affect

From Transactional to Emotive Assessment and Feedback Practices

This finding is the result of a grounded research approach. It was not pre-meditated but has emerged as a very valuable discovery for this study.

On the surface, self- and peer assessment and feedback are transactional activities in which a person and their peers mutually assess one another and provide feedback on one another's performance. Beyond this transactional practice lies the emotional responses of raters and ratees which are anything but neutral. Assessment literature (Crossman, 2007) identifies emotion as a distraction, and students generally perceive emotions to be inappropriate in their assessment experiences.

Yet one's emotive state upon receiving peer feedback cannot be dismissed. Assessments and feedback are not "unemotional" practices, especially those that involve a critique of one's behaviour and performance over time, as opposed to static work output. The act of being assessed is one that has considerable emotional resonance (Boud & Falchikov, 2006). The literature indicates an interaction between affective issues with students' ability to self-regulate learning (Boekaerts, 2010) and their level of engagement with feedback (Price, Handley, & Millar, 2011). Self- and peer assessment of teamwork are not solely cognitive processes but highly emotional activities that can generate both positive and negative feelings in individuals, especially the latter when there are dissonances between self- and other perception of one's teamwork competencies.

Assessment is indeed an "emotional practice" (Hargreaves, 1998). Students' latent emotions can be dynamically affected by feedback from their peers (Hou & Cheng, 2012). Feelings that emerged from assessment and feedback can aid or distract one from further learning, and can help fulfil or thwart the learning intentions for which the assessment and feedback are planned.

Positive feelings can lead to self-affirmation, increased self-efficacy and greater clarity in understanding the practice (Boud & Walker, 1998) so as to build a good foundation from the assessment and feedback experience. This,

in turn, can stimulate and encourage more positive emotional outcomes from assessment and feedback.

Negative emotions may inhibit recipients from reflecting on and assimilating their feedback which will thwart plans for learning and change (Lipsett et al., 2011). A study by Ilies and Judge (2005) showed that affect mediated substantial proportions of feedback goals, such that participants adjusted their goals downwardly following negative feedback, and upwardly following positive feedback.

Dealing with Emotions from Feedback

Dealing with emotions effectively is an important aspect of our personal, academic, and work lives. One way to handle them is to label them and write them down. The process of writing allows individuals to gain new perspectives on their emotions and to better understand them and their implications. Besides writing thoughts, writing feelings down is also "a help in expressing and transforming them" (Boud & Walker, 1998: 34). In fact, individuals who write about their emotional experiences have a marked increase in their physical and mental well-being (Pennebaker, 1997) because the brain circuit reduces emotional reactivity and thus impact via affect labelling (Burklund et al., 2014; Lieberman et al., 2007), or simply putting one's feelings into words.

Individuals should make sense of and negotiate self- and peer evaluation of their teamwork competencies so that the energy provided by unpleasant emotions promotes their learning and allows them to focus their goals on doing

better. This process allows unpleasant emotional experiences to be seen as new opportunities to learn rather than personal failures. Conversely, it is not sufficient for students to just experience positive feelings. The experience needs to be linked to the questions of what, why, and how were the students effective, such that the experiencing of good feelings leads to the replication and enhancement of appropriate teamwork behaviours.

Cluster H-H students showed more positive and less negative affect in their negotiation than Cluster M-H students. Understandably, Cluster H-H students dealt with more positive feedback given that they were already high-achievers in teamwork competencies at the outset of the study. This is supported by studies that have shown that people generally feel worthy if they successfully attain their goals because doing so promotes “need-satisfying” experiences which are related to feeling competent (Diener, Suh, Lucas, & Smith, 1999; Koestner et al., 2002; Seligman & Csikszentmihalyi, 2014; Sheldon & Houser-Marko, 2001). Hence it is not surprising that Cluster H-H students manifested more positive and less negative affect than Cluster M-H students. In addition, Sheldon and Kasser (2001) and Sheldon and Houser-Marko (2001) found that goal progress result in greater well-being and this enhanced well-being encourages the setting of more goals that reflect personal interests and values. These, in turn, foster goal attainment and enhance well-being. This same point is also discussed in the next key strategy to improve teamwork competencies, indicating goal intentions.

This finding is also significant because despite presenting less positive and more negative affect than Cluster H-H students in negotiating self- and peer feedback, Cluster M-H students continued to make progress in their peer scored teamwork competencies over time. This refutes the findings by Lipsett et al. (2011) that negative emotions inhibit recipients from reflecting on and assimilating negative feedback and could thwart plans for learning and change.

In this study, Cluster M-H students made sense of and responded to their teamwork experiences and feedback in their reflective journals with articulated emotions to overtly describe their affect. This helped them to clarify their thoughts and feelings toward persons or events, and thus to learn from the elucidation rather than being held back by negative feedback and feelings.

The process of giving, receiving, and negotiating self- and peer assessment is an experience for students that is complex and needs to be understood, not viewed simply as a practice to mechanically administer. Given the rich context of self-assessment and peer feedback on teamwork competencies, coupled with the inability of assessment to manage learning emotions and create deep learning strategies, educators can consider written practices such as reflective journaling to be a viable way for individuals to label, respond to, negotiate, and make sense of their experiences and emotions.

Implications for Practice

We know that assessment is not “unemotional” practice especially when it involves a critique of one’s behaviour and performance over time. Self- and

peer assessment of teamwork are highly emotional activities that can generate both positive and negative emotions in individuals, especially the latter when there are discrepancies between self- and other perception of one's teamwork competencies.

The latent emotions in students can be dynamically affected by their peers' feedback (Hou & Cheng, 2012). What is crucial for educators, in briefing and debriefing students in such a highly emotive exercise of self and peer assessment and feedback, is to acknowledge that affective display in reflective journal is acceptable. Educators should further explain that noticing and labelling emotions is a self-awareness capability. Discussing the impact of emotions on one's behaviour in teamwork situations keeps emotions in check so that one can manage affect to work more effectively in teams. At the same time, educators could encourage students to discover and display positive affect by being and staying positive about their teamwork experiences, be these smooth-sailing or challenging.

5.4.2 Setting Goal Intentions

Cluster H-H students indicated more goal intentions than Cluster M-H students in negotiating self and peer feedback by way of reflective journal. According to theory of planned behaviour by Gollwitzer and Moskowitz (1996) and Ajzen (1985, 2011), goal intentions specify a certain end point, be it a behaviour or an outcome. Goals are a key element in self-regulation (Locke & Latham, 2006), which is "an active, constructive process whereby learners set

goals for their learning and then attempt to monitor, regulate, and control their cognition" (Pintrich & Zusho, 2002: 250). The act of forming a goal intention provides a sense of commitment that obligates an individual to realize the goal (Gollwitzer, 1999). Students who set specific goals are more likely to self-monitor their performance in those areas and thus more likely to achieve in their target area (Zimmerman, 2002). This could explain why Cluster H-H students scaled higher in their peer-evaluated teamwork competencies over time — because they indicated specific goals which would help them perform more effectively in teams.

As an extension of the affect labelling strategy to improve teamwork competencies, evidence from the works of Sheldon and Kasser (2001) and Sheldon and Houser-Marko (2001) similarly found that not only does goal progress result in improved well-being, but this enhanced well-being stimulates the setting of more goals that reflects personal interests and values. These, in turn, fuel desire for goal attainment as well as promote and enhance one's well-being. Aligned with this evidence, the findings of this study demonstrated that Cluster H-H students were setting more goal intentions than their peers (in Cluster M-H) and were thus recording more positive affect in their negotiation of self and peer feedback.

Implications for Practice

Goal-setters augment their progress in teamwork competencies against personal interests and values, and thereby report greater positive affect. This finding may have important implications for education settings in which goal-

setting is viewed as a vital mechanism accountable for growth. To help students build and develop their teamwork competencies, students should be encouraged to set goals in the active experimentation section of their reflective journal so that they make a commitment to attain their desired competency outcomes. Students who do not perform as well in their teamwork competencies in the initial peer evaluation could be encouraged to set specific goals targeted at improving their teamwork competencies.

Goal intentions, however, are not always translated into behaviour. So the recommendation is to form implementation intentions of "how" and "when" to help one make a conscious intent with action steps to direct one's behaviour toward fulfilment of the goal(s). Numerous studies have shown the self-regulatory benefits of goal and implementation intentions (Gollwitzer, 1993; Gollwitzer & Moskowitz, 1996; Koestner et al., 2002; Sheeran et al., 2005; Sommer & Haug, 2012), and there is scope for application in the design of the reflective journal. The qualification is that commitment to multiple goals can undermine the effectiveness of implementation intentions because of the perceived difficulty in acting and responding with flexibility (Dalton & Spiller, 2012). Therefore, educators should guide students to start with one or two goals with implemental planning, acting, and monitoring of their goal pursuit(s).

5.4.3 Monitoring Performance

Cluster H-H students had significantly higher awareness of their performance than Cluster M-H students in their teamwork competencies. The

awareness of performance could have been a derivation of self-awareness of one's teamwork competencies as well as peers' awareness of one's teamwork competencies, which were then negotiated in the reflective journal. After all, the results represent a three-way interaction among self- and peer feedback, and the negotiation of self- and peer feedback on teamwork competencies. This capability "to possess an appreciation of what high quality work is, that they have the evaluative skill necessary for them to compare with some objectivity the quality of what they are producing in relation to the higher standard" (Sadler, 1989: 119) is a crucial ingredient of self-regulated learning from which Cluster H-H students have benefited, as shown in their higher teamwork competency scores.

Literature on goal setting and self-awareness also suggests that students who effectively self-regulate are those who have explicit goals and high levels of self-awareness (Locke & Latham, 2006; Ridley, Schutz, Glanz, & Weinstein, 1992). Ridley et al. (1992) demonstrated the interactive influence of two self-regulatory processes — goal-setting and metacognitive awareness — on students' performance within a team. Ridley et al. (1992: 294) defined metacognitive awareness as the "process of using reflective thinking to develop awareness about one's own person, task, and strategy knowledge in a given context". Ridley et al. (1992) also found that the interaction between being asked to set clearly defined goals and a tendency to develop a high degree of metacognitive awareness best facilitated individuals' performance. Interestingly, this draws a parallel comparison between Cluster H-H students' goal-setting capability and their awareness of their performance. The

awareness of performance of teamwork competencies is associated with the students' goals; a goal would not be useful if it were cut off completely from any reflective awareness of the performance.

Conversely, Cluster M-H students reported a significantly lower awareness of their performance, which could be attributed to the less apparent goal intentions in their reflective journals. With less apparent goal intentions, the awareness of performance matched against these goals would undoubtedly be relatively lower than their peers in Cluster H-H.

Implications for Practice

Besides setting specific goals targeted at improving their teamwork competencies, students who do not perform well in their initial peer-evaluated teamwork competencies need to keep their focus on the fulfilment of their set goals. That is, they need to be aware of their performance or non-performance in relation to their goals. Educators could also provide specific feedback after assessing students' reflective journals.

5.4.4 Summary

The unearthing of interactions among these key features of negotiation — positive affect labelling, goal intentions, and awareness of performance — sheds light on their relational complexity, and is a wholly new contribution to the literature on reflective teamwork processes. Goals — which refer to future valued outcomes and imply discontent with one's present condition and the

desire to attain an object or outcome — are related to affect in that goals set the primary standard for self-satisfaction with performance (Locke & Latham, 2006). Feelings of success, which come from awareness of performance or fulfilment of goals, conjure positive affect and enhanced well-being, which promote the setting of more goals that reflect personal interests and values (Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 2001).

I envisage that the internal negotiation of self- and peer feedback on teamwork competencies, which include this triangulation of interlocking components, can be powerful for priming students on the key elements of their internal negotiation strategies of self- and peer feedback on teamwork competencies — label positive affect, specify goal intentions, and monitor goal accomplishment through awareness of performance. Further research can explore how the engagement and interactions of these three features facilitate the development of teamwork competencies over time.

Chapter 6: Conclusion

6.1 Introduction

In this final chapter, I recapitulate the purpose of this study, its relationship with previous studies, and the findings it contributes to empirical knowledge about the use of written reflection journals beyond self and peer feedback on teamwork competencies. Alongside the contributions, I consider implications of this study with attention paid to practice in school for the purpose of equipping graduates for the workplace. Limitations of the study, which provide caution and avenues for future research, are spelled out. Finally, recommendations for future research to enrich, extend or challenge this study are put forth.

6.2 Purpose of the Study

This study is contextualized in an institute of higher learning with the aim of building and developing students' teamwork competencies. Effective teamwork competencies are essential for success in the team-based workplace and their introduction in the school setting is therefore vital. As a course instructor who uses collaborative learning and team projects in my classes, I have a rich platform and an important role to play: to help students develop core competencies, namely, teamwork competencies to function effectively in teams not only in my course and other courses, but ultimately in the workplace. Also, I hope to share this pedagogy with fellow educators at the business school and

with peer reviewers at our five-year on-site accreditation visits to demonstrate that through a self-regulated reflection comprising internal negotiation between self- and peer feedback on teamwork competencies — students can grow their teamwork competencies over time.

6.3 Relationship with Previous Studies and Contributions to Literature

This study draws on the literature of teamwork competencies, self- and peer assessment and feedback, and reflective journaling, then bridges these works with empirical research on the internal negotiation of self- and peer feedback in reflective journals. The corpus of work on teamwork competencies is huge. In this study, the literature search is categorized into three main bodies of literature that centre on 1) the constructs and practices of teamwork competencies, 2) the agentic assessment of and feedback on teamwork competencies, and 3) the reflective practice of teamwork competencies in higher education.

Through the reviewed constructs and practices of teamwork competencies, the widely used Stevens and Campion (1994) measures of teamwork competencies were adopted as the criteria by which students would rate themselves and their teammates. For pragmatic operationalization in the classroom, I considered this set of pre-determined and validated teamwork competencies ideal for deployment in teaching, measuring and assessing teamwork competencies in the curriculum. These competencies serve as a means and not an end because, more importantly, it is how students engage with and develop teamwork competencies that matters.

The next body of literature to address was the agentic assessment of and feedback on teamwork competencies. In this study, the agents were the student, peers and teachers. In essence, beyond the cognitive test of teamwork knowledge, the teacher's role in direct assessment of and feedback on teamwork competencies is limited because most teamwork takes place outside the classroom and is therefore not observable by the teacher. However, the teacher can provide scaffolding for observable self- and peer assessment of and feedback on teamwork competencies. With a deliberate intervention of self- and peer assessment and feedback on teamwork competencies, the measures and results can be collected for various purposes — to deter social loafing and domineering behaviour in individuals, and ensure distributive justice of team project grades (Goldfinch, Raeside, Judy, & Robert, 1990; Conway & Kember, 1993; Cheng, Warren, Winnie, & Martin, 2000). It is also reported that increased exposure to the teamwork competencies through assessment and feedback (Donia et al., 2015; Donia et al., 2018) can help students improve their teamwork competencies and at the same time build self-efficacy in evaluating others. These benefits of self- and peer assessment and feedback then draw me to question what students' thoughts, feelings, and wants are in the process of assessing their peers and getting feedback from them. This led me to the third body of literature on reflective practices of teamwork competencies, with the aim of exploring how the students' thoughts, feelings, and wants can be codified and explicated.

Theories of reflection on experiences by Dewey, Schön, and Kolb were explored to judge against the reflective practices of teamwork competencies. Four works (Chen et al., 2004; Hobson et al., 2014; Hughes et al., 2008; Kemery & Stickney, 2014) with prescribed reflection to bridge the higher education students' experiences of self- and peer evaluation on teamwork competencies were studied. Gaps discovered in these studies were filled by this study in the following two ways: 1) ensuring that identical teamwork competencies were used throughout the experiment so that there were multiple exposures to the same criteria and students could learn through practice; 2) using an internal negotiation approach to reflect on self- and peer feedback so that the practices of reflection-in-action, reflection-on-action and reflection-for-action could be deployed systematically through the use of a written reflection journal.

This current study shares a similar goal with studies of dialogic feedback (Ajjawi & Boud, 2017; Beaumont et al., 2011; Crimmins et al., 2016; Nicol, 2010; Yang & Carless, 2013) which is to reconcile the different perspectives of students, peers and/or teachers in the feedback process to promote independent learning. While the goal is similar, the mode and process are different.

With the exception of Yang and Carless (2013) which is "assessment-free", that is, not specific to the types of assessment, the other works on dialogic feedback (Beaumont et al., 2011; Crimmins et al., 2016; Nicol, 2010) are

centred on written assignments. In contrast, this current study looks at assessment of manifested behaviours — teamwork competencies.

In a recent work, Ajjawi and Boud (2017) looked into feedback in the written mode, which preserves face in an exchange that can be face-threatening for the tutor and student. In their study, tutor and student engaged feedback dialogues via written text. Similarly, in this current study, students received feedback from themselves and their peers to start an internal negotiation to evaluate strengths and weaknesses.

As for process, my study takes a similar cyclical approach to the Beaumont et al. (2011) dialogic feedback cycle of three phases for teamwork interactions, rather than an assignment. The phases are: 1) preparatory guidance with knowledge of criteria of assessment of teamwork competencies; 2) in-task guidance, which is teamwork in my study, with peer assessment and feedback; and 3) performance feedback, from peers, which was standards-related and served as action points to feed forward to preparatory guidance. The cycle continues to scaffold the development of independent learning through peer assessment and final performance feedback. I have also extended another link between Phase 3 performance feedback and Phase 1 preparatory guidance: to include reflection on post-performance feedback so that action plans can be created to feed forward to the preparatory guidance phase. The explication of reflection upon receiving feedback is emphasized in my study.

Similarly, Crimmins et al. (2016) make the reflective mode a key element in their study to examine higher education students' and teachers' experience via a written feedback (W) on an argumentative essay, reflection on the feedback (R) and dialogic feedback in a face-to-face consultation (DF) between student and tutor, known in short as WRDF strategy. My study takes on the reflective element of the model as students take into account the feedback from themselves and their peers on their teamwork competencies and, reflect on and document their learning takeaways in a written journal. As acknowledged by Crimmins et al. (2016), there is a time restriction for the dialogic feedback, of which I have taken heed, and hence my study builds on an internal negotiation between self- and peer evaluation of one's teamwork competencies that does not depend on another person's availability for dialogue, as was the case in Crimmins et al. (2016) study which was dependent on the tutor's schedule for consultation. In this current study, the mode of dialogic exchange is an internal process of negotiation between self- and peer feedback that can take place at any time and in any place, without a physical or virtual space and time requirement of teacher-student, or peer-to-peer dialogic feedback.

To ensure that there is opportunity for practice in using the feedback from others, Beaumont et al. (2011) and this current study offer a cyclical approach so that data can be obtained on students' improvement after feedback, while Crimmins et al. (2016) had no data beyond the one-time mandated reflection and consultation with the tutor. I have thus curated very useful components from the works of Beaumont et al. (2011) and Crimmins et al. (2016) to create a pedagogical model of developing teamwork competencies

in higher education students. Yet there is one aspect of assessment that I could not locate in these works, and that is the role of emotions in assessment and feedback.

Yang and Carless (2013) recognized the emotion dimensions of feedback practices. They recommended a triangular framework of feedback that sought to analyse feedback practice coherently in order to promote dialogic feedback and foster self-regulated learning. This feedback triangle focused on the content of feedback (cognitive dimension), the interpersonal negotiation of feedback (socio-affective dimension), and the organisation of feedback (structural dimension). While there is a huge corpus of work on the cognitive and structural dimensions of feedback, the body of work on the social-affective dimension of feedback pales in comparison. Assessment and feedback are highly emotional activities. Sensitivity to students' emotional responses and psychological needs, which go beyond the intellectual needs of the feedback content within a planned formative feedback structure, should be taken into account in the design of assessment and feedback. In this current study, the research findings have shown that labelling affect has positive implications for how students reflect on their teamwork experiences and improve their teamwork competencies.

6.4 Contributions to Empirical Knowledge

There are three key contributions to empirical knowledge around the process of self- and peer assessment of and feedback on teamwork

competencies. One, an internal negotiation process is applied to reconcile self- and peer perspectives on one's teamwork competencies. Two, written reflective journal is introduced following self- and peer feedback, which uncovered key features of how students respond to feedback to develop their teamwork competencies. Three, the employment of and interaction among key features of journaling — positive affect labelling, goal setting, and awareness of performance — are important strategies for improving one's teamwork competencies.

6.4.1 Dialogic Feedback as an Internal Negotiation Process

In this current study, the approach to dialogic feedback is distinct from reviewed studies on dialogic feedback in two main aspects: 1) task versus inter- and intra-personal management and performance, and 2) internal negotiation of feedback from self and others within self- versus dialogic feedback, which takes the form of dialogue between teacher and student, and peer and peer.

Empirical studies on dialogic feedback (Beaumont et al., 2011; Crimmins et al., 2016; Nicol, 2010) have been centred on feedback dialogue with teacher or peer on performance of written assignments. In contrast, the focus of feedback in this study goes beyond task performance to encompass internal processing of feedback within oneself on assessment of interpersonal and intrapersonal management.

This inner negotiation is conducted through an internal discourse of negotiating self- and peer feedback on teamwork competencies for the purpose of building understanding that goes to the heart of the inner reflective process. Reflection on one's teamwork skills through self- and peer assessment and feedback are explicit feedback loops built in this study to enable students to compare and contrast useful information about their teamwork competencies, and to act on this information.

Carless et al. (2011: 397) define dialogic feedback as "an interactive exchange in which interpretations are shared, meanings negotiated and expectations clarified". I gave emphasis to the term "meanings negotiated". "Negotiation" in this study took the form of an intra-personal self-awareness process to reconcile perspectives from oneself and one's peer on one's teamwork competencies. Negotiation can centre on shared or opposed views as Fisher and Ury (2011) suggest, so one takes cognitive and discursive approaches to processing compatible and incompatible information from self and peer feedback.

6.4.2 Written Reflective Journal and Key Features of Negotiation

An essential element of the methodical approach to develop teamwork competencies in this study, written reflective journaling was introduced to capture the key features of students' learning through their negotiation self- and peer feedback. Students wrote in their journals about their experiences negotiating their self- and peer feedback on teamwork competencies at three time points, each time after receiving feedback.

These written reflective journal surfaced interesting features of students' learning through a three-way interaction among self-feedback, peer feedback, and negotiation between self and peer feedback on teamwork competencies. These empirical ground-up features were:

1) Teamwork competencies - conflict resolution, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination;
2) Emotive reaction to peer feedback — positive affect and negative affect;
3) Intentions — goal intentions, implementation intentions (how), and implementation intentions (when); and
4) Awareness — an awareness of teamwork performance, awareness of non-performance, and gap closure between intentions and performance.

These features, derived from the written reflective journals of students of higher education students, helped them to rationalise and develop their teamwork competencies over time.

6.4.3 Three Key Negotiation Features to Improve Teamwork Competencies

Of interest in this study was ***how*** students continue to improve their teamwork competencies over time. The discovery of interactions among these key features of negotiation in high teamwork-performing students — labelling positive affect, setting goal intentions, and monitoring performance — is a new contribution to the literature on reflective teamwork processes. Goals are related to affect in that goals set the primary standard for self-satisfaction with performance (Locke & Latham, 2006). Although Pintrich and Zusho (2002: 250) define self-regulation as "an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition", this current study extends from the regulation of cognition to the regulation of affect. Feelings of success from awareness of performance or fulfilment of goals conjure positive affect and enhanced well-being which promotes the setting and monitoring of more goals. These goals often reflect personal interests and values (Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 2001) which intrinsically motivates students to achieve them.

This interactive triangulation can be powerful for priming students on the key elements of their strategies for negotiating self- and peer feedback on teamwork competencies — label positive affect, specify goal intentions, and monitor goal accomplishment through awareness of performance.

6.5 Implications for Practice

From a practical standpoint, the findings from this study have important implications for teamwork practices in higher education. Systematic effort devoted to the development of teamwork competencies in university curricula calls for developing teamwork competencies crucial for workforce readiness. This study exemplifies a methodical approach with demonstrated findings about the approach and answers the question that students do improve their teamwork competencies through the cyclical process of internal negotiation of self- and peer feedback on their teamwork competencies.

The methodical pedagogy that encompassed internal negotiation of self and peer feedback through written reflective journal was effective in developing teamwork competencies through interaction, action, and negotiation. The framing of assessment and feedback in this methodical way offers a concrete and explicit way of clarifying the distinct roles of assessment design, standards, and feedback (Tan, 2013). Beyond the undergraduate setting, researchers and educators can attempt to replicate and extend this methodical approach to other courses in both undergraduate and graduate programmes.

I have mentioned the implications for practice in Chapter 5 following each research question. Synthesizing these implications, I propose the following ***guidelines to aid reflection-in-action, reflection-on-action, and reflection-for-action for a written reflective journal*** that have served the students in this current study well:

5) Make reference to teamwork competencies,
6) Label affect so as to manage emotion,
7) Set one to two goals and be specific with implementation intentions, and
8) Monitor performance of intentions to ensure gap closure between intentions and performance.

These guidelines necessitate students to use metacognition, the awareness and understanding of one's own thought processes, to improve the quality of feelings, thoughts, and actions and the relationship among them so as to set realistic goals for teamwork competencies and to achieve them. Not meant to be a mechanistic response to educators' instruction, these guidelines are means to support students in productive ways to guide them to use feedback from themselves and their peers to develop their learning and to improve their embodiment of teamwork competencies.

For instance, a ***new design*** to develop teamwork competencies in higher education could embrace the above guidelines for reflective journaling (make reference to teamwork competencies, label affect so as to manage emotion, set one to two goals and be specific with implementation intentions, and monitor performance of intentions to ensure gap closure between intentions and performance) and give ***autonomy and flexibility*** to students. While this current study stipulated the timeline for giving feedback to and receiving feedback from peers, followed by reflective journaling; a new study design could experiment with giving students autonomy to plan for the number of times and when they give and receive feedback, and the number of reflective

journals to write. There could also be time flexibility in journal submission. Such a plan could be submitted as a learning contract to the instructor within the first few weeks of the course. It will be novel to see how students plan for their learning and development of teamwork competencies, and to evaluate the plan in terms of the degree of success in facilitating their learning and development.

6.6 Limitations of the Study

Despite the strength of the methodology that guided students to progress in their teamwork competencies, this study has limitations that provide both avenues and caveats for future research.

First, the systematic methodology which has shown to be successful in improving teamwork competencies in this current study — self- and peer assessment and feedback, and negotiation of self- and peer feedback — could be dissected to examine the isolated effects of self-assessment and feedback, peer assessment and feedback, and negotiation of self- and peer feedback. In this current study, the accomplishment of improved peer-evaluated teamwork competencies scores over time is attributed to the total method and not its parts. Future studies could differentiate the interventions by introducing control groups and assessing the effects of each intervention on different groups.

Second, the design of this current study is based on a course taught and coordinated by me, the researcher. The results could be a function of teacher effects in terms of the feedback and interaction with students, and there could be teacher-level variance in student outcomes if there were other instructors. To ascertain the generalizability of my results, future studies could attempt to replicate my design, and track students' performance in teamwork competencies across different courses and in different teams.

Third, in studying the features of negotiation of self- and peer feedback, my study inherently presumes that students are capable of expressing their thoughts in written words in their reflective journals. The cohort of students comprised local and exchange students. Some exchange students did not have English as the language of instruction in their home universities but were assumed to be capable of expressing their feelings, thoughts, and wants in writing nonetheless because they were admitted to this University, which uses English as the language of instruction. By the same token, not all local students would have a flair for writing or expressing their thoughts and actions in English. To address this concern, a control variable for English language proficiency could be included in future studies, and the study could also be replicated in other languages.

The context in which this research took place was that of a university, and not an organisation, so it does raise questions about the extent to which the outcomes of this study can be transported to workplace settings upon graduation. The stakes at the workplace are definitely higher than in the university setting; in the workplace, evaluation can have more far-reaching effects on one's career while in the university, a team-based project may be within a shorter time frame and evaluation in this current study had no adverse effects other than account for a fraction of the course grade. So, it would be interesting to investigate if the effects observed in this current study carry over to organisational teams where "accountability, impact, and team longevity are greater" (Brutus et al., 2013).

6.7 Recommendations for Future Research

This research offers insights into the realities of reflective education and has currency for educators committed to the pedagogy of experiential learning through negotiation of self- and peer feedback through the use of reflective journaling. A reflective and strategic stance toward learning is thus recommended in higher education classrooms. Rather than taking self- and peer assessment as ends in learning, the valuable feedback from self- and peer assessment is a great means for deliberation, negotiation, learning, and growth. Though this study focused on building teamwork competencies, the methodology can be situated within a larger or differently focused endeavour to build other competencies.

To help our graduates thrive in a landscape characterized by globalization, changing demographics, and an increasing need to work in teams, this study sheds light on how institutes of higher education can build and develop teamwork competencies as well as other 21st century competencies to help our students embody the desired outcomes of education (Ministry of Education, 2015) including social and emotional competencies — self-awareness, self-management, social awareness, relationship management, responsible decision making, cross-cultural skills, critical thinking, communication, and collaboration skills.

The methodical pedagogy introduced in this study includes students' team interaction in prescribed synchronous and asynchronous class activities,

such as team experiential outings, team project presentations, and other team activities within the course. Post-action took the form of self- and peer assessment and feedback on teamwork competencies modelled after Stevens and Campion (1994, 1999). Through teamwork, students learn to communicate and collaborate with others in regard to these competencies — conflict management, collaborative problem-solving, communication, goal setting and performance management, and planning and task coordination. In this current study and in future studies where teammates are of diverse nationalities, ethnicities, cultural backgrounds, and professional specializations, there are also opportunities for students to hone their cross-cultural and relationship management skills. Students develop self-awareness through feedback from others and from themselves, and then critically think about how they can reconcile the different perspectives and ideas through a process of internal negotiation.

The internal negotiation about self- and peer feedback, codified in written reflective journals guided by Kolb's (1984) experiential learning model, requires students to be self-directed learners — to self-manage and make responsible decisions about how to work on perceived weaknesses and leverage strengths to work more effectively with others in the workplace. In short, the measures of competencies are domain-free whether they are teamwork, social, or emotional competencies, as long as a methodical approach of internal negotiation between self- and peer feedback through written reflective journaling allows students to engage with and codify their experiences.

New research directions can be outlined on the nuanced interpretations of negotiations of self and peer feedback in written reflective journals and the potential to more thoroughly assess the influence of interactions among features of negotiation of self and peer feedback on other competencies. The interactive triangulation of teamwork competencies that reflection features — positive affect labelling, goal intention specifications, and awareness of performance — could be determining factors for how some students progress well in their teamwork competencies over time. Future research can take this on and explore how the engagement and interactions of these three features facilitate the development of teamwork competencies over time.

The framing of assessment and feedback in this methodical way offers a concrete and explicit way of clarifying the distinct roles of assessment design, standards, and feedback (Tan, 2013). Beyond the undergraduate setting, researchers and educators can attempt to replicate and extend this methodical approach to other courses in both undergraduate and graduate programmes to build teamwork competencies and other 21st century competencies for a team-ready workplace.

My vision for this study is to provide a rich and comprehensive methodology for developing teamwork competencies for students in higher education so as to prepare them for a team-based workplace. The current study is intended to elucidate evidence-based practice useful to scholars and practitioners. More importantly, this study aims to offer my students a stimulating experience of engaging in teamwork, making meaning from their

experiences, learning about and improving their teamwork competencies through their own interpretations and feedback from their peers, and negotiating multiple sources of feedback and divergent perspectives before acting on them. I carry the hope that scholars and practitioners who share this vision will test the applicability of the methodology in other contexts and facilitate deeper understanding on how to develop teamwork competencies in higher education.

At the end of the day, we want to equip students, “in the absence of the artifice of the university” (Tai et al., 2017: 10), for a global workplace, which hinges on effective teamwork.

APPENDICES

Appendix A: Sample of Student's Journal and Instructor's Assessment

Sample of Student's Journal

Name : Sample of Student's Journal 2 Seminar Grou : x Date : 10/10/2016

Complete the following once you received your peers' evaluation of your teamwork competencies.

INTERPERSONAL COMPETENCY – Knowledge, Skills, Attitude (KSAs) (1) Strongly Disagree; (2) Disagree; (3) Neither Agree nor Disagree; (4) Agree; (5) Strongly Agree	**Self 1** (Score)	**Peer 1** (Score)	**Self 2** (Score)	**Peer 2** (Score)
Conflict Resolution KSAs 1. The KSA to encourage desirable and discourage undesirable team conflict. 2. The KSA to use an appropriate conflict resolution strategy. 3. The KSA to employ an integrative (win-win) negotiation strategy.	4	4	4	5
Collaborative Problem Solving KSAs 4. The KSA to utilize the appropriate type of participation. 5. The KSA to recognize the obstacles to collaborative group problem solving. 6. The KSA to implement appropriate corrective actions.	5	5	5	5
Communication KSAs 7. The KSA to communicate supportively. 8. The KSA to listen actively and non-evaluatively. 9. The KSA to maximize consonance between verbal and nonverbal messages.	5	4	5	5
SELF-MANAGEMENT COMPETENCY – Knowledge, Skills, Attitude (KSAs) (1) Strongly Disagree; (2) Disagree; (3) Neither Agree nor Disagree; (4) Agree; (5) Strongly Agree	**Self 1** (Score)	**Peer 1** (Score)	**Self 2** (Score)	**Peer 2** (Score)
Goal Setting and Performance Management KSAs 10. The KSA to help establish specific, measurable, achievable, realistic and timely (SMART) team goals. 11. The KSA to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance. 12. The KSA to provide good quality contribution.	4	4	4	5
Planning and Task Coordination KSAs 13. The KSA to establish task and role expectations of individual team members and to ensure proper balance of workload in the team. 14. The KSA to synchronize activities, information, and task interdependencies between self and team members. 15. The KSA to keep team members informed of one's availability and provide alternative for unavailability.	5	5	5	5
Qualitative Feedback **Strength** - He's gives good feedback during discussions. - Task oriented and contributes to the project - Able to provide useful opinions and feedback **Areas to Improve** - He could be more responsive during mobile discussions. - Is sometimes too hasty in completing the task. Can be more patient				

- Engage more in team activities

1. Concrete Experience

Describe critical incident(s) that took place.

Note: A critical incident is an incident which has significance for you in learning about teamwork competencies. It is an incident which has had a significant impact on your learning of teamwork competencies. It may have made you question an aspect of your beliefs, values, attitude and/or behaviour in relation to teamwork.

Throughout this reflection I will be focusing on the teamwork my group demonstrated during the competition of the synopsis for our film.

Setting meeting time.
The first critical incident for this task was the process of arranging a meeting for us to work on our synopsis. As a team, we decided that it would be best if we all met in person and sat down to brainstorm and complete our task. We used our mobile group discussion to pick a day and arrange a time that we could all attend. This was an easy scheduling and all were able to meet during the day in the North Spine food court.

Completion of work.
We set an hour and a half of work time to get a start on our synopsis. Upon all of our arrivals we took to reviewing our task and brainstorming what was expected of us and how we could best accomplish our tasks. We kept our meeting conversational and let our ideas flow, bouncing ideas off of each other and recording what we agreed upon. We agreed on a satisfying plot line and completed our synopsis in that hour and half. We concluded our meeting in contentment and shared accomplishment.

Revising work
Upon the reception of our grade we decided that we wanted to revise our summary. With the added guidance provided, we believed that we would be able to achieve a higher grade. Again using our group messaging as our main communication tool we decided that we would work collaboratively online to revise our synopsis rather than setting another formal meeting. This provided beneficial as we were able to come together again, add some retouching and submit our summary again. This time receiving a better more reflective grade.

2. Reflective Observations

a. Describe your thoughts and your feelings to the critical incident(s) and the team experience thus far.

Setting a meeting time
I have been very impressed with our team's ability to set up events and meetings thus far. I am grateful that our all of the members in the group are very accommodating and understanding of the importance of us all being able to attend meetings. I think it is this flexibility as well as the communicational strengths of the team that has allowed us to be so productive thus far. I have no doubt that in our future filming that the team will be able to set a large period of time to work on producing our best piece possible.

Completion of work
I think that the process of completing our synopsis has been one of our most critical experiences, in regards to team work. I was impressed with the team's ability to focus on our task and to maintain efficient work time. All parties were attentive and mentally present at the meeting, there were no major distractions or lulls in our effort. We all had a part in the creation of our plot line, one person would propose an idea and the others would either agree or alter their

suggestion, this happened back and forth for the entirety of the creation. We even took turns typing and researching more information. There was not a clear leader in our group, however I took it upon myself to keep driving the group forward and to stay on task. I think it was this motivation that one of my group members commented on in my areas to improve, but I will talk more of this in the next section.

I also enjoyed this aspect of our assignment because I had originally been mostly unaware of the national framework of Qatar. We specifically focused on the family and marital systems and I was able to learn more about both Qatar and Singapore.

Revision
I would say that our group consists of prudent and driven students and when received our initial grade of a B, there was a group consensus that we could have done better. Considering we were given the option of revision it was a no brainer that we would capitalize on such opportunity. As I mentioned earlier we decided that we would be able to facilitate a revision using online communication. This actually worked well for us as a team. We were all able to contribute smaller changes that in turn led to a better piece of work. I am happy with the way our team completed this deliverable in whole.

b. Compare and contrast the teamwork competencies scores and comments provided by self and your peers.
Note: Refer to the rubrics on page 1

What are your learning takeaways?

From my teammates, I received scores of all 5's. This is a nice and rewarding realization that my peers respect me and my abilities. Their scores ranked higher than mine in two KSA's, conflict resolution and performance management. It is humbling to see that my teammates think that I am proficient in these regards. I can sometimes be a bit critical on myself but I am working to achieve a better understanding and acceptance of myself. These scores reaffirm to me that I am capable and exude these skills. Though I was rated as a 5 in these areas, I do still recognize that there is improvement to be had in the regards of goal setting and conflict resolution.

I would also like to address my areas of improvement from my peers. Though my peers had some very constructive advice, it was not representative in my KSA grading. This leads me to believe that my teammates were trying to demonstrate to me that though they think am I am capable of achieving these KSA's, but there are still areas in which I should focus more of my energy on. These areas include being more active in group conversations and allowing creative processes to take place. This is very valuable to me and certainly an important learning takeaway.

c. How successful was your application of active experimentation plan devised in Journal One?

In my first reflection I focused my active experimentation on the implementation of our next GEL experience and not on our next meeting in general. Though I had a different focus in my first active experimentation some of the concepts hold true. The main points that I included were that I wanted our team to be more structured and hold stronger opinions to achieve better success. To my delight this has actually begun to come to fruition. I felt that the team was much more structured in our approach to setting a meeting time as well as demonstrating our opinions. As I mentioned earlier, we used a very open and brainstorm like approach to complete our synopsis. This process was so successful for us because we all shared our opinions strongly. If a member of the group had a problem or a suggestion on how to supplement someone else's idea, they respectfully brought it to everyone's attention. Our team members used both direct and indirect communication to create an effective communicative space. For example, team members used more indirect language to lobby suggestions where as more direct communicational efforts

when expressing approval. This was very effective in our team as it allowed us to generate a common consensus in our group.

I believe the success of our group has to do with both our reflection of our active experimentations as well as the context and focus on our task. Considering we were focusing on an academic task, everyone had more at stake and were more "bought in" to the whole situation. As the weeks go on we also continue to grow more comfortable and understanding of each other.

3. Abstract Conceptualization

Based on what you have learned about your teamwork competencies from self and peers, suggest what you would have done (a) differently and (b) similarly?

I will start with what I would like to continue doing. I think that I bring an understanding leadership presence to the group. I am able to keep the group on task, stimulate conversation, and delegate as necessary. I think that these are leadership characteristics that I embody strongly. Considering my teammates comments, it apparent that they agree as well. I will continue to focus my energy on being more sensitive to the group and engaged in more casual conversation.

Based upon the constructive comments from my peers, I also have some areas in which I believe I could focus better on. I am glad that a teammate of mine brought to my attention that they were bothered by my lack of communication in our group chat. I was unaware that they felt this way. I typically only ever use our group chat to schedule meeting or ask/ answer questions directly. At my home university this is normal group project behaviour. As some of my members are more casual about their usage of the chat, I could spend more time entertaining conversation within the chat. I am not very attentive to my phone or texting and though it is not something that I wish I did more of, I understand the need for me to be more active.

Another area that I will certainly be focusing on is due to the fact that a teammate of mine found me hasty or impatient with the group work. I understand this and completely recognize this within myself. I have always been a doer and I get little ahead of myself when dealing with inefficiencies. I like things to be done and done right and I certainly can get impatient sometimes. This also stems from my false consensus bias; I tend to believe that others think just as I do. This creates problem when there is understanding between me and others. In our next meeting, I will make sure that I am more aware of this attitude and allow the creative process of the group to unfold. This also touches on my perfectionist side and how I like to control situations. I am very glad that a team member brought this up.

Lastly, I also need to be more aware of my nonverbal communications. I find that I give off a certain aloofness and emotional reserve when I am in unfamiliar social scenes. I consider myself a good communicator but in order to be a great communicator I have to be more aware of the signals that I transmit with my body language. I am also working on being more vulnerable and emotionally expressive in order to create stronger rapport with others.

4. Active Experimentation

How would you plan for future actions/interactions within your team to better your teamwork competencies?

Note: Test your plan/action. You will revisit them in Journal Three to discuss your progress (or the lack of) and why.

I am very pleased with the success and relationship that our team has built up. We are starting to function more as a team rather than individuals trying to achieve a common goal. We have started to look out for each other more and provided helpful reminders to each other when seen fit. That being said we have our largest task still ahead of us, filming our scene. I am excited and eager to see what we come up with. That being said, I do still have some focus areas that I think that we could continue to build upon.

I believe the development of both solid and fluid roles will be absolutely necessary during the planning, filming and production of our film. It will be very important for us to be very flexible and willing to help out wherever needed, however we will need to adopt some more solid roles for this project. For example, some of us will have to step up as actors/ actresses, cameraman or editor.

I also believe that we will need to continue to be more vocal and opinionated though out the creation of our film. We are all relatively novice to cinema so we are all on the same field, not knowing too much about producing an effective film. Therefore, if anyone has any ideas they will need to share them in order for us to more forward as best as possible. I also imagine that this will be the most stressful of our projects so I also wish strong emotional intelligence when it comes to our group member's interactions. We hopefully will be able to achieve this through being honest and respectful to each other.

5. Any other reflection on your learning take-away

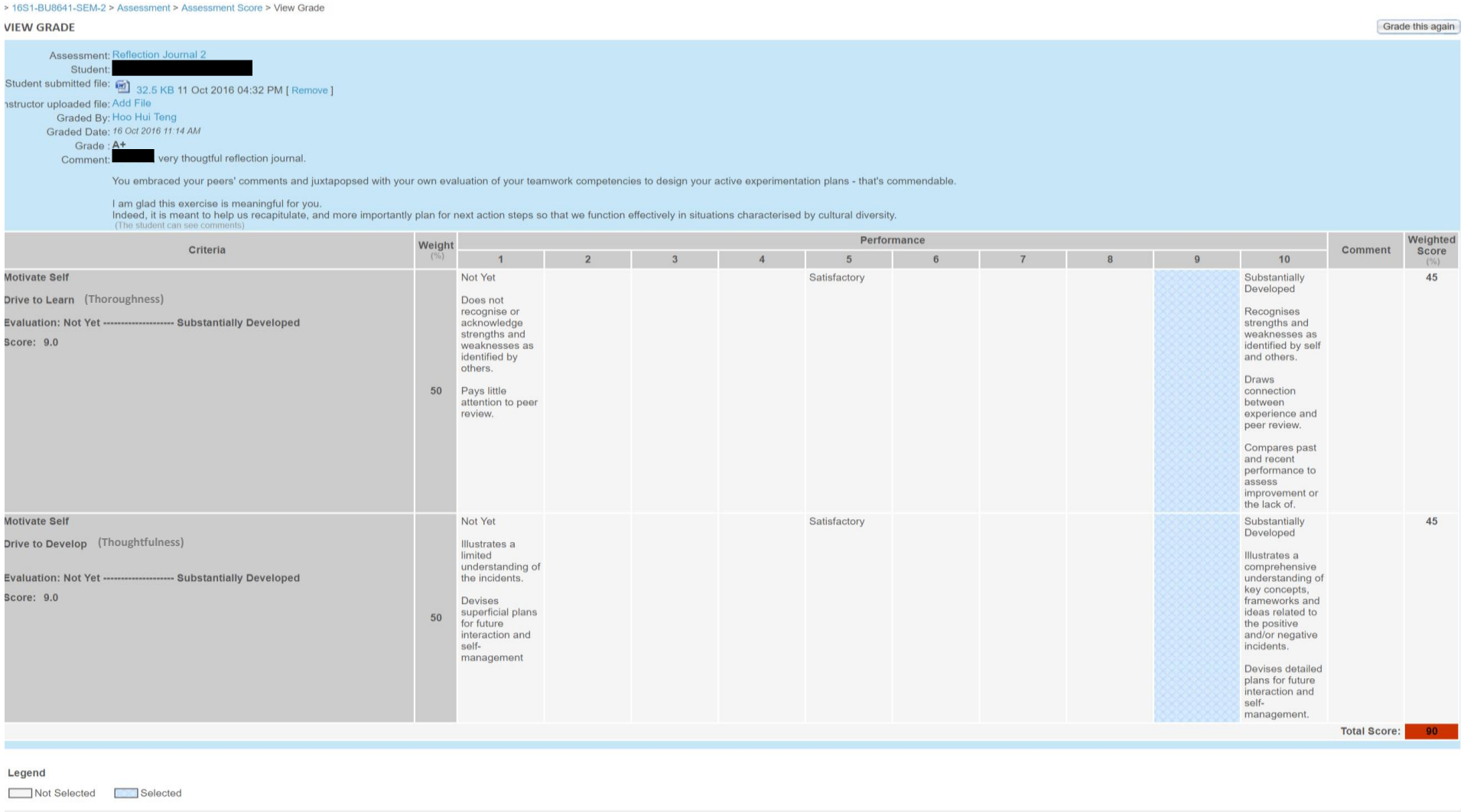
As we are tasked to revisit these reflections, I am finding it increasingly rewarding to reflect upon where my team started and where we are now. I think that deep reflection like this should be built in most, if not all relationships in our lives. Imagine the miss communications that would cease to exist.

I am thinking about sharing some parts of my reflections with my team so that they know more about where and what I am currently working to improve. I think that if we were able to have a serious conversation with each other we would all find it extremely rewarding.

Thanks for reading ☺

Upon completion, submit on eUreka.ntu.edu.sg

Sample of Instructor's Assessment and Feedback on Sample Student's Journal



> 16S1-BU8641-SEM-2 > Assessment > Assessment Score > View Grade

VIEW GRADE

Grade this again

Assessment: Reflection Journal 2
Student: [redacted]
Student submitted file: 32.5 KB 11 Oct 2016 04:32 PM [Remove]
Instructor uploaded file: Add File
Graded By: Hoo Hui Teng
Graded Date: 16 Oct 2016 11:14 AM
Grade : A+
Comment: [redacted] very thougtful reflection journal.

You embraced your peers' comments and juxtapopsed with your own evaluation of your teamwork competencies to design your active experimentation plans - that's commendable.

I am glad this exercise is meaningful for you.
Indeed, it is meant to help us recapitulate, and more importantly plan for next action steps so that we function effectively in situations characterised by cultural diversity.
(The student can see comments)

Criteria	Weight (%)	Performance 1	2	3	4	5	6	7	8	9	10	Comment	Weighted Score (%)
Motivate Self **Drive to Learn** (Thoroughness) **Evaluation: Not Yet ---------- Substantially Developed** **Score: 9.0**	50	Not Yet Does not recognise or acknowledge strengths and weaknesses as identified by others. Pays little attention to peer review.				Satisfactory					Substantially Developed Recognises strengths and weaknesses as identified by self and others. Draws connection between experience and peer review. Compares past and recent performance to assess improvement or the lack of.		45
Motivate Self **Drive to Develop** (Thoughtfulness) **Evaluation: Not Yet ---------- Substantially Developed** **Score: 9.0**	50	Not Yet Illustrates a limited understanding of the incidents. Devises superficial plans for future interaction and self-management				Satisfactory					Substantially Developed Illustrates a comprehensive understanding of key concepts, frameworks and ideas related to the positive and/or negative incidents. Devises detailed plans for future interaction and self-management.		45
												Total Score:	90

Legend
Not Selected Selected

Appendix B: Research Permission Form

Request for Permission to Review and Assess Your Reflective Journals for Research Purposes

Title of Study:
Negotiating Self- and Peer Feedback of Teamwork Competencies

Objective:
To examine how students learn and develop teamwork competencies from self and peer feedback.
I expect approximately 200 participants to take part in this study.

Procedures:

I. Course Requirements:

One of the key objectives of the course, BU8641: Cultural Intelligence – How to be an Explorer of the World, is to develop greater self-awareness and confidence to function effectively in multicultural environments.

Self- and Peer-Assessment Surveys
As part of the course requirements, ALL students will be required to complete three (3) online questionnaires about themselves and their team members. These responses are compiled and returned as feedback to students to help them in the individual reflection assignments. These surveys and feedback form an important part of class participation and involvement.

II. Research Participation Requirements:

Students who consent to participate in this study

1) give rights to the researcher to use data from the self- and peer feedback and from the **reflective journals** on teamwork competencies;
2) give permission to the researcher to **observe** teamwork competencies in class team activities as well as through interactions such as e-mails and class forums; and
3) give permission to the researcher to contact them for a follow-up interview or **focus group** to gather their views about this study.

Right to Refuse or Withdraw:
Participation in this study is entirely voluntary. Refusal to participate or withdrawal from the study will NOT affect course performance.

Participants can choose to withdraw at any time and without explanation by emailing the third-party individual, Ms Goh Sok Ling, sokling@ntu.edu.sg, who has access to the participation consent forms until the course is completed and grades are determined. Only upon submission of grades to the University Examination Office will the instructor-cum-researcher have access to the consent information.

Risks and Discomforts:
Students may experience discomfort associated with this study, particularly when asked about the content of their self- and peer feedback as well as in their reflective journals. When such discomfort arises, students may choose to withdraw from participation in this study.

Benefits:
Students may develop their teamwork competencies by bringing attention to the negotiation of self- and peer feedback in written reflective journals.

Confidentiality:

All data collected are used strictly for research purposes and will be kept private and confidential.

All analyses are based on aggregated responses.

The anonymity of participants will be ensured. No reference to students' names or details that may be attributable to any individual will be included in the dissemination of findings.

For questions regarding the study, please contact:

Principal Investigator (PI):
Name: Hui-Teng Hoo
Position: Lecturer; Director (Accreditation)
Phone: 6790-4813
Email: hthoo@ntu.edu.sg

For questions regarding the rights of research participants, please contact:

Ms Germaine Foo, Secretariat of NTU-IRB
Email address: irb@ntu.edu.sg
Website: http://research.ntu.edu.sg/GuidelinesnForms/

IRB Approval No.: IRB-2015-08-001-01

I understand the procedures described above. My questions have been answered to my satisfaction, and I acknowledge that I am participating in this study of my free will. I understand that I may refuse to participate or stop participating at any time via email to an independent third party, Ms Goh Sok Ling, sokling@ntu.edu.sg.

Name: _____ Student ID/Matric: _____

Signature: _____ Date: _____

Appendix C: Reflective Journal

Journal One

Complete the following once you receive your peers' evaluation of your teamwork competencies.
(1) Strongly Disagree; (2) Disagree; (3) Neither Agree nor Disagree; (4) Agree; (5) Strongly Agree

INTERPERSONAL COMPETENCY – Knowledge, Skills, & Abilities (KSAs)	**Self Score**	**Aggregated Peer Score**	**Strengths/ Areas for Improvement (Self and Peer's Comments Time 1)**
Conflict Resolution KSAs *<Name of team member> has* 16. The KSA to encourage desirable and discourage undesirable team conflict. 17. The KSA to use an appropriate conflict resolution strategy. 18. The KSA to employ an integrative (win-win) negotiation strategy.			
Collaborative Problem-Solving KSAs *<Name of team member> has* 19. The KSA to utilize the appropriate type of participation. 20. The KSA to recognize the obstacles to collaborative group problem-solving. 21. The KSA to implement appropriate corrective actions.			
Communication KSAs *<Name of team member> has* 22. The KSA to communicate supportively. 23. The KSA to listen actively and non-evaluatively. 24. The KSA to maximize consonance between verbal and nonverbal messages.			
SELF-MANAGEMENT COMPETENCY – Knowledge, Skills, & Abilities (KSAs)			
Goal Setting and Performance Management KSAs *<Name of team member> has* 25. The KSA to help establish specific, measurable, achievable, realistic and timely (SMART) team goals. 26. The KSA to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance. 27. The KSA to provide good quality contribution.			
Planning and Task Coordination KSAs *<Name of team member> has* 28. The KSA to establish task and role expectations of individual team members and to ensure a proper balance of workload in the team. 29. The KSA to synchronize activities, information, and task interdependencies between self and team members. 30. The KSA to keep team members informed of one's availability and provide an alternative for unavailability.			

1. Concrete Experience

Describe critical incident(s) that took place.

Note: A critical incident is an incident that has significance for you in learning about teamwork competencies.

It is an incident that has had a significant impact on your learning of teamwork competencies.

It may have led you to question an aspect of your beliefs, values, attitudes, or behaviours about teamwork.

2. Reflective Observations

a. Describe your thoughts and feelings about the critical incident(s) and the team experience thus far.

b. Compare and contrast the teamwork competencies scores and comments provided by yourself and your peers.

Note: Refer to the rubrics on Page 1

What are your learning takeaways?

3. Abstract Conceptualization

Based on what you have learned about your teamwork competencies from yourself and your peers, suggest what you would have done (a) differently and (b) similarly?

4. Active Experimentation

How would you plan for future actions/interactions within your team to improve your teamwork competencies?

Note: Test your plans/actions. You will revisit them in Journal Two to discuss your progress (or the lack thereof) and why.

Journal Two

Complete the following once you receive your peers' evaluation of your teamwork competencies.

INTERPERSONAL COMPETENCY – Knowledge, Skills & Abilities (KSAs)	**Self Score 1**	**Aggregated Peer Score 1**	**Self Score 2**	**Aggregated Peer Score 2**	**Strengths/ Areas for Improvement (Self and Peer's Comments Time 2)**
Conflict Resolution KSAs *<Name of team member> has* 1. The KSA to encourage desirable and discourage undesirable team conflict. 2. The KSA to use an appropriate conflict resolution strategy. 3. The KSA to employ an integrative (win-win) negotiation strategy.					
Collaborative Problem-Solving KSAs *<Name of team member> has* 4. The KSA to utilize the appropriate type of participation. 5. The KSA to recognize the obstacles to collaborative group problem-solving. 6. The KSA to implement appropriate corrective actions.					
Communication KSAs *<Name of team member> has* 7. The KSA to communicate supportively. 8. The KSA to listen actively and non-evaluatively. 9. The KSA to maximize consonance between verbal and nonverbal messages.					
SELF-MANAGEMENT COMPETENCY – Knowledge, Skills & Abilities (KSAs)					
Goal Setting and Performance Management KSAs *<Name of team member> has* 10. The KSA to help establish specific, measurable, achievable, realistic and timely (SMART) team goals. 11. The KSA to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance. 12. The KSA to provide good quality contribution.					
Planning and Task Coordination KSAs *<Name of team member> has* 13. The KSA to establish task and role expectations of individual team members and to ensure a proper balance of workload in the team. 14. The KSA to synchronize activities, information, and task interdependencies between self and team members. 15. The KSA to keep team members informed of one's availability and provide an alternative for unavailability.					

1. Concrete Experience

Describe critical incident(s) that took place.

Note: A critical incident is an incident that has significance for you in learning about teamwork competencies.

It is an incident that has had a significant impact on your learning of teamwork competencies.

It may have led you to question an aspect of your beliefs, values, attitudes, or behaviours about teamwork.

2. Reflective Observations

a. Describe your thoughts and feelings about the critical incident(s) and the team experience thus far.

b. Compare and contrast the teamwork competencies scores and comments provided by yourself and your peers.

Note: Refer to the rubrics on Page 1

What are your learning takeaways?

c. How successful was your application of your active experimentation plan devised in Journal One?

3. Abstract Conceptualization

Based on what you have learned about your teamwork competencies from yourself and your peers, what you would have done (a) differently and (b) similarly?

4. Active Experimentation

How would you plan for future actions/interactions within your team to improve your teamwork competencies?

Note: Test your plans/actions. You will revisit them in Journal Two to discuss your progress (or the lack thereof) and why.

Journal Three

Complete the following once you receive your peer's evaluation of your teamwork competencies.

INTERPERSONAL COMPETENCY – Knowledge, Skills & Abilities (KSAs)	**Self Score 1**	**Aggre-gated Peer Score 1**	**Self Score 2**	**Aggre-gated Peer Score 2**	**Self Score 3**	**Aggre-gated Peer Score 3**	**Strengths/ Areas for Improvement (Self and Peer's Comments Time 3)**
Conflict Resolution KSAs *<Name of team member> has* 1. The KSA to encourage desirable and discourage undesirable team conflict. 2. The KSA to use an appropriate conflict resolution strategy. 3. The KSA to employ an integrative (win-win) negotiation strategy.							
Collaborative Problem Solving KSAs *<Name of team member> has* 4. The KSA to utilize the appropriate type of participation. 5. The KSA to recognize the obstacles to collaborative group problem-solving. 6. The KSA to implement appropriate corrective actions.							
Communication KSAs *<Name of team member> has* 7. The KSA to communicate supportively. 8. The KSA to listen actively and non-evaluatively. 9. The KSA to maximize consonance between verbal and nonverbal messages.							
SELF-MANAGEMENT COMPETENCY – Knowledge, Skills & Abilities (KSAs)							
Goal Setting and Performance Management KSAs *<Name of team member> has* 10. The KSA to help establish specific, measurable, achievable, realistic and timely (SMART) team goals. 11. The KSA to monitor, evaluate, and provide feedback on both overall team performance and individual team member performance. 12. The KSA to provide good quality contribution.							
Planning and Task Coordination KSAs *<Name of team member> has* 13. The KSA to establish task and role expectations of individual team members and to ensure a proper balance of workload in the team. 14. The KSA to synchronize activities, information, and task interdependencies between self and team members. 15. The KSA to keep team members informed of one's availability and provide an alternative for unavailability.							

1. Concrete Experience Describe critical incident(s) that took place. *Note: A critical incident is an incident that has significance for you in learning about teamwork competencies.* *It is an incident that has had a significant impact on your learning of teamwork competencies.* *It may have led you to question an aspect of your beliefs, values, attitudes, or behaviours about teamwork.*
2. Reflective Observations a. Describe your thoughts and feelings about the critical incident(s) and the team experience thus far.
b. Compare and contrast the teamwork competencies scores and comments provided by yourself and your peers. *Note: Refer to the rubrics on Page 1* What are your learning takeaways?
c. How successful was your application of active experimentation plan devised in Journal One and Journal Two?
3. Abstract Conceptualization Based on what you have learned about your teamwork competencies from yourself and peers, what you would have done (a) differently and (b) similarly?
4. Active Experimentation How would you plan for future actions/interactions with your team to improve your teamwork competencies?

5. Lessons Learned a. What did you learn from carrying out self-review?
b. What did you learn from carrying out peer review?
c. What did you learn from receiving peer feedback?

6. Reflective Journal How useful was this exercise of reflective journaling (using the experiential learning cycle, teamwork competencies framework, self- and peer feedback, etc.) in helping you to learn and develop your teamwork competencies?

Appendix D: Codes and Categories

Code	Definition	Category
Conflict resolution	1. encourage desirable & discourage undesirable team conflict 2. use an appropriate conflict resolution strategy 3. employ an integrative (win-win) negotiation strategy	Reference to teamwork competencies (based on Stevens & Campion, 1994)
Collaborative problem solving	4. utilize the appropriate type of participation 5. recognize the obstacles to collaborative group problem solving 6. implement appropriate corrective actions	
Communication	7. communicate supportively 8. listen actively and non-evaluatively 9. maximize consonance between verbal and nonverbal messages	
Goal setting & performance management	10. help establish specific, measurable, achievable, realistic and timely (SMART) team goals 11. monitor, evaluate, and provide feedback on both overall team performance and individual team member performance 12. provide good quality contribution	
Planning & task coordination	13. establish task and role expectations of individual team members and to ensure a proper balance of workload in the team 14. synchronize activities, information, and task interdependencies between self and team members 15. keep team members informed of one's availability and provide an alternative for unavailability	
Positive affect	"extent to which a person avows a zest for life" Watson & Tellegen (1985: 221)	Reaction to peer feedback
Negative affect	"extent to which a person reports feeling upset or unpleasantly aroused" Watson & Tellegen (1985: 221)	
Goal Intentions	"Goal intentions specify what one wants to achieve." (Sheeran, Webb & Gollwitzer, 2005: 87) "possess an appreciation of what high quality work is" (Sadler, 1989: 199)	Next actions following negotiation of self and peer feedback
Implementation Intentions (How)	"Implementation intentions involve specifying the behavior one will perform in the service of the goal and the situational context in which one will enact it (i.e.,if situation Y arises, then I will initiate goal-directed behavior Z!"). Although implementation intentions are formed through a conscious act of will, there is evidence that action initiation proceeds in an automated manner (Gollwitzer, 1999). Consequently, forming an implementation intention increases the likelihood of attaining one's objectives compared to the formation of a goal intention on its own." (Sheeran, Webb & Gollwitzer, 2005: 87)	
Implementation Intentions (When)	Disagree with peer feedback	
Gap Closure	"develop a store of tactics or moves which can be drawn upon to modify their own work." (Sadler, 1989: 119)	Degree of success of action
Awareness (performance)	"develop the capacity to monitor the quality of their own work during actual production. This in tum requires that students possess an appreciation of what high quality work is, that they have the evaluative skill necessary for them to compare with some objectivity the quality of what they are producing in relation to the higher standard, " (Sadler, 1989: 119)	
Awareness (non-performance)		

GLOSSARY

Affect — Affect is an "umbrella term encompassing a broad range of feelings that individuals experience, including feeling states, such as moods and discrete emotions, and traits, such as trait positive and negative affectivity" (Barsade & Gibson, 2007: 38). Moods refer to the global positive or negative feeling that tend to be diffused and not focused on a specific cause (Barsade & Gibson, 2007), such as feeling pleasant (positive) or irritable (negative). Emotions refer to the psychological and physiological sense of being affected emotionally by an event and are target-specific states (Barsade & Gibson, 2007; Frijda, 1988) such as joy (positive) and anger (negative). In this study, affect is used to encapsulate both moods and emotions.

Dialogic Feedback — Dialogic (or dialogical) feedback suggests "an interactive exchange in which interpretations are shared, meanings negotiated and expectations clarified" (Carless et al., 2011: 397). This study shares a similar goal with previous studies of dialogic feedback (Beaumont et al., 2011; Crimmins et al., 2016; Nicol, 2010; Yang & Carless, 2013) to reconcile the different perspectives of students and teachers or peers in the feedback process.

Negotiation — In this study, negotiation refers to the intra-personal self-awareness process of dealing with self- and peer feedback on one's teamwork competencies. Negotiation can occur in relation to shared or opposed views as Fisher and Ury (2011) suggest, so one takes cognitive and discursive approaches to processing compatible and incompatible information from self and peer feedback. The term "negotiation", as used in this study, employs two key definitions: 1) "Communication designed to reach an agreement when you and your other side have some interests that are shared and others that are opposed" (Fisher & Ury, 2011); and 2) An intra-personal self-awareness process (Fox, 2013) that advocates that the most important negotiations we have, the ones that determine the quality of our lives and the impact of our actions, are the ones we have with ourselves.

Peer Assessment — Peer assessment is defined as "an arrangement in which individuals consider the amount, level, value, worth, quality, or success of the products or outcomes of learning of peers of similar status" Topping (1998: 250). In this study, peer assessment of teamwork is not based on an artefact, that is a product of a team, but rather the processes involved in working as a team.

Reflection — Reflection is defined as the conscious awareness and questioning of personal experience, a search for alternative explanations and interpretations, and identification of areas of improvement (Scott, 2010).

Reflection is also “best understood as a process of metacognition that functions to improve the quality of thought and of action and the relationship between them” (Ash & Clayton, 2009). In this study, written reflection is the mode for negotiation and reconciliation of self-assessment and peer feedback, through which students develop self-awareness, and then identify areas for improvement and strengths to leverage on.

Self-assessment — Self-assessment is “a formative, task-specific process during which students first generate feedback on the quality of their work by assessing the extent to which it meets explicitly stated criteria and expectations and then, through a process of revision, use their self-generated feedback to improve the quality of their work and deepen their learning” (Valle & Andrade, 2015: 1006).

Self-regulation — Self-regulation is “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition” (Pintrich & Zusho, 2002: 250). In this study, self-regulation extends from regulation of cognition to regulation of affect.

Team — A team is a set of two or more individuals interacting adaptively, interdependently and dynamically toward a common and valued goal (Salas et al., 1992). Unlike groups, teams have task interdependency, task and role structure as well as a limited time span in which to perform (Salas et al., 2000). In this study, a team was made up five to six students who worked together to accomplish several team tasks over the course of the semester.

Teamwork — Teamwork is a multi-dimensional construct defined by a set of interrelated competencies or knowledge, skills and abilities that facilitate two or more individuals within a team to interact adaptively, interdependently and dynamically as they work toward a shared and valued goal (Salas et al., 2000). It is difficult to quantify teamwork because it can be inferred from myriad elements of knowledge, skills and abilities (Britton et al., 2015). In this study, teamwork is quantified by the teamwork competencies delineated by Stevens and Campion (1994).

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