Assessing Social Capital and Value Creation in Virtual Student Project Teams: Evidence from Online Management Courses

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This study contributes to the Scholarship of Teaching and Learning by expanding the investigative areas on the role of social capital in collaborative learning environments. This is done by examining aspired and experienced social capital in student reflections on team dynamics in online project teams and aligning student narratives to expected student outcomes. Within a value creation framework which is aligned to the four stages of team development, including forming, storming, norming, and performing in order to illuminate value creation experiences and aspirations of participants, the study covered 39 management education students in 8 online project teams spanning 3 courses at an East Coast US institution of higher learning from spring 2015 to spring 2016. Findings from 185 emerging themes suggest an alignment between social capital and student learning outcomes and appear to validate the explanatory strength of the value creation framework in relation to social capital as a value creator and as value created in learning communities. The findings demonstrate that social capital is both inherent and created in learning communities of the evaluated online project teams, and that social capital contributes to both individual and collective objectives of online project teams. Recommendations for online project team learners and instructors are discussed.

INTRODUCTION

The role of social capital in individual and collective student learning outcomes has been documented in the Scholarship of Teaching and Learning (Craig et al., 2016; Kent et al., 2019; Yao et al., 2015). However, the use of student narratives to understand the role of social capital in advancing student learning outcomes in this study, expands the area of investigation in the study of social capital and student outcomes. It is also, a noteworthy addition to the Scholarship of Teaching and Learning.

Social capital is the "social glue" inherent in social learning environments such as student learning communities (Affanas'ev et. al, 2017; Coleman, 1988; Douglas et al., 2021), and is also found in community networks, associations, and resource sharing environments (Scales et al., 2020). It is sometimes difficult to grasp social capital as a phenomenon because of its lack of clarity (Hean et. al. 2004), and its intangible and multifarious character (Bourdieu, 1997; Coleman, 1988;). However, the added value of social interactions that stimulate members of network communities to achieve specific aims (Almuqrin et al., 2020; Kent et al., 2019), is hardly in dispute. Social capital also drives student learning outcomes in collaborative learning environments such as Team and Problem based learning (Dingyloudi et al., 2019; Fink,2003; Gomez et al.,2010; Haidet et al. , 2002; McInerney & Michaelson et al., 1993; Mitra, 2022; Tan et al., 2011; Vaughan et. al., 2015, Venter, 2019). This paper focuses on online project team activities which integrate both Problem Based Learning (PBL) and Team Based Learning (TBL) characteristic into one instructional strategy. TBL makes small group work the primary class activity and calls for activities that support the transformation of newly formed groups into high-performance learning teams, and usually requires a change in the structure of the team and transforms teamwork from a technique to a strategy (Fink, 2002; Michaelsen & Sweet 2008). Project Based Learning (PBL) is designed to help students investigate an authentic problem (Blumenfeld et al. 1991) by translating theory into practical application (Bell 2010). PBL could either be individual or collaborative; and is often delivered online or face to face. Many benefits of both PBL and TBL are relevant to properties of relational and cognitive social capital such as quality of relationships and social solidarity (McFadyen & Cannella, 2004; Nahapiet & Ghoshal, 1998; Roxas, 2008). In this study, a value creation conceptual framework (Wenger, et al., 2011), is used to examine the role of social capital in value creation and student learning outcomes, by analyzing student reflections on project team experience.

LITERATURE REVIEW
Social Capital and Learning Outcomes

Social capital is multidimensional but its impact on learning outcomes in student learning communities is unquestionable. Researchers explain social capital from various perspectives and varying influences on individual and collective learning. Some commonly identified dimensions include structural, relational, and cognitive (Nahapiet & Ghoshal, 1998; McFadyen & Cannella, 2004; and Roxas, 2008). Structural dimension refers to "the overall pattern of connections between actors" (Nahapiet and Ghoshal, 1998, p. 244) and focuses on impersonal linkages among actors, such as network ties and network configurations. The relational dimension focuses on the quality of relationships (McFadyen & Cannella, 2004), which is accumulated through trust, norms, and obligations among actors (Nahapiet & Ghoshal, 1998). The cognitive dimension describes social collectivity or solidarity among actors (Nahapiet & Ghoshal, 1998). Structural, relational, and cognitive dimensions have an effect on knowledge sharing relationship, with structural dimensions having the strongest impact (Han et al., 2020).

Many studies have documented the different manifestations and influences of social capital on individual and collective outcomes in learning communities. Yao et al., (2015), determined

that social capital is positively related to team learning and knowledge sharing; while team learning is positively related to knowledge sharing; and both social capital and knowledge sharing are positively related to network loyalty. Other studies point to the links between social capital generated in interprofessional learning and improvements in desired practice outcomes (Craig et al., 2016). More recent studies show a positive association between offline social capital and online learning interactions across all classes at the individual and dyadic levels **(**Kent et al., 2019); and some studies found a predictive relationship between social capital and knowledge sharing intentions and behaviors (Almuqrin et al., 2020).

This study seeks to understand the alignment between structural, relational, and cognitive dimensions of social capital created in online project teams to both value creation and expected student learning outcomes.

Value Creation in Learning Communities

Structural, relational, and cognitive dimensions of social capital are inherent in learning communities. Social capital contributes to the knowledge assets and performance outcomes of learning communities such as student learning communities. Online project teams as student learning communities, are important structures in the creation and sustainability of value in instructional settings. Student learning communities (SLCs) provide students with a structured way to solve problems, share insight, and help one another to develop new skills and expertise and advance dynamic collaborative learning (Douglas et al., 2021). A basic learning community includes people, resources, rituals, norms, dependency, and ties, as well as nodes and holes within different communities (Ozturk & Ozcinar, 2013; Vesely et al., 2007), which could exist as a single community (Becket et al., 2012); or multiple/sub-set of communities in a network structure (Maddix, 2013).

Value creation occurs at macro, mezzo, and micro levels of social interactions (Affanas'ev et al., 2017), and could be external or internal to a learning structure (Chung & Yoon, 2015; Yoon & Hyun, 2010). Teams are crucial for enabling knowledge creation, learning, knowledge dissemination, and performance (Anderson & West, 1996, 1998; Lawson et al., 2009: Pitsis et al., 2003). Value creation from team learning occurs in five value cycles: 1. immediate value including activities and interactions; 2. potential value, which is knowledge capital including human capital, social capital, resources which could be both tangible and intangible, and transformed ability to learn; 3. applied value covering changes in practice, 4. realized value which is inherent in performance improvement; and 5. reframing value which includes reframing success (Wenger et al., 2011). Of recent, the value creation framework has become a program evaluation tool which assesses value created for individuals and institutions (Whisler, 2017); and captures the unique significance and forms of perceived values ranging from immediate to transformative, across a range of stakeholders in learning environments (Clarke et al., 2021; Heemskerk et al., 2021; Mavri et al., 2021).

In this study, the contributions of social capital to student learning outcomes or team performance are traced by examining the inherent social capital in the five value cycles mentioned above, alongside four team development stages. Social capital and value created is gleaned from the narratives of students participating in online project teams.

Assessing Value Creation Using Personal and Collective Narratives in Learning Communities

Narrative inquiry has become a common method used to examine value creation and is applied in a variety of learning contexts. Regardless of the level of social interactions, created and aspired value could be relayed through personal or collective narratives of members themselves (Wenger et al., 2011; Dingyloudi et al., 2019; Tataw, 2021). Participants in networks or communities have narratives through which we can appreciate what learning is taking place (or not) and what value is created (or not). Collective narratives project the aggregate experience of the entire community or network while personal narratives focus on the experience and voice of an individual member.

Both personal and collective narratives could serve as accounts of what has happened and is happening in the everyday life of a community or network, or they can represent aspirations which are what defines success for a community in terms of the value they are expected to produce (Wenger et al., 2011). Contemporary use of narrative inquiry to examine value creation among learning communities' members includes conversion narratives used to examine the emotional learning of new community members (Kurtyka, 2017); the examination of narratives of professional development in a learning community (Galliazzi, 2018; Hayler & Williams, 2018); and life-story interviews used to examine experiences in intentional communities (Pisters et al., 2020).

The data analyzed in this study comes from the individual and collective narratives of project team members in online management courses. This study draws from the contemporary use of narrative inquiry to examine value creation but goes further by aligning value creation cycles to student learning outcomes and anchoring both to social capital.

Small Group learning, Project Learning, and Team Based Learning (TBL)

Online project teams are a form of Team Based Learning (TBL) just as they are student learning communities. They integrate both PBL and TBL characteristic into one instructional strategy. Project Based Learning is designed to help students investigate an authentic problem (Blumenfeld et al. 1991), by translating theory into practical application (Bell 2010), providing additional autonomy and a personal stake in the learning outcome (Krajcik and Blumenfeld 2006). PBL could be either individual or collaborative and is delivered online or fact to face.

TBL is an advanced form of collaborative learning which can be traced to many educational theories, including constructivist and social learning models (Bruner's, 1966; Carswell, 2001; Gold, 2001; Hodgson & Watland, 2004; Piaget's 1955; Vygotsky, 1978). An early form of collaborative learning is small group learning which is designed to hold the student more accountable for their learning in comparison to lectures, by contributing to their own learning through participation in a social learning context (Felder and Brent 1996; John-Steiner and Mahn 1996; Vygotsky 1978). The adoption of Team Based Learning (TBL) as an instructional strategy is credited to Larry Michaelsen in the late 1970s who first used it in a large business class (Fink, 2002, Fink & Parmelee, 2008; Mennenga & Smyer, 2010). TBL makes small group work the primary class activity and calls for activities that support the transformation of newly formed groups into high-performance learning teams, and usually requires a change in the structure of

the team and transforms teamwork from a technique to a strategy (Fink, 2002), by executing on four essential elements of groups, accountability, feedback, and assignment design (Michaelsen and Sweet 2008), which creates a chain of responsibility and a means of command and control (Michaelsen et al. 2008; Parmelee et al. 2012).

A variety of studies point to positive student learning outcomes in Team Based Learning (TBL) environments (Fink, 2002; Fink & Parmelee, 2008; Mennenga & Smyer, 2010), such as developing students' higher-level cognitive skills in large classes, providing social support for at-risk students, promoting the development of inter-professional and team skills (Michaelson et al., 1993; Haidet et al.,2002); improved positive student attitudes and motivation (McInerney & Fink,2003; Gomez et al., 2010); learner-focused communication (Matveeve & Milterb, 2010); analytical and presentation skills, reflective learning, and the application of knowledge and skills in future learning (Matveeve & Milterb, 2010); and critical thinking, creativity, and innovation (Almuqrin et al. , 2020). While value created from collaborative learning contributes to overall improved academic performance and better relationships in the learning community (Bilgin & Geban, 2006; Brouwer et al., 2016; Cremerius et al., 2021; Dingyloudi, 2007; Mitra, 2022; Tan et al., 201; Tataw, 2021; Venter , 2019), lower levels of value creation and underperformance may be tied to the absence of potential ad actual resources that facilitate learning and achievement (Vaughan et. al., 2015).

Also, many benefits of TBL such as increases in student engagement in both online and face to face environments (Carpenter et al.,2021; Hyman &Will ,2022; Mitra, 2022); development of generic skills such as teamwork, problem-solving, interpersonal skills, time management, communication and adaptability (Eskeen,2022); and increases in social interdependence (Shimizu (2022), are relevant to properties of relational and cognitive social capital such as quality of relationships and social solidarity.

RESEARCH QUESTIONS AND STUDY FOCUS

This study examines the role of social capital in value creation and student learning outcomes, by analyzing student reflections on project team experience. Findings from the analysis of reported experiences and perceptions of project team members can clarify the value creation dynamic around accumulated social capital in project teams studied, and the alignment of the created value to student learning outcomes. Also, lessons learned from the collective narratives of project team members could provide guidance for instructors and students who are facilitating or participating in online project teams, thereby contributing to individual and collective performance.

The study expands the literature on the role of social capital in TBL and PBL by adding student reflections on team dynamics in online project teams to the areas of study. Student narratives are used to understand the contributions of social capital to individual and collective student learning outcomes in online project teams. One hundred and eighty-five statements were examined from a sample of 39 students, organized in 28 student project teams, and enrolled in 3 online management education courses from fall 2015 to spring 2016. Social capital is framed both as value created by online project team members, and as a phenomenon that created value for members of online project teams. A modified team development framework adapted from the four stages

of team development (Tataw, 2014; 2021) guided data collection, while a value creation conceptual framework made up of five value creation cycles (Wenger et al., 2011) guided data analysis and interpretation. The data analyzed is collected at the end of each class, from management students' reflections on the team dynamics in their project teams. This study relies on a combination of inductive and deductive analysis. Qualitative data is categorized using open, axial, and selective coding. Emergent themes are aligned to the social capital dimension; value creation cycles in the conceptual framework; and to the following expected student learning outcomes in online project team activities:

1. Use of critical thinking,
2. Student interaction with other students and the instructor,
3. Student engagement in initiating or contributing to content or other learning activities
4. Student enthusiasm,
5. Use of problem-solving skills, and
6. Individual and Team Performance
        (Tataw, 2014 pp 194-195).

Study Questions/Hypothesis

1. Do emergent themes from project team members' narratives of acquired and aspired values due to their learning community membership, align with value cycles of the value creation framework

2. Do emerging themes from project team members' narratives of perceived or aspired added value borne of collective interactions align with expected student learning outcomes in online team projects.

A VALUE CREATION CONCEPTUAL FRAMEWORK

A value creation conceptual framework (Wenger et al., 2011), is used to analyze and interpret social capital value accounts and aspirations of online project team members. The five cycles in the value creation framework are summarized below:

Cycle 1 This cycle focuses on immediate value including activities and interactions which can produce value in and of themselves and can be fun and inspiring.

Cycle 2. Potential value could be individual or collective and encompasses knowledge capital which underscores the fact that not all value produced by a community, or a network is immediately realized. Activities and interactions can produce "knowledge capital" whose value lies in its potential to be realized later. Knowledge capital can take different forms including personal assets (human capital), relationships and connections (social capital), resources (tangible capital), collective intangible assets (reputational capital), and transformed ability to learn (learning capital). Human capital can take the form of a useful skill, a key piece of information, or a new perspective. It can also consist of innovative ideas to address in a class of problems. Social capital occurs in all dimensions of knowledge capital, when one considers knowledge as a collective good distributed across a community or network.

Cycle 3. Applied value involves changes in practice. Knowledge capital is a potential value, which may or may not be put into use. Looking at applied value means identifying the ways practice has changed in the process of leveraging knowledge capital.

Cycle 4. Realized value relates to performance improvement. This refers to the effects the application of knowledge capital is having on achievement.

Cycle 5. Reframing value: Redefining success. The last cycle of value creation is achieved when social learning causes a reconsideration of the learning imperatives and the criteria by which success is defined. It may also mean transforming or leaving behind the existing structure and using this new definition of success to create a new framework.

Neither hierarchy nor direction are to be assumed and learning in these cycles is not a linear but rather a dynamic and complex process in which producing and applying knowledge are tightly intertwined and often indistinguishable. Social capital is created through out the value cycles and social capital also creates other values that accrue to members individually and collectively (Wenger et al., 2011). Structural, relational, and cognitive social capital dimensions (Nahapiet & Ghoshal, 1998; McFadyen & Cannella, 2004; and Roxas, 2008) are inherent in immediate, potential, and applied value cycles respectively, and they create realized and reframed value to community members.

METHODS
Design
This is a prospective study assessing individual and collective narratives of experienced and aspired value among online project team members in management courses. The study relies on qualitative data sources and a combination of inductive and deductive analysis within a value creation conceptual framework. Qualitative data is categorized using open, axial, and selective coding. Emergent themes are aligned to social capital dimensions, value creation cycles in the conceptual framework, and to expected student outcomes.

Institutional Review Board Approval
The study was approved by the Institutional Review Board of an East Coast US institution as an exempt study.

Learning Components in Online Project Teams
There were three learning components involved in online team project activities in all three online management courses under study. These included preparation, application, and assessment; adapted with modifications from Team-based Learning literature (Fink, 2002; Tataw, 2014). **The preparation component** was made up of two activities: 1. Team Formation where the instructor assigned students to different project teams to minimize barriers to group cohesiveness and distribute member resources evenly. 2. Student Preparation which required students to complete individual reading, discussion, and written assignments before weekly project team activities. **Application** occurred during weekly project team activities including collective work on group term projects asynchronously in digital group discussion forums, and synchronously in teleconferences, as well as the occasional offline team project face to face meetings. **Assessment** involved both students and instructors. Students were

involved in two assessment activities: 1. Intra-group peer review of group member participation in group projects by completing an evaluation of every member of the project teams 2. Participation in individual and group project team dynamics evaluation using nominal techniques. Here, team members assessed team dynamics in their project team first individually, then collectively as a team, by synthesizing individual assessments into collective assessments. The instructor's role in assessing team project activities included the following activities: facilitate and assess student participation; grade weekly individual assignments, grade group projects; facilitate process evaluation using nominal techniques. This paper analyzes the data from assessment activity 2 above involving student reflections on team dynamics.

Expected Student Learning Outcomes
Participants in online team projects were expected to demonstrate the outcomes noted above, which were adopted from a Team-Lecture Hybrid Instructional Strategy (Tataw, 2014, 2021)

Recruitment
Program participants were enrollees in management courses taught by the author. Participants were drawn from a total of 3 courses, 8 teams, and 39 students. Program participation was obligatory for all students since project teams' activities were part of the course requirements. Participation in program evaluation activities was voluntary and the students were informed that their participation or non-participation did not affect their grades in the classes.

Institutional Setting
At the East Coast USA institution, management students arrive with varying academic strengths and backgrounds. Seventy-five percent of graduate management students at the time of implementation worked full or part time. More than fifty percent needed additional help to succeed in graduate school and do not have prior industry experience. The ethnic make-up was as follows: 76% white, 10% African American, 6% Hispanic, 6% Asian pacific, and 8% others (Fact Book, 2012).

Target Population
Thirty-nine students in 3 graduate management courses participated in evaluation activities. Gender and racial/ethnic distribution were as follows: female (53.6%), male (62.3%), African American (4.4%), Asian (2.9%), Latino (1.5%), White (91.3%). Age distribution was as follows: 18-24 (46.4%), 25-35 (34.8%), 36-46 (11.6%), and 47-64 (7.3%).

Sample Selection for Evaluation purposes
All students in each class under study were recruited to participate in course evaluation activities including participation in team dynamics assessment and consenting to the analysis of their performance activities as individuals or groups. Students were recruited directly from the class by representatives of the instructor. Students either completed a written consent form or provided verbal informed consent. Recruitment occurred and consent was administered by representatives of the instructor in the absence of the instructor. The instructor's representatives were trained and certified in human subject protection principles and practices.

Inclusion and Exclusion Criteria

To be included in the study, participants had to meet the following criteria: (1) Be a student in one or more of 3 management courses offered at the East Coast United States institutions from fall 2015 to spring 2016 semesters; (2) Must have participated in project team learning activities in the semester for which the evaluation is being conducted; (3) Must be more than 18 years old; (4) Must be willing to provide a written or verbal consent.

Data Security

No identifying marks were permitted on student documented reflections on the team development process. All identifying marks were removed from completed assessments. No identifying marks were entered into the study data base. All the data for this project were stored in the researcher's office at the institutions of higher learning.

DATA COLLECTION AND MEASURES

On the last day of each class, a team process reflection tool adapted from the team development process was used to facilitate individual and collective reflection on the team-based learning experience. This was a two-stage process. First students developed individual responses to survey questions. Second, the team collectively reflects on their team processes and performance at each stage of team development by discussing and synthesizing individual responses. Students described their experiences in each team development stage including forming, storming, norming, and performing. In addition, the students responded to three open ended questions, where participants stated what the team did well during the semester, what they could have done better, and what additional support the instructor could have given to the team process or groups.

Individual and collective student responses were anonymous and were submitted to the instructor representative for onward transmission to the instructor.

Data and Theory Saturation

The initial analysis sample (Francis et al.,2010), was 20 students, 5 teams, and 2 courses. The stopping point for determining saturation (Gupta et al., 2012), was 39 students, and after 3 additional teams, and 1 additional course beyond the initial analysis sample. Beyond 20 students, 2 courses into data analysis, no new additional data was found that developed new aspects of a conceptual category emerging from open, axial, or selective coding (Glaser and Straus, 1967), and it is likely that the content domain of the construct has been adequately populated (or saturated) and the sample size is big enough for content validity (Guest, Bunce, & Johnson, 2006).

Data Analysis

Within a value creation framework, data analysis was guided by interpretive methods using content, categorical, and frame analysis of student reflections on the team development process. Interpretive thematic analysis (Braun & Clarke, 2006; Cardenas, 2012), made use of already existing and widely adopted stages of team development frames in combination with open-ended questions. This process of analysis involved sorting or coding the data into themes and categories by identifying and analyzing repeating patterns that exist in the data (Braun and Clarke 2006; Opong, 2016). Data coding included open, axial, and selective coding iden-

tified by Strauss and Corbin (Straus & Corbin, 1990, 1994, 1998). In open coding, the data sets were broken down into parts and compared for similarities and differences and categorized (Srauss & Corbin, 1998). In axial coding, the subcategories created were refined and categorized into a more abstract conceptual level using the constant comparison method (Straus & Corbin, 1998; La Rossa, 2005). In the selective coding stage, the main categories of all the data sets were refined and integrated at the level of their properties, dimensions, and relationships. Selective coding occurs at a higher level of abstraction (Strauss & Corbin, 1998), which are tied to the team project expected student learning outcomes.

Members' narratives were tied to conceptual elements and relationships in the value creation conceptual framework. Open, axial, and selective coding were applied within an interpretive thematic analytic process. Predetermined team development framework topics/questions guided team member reflections on their learning community experiences. In open coding, inductive analysis was used to categorize and interpret responses to semi structured and open-ended questions. Here, emerging themes and frequency of responses from individual and collective reflections structured around the four stages of team development and in three open-ended questions to students and instructor were summarized. In axial coding, emerging primary data patterns were analyzed deductively using established theory constructs (Cutler, 2014). Emerging themes were categorized using value creation cycles. In selective coding, categorized data was used to determine if any expected learning outcomes of team project activities were met and if they aligned to any social capital dimension. Both the thematic categories and value creation cycles of relevance were aligned with social capital dimensions and expected team project student learning outcomes.

RESULTS

A value creation conceptual framework (Wenger et al., 2011), was used to analyze social capital and value creation in 8 project teams, involving 39 students, across 3 online management courses at an East US institution of higher learning from Fall 2015 to Spring 2016. The results supported the anticipated student learning outcomes in online project teams and offered affirmative responses to the study questions. The detailed results are presented below.

Characteristics of Online Project Teams

Table1 summarizes the characteristics of online project teams included in the study. This covers descriptions of participants, courses, and project teams. The characteristics include details of the learning communities, aggregate numbers and distribution of students, teams, and courses. The study included 185 statements/responses, 49 assessments, 39 students, 8 project teams, 3 courses. Each class was made up of 2 to 3 teams of 3 to 7 members. Course distribution was as follows: 3 graduate courses including a capstone course in Spring 2015, a strategic management course in Fall 2015, and a capstone course in Spring 2016 with enrollments of 9 students, 11 students, and 19 students, respectively.

Table 1: Characteristics of Online Project Teams

Community ID/Course Name and Number	Description of Learning Communities	Number of Teams	Number of Students
Management Capstone BUS 690	Spring 2015 Regular 15 weeks 5-5 members per team	2 teams	9 students
Strategic Management BUS 634	Fall 2015 Graduate Regular 15 weeks 3-5 students per team	3 teams	11 students
Management Capstone BUS 690	Spring 2016 Graduate Regular 15 weeks 4-5 members per team	3 teams	19 students
Summary/Total	3 Graduate Courses 1 Spring Semester Courses 2 Fall Semester Courses	8 micro learning communities made up of 8 project teams Range: 2 to 3 teams a class Average of 2 teams a class	39 students Range: 9 to 19 students a class and 3 to 6 students a team. Average: 4 students a team and 13 students a class.

Totals: 3 courses, 8 teams, and 39 students, 49 assessments, 185 statements/responses.

Table 2: Domains, Student Responses, Thematic Categories, Analytic Concepts, and Student Outcomes FIT

Domains (Team Development Stages and Questions)	Responses by Emerging Thematic Categories	Value Creation Cycles and Analytic Concepts	FIT with Student Outcomes in Team Projects
Team Development: Forming	A. Team Formation Rationale-7 B. Team Organization at Formation-6 C. Social Process of Team Formation-8	Cycle 1. Immediate value: Activities and interactions Cycle 2. Potential value: Knowledge capital	1. Interactions with other students 2. Student Enthusiasm
2. Team development: Storming	A. Easily Resolved Conflict-8 B. Lack of Respect for others, other ideas, and compromise-7 C. Struggles with Conflict Resolution-4	Cycle 2. Potential value: Knowledge capital, Cycle including human capital, social capital, resources both tangible and intangible, transformed ability to learn.	1. Use of critical Thinking 2. Interaction with other students 3. Students engagement in initiating or contributing to content or other learning activities 4. Problem-solving skills
3. Team Development: Norming	A. Set Rules, Roles, and Standards-8 B. Applied Rules and Standards-8 C. Team and Project Achievements-5 D. Disrespect for Team Norms-3	Cycle 2. Potential value: Knowledge capital Cycle 3. Applied value: Changes in practice. Cycle 4. Realized value: Performance improvement.	1. Use of critical thinking 2. Use of problem-solving skills. 3. Individual and Team Performance
4. Team Development: Performing	A. Good Performance-18 B. Poor Performance-2	Cycle 3. Applied value: Cycle 4. Realized value: Performance improvement.	1. Use of critical thinking. 2. Individual and Team Performance
5. What did your Group Do Well?	A. Democratic Participation and Respect for another's ideas-11 B. Communication-7 C. Collaboration and Mutual Support-6 E. Coordination, Organization, and Commitment to Mission-12	Cycle 1. Immediate value: Activities and interactions Cycle 2. Potential value: Knowledge capital including human capital, social capital, resources both tangible and intangible, transformed ability to learn. Cycle 3. Applied value: Changes in practice.	1. Interactions with other students and instructor 2. Student engagement in initiating or contributing to content or other learning activities .
6. What could your group have done better?	A. Democratic Participation-1 B. Communication-5 C. Coordination and Organization-3 D. Choice of Project Topics and Companies- E. Commitment-9 F. No improvement Needed-3	Value creation cycles encompass. Cycle 2. Potential value: Knowledge capital	1. Interactions with other students 2. Student engagement in initiating or contributing to content or other learning activities. 3. Use of problem-solving skills
7. What additional support could your instructor have given the team process or groups?	A. More Frequent Engagement-3 B. Clearer Expectations-9 C. Provided Clear Guidance, Expectations, Timely Support-9 D. General -4	Cycle 2. Potential value: Knowledge capital Cycle 3. Applied value: Changes in practice. Cycle 4. Realized value: Performance improvement.	1. Use of critical thinking 2. Interactions with other students and instructor 3. Student Enthusiasm 4. Use of problem-solving skills 5. Individual and Team Performance

Table 3. Frequency of Responses for Each Topic/Domain		
Themes by Domains	**No. of Statements/ Responses**	**Percentage**
FORMING	21	
Team Formation Rationale	7	33%
Team Organization at Formation	6	29%
Social Process of Team Formation	8	38%
Total	21	100.0%
Percent of Grand Total		11.3%
STORMING	19	
Easily Resolved Conflict	8	42%
Lack of Respect for Others, other ideas, and compromise	7	37%
Struggles with Conflict Resolutions	4	21%
Total Statements for Question	19	100.0%
Percent of Grant Total		10.0%
NORMING	24	
Set Rules, Roles, and Standards	8	33%
Applied Rules and Standards	8	33%
Team and Project Achievements	5	21%
Disrespect for Team Norms	3	13%
Total Statements for Question	24	100%
Percent of Grand Total		13%
PERFORMING	20	
Good Performance	18	90%
Poor Performance	2	10%
Total Statements for Question	20	100.0%
Percent of Grand Total		11%
What Did Your Group Do Well?	36	
Democratic Participation and Respect for other Ideas	11	31%
Communication	7	19%
Collaboration and Mutual Support	6	17%
Coordination, Organization, and Commitment to Mission	12	33%
Total Statements for Question	36	100%
Percent of Grand Total		19%
What Could Your Group Have Done Better	20	
Democratic Participation	1	5%
Choice of Topics and Companies	1	5%
Coordination and Organization	3	15%
Communication	5	25%
Commitment	9	45%
No Improvement Needed	3	15%
Total	20	100%
Percent of Grand Total		11%
What Additional Support Could Your Instructor have given the Team Process or Group?	25	
More frequent engagement	3	12%
Clearer Expectations	9	36%
Provided Clear Guidance, Expectations, Timely Support	9	36%
General	4	16%
Total	25	100%
Percent of Grand Total		14%
GRAND TOTAL	**185**	**100%**

Domains, Thematic Categories, Frequencies, Alignment to Concepts and Student Learning Outcomes

This section presents results summarized in Tables 2 and 3. Table 2 presents predetermined domains, a summary of student reflections /responses by thematic categories, alignment of responses and thematic categories to conceptual elements, and alignment of thematic categories and conceptual elements to expected student learning outcomes. Table 3 presents frequency of narratives/responses by predetermined domains and emergent themes.

Detailed results of responses are presented below and organized by Domains (Team Development Stages and open questions) as reported in Table 2, and thematic categories as outlined in Table 3. Alignments to conceptual elements and expected student outcomes are covered in the discussion section. Frequency of responses by domains and emergent themes are also integrated in the narrative below (see summaries in Table 3) and organized by domain and thematic category.

Of the 185 emerging themes, response frequency by domain ranged from 10% for *storming* to 19% for *What did your group do well?* Detail results are presented by predetermined topics/domains as follows.

Forming

The *forming domain* contained 21 responses or 11.3% of total emerging themes, including three thematic categories distributed as follows: *team formation rationale (33%), team organization at formation (29%), and the social process of team formation (38%)*– See Table 3. The sub-categories in each major thematic category were as follows (Table 2):

A. Team Formation Rationale - 7
1. Worked well together
2. Group selected by instructor, then became a team
3. Instructor added a member to the group which became a team and project pieces were reassigned
4. Decided on project, then formed a group with the teacher's help
5. Group came together to prepare and submit capstone project and corresponding power point presentation
6. We were assigned to the group
7. We were divided into two groups and given a topic with three sections

B. Team Organization at Formation - 6
1. Assigned a group head
2. *Use google drive to share contributions and progress*
3. *Took turns heading the group*
4. *Met and established rules*
5. Decided on project goals and rules to guide us
6. We assigned roles for each member

C. Social Process of Team Formation - 8
1. Introducing each other
2. *Met in person and via conference call*
3. Going over syllabus and coming up with topics
4. We met to pick a topic, divided the work, stayed in contact via email
5. Collaborated from beginning once the group was created
6. Met on teleconferences to decide on approach to the team project
7. The group came together and developed goals and objectives
8. We reached out to each other very quickly

Storming

In the *storming domain,* three thematic categories emerged after open coding of 19 responses or 10% of total statements in the study and distributed as follows: *easily resolved conflict (42%); lack of respect for others, other ideas, and compromise (37%); struggles with conflict resolution (21%)*-See table 3. The sub- categories of each thematic category are presented below (Table 2):

A. Easily Resolved Conflict - 8
1. Easily Resolved Differences
2. We did not have many differences
3. We met to discuss topic choice, pros and cons were reviewed and agreed on one topic
4. Conflict was put aside to advance team interest
5. We identified roles and assignments
6. Scheduled meetings in advance to reduce time conflict
7. All felt comfortable with parts assigned
8. We easily work out differences and came to an agreement

B. Lack of Respect for others, other ideas, and compromise - 7
1. Not respecting team lead
2. Late submission of parts needed for draft
3. Conflict in scheduling
4. Faced conflicts on creative ideas
5. Minority opinions disregarded through majority intimidation
6. Team mates not cooperating
7. Teammates wanting to change topic halfway into writing

C. Struggles with Conflict Resolution - 4
1. Did not do a good job sorting out differences
2. Keeping conflict aside was difficult
3. Three teammates disagreed
4. There were differences when two other members joined the group

Norming

The norming domain had four thematic categories coded from 24 responses or 13% of total statements in the study and distributed as follows: *set rules, roles, and standards (33%); applied rules and standards (33%), team and project achievements (21%), and disrespect for team norms (13%)*–See Table 3. The sub-categories in the major thematic categories were as follows (Table 2):

A. Set Rules, Roles, and Standards - 8
1. Designated roles helped to make process smooth
2. Expectation guidelines were set, and roles designated
3. Roles and responsibilities were assigned, and project plan developed - 2
4. Rules and regulations were set up at the beginning
5. We created rules and guidelines
6. We assigned roles
7. We assigned responsibility at first meeting

B. Applied Rules and Standards - 10
1. Team members held each other accountable
2. Group decisions made through discussions and input from all
3. Through discussing and working together conflicts were resolved
4. Collaboration was strengthened
5. Started routine phone meetings and email communications
6. Communication was constant
7. We communicated regularly
8. We used corrections from peers and instructor to reedit the paper and presentation
9. We were in constant contact with one another even on Thanksgiving holiday
10. Flexible with meeting times to accommodate varying schedules

C. Team and Project Achievements - 5
1. Respectful of each other
2. Started appreciating each other's strength
3. Progress was made quickly
4. Everyone on the same page
5. Worked well together most of the time

D. Disrespect for Team Norms - 3
1. Some members less involved and that presented a challenge
2. Some members did not make time to meet at agreed time
3. Resistance to make changes based on group consensus

Performing
The *performing* topic/domain encompassed two emerging thematic categories coded from 20 responses or 11% of total statements in the study as follows: *good performance (90%), and poor performance (10%)*– See Table 3. Sub-categories in the major thematic categories were as follows (Table 2):

A. Good Performance - 18
1. The group did well
2. Met one last time, went over peer review and made corrections on paper
3. Rewrite portions that needed more work
4. Followed project guidelines
5. Had group member review paper and approve before it was sent in
6. We had a high performing team
7. We performed as a group, came together, and hammered out task required by professor
8. Finally getting individuals to pick the slack and help out
9. We achieved small goals to eventually reach the main goal of a quality paper
10. Timely completion and expectations met - 2
11. The group achieved the goal and task
12. Team worked together to prepare paper and present power point
13. Tasks were completed on time - 2
14. Product was exactly how we envisioned it
15. Great finished product
16. Reviewed each other's work

B. Poor Performance - 2
1. Some individuals were not allowed to contribute meaningfully to the product
2. Everyone's schedule was not fully considered

What did your Group Do Well?
Responses to this question included four thematic categories from 36 responses or 33% of total statements in study, distributed as follows: *democratic participation and respect for other ideas (31%); communication (19%); collaboration and mutual support (17%); and coordination, organization, and commitment to mission (33%)*-See Table 3. The sub-categories in the major categories are presented below (Table 2):

A. Democratic Participation and Respect for other ideas - 11
1. Regular meetings
2. Considering and compromising on meetings amidst varying schedules
3. We were respectful and helpful to each other
4. Safe place to be honest
5. Members freely expressed themselves
6. Team members accepted critique of their work
7. Gave room for changes and suggestions
8. Willing to listen to feedback from professor and other team members
9. We listened to each other and contributed ideas
10. Respectful of each other
11. We planned phone conferences, texted, and emailed each other

B. Communication - 7
1. Good communication
2. We maintained regular communication
3. Keeping each other up to date
4. Getting information in a timely manner
5. Communicated very well 2
6. Communication and participation were well done

C. Collaboration and Mutual Support - 6
1. Did well on sorting out differences
2. Worked well as time went on
3. Team interacted well
4. Supportive of each other by stepping in when someone needed help - 2
5. We had everyone's cooperation

D. Coordination, Organization, and Commitment to Mission - 12
1. Had a good leader
2. Good coordination to stay on task and meet deadlines
3. Meet on conference calls
4. Discussions meetings on time
5. Created action items
6. Project progressed in smooth and orderly way
7. Kept each other on track
8. Stayed with timeline and finished project on time
9. Did well forming group guidelines and assigning tasks
10. Responsibilities were well distributed
11. Determination to succeed
12. Teammates worked very hard despite busy schedule.

What could your group have done better?

What *could your group have done better* domain, had six thematic categories coded from 20 responses or 11% of total statements in the study distributed as follows: *democratic participation (5%); choice of topic and company (5%); coordination and organization (15%); communication (25%); commitment (45%); and no improvement needed (15%)*-See Table 3. The sub-categories in the major thematic categories are listed below (Table 2):

A. Democratic Participation - 1
1. Could have been more open to ideas that may improve product even if they are minority opinions

B. Communication - 5
1. Communicate better in online setting, we misunderstood each in emails and other online communications
2. Communication could have been improved
3. Sending tons of emails, a day became too much
4. Mixing emails with conference calls just became too much
5. Communications became difficult due different schedules

C. Coordination and Organization - 3
1. Think through the roles a little more at the beginning
2. Could have accommodated each other's schedules better
3. Group could have met more often to develop comradery

D. Choice of Project Topics and Companies - 1
1. We could have done initial research before choosing a company to work on

E. Commitment - 9
1. Make everyone work on report
2. Not everyone pulled their weight - 3
3. Difficult to motivate slackers
4. Some members were slow in responding to emails
5. Some members did not attend meetings and conference calls regularly
6. We would do better if everyone read and followed instructions
7. Not every member met deadlines

F. No improvement Needed - 3
1. Did not see weaknesses, we did everything well - 2
2. We communicated well

What additional support could your instructor have given the team process or groups?

Narratives of experienced and desired instructor support were organized into four thematic categories emerging from 25 participant responses or 14% of total statements in the study, distributed as follows: *more frequent engagement (12%); clearer expectations (36%); instructor provided clear guidance, expectations, timely support (36%); a general category (16%)*-See Table 3. The sub-categories in the major thematic categories are listed below (Table 2):

A. More Frequent Engagement - 3
1. Meeting with each group virtually and providing feedback along the way
2. Group should have met with instructor at least to review comments together
3. More regular touchpoints with groups and/or individuals could mitigate some issues with team members and address any open questions from group

B. Clearer Expectations - 9
1. Some expectations where not always communicated clearly - 3
2. Should have made clear that every team member needs to help out
3. Low grades for slackers
4. Sometimes delay in feedback slowed team progress - 4

C. Provided Clear Guidance, Expectation, Timely Support - 9
1. Expectations were clear and allowed us to move week to week without confusion
2. I understood the assignment
3. Instructor was attentive to our questions when raised
4. Provided good examples of papers to review
5. Provided a good rubric to guide the final project
6. Instructor gave us enough guidance to get the job done
7. We heard back very quickly in all correspondence and were able to work together to get the job done
8. The instructor provided a fair amount of support
9. Instructor helped whenever we were having difficulties

D. General - 4
1. Thank you for a good class
2. No comment
3. It was hard to pick a topic early in the class

DISCUSSION
Summary

This study used four value creation cycles of a value creation framework (Wenger, et al., 2011), to analyze the role of social capital in experienced and aspired value narrated by members of online project teams. The conceptual framework is aligned with four stages of team development, including forming, storming, norming, and performing in order to illuminate value creation experiences and aspirations of participants in online project teams as they moved from one stage of team development to another, and as they interacted with other students and the instructor in the micro and mezzo environments. The findings show the teams achieving online project team student outcomes and supporting the study questions. The findings also demonstrate that social capital is both inherent and created in learning communities of the evaluated online project teams, and that social capital contributes to both individual and collective objectives of learning communities.

From Social Capital Formation to Performance Improvement in a Value Creation Framework

Emergent themes from project team member narratives related to the four stages of team development and the three open ended topics reveal social capital development growing from team formation to performance improvement. When social capital was accumulated, it was accompanied by value creation, and performance was advanced. The reverse was the case when social capital diminished. Social capital is traceable through four value cycles including immediate, potential, applied and realized cycles as well as through the four team development stages including forming, storming, norming, and performing, and three open ended questions. Structural social capital is evident in immediate value cycle which align with the forming stage. Relational and cognitive social capital is evident in both potential, and applied value cycles which align

with the forming, storming, and norming stages of team development. Narratives in these three stages of team development have elements of structural social capital such as impersonal network relations or team structures; elements of relational social capital such as quality of relations in the storming phase; and cognitive social capital dimensions such as social solidarity or collectivity seen in the creation of norms and values and the application of same. Narratives pointing to challenges to team loyalty; poor quality of relations such as lack of respect; no commitment; or absence of norms are evidence of diminished social capital. Narratives in the performing stage of team development point to individual and collective performance and to the creation of great products which align with realized value in the conceptual framework. When poor performance is described, it is linked to diminished relational and cognitive social capital elements which did not take hold in the first three team development stages and the first three value creation cycles.

In addition, the data appears to validate the value creation framework (Wenger et al. 2011). Categorized empirical data matched the constructs in the conceptual framework adopted for the study and data patterns aligned with the relationships articulated in the value creation framework. Consistent with the value creation framework, thematic categories coded from participant narratives on the four team development stages and responses to the three open questions, align and intersect in varying degrees, with four of the five value creation cycles including immediate value, potential value, applied value, and realized value (Wenger et al., 2011). Furthermore, the emergent themes from student narratives align with expected outcomes in online team projects. Social capital development, value creation, and student outcomes met are described below according to each of six predetermined domains including four team development stages and three open ended questions.

Forming

Structural and relational social capital began accumulating in the forming stage of team development as evidenced in factors described in the *team organization and social process of team formation* thematic categories. Empirical data in the forming stage of team development aligned with immediate value and potential value cycles of the value creation framework. Factors in the *team formation rationale and team organization* thematic categories contributed to team formation and interactions as predicted in the immediate value cycle. Narratives in the *social process of team formation* thematic category were also predicted in elements of the potential value cycle, including the creation of social capital, readiness to perform, and transformed ability to learn

Also, in the forming phase of team development, factors in major thematic categories aligned with two expected learning outcomes as follows: 1. interactions with other students: and 2. Student enthusiasm. Examples of interactions with other students included group working together, using google drive to share contributions, taking turns to head the group, and reaching out to each other quickly. Themes that symbolized enthusiasm included but not limited to the following: 'we met to pick a topic, divided the work, and stayed in contact via email; collaborated from beginning once the group was created; we reached out to each other quickly.'

Storming

Reflections on the storming stage revealed the magnitude of relational and cognitive social capital seen in positive experiences indicated in the following thematic category*: easily resolved conflict.* There were also performance failures in team activities such as conflict resolution when no social capital was accumulated as described in factors related to lack *of respect for others, other ideas, and compromise*, and *struggles with conflict resolutions* thematic categories.

Categorized data in the storming stage of team development aligned with the potential value cycle of the value creation framework. The three thematic categories in the storming domain suggest different levels of potential capital. For instance, factors in the thematic category *easily resolve conflict* reflects the presence of potential capital, while factors in the thematic categories *lack of respect for others, other ideas, and compromise; and struggles with conflict resolution* reflect deficits in potential capital.

Factors in three thematic categories either aligned with or created barriers to the achievement of expected team project outcomes. Factors in the thematic category *easily resolved conflict* created the context for achieving the following 4 student learning outcomes :1. student interaction with other students; 2. student engagement in initiating or contributing to content or other learning activities; and 3. problem-solving skills as team members felt at ease and eager to solve problems together; 4. Critical thinking. There was also a fit with critical thinking statements such as "we met to discuss topic choice, pros and cons were reviewed and agreed on one topic." On the other hand, factors in the thematic category *lack of respect for others, other ideas, and compromise*, and *struggles with conflict resolutions* were barriers to achieving student outcomes as they made it difficult for team members to work together toward desired goals.

Norming

At the norming stage, emphasis on the creation of relational and cognitive social capital at this stage of team development was evidenced in the following thematic categories: *set rules, roles, and standards; applied rules and standards; and team and project achievements,* while *disrespect for team norms* reduced relational and cognitive social capital by negatively affecting positive interactions.

Categorized data from the norming stage of team development aligns with potential value, applied value, realized cycles of the value creation framework, and represent benefits that accrue to community members collectively. The *rules, roles, and standards category* represent social capital which is the glue that holds the social interactions, while the *applied rules and standards* category creates applied value through enforcement of norms which benefits the learning community and advances team project activities. Factors in the *team and project achievement* category represent realized value as substantive progress is made towards team goals. On the other hand, the *disrespect for team norms* thematic category included factors that diminished the creation of realized value by making it difficult for team members to work together or achieve goals.

Factors in four thematic categories are aligned with three expected student outcomes as follows: 1. increased use of critical thinking seen in factors related to *set rules, roles, and standards; applied rules and standards; and team and project achievement* thematic categories which involved thoughtful thinking and discussions.2. increased use of problem-solving skills seen in factors

related to the creation and application of norms; and 3. improved performance seen in the *team and project achievement* thematic category as progress was made and teams worked well together.

Performing

Emerging thematic categories in the first three stages of team development act as inputs into ultimate team performance in the performing stage of team development where accumulated structural, relational, and cognitive social capital are transformed into factors in the *good performance* thematic category, and social capital deficit was evidenced in the items summarized in the *poor performance* thematic category which was lacking in both relational and cognitive social capital. Also, most challenges in the norming and performing stages appeared to have been resolved in the performing stage.

Narratives in the Performing stage of team development are consistent with constructs in in the realized value cycle of the value creation framework. This is obvious in the *good performance* thematic category as team members came together and had a great finished product.

In the performing stage of team development, factors in the thematic category good *performance,* aligned with expected student outcomes as follows: 1.use of critical thinking observed in factors related to the *good performance* thematic category such as individual and collective review and approval of papers; 2 improved student performance observed in factors related to the *good performance* thematic category such as high performing team activities and a great finished product.

What Did Your Group Do Well?

Reflecting on what they did well, learning community members' narratives pointed to structural, relational, and cognitive social capital elements which paved the way for team performance outcomes captured under four major thematic categories including: *democratic participation and respect for other ideas; communication; collaboration and mutual respect; and coordination, organization, and commitment to missions*.

Categorized data of participant reflections on what team members did well align with elements in three cycles of the value creation framework including immediate value, potential value, and applied value. In their collaborative spirit, illustrated in the *collaboration and mutual support* thematic category, members reported the celebration of the act of coming together as learning community. Also, the *coordination, organization, and commitment to mission* thematic category provided structural factors which created readiness to perform. In addition, factors in the thematic category of democratic *participation and respect for other ideas,* created a participatory culture which fostered positive norms, and a collaborative spirit inherent in both social interactions and intangible resources which are part of potential capital. Moreso, three thematic categories including *democratic participation and respect for other ideas; communication; collaboration and mutual support,* foster collaborative behavior and the enforcement and respect of norms which constitute applied value in team practice.

Narratives in the four thematic categories aligned with two online team project student learning outcomes as follows: 1. interactions with other students; and 2. student engagement in initiating or contributing to content or other learning activities. These are observed in factors related to democratic *participation and respect for other ideas, communication, and collaboration and mutual support.*

What Could Your Group Have Done Better?

When participants commented on what they could have done better as a learning community, they pointed to deficits in structural, relational, and cognitive social capital which are illuminated by challenges observed in factors related to the following thematic categories: *democratic participation; choice of topic and companies; coordination and organization; communication; and commitment.* Social capital deficits included barriers to project quality or on time completion, thereby negatively impacting social capital development. In addition, there was a failure to establish appropriate participatory culture and structural frames as observed in three thematic categories including *democratic participation; communication; coordination, organization, and commitment. This created* deficits in social interactions and network resources thereby undermining knowledge capital and potential value creation.

Factors in the 6 thematic categories above, if done well, would have contributed to the following 3 student learning outcomes: interactions with other students; student engagement in initiating or contributing to content or other learning activities; and use of problem-solving skills.

What Additional Support Could Your Instructor have given the Team Process or Group?

Team member narratives on instructor support, celebrated and desired an instructor who injected structural, relational, and cognitive social capital into the group as an external source of tangible and intangible resource for the micro learning community of online project teams. This is captured in the following thematic categories: *more frequent engagement; clearer expectation; instructor provided clear guidance, expectations, and timely support;* and *general.* Team members saw the instructor as a contributor who creates the conditions for social capital to take hold. They also saw and desired an instructor who conditioned the context and dynamism for productive relationships by being very engaged, accessible, and supportive. Three thematic categories including *more frequent engagement, clearer expectations, and provided clear guidance, expectations, and timely support,* portrayed the instructor as a social capital creator who is both a tangible and an intangible resource; an active ingredient in advancing team practice or negatively affecting it; and an active contributor to progress from immediate value creation in team selection to performance improvement as realized value.

Though, the value creation analysis above follows a sequence from one value creation cycle to another, there was not always a predictable break or continuation from one cycle to the other, or between value or social capital from one value cycle to another. Social capital elements in one value creation cycle can be found in another cycle performing a different role in the social capital chain and could influence the next cycle. For instance, member interactions and enthusiasm could be found in immediate, potential, and applied value creation cycles. In addition, though certain social construct elements were concentrated or only existed in a particular team formation stage or value creation cycle, other elements straddled more than one team stage or occurred in one value creation cycle but were relevant in the following team development stages or value creation cycles. Norms were established or enforced in the potential and applied value cycles while performance elements existed in both the applied and realized value cycles. Also, the instructor as a value creator, external to the online project team, impacted social capital accumulation and

performance outcomes in immediate, potential, applied, and realized value creation cycles.

The empirical findings in this study related to the development of social capital, value creation patterns, and the fit between emergent themes and expected student learning outcomes are consistent with findings in the literature. Study findings suggesting an alignment between social capital formation and online project performance are consistent with the conclusions of other scholars who determined that social capital is the "social glue" inherent in social learning environments such as student learning communities (Coleman, 1988; Affanas'ev et. al, 2017; Douglas et al., 2021), and social interactions that stimulate members of network communities to achieve specific aims (Almuqrin et al., 2020). Also, social capital has been tied to individual and collective student learning outcomes (Craig et al., 2016; Kent et al., 2019; Yao et al., 2015).

In addition, the complex and transformative character of alignments between social capital, value creation, and student learning outcomes in this study are consistent with prior scholarship. Social capital and value creation are transformative from one value cycle to another and from one team development stage to another. They also occurred at mezzo(class), and micro (project team) levels of social interactions (Affanas'ev et al., 2017), and social interactions could be external (instructor) or internal (project team) to a learning structure (Yoon & Hyun, 2010; Chung & Yoon, 2015). More recent studies utilizing the value creation framework as the conceptual framework, reveal a dynamic and transformative relationship between social capital and value creation such that social capital at the immediate value creation cycle in the early stage of value creation can evolve into to new activities and interactions associated with potential value, applied value, and realized value (Heemskerk et al. 2021; Mavri et al. 2021).

STUDY LIMITATIONS AND FUTURE RESEARCH

The main limitation to the findings of this study is the reliance on self-report in the data collection which always comes with subjectivity. However, this weakness is mitigated both by the diversity of the contexts in which social interaction took place, and the diversity of participants who reported their experiences and aspirations. The findings are further strengthened by the data saturation and theory validation at a sample size that confirms content validity.

The complexity of the subject matter makes this study a good fit for qualitative data analysis. However, quantitative data could strengthen the findings and expand the realm of analysis. Future work should consider a mixed methods approach including qualitative and quantitative strategies as well as the addition of control or comparison groups.

CONCLUSION AND RECOMMENDATIONS

The created or aspired value revealed in the narratives of learners in online team project activities, represent attributes that should be developed and nurtured in learning communities of active learners and active instructors (Tataw, 2014, 2021). Based on the emergent themes in the three open ended questions, the participants would recommend the following attributes for learners in online project teams: conflicts should be easily resolved, show respect for other ideas; seek compromise; set rules, roles, and standards; apply rules and standards consistently; follow project guidelines; practice individual and peer review; practice democratic participation; have good communication; collaborate and show mutual respect; coordination, organization, and commitment to mission are important to team success; evaluate your choice of project and companies carefully. The participants would also recommend the following attributes to instructors in online project teams: frequent engagement such as meeting each team virtually and having regular touchpoints which include regular review of project progress; clearer expectations including requirements for all members to participate and lower grades for slackers; timely support and feedback; and provide guidance to students such as mentorship and good paper examples to guide project activities. The recommendation is for these attributes to be given significant consideration when designing objectives, activities, structures, and cultures in learning communities.

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