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Student Participation in the Distribution of Instructional Leadership

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A thesis submitted to the faculty of
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Master of Science

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ABSTRACT

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This explorative study offers much needed perspective on students' role and development as instructional leaders (Halverson & Clifford, 2013) through answering the following questions: (a) How can students be involved in distributions of instructional leadership in a studio learning environment; (b) What is the value of their contribution; and (c) What patterns of distributed instructional leadership (DIL) facilitate student involvement? I chose an animation studio at a large western university for the setting, on account of its collective-leadership structure involving students. I randomly sampled a pre-recorded data set of participants' studio interactions and participant interviews to use for the study; participants involved students, faculty, and industry mentors involved in studio productions during qualitative data collection of studio interactions.

My method of data analysis involved pairing the DIL framework with additional approaches, per analysis focus: An ethnographic approach (Merriam, 2002) for a birds-eye overview of the setting influencing studio interactions, Interaction analysis (Jordan & Henderson, 1995) for in-depth exploration of studio interactions, and Spradley's (1980) recommendations for qualitative analysis ensuring trustworthiness of codes and themes.

The study's findings answered each of the three exploratory questions, revealing that students voluntarily took ownership for their learning, and engaged in an instructional leadership capacity over support for their needs and interests. They were valuable in negotiating mutually beneficial compromises as contributed to member capacity and organizational development in academia and industry. Studio leadership and policies facilitated students' interdependent development as instructional leaders through providing guided autonomy in their supportive and formal roles in the studio. More specifically, the studio's deliberate focus on students' development of leadership virtues shaped students' experience and approach toward interpersonal and technical problem solving as contributed to studio production and overall development.

Pairing the DIL framework with additional methods per analysis focus was a useful approach in exploring in exploring the study questions. Future research should replicate the study in different contexts to add perspective to the questions asked. It should also assess the verity of patterns DIL that this study delineates as contributing to individual and organizational capacity, and school development.

Keywords: distributed instructional leadership, capacity building, student leadership, studio environment, learning ownership, leadership virtues

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CHAPTER 1: Introduction

Scholarship on instructional leadership has recently shifted from exploring hierarchical leader-follower relationships to investigating distributed leadership as it emerges in practice—through culturally dynamic interactions between members and their situational environments (Hallinger, 2009; Spillane, Halverson, & Diamond, 2001). Distributed leadership focuses on capacity building within the entire organization, the core assumption being "that each member has some leadership abilities that will be needed by the group at some time" (Harris, 2008, p. 174). Harris (2008) has argued, however, that "internal capacities to develop, grow and innovate" are arguably affected by "the way that leadership is facilitated, orchestrated and supported" (pp. 173, 183; see also Leithwood, 2007; Leithwood, Mascall, Strauss, Sacks, Memon, & Yashkina, 2007; Stoll & Seashore Louis, 2007). The patterns of distributed instructional leadership (DIL) necessary for success will likely vary in different environments according to the instructional goals within each (Harris, 2008; Stoll & Seashore Louis, 2007).

Not much is known about patterns of student involvement that contribute to successful distributions of instructional leadership in educational settings. My exploratory study addresses this literature gap by asking the following questions: (a) How are students involved in the distributions of instructional leadership in a learning environment? (b) What is the value of their contribution? (c) What patterns of DIL facilitate student involvement? My study employed ethnographic methods for both positive and negative case analysis of the observed phenomena.

CHAPTER 2: Review of Literature

DIL is a type of distributed leadership used to explain modern conceptions of leadership in schools, though the framework is applicable in any instructional setting: educational, organizational, government, and so on (Halverson & Clifford, 2013). DIL emphasizes the task of reforming leadership and learning environments at both the organizational as well as sub-level contexts of teaching and learning. According to the framework, instruction and leadership both emerge from dynamic interactions between material and social sources within leadership and learning environments, or situations.

Cohen and Ball (1999) have recommended that the interactions between students, teachers, and instructional materials "comprise the enacted—which is to say, the actual or effective—curriculum" and instruction, as opposed to that which is "developed in advance" (p. 10). This represents a whole-systems view of instruction that intuitively incorporates Reigeluth's (1999) promulgation of the user-designer as facilitator in designing their own instruction and learning (see also Banathy, 1991; Spillane et al., 2001).

Distributed leadership gained relevance in the 1990s as scholarship on instructional leadership began to explore alternatives to sole principal leadership (Barth, 1990, 2001; Blasé & Blasé, 1998; Crowther, Ferguson, & Hann, 2008; Harris, 2003; Lambert, 2002; Marks & Printy, 2003). Instructional leadership was initially conceived as the responsibility of school principals, whose teachers *followed* their lead. Contemporary scholars now recognize the influence of teachers, stakeholders, and other sources of instructional leadership in schools. The DIL framework exemplifies this shift, and "draws on central concepts of distributed cognition"—tasks, tools, routines, and cognitive systems—"to understand how leaders manage and change . . . complex cognitive" school systems (Halverson & Clifford, 2013, p. 2).

Situational-Material Distribution

Halverson and Clifford (2013) have stated that situational analyses look beyond a "static backdrop" of leadership to consider its dynamic context, "the tool-set from which leaders draw to engage their work" (p. 5). The material distribution of language(s), tasks, tools and other artifacts, and routines serve to both create and thwart "opportunities to exercise effective leadership" and instruction (Halverson & Clifford, 2013, p. 35; see also Spillane et al., 2001). Thus, DIL incorporates a rich context for interpreting the cultural distribution of instructional leadership, as recommended by Stigler and Hiebert (1999).

Tasks. According to Halverson and Clifford (2013), DIL's focus on tasks, as opposed to roles, "captures patterns of leadership interaction regardless of" actor position by looking at the macro and micro-level actions that knit "actors, tools, and goals" together (pp. 28-29, 9). Figure 1 provides a visual representation.

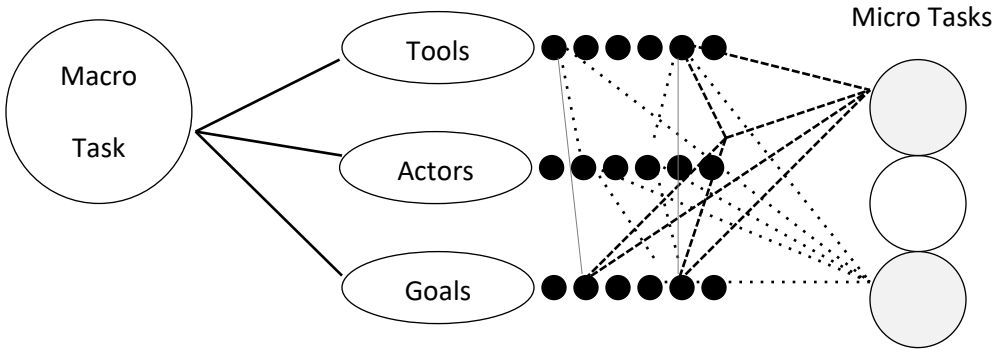

Figure 1. DIL task model. This figure shows the relationship between macro and micro tasks and their associated tools, actors, and goals that interconnect to influence instructional leadership in organizational settings.

Macro-level tasks may involve the creation of instructional resources, assessments, schedules, and technologies "to create safe and effective learning environments" (Halverson & Clifford, 2013, p. 5). Additional examples are listed in the table below.

Table 1

DIL Macro-level Tasks

DIL Macro-level Tasks
Leadership
Traditions that define leadership practice in schools
Policies
Expectations
Role descriptions
Scheduling
Budgeting
Creating a safe learning environment
Creating partnerships to leverage resources and talent
Instructional
Design opportunities for professional and student learning
Build professional learning communities
Build coaching and assessment routines to support teaching practices
Monitor Instructional practices
Acquire and allocate

Tools. DIL categorizes tools according to their features and affordances (Halverson & Clifford, 2013). Designed features signal and encourage appropriate use, whereas tool affordances represent actual use in practice. According to Halverson and Clifford (2013), "creative instructional leaders work in" the "gap between feature and affordance by using tools in ways" reflective of and improving on "the intention of tool designers" to "effectively shape new practices to improve instruction" (p. 11). Typical leadership tools may or may not include teacher and student evaluation forms, reports, websites, and so forth. Additional examples are listed in the table below.

Table 2

DIL Tools

DIL Tools
Leadership
Procedures
Keyboards
Parking lots
Computer networks
Roles—Crossing guards, and so forth
Instructional
Curricula
Instructional materials
Roles—Instructional coaches, and so forth

Routines. DIL routines comprise of the patterns of action that define practice within organizational cultures (Clifford, 2009; Halverson, 2003; Halverson & Clifford, 2013). Halverson and Clifford (2013) have noted that "the purposive use of tools and tasks to reshape routines constitutes a powerful resource for leadership practice" (p. 12). The negotiation, reshaping, and intentional or unintentional neglect of routines illustrate leaders' effect on local situations.

Social Distribution

Harris (2008) said that "if leadership equates with influence, as so many studies have shown, then all leadership is inevitably distributed, to some degree" (p. 183). DIL encompasses the social distribution of instructional leadership as it emerges from sharing, co-creating, and obstructing tools, tasks, and routines (Halverson & Clifford, 2013). According to Halverson and Clifford (2013), task distribution may involve social distributions that are collaborative, collective, and coordinated. Clifford (2009) added oppositional relationships to the list of possibilities. Collaborative distribution of tasks involves simultaneous engagement of multiple

leaders. Collective distribution involves task division across leader roles. Coordinated distribution involves sequential organization of routines for leaders to engage in. Oppositional distribution involves action-checking, as necessary, to strengthen reform efforts.

DIL recognizes the potential of ordinary stakeholders, or members, to contribute to and affect leadership through influencing both organizational and team direction, strategy, and motivation (Spillane et al., 2001). Analysis begins with an investigation of who participates in leadership activities, "what they do," and "how they shape (and are shaped by) the context of practice" (Halverson & Clifford, 2013, p. 4).

Students and teachers as instructional leaders. Research indicates students' active and passive influence on instructional capacity and thus instructional leadership. Cohen and Ball's (1999) illustration of student involvement addresses their passive impact on instructional capacity:

> One way to consider the matter is that the resources that students bring influence what teachers can accomplish. Students bring experience, prior knowledge, and habits of mind, and these influence how they apprehend, interpret, and respond to materials and teachers. . . . Students—and interactions among students—shape the resources for their own learning. (p. 10)

Cohen and Ball have also suggested that teachers' "perceptions of what students bring," affects student response, and thus instructional capacity: "One teacher's interactions . . . will yield greater instructional capacity than those of a colleague who works with the same class, because the first teacher is more adept at evoking and making use of students' ideas" (p. 10).

Students' active influence on instructional capacity is demonstrable in instances of peer mentoring. Student willingness to *actively* participate in and *contribute to* instructional leadership is facilitated when students are provided with mentoring roles and responsibilities (Wolff, 2007). Brigham Young University's animation studio serves as a good example (Wolff, 2007).

In an interview for AnimationMagazine.net, Professor Kelli Loosli and Brent Adams, the program creator and director, explained the instructional purpose for student involvement in studio critiques of student work on the film: "We want students to develop the confidence to oversee each other's work," said Adams "whether they're an art director or a lighting lead on a project" (p. 90). The return on investment in facilitating student involvement has been high—from the acknowledgement and involvement of professional studios to 99% guaranteed job placement: "Pixar sent five people to attend one of these [critique] sessions," said Loosli, "and they got really excited when they saw that our students had the maturity to organize critiques and schedule assignments." Loosli explained that the studio was also impressed that the students were "smart enough to know what's good." He continued to relate that as a result of their visit, the studio planned to send "about a dozen people to BYU over the next seven months to mentor the students making the next senior film, called *Kites*" (p. 90).

Student facilitation of the animation studio's critiques is unique among approaches to instructional studio environments. Instructional studios traditionally place the responsibility of critiquing and instructing on the professor and outside practitioners, with student collaboration occurring at the team level during the hours of regular studio workshop (Brown, 2006).

Halverson and Clifford (2013) have also noted that "recent research emphasizes student involvement in assessing and constructing learning environments" as well (p. 36), and voiced a

concern about the literature gap "between teaching, on the one hand, and learning on the other" (p. 36; see also Jenkins, Purushotma, Clinton, Weigel, & Robison, 2007; Young, Cline, King, Jackson, & Timberlake, 2011). He warned that "by overlooking the perspectives of students, the curricular focus of teachers and leaders can run the risk of becoming just another reform task among the adults in the building—a gear that turns no wheels" (p. 36).

Instructional leadership capacity building. Harris (2008) has recommended that leadership strengthens as an organizational resource when members "capitalize on the range of their individual strengths, and … develop … a fuller appreciation of interdependence and how one's behavior affects the organization as a whole" (p. 177). Thusly stated, distributed leadership lies at the core of the capacity-building model of leadership for sustainable school improvement (Harris, 2008; Louis & Marks, 1998; Mitchell & Sackney, 2000). Cohen and Ball (1999) have noted, however, that "most discussion of capacity has focused on teachers," despite research showing "that students' experiences, understandings, interests, commitments, and engagement are also crucial to instructional capacity" (p. 10). If developmental efforts seek to enhance organizational productivity, opportunity, and creativity, instructional leaders must also acknowledge and develop students' membership capacity for leadership.

Wolff's (2007) description of student involvement in the animation studio illustrated students' capacity for leadership in part; the specific actors, tasks, and associated tools and routines required for students to successfully contribute to instructional leadership capacity will likely vary situationally according to different instructional goals and school environments (Hallinger, 2009). The constraint Harris (2008) has identified in practitioners' approach to facilitating leadership is that it "is not restricted to any particular pattern and cannot be prescribed in advance" (p. 175). His argument denotes that leadership "emerges within the

organisation in order to solve problems or to take action" (p. 175). Differing patterns of leadership facilitation have variable impact on internal capacities for development and innovation (Harris, 2008, p. 173; see also Hallinger & Heck, 2011; Leithwood, 2007; Stoll & Seashore Louis, 2007).

In order to facilitate the development of leadership capacity, then, Stoll and Seashore Louis (2007) have recommended that practitioners identify how to orchestrate activity that elicits desired patterns of DIL that help the organization grow. This would require "careful accounts of social and situational distributions of practice that articulate leadership tasks as identified through relevant tools," as Halverson and Clifford (2013) have recommended (p. 39). When the DIL framework is used in this way, as a "diagnostic system," Halverson and Clifford's argument suggests that it will reveal "the occasions for effective change" (p. 40). Practitioners and researchers' careful analyses of these occasions "could then result in the kinds of knowledge . . . and understanding . . . that can better situate reform efforts . . . for more effective . . . teaching and learning" (pp. 39-40).

Statement of Purpose

The purpose of my study, therefore, was to explore student involvement in distributions of instructional leadership, in order that I might discover situational patterns facilitative of student contribution to development therein. Following Wolff (2007), I designed a similar study where I sought to identify patterns of DIL facilitating student involvement in an animation studio's project design and development.

The following research questions guided my study of student participation as instructional leaders:

1. How are students involved in distributions of instructional leadership in a studio learning environment?
2. What is the value of their contribution?
3. What patterns of DIL facilitate student involvement?

CHAPTER 3: Method

DIL is a framework for observing and understanding instructional leadership (Halverson & Clifford, 2013), and could be considered its own method of observation; I paired it, however, with an ethnographic approach (LeCompte et al., 1993; Merriam, 2002), interaction analysis (Jordan & Henderson, 1995), and Spradely's (1979, 1980) recommendations for qualitative analysis, for the following purposes:

- An ethnographic approach helped to explore a birds-eye overview of the studio's learning environment—the setting informing where leadership interactions took place.
- Interaction analysis helped to explore the interactions surrounding members' use of leadership tools, tasks, and routines, and to narrow in on key themes therein.
- Spradley's recommendations for qualitative analysis helped to ensure trustworthiness, in that it helped to verify that I had captured the richness of the context for a meaningful analysis of codes and key themes.

I combined methods because I value the focus of each as contributes to the purpose of the study, and the questions asked. It is important to note that my own philosophical and epistemological underpinnings intertwine with those above, though mine are distinct in that they center on Jesus Christ and His doctrines as revealed and recorded by "his servants the prophets"—those to whom Amos has said that "the Lord God will do nothing, but . . . revealeth his secret unto" (Amos 3:7, King James Version).

Accordingly, I believe in the correlation of knowledge and truth as taught by Joseph Smith—that "truth is knowledge of things as they are, . . . were, and . . . are to come" (*Doctrine & Covenants* 93:24). I believe in the role of the Holy Ghost in learning truth as taught by Moroni, that "by the power of the Holy Ghost ye may know the truth of all things" (Moroni 10:5,

The Book of Mormon). I also believe in the role of obedience to God's commandments in learning truth as taught by Joseph Smith, that "he that keepeth his [God's] commandments receiveth truth and light, until he is glorified in truth and knoweth all things" (*Doctrine & Covenants* 93:24).

Therefore, my primary approach toward understanding the cultural phenomena involved personal revelation. The principles of personal revelation that I followed throughout data analysis involved an exercise of "faith in Christ . . . with a sincere heart," and "real intent," believing that through the influence of the His Spirit He would "manifest the truth of it" to me (Moroni 10:4, The Book of Mormon; see also *Doctrine & Covenants* 8:1-5; Galatians 1:12, King James Version; Isaiah 28:9-11, King James Version; Monson, 2011, 2013; 2 Nephi 28:30, The Book of Mormon; 2 Timothy 3, King James Version).

For the setting, I chose an animation studio's student-driven senior film production at a large western university in the United States of America because of its fit for the purpose of the study. The intentional design of production experience to facilitate a unique distribution of leadership involving students, professors, and outside professionals was the primary consideration influencing the choice of setting in this case (Merriam, 2002; Stake, 1995, 2000, 2010). The study utilized archival video of participants' studio interactions and interviews, taken over an 18-month period.

Setting

The animation studio operates under the auspices of three colleges: The College of Engineering and Technology, The College of Fine Arts and Communications, and The College of Physical and Mathematical Sciences. The studio's senior animation short involved student leadership in all areas of film production—producing, directing, and team development.

Development of the senior film occurred over the span of one-and-a-half years, beginning midway through students' junior year. The details of studio production, including biweekly critiques led by student leaders, will be explored in detail in the results.

Participants

Studio participants consisted of professors, industry professionals, and students—senior students enrolled in the studio class, other current and potential animation students, and collaborating students from other departments. Student participation estimates totaled to approximately 60 members. Five faculty members participated, including the studio director—the class "teacher," though we directly captured only a few faculty members participating in studio interactions on-site. Involvement was dynamic; unofficial studio members came and went as time and circumstance permitted, and some students left mid-production for promising internships and later reintegrated into the studio.

Data Collection

Ethnography (LeCompte, Preissle, & Tesch, 1993; Merriam, 2002; Spradley, 1979, 1980; Wolcott, 1999) and interaction analysis (Jordan & Henderson, 1995) both call for the use of video to capture participant interactions, and overall studio culture from which student leadership emerged (Mills & Gay, 2016; Wolcott, 1995). Video data collection began during the initial stages of project development during the students' junior year, half-way into the school year. I joined the data collection team at the beginning of the students' senior year and participated in taking video of studio work—biweekly production critiques and lab-work—and informal interviews.

Informal interviews typically took place after studio critiques, during the lab hour following studio dailies. They were not formally structured, but were guided by dynamic

observational inquiry. Formal interviews were primarily focused on leaders with formal leadership roles in the production, though all participants were involved in a supportive leadership capacity.

We stopped filming studio work halfway into the students' senior year; formal interviews became our sole means of tracking changes in studio production and student participation after that time. In all it is estimated that over 60 hours of video were taken to capture studio production processes and associated interviews, providing a means of data triangulation.

Data Sampling

I conducted a stratified sampling of the data—group review meetings (called dailies), lab interactions, and interviews—and split each of the 3 categories into an additional 3 sections, and randomly sampled 3 interactions per section. I ended up with 9 leadership interactions per data type—3 per section, and 27 leadership interactions in total. I used interaction analysis (Jordan & Henderson, 1995) as my guide for discerning interaction boundaries; interview boundaries were from beginning to end of interview; group and review interactions had a natural beginning and end. Boundaries for review interactions consisted of individual reviews of studio participant tasks, and beginning- and end-of-meeting discussions led by the student-producer and student-director, the studio director, and industry professionals.

Data Analysis

I used DIL to code the remaining sample of leadership interactions. I paired DIL with interaction analysis (Jordan & Henderson, 1995) to provide for a more detailed look at leadership interactions, and ethnography for an overview of studio culture that provided the context for facilitating interactions. I used Spradley's (1979, 1980) recommendations for qualitative

analysis to ensure that my codes captured the richness of the context, and to help me narrow in on key themes and codes.

The DIL framework provides a list of typical instructional leadership tasks (refer to Table 1 from the literature review) and associated tools (refer to Table 2 from the literature review); my initial coding of the data employed an inductive approach to using the DIL framework, however. For example, I discovered early on in the coding process that many tasks were negotiation-based—though negotiation is not a leadership task highlighted in the DIL framework.

By negotiation-based, I mean that task value, ownership, definition, and approach were negotiated, or brought about by discussion and compromise; I explain this further in the findings section. As a result of that finding, however, I coded most task-based interactions under the theme of task-negotiation (e.g., *Dailies Interaction*: Oliver—"Jules, you had something to say," Jules—"Oh, I was just wondering what all Tilbert's doing for effects," Oliver—"He had been morphing Houdini on doing some dust hits, . . . And I know your interests lie more in the tech stuff anyway, so, you and I need to talk this evening," Jules—"okay;" *Coding*: Jules—TN [task-negotiation], Inquires into tasks of interest—keep self <u>meaningfully</u> involved; see the appendix for more examples).

My initial coding of studio tools was similarly inductive, though some codes were predictable within the DIL framework—these were the tactile tools (e.g., the computer pipeline students developed and used to organize all of the files for the film). Other tools I identified were language-based (e.g., the use of "we" versus "you" in studio communications between leaders and task owners, or collaborators; expressions of confidence and faith in studio participants). Language is identified as part of the situational-material distribution of

instructional leadership, though the DIL framework doesn't expand on it, or identify language as a tool.

I referred to Spradley's (1980) recommendations for coding semantic relationships in the initial domain analysis to ensure that my capture of DIL portrayed in studio interactions was thorough and rich (Merriam, 2002; Spradley, 1979, 1980; Williams, 2011). The table below provides a sampling of semantic relationships found in the data.

Table 3

DIL Semantic Relationships

DIL	Semantic Descriptor	Example
Task		
Studio contribution	Attribution	Proactivity *is an attribute of* student leadership, or contribution.
Task ownership	Rationale	To give back to the university *is a reason to* take ownership of the senior film and make it better, despite differences in story preference.
Negotiation	Strict inclusion	Negotiation *can be* an instructional leadership task.
Reasoning	Means-end	Reasoning *is a way to* influence instructional leadership.
Task review	Sequence	Having your team lead review your task work *is a step toward* getting it approved as final and complete.
Tool		
Leadership virtues	Strict inclusion	Leadership virtues *can be* tools for negotiation.
Computer pipelines	Function	Computer pipelines *are used for* organizing project files.
The computer lab	Spatial	The computer lab *is a room in* the animation studio.
Auditorium room	Location-for-action	The auditorium room *is a place for* screening and reviewing film progress.
Routine		
Assignment negotiation	Cause-effect	Student leadership *is a result of* participation in and learning from assignment negotiation routines prioritizing ownership and mutual respect.
Social Distribution		
Supportive leadership	Strict inclusion	Supportive leadership *is a kind*, *or type, of* distributed leadership.

I then organized the domain categories and their attributes to discern additional themes underlying participants' negotiations influencing studio development and support—including the roles and routines surrounding participants' negotiations. These I verified with my chair, an expert in qualitative analysis. This stage in the analysis can be considered componential, according to Spradley's recommendations for analysis (1980). It helped me discover important themes that I had alluded to, but not specifically developed in my initial analysis. This led to iterations of coding and reanalysis around the specific themes I desired to highlight in the final write-up.

I referred to the list of typical instructional leadership tasks and tools, lain out in the DIL Framework, as my initial componential and thematic analyses were underway. I used the list to identify relationships demonstrating students' influence in traditional practice. The process of identifying similarities and differences between domain terms, and identifying structural relationships, followed Spradley's (1980) guidelines for taxonomic analysis (Williams, 2011). This greatly informed further analyses, and the final write-up of my findings. Tables 4 and 5 illustrate some of the structural relationships discovered in this step of the analysis.

Table 4

DIL Tasks Taxonomic Analysis

Typical Macro-level Tasks	Codes
Leadership	
Traditions defining leadership practice in schools	College traditions that knowingly or unwittingly support individualist methodologies; college traditions that manifest a belief in individualist methodologies; college traditions that manifest a belief in collaborative methodologies; college traditions that manifest an understanding of collaboration and interdependence through successful facilitation
Policies	Student-leadership policy; Open-participation policy
Expectations	Studio participant expectations communicated by the student director and team leads; studio participant expectations communicated by the studio director and animation faculty
Role descriptions	Student director, student producer, team contributor, and so on
Scheduling	Project scheduling conducted student producer and director; Training scheduling conducted by team leads
Budgeting	Stakeholder budgeting—College and departmental
Creating a safe learning environment	Leadership simulation, mentoring relationships, learning negotiation
Creating partnerships to leverage resources and talent	Reasoning with instructional leaders, assignment negotiation
Instructional	
Designing opportunities for professional and student learning	Leadership simulation, reason with instructional leaders, assignment negotiation
Building professional learning communities	Studio design and development

Table 5

DIL Tools Taxonomic Analysis

Typical Tools	Codes
Instructional	
Curricula	General technical areas—animating, modeling, rigging, and so on; Film-specific technical areas—shading towels, fog effects, and so on
Instructional materials	Those provided by professors to consult on best practices for story, design, and so on; Those created and provided by team leads to build team knowledge and capacity
Leadership	
Parking lot	Other accommodations—2D and 3D Studios
Keyboards	Related equipment—Supercomputer, computers, and printers
Computer network	Supercomputer network
Both	
(No relating category)	Leadership virtues

Trustworthiness

My prolonged engagement with, and persistent observation of, study data provided a measure of trustworthiness (Lincoln & Guba, 1985). I used reflexive journaling to chronicle my questions, decisions, and evolving view of the study and the phenomena involved (Merriam, 2002). I discussed my findings and conclusions with peer reviewers throughout the study. Peer reviewers evaluated the study's integrity in measuring the influence of personal assumptions, biases, theoretical orientation, and worldview. They also ensured that I provided thick description of the phenomenon and gave reliable negative case analysis—per standard for case studies employing ethnographic methods (Merriam, 2002; Stake, 2000).

My triangulation efforts entailed the investigation of passive observations via formal and informal interviews of student leaders and participating professors. It also entailed comparisons between what individuals vocalized in their interactions with one another, and what actions followed and preceded such interactions. Additionally, it entailed the triangulation of video sources with other artifacts pertaining to the study—including other published works on the animation studio (West, 2013).

CHAPTER 4: Findings

The structure of my results consists of two sections; the first conveys a descriptive overview of the studio setting simulating industry leadership. The second provides a detailed examination of participants' interactions in working with instructional leaders to garner support for their learning goals and interests, and subsequent organizational investment leading to studio development. Each section contains a thematic account of student participation in the core tasks, tools, and routines associated with DIL in this setting.

Table 6

Thematic Structure

Thematic Structure
Meta-theme 1: *Leadership Simulation*
Theme 1: *Technical Leadership Development*
Theme 2: *Interpersonal Leadership Development*
Sub-theme 1: *Supportive Leadership*
Sub-theme 2: *Formal Leadership*
Micro-theme 1: *Director*
Micro-theme 2: *Producer*
Sub-theme 3: *Studio Consultants*
Theme 3: *Provisional Accommodations*
Sub-theme 1: *3D Animation Studio*
Sub-theme 2: *2D Animation Studio*
Theme 4: *Routine Production*
Sub-theme 1: *Senior Film Production*
Sub-theme 2: *Dailies*
Sub-theme 3: *Lab Interactions*
Meta-theme 2: *Learning Ownership*
Theme 1: *Feedback Process*
Sub-theme 1: *Product Negotiation*
Example: *Story Ownership*
Example: *Frame Length*
Example: *Content Sensitivity*
Sub-theme 2: *Production Negotiation*
Sub-theme 3: *Talent and Resource Negotiation*
Theme 2: *Leadership Virtues*
Sub-theme 1: *Pioneers*
Sub-theme 2: *Participants*
Example: *Able to Add Value*
Example: *Able to Reason and Negotiate with Humility and Courage*
Example: *Able to Have Interdisciplinary Appreciation and Respect*
Example: *Able to Manage Participant Engagement and Value*
Example: *Able to Manage Member Integrity*
Sub-theme 3: *Industry*
Theme 3: *Assignment Administration*
Sub-theme 1: *High-level Assignment Administration*
Example: *Closing Dailies*
Example: *New Members*
Sub-theme 2: *Specific Assignment Negotiation*

Meta-theme 1 describes the setting in which the studio's leadership interactions took place, and the DIL context facilitating membership capacity building, and more particularly student capacity building in their role as instructional leaders in the studio. It's important to re-emphasize here that leadership—as I refer to it—is equated with influence. In the context of DIL and membership capacity building, all members of a learning environment exert influence that contributes to, or compromises, the instructional and organizational capacity therein; this section looks at how the studio's learning environment, intended to simulate industry leadership, facilitates the emergence of student development as instructional leaders.

Meta-theme 1 describes how the studio setting simulated industry leadership—an instructional task intended to provide opportunities for students to develop technical and interpersonal leadership skills in both formal and supportive leadership capacities. It explores how the learning environment—the interdisciplinary overhead and studio policies (leadership tasks), provisional accommodations (leadership tools), and routine productions (instructional leadership)—all aligned to facilitate role development in a manner that modeled the organizational interdependence found in industry. The setting was ideal for a study of student participation in instructional leadership.

Meta-theme 2 describes the leadership interactions that emerged from participation in the studio, as was desirable for organizational growth. It also explores those interactions that led to the development of the studio's learning environment, as they were discovered to follow the same pattern (this will be described later in detail).

Meta-theme 2 provides a description of how students' active ownership over their individual and shared learning needs and interests, which resulted in additional learning opportunities for students and faculty alike—throughout design and development (D&D) of the

animation studio, and in ongoing studio productions. It explores the feedback process students engaged in to reason and negotiate with one another over learning products, processes, and talents and other resources in formal and supportive capacities as instructional leaders.

Meta-theme 2 also explores the students' leadership virtues as the main tools used in negotiating ownership and support. I chose the word *virtue* to describe students' useful qualities in their approach toward reasoning and negotiating with their peers and colleagues as instructional leaders. Their leadership virtues shaped the way they participated as instructional leaders, and were considered morally desirable goods for their interpersonal development.

Last but not least, this section entails a description of the routines involved in student administration of studio assignments; it explores how these routines engaged participants in taking ownership of their learning interests, and the opportunity for developing the virtues of successful leadership. While administration involved organization of team instruction and assignment review, this section focuses solely on initial assignment negotiation.

I carefully selected quotes to provide a basic context for insight into each meta-theme, though some modification was necessary to focus on the key themes therein. My intent in making further modifications was to protect participant identity and help enhance flow. These modifications include the use of pseudonyms and a correction of grammatical errors in participants' quotes.

Meta-theme 1: Leadership Simulation

The studio environment simulated leadership in industry by facilitating a production process described by students and faculty as "student driven" and "student generated, but then followed more of a studio model"—"a microcosm . . . for what's out there" for students. One of the students we interviewed described the studio environment this way: "The film presents

problems that you probably wouldn't have another opportunity to solve" in a traditional school context. In response to a question about the skills the studio experience helped students develop, he replied "your approach toward how to manage and handle a problem, whether it be technical or interpersonal."

Student leadership roles on the film simulated typical hierarchical organization for "how a film gets made" in industry. Animation faculty set them "up in a way so" that in working together on the collaborative group project students literally simulate "what their experience is going to be like in the studio." The studio's four sponsoring departments—from three distinct colleges—combined their institutional resources to provide the authentic collaborative experience, and to take ownership in the studio's success.

Animation faculty facilitated leadership simulation, and guided students' leadership participation, through acting in the role of consultant. Studio policies required that students manage their own projects and assignments through democratic organization of student volunteers coming from a broad array of talents, interests, background experience, and leadership (democratic organization is explained in a later section on studio routines for senior film productions.). The student-leadership policy encouraged students to embrace technical and interpersonal studio constraints—including respect for religious values—in formal and supportive leadership capacities.

The studio's open-door participation policy welcomed an interdisciplinary experience for all interested students, familiarizing each with the interdependence of professional practice. Pre-animation and computer science (animation emphasis) majors worked alongside matriculated students—students who had already been admitted into the university's animation program—and interested students from other colleges and departments. The participation policy allowed for

additional mentoring opportunities with faculty in the three different colleges, with interested professionals—some sent by recruiting studios, and with alumni interested in sharing (their own) words of wisdom.

One of the animation professors described the studio's administrative overhead as an "odd interdisciplinary game" and "an administrative nightmare." According to the program director, however, the participating departments and colleges believed their collaborative efforts were worth it if they could positively impact society: "All feel that long term we can make a difference on society . . . and they're willing to . . . do a little bit extra . . . to see if we can." Thus student leadership was and has continued to be key in unifying the studio's supporting administrators and faculty.

Theme 1: Technical leadership. On a technical level, the studio experience helped students transfer and apply foundational skills into areas of specialization. For example, one of the students I interviewed was working on texturing towels on the senior project. He had "signed up," or volunteered, for the towel assignment because he was concurrently "taking a shader class," and he thought he could "use that knowledge to help make the towel shaders"—to give the towels on the set their soft fluffy texture. In class he was working on fruits and vegetables, however. The student's task was novel, and the process as well.

The technological context in which the student was using shaders in was new to him, though he had used the technology "a little bit for a modeling class"—another specialty area—"earlier in the year." Additionally, he could not find anyone with specific experience shading towels that he could turn to for help. He described the task as a "trick" and "a struggle to be creative and think and solve problems" he "didn't expect to be so involved" and "take . . . forever" to solve. The student's experience was typical according to interviews with the studio

director, who informed us that the technical issues "are different from film to film . . . so it's not like I can say 'oh here is exactly how to do it,' because it needs to be done differently."

The student's growing expertise was very apparent in my conversation with him. His experience had replaced novice assumptions (e.g. "I thought, okay, I'll just put some noise in there and make it bump) with realistic expectations for the task, and technical problem solving in general. He understood the tedious nature of the task, and relayed that "it gets really tedious . . . you only have this much room between it looking like concrete, or a towel that's dipped in paint, and a towel that's slightly fuzzy—at some points it started looking like hummus." Yet he had developed a rationale and approach to problem-solving that was very practical:

> It seems reasonable to me because when you have a real job doing this kind of thing you're going to have to explore and try new things all the time and figure out how to make it work. . . . You're not getting paid to solve a problem that somebody's already solved. You are the other half.

The studio director explained the rationale for students' experience with technical problem solving—the relationship between the foundational skills taught in classes, and the dynamic experience students get working in studio productions—in similar terms:

> The thing about this industry is that what the studios are really looking for are creative problem solvers, so that's actually what we are trying to create. Yeah we'll create a modeler or we will create an animator, but the underlying thing is we're trying to create problem solvers. Sometimes people have thought that the animation program doesn't belong at a university; it belongs at some technical college because they think we're just teaching them software and that the software, once it's obsolete—yeah. We use software, but we don't really teach the software. We teach principles of problem solving, and okay

> here are some software tools that you can use, but if that tool doesn't work then you have got to figure out a different tool, and a different tool, and a different tool.

The development of technical expertise and problem solving skills helped students to stand out among applicants to professional studios; higher in priority, however, was the development of interpersonal problem skills, as the studio director went on to relate:

> They can practice for the year on the film, and we have mentors from studios come all the time and help them with those [technical] skills, but . . . by the time they're a senior I spend way more time thinking about: "Are they learning those other things?"—how to be that leader . . . to really contribute and not become a cancer that always whines and complains when they go to work— "are they getting those other experiences?"

Theme 2: Interpersonal leadership. The studio's approach toward teaching interpersonal problem-solving skills—what the studio director referred to as "the right personality" for working in a group—was very direct and intentional. Though interpersonal problem-solving was an inescapable component of studio involvement—as one student succinctly put it: "You kind of have to interact with people"—students developed an appreciation of the challenge. Interviews with the studio director highlighted the influence of mentoring alumni in helping the students to understand that "the frustrations they have on the group project—of who's doing what, and why do it this way"—would not change in industry; "the problems actually get bigger." They taught the students that if they "can solve some of the [group] problems" beforehand, they will be "that much further ahead."

Animation faculty helped students learn how to manage interpersonal constraints and opportunities with a focus on building and retaining lasting friendships. The student director

expressed that the way he interacted with participants not meeting their deadlines was directly influenced by the faculty's focus on managing friendships:

> The faculty has made it abundantly clear that a lot of the jobs you will get in the industry will be on the basis of referrals. If someone enjoys working with you and feels that you will get your work done, they are going to refer you . . . if someone says, "Hey, we need someone like this on our project." . . . You don't want to burn any bridges.

Interpersonal skills developed in the studio experience helped students center on ownership and compromise. Skills that helped students to develop and share their passion, and to demonstrate "mutual respect for other people," included the following—listed by the studio director:

- An ability "to take criticism"
- An ability to "compromise . . . ideas for the ideas that are best for the project"— to "let go of good ideas" that are "harder to implement, or they're not in a position for it to get implemented or chosen"
- An ability "take ownership of ideas that are not yours—not tell people that it was your idea, but . . . make it your goal and passion"
- Discernment for "when to talk . . . and demand that they listen to your idea, . . . advice, and opinion, and when to shut up and just work hard . . . on somebody else's idea and make it your own, and make it better because you worked on it"

The studio director acknowledged the challenge of getting along, and stated "it's really hard for everybody. I think it may be even more hard for artists because artists are taught 'this is your art, and your creativity.'" The student director over the senior film echoed this thought, stating "the program does a really good job of building us up individually as artists to the point

that we are not a group. We are a bunch of individual artists who agreed to work together, and I think that is the most frustrating aspect."

The challenge to get along took on different dynamics per leadership role on the film. Students developed their interpersonal skills through general leadership participation supporting the film's development, and in formal leadership capacities. Studio consultants guided their participation in a manner that facilitated their leadership development.

Sub-theme 1: Supportive leadership. The studio director explained the basic premise underlying students' supportive leadership role in the studio: "Everybody should go out and try and positively influence a company. . . . If we aren't trying then we've lost." The studio's interdependent environment provided the essential conditions for learning and demonstrating supportive leadership, and the lack thereof.

Interviews with the studio director indicated that the students who struggled the most in taking on a supportive leadership role in film production were those whose ideas were beyond the capacity of the studio to produce. He relayed the example of one student who he considered a genius—"his ideas were always better than everybody else's, and it was across the board: the art, design, technology, everything." The student's ideas were above the capacity of the group to achieve, however, and would have rendered the film impossible to complete if accepted. He explained that the student "had a hard time letting go because he knew his ideas were better, he knew it would work better, and his approach would be better"—if it weren't for the constraints of the project. In order to learn how to play a supportive role on the film, the student "had to figure out what his responsibility with the group was, and literally just ignore all the other stuff. . . . He would literally have to bite his tongue."

On the other hand, interviews revealed that some students struggled with the confidence to approach the group with their ideas "and see where it goes," thus holding back potential value they could add to the project. The studio director indicated the importance of student confidence in relaying his response given to a human resource (HR) representative on what his advice would be to a student "they wanted to hire," or to his or her boss "to get the most out of this [particular] student." In answering the two-way question, he described the student's insecurities in speaking up in a group setting:

> This student is very talented, very smart. He still doesn't have enough self-confidence in a group to say, "Here's a really good idea I have." He's too willing to listen to everybody else's idea and try and incorporate their ideas—even though he was in a leadership kind of role on a previous film. He was still fairly quiet, fairly shy, but he had really great ideas. He still needed to figure out when to stand up and say "No wait; listen. I have a good idea, it's appropriate, and it fits right into this thing." He would sometimes voice his opinion to one or two other students, . . . but if they didn't really encourage him then it would go nowhere.

The studio director explained in the interview the importance of helping students feel comfortable in sharing their ideas that they might increase their personal and organizational value. He relayed industry observations of team members who, as with the student he referenced, gave up "too early" without thinking about how to change the idea to make it "more appropriate for the current project." Their contributions curtailed with a conclusive "I'm not going to bring up anymore ideas like that anymore," because they felt that "nobody liked it;" he indicated that if they had kept working on the idea to make it fit, the rest of the team would likely

follow behind. Instead, he observed that for lack of profit, the company would relegate such individuals to "the back corner" where they were given assignments that no one else wanted.

The studio director indicated that the workforce is "not a good environment . . . to learn" how to approach others. He shared his belief that "there are a lot of people that could have learned it in school" but didn't, and "end up being the end cubicle guy" as a result. Thus, for the purpose of facilitating student success in learning "when to make a comment," and "when it's appropriate" for the constraints of the project to do so, the ability to contribute in a supportive capacity was a key focus of students' interpersonal development.

Sub-theme 2: Formal leadership. The studio's formal leadership opportunities introduced an additional aspect of interpersonal development involving administrating tasks such as presenting, organizing meetings, organizing the project, managing project deadlines, and setting expectations, managing student volunteers. The studio director described the purpose for engaging students in formal leadership as follows: "We want our students to learn how to do that because our goal is that our students go out as technical directors or artistic directors." His vision was to enable students with the leadership that would avail them with greater opportunities for career development, beyond what they might otherwise be able to achieve. Thus, the formal leadership roles on the film were all designated to students—producer, director, and team leads. The roles of producer and director are explained here; I explain team leadership in detail in another section.

Micro-theme 1: Producer. The producer-director roles overlapped a bit on the film we observed. In an interview with one of the student producers on the senior film, the producer identified himself as more of a creative producer, and partial co-director, with responsibilities extending beyond traditional project organization and managing deadlines and progress on the

film. Though he took the responsibility for "keeping schedules and making sure everybody's getting their job done," he also participated "a lot" in developing the story and the art—or the look of the film.

All faculty members interviewed for the study indicated their collaboration in nailing down an industry-process to mentor the students by. This involved direct collaboration with industry professionals in the creation of production guidelines and expectations. The student producer (mentioned above) identified the studio director as the main faculty member mentoring him, and the other students involved, in setting deadlines and other goals. He indicated the reason for the studio director's primary influence, explaining "he's been here [with the university's animation studio] the whole time, so he kind of knows the process and how long things take." In further clarification of the faculty's role and influence in production, he likened the faculty unto "shepherds" who herded them "in the right direction" and provided "guideposts along the way." The student director confirmed their role, indicating that "they don't really set the pace; they just kind of make sure we're on track more or less."

Micro-theme 2: Director. The director's main contribution on the project was in establishing the vision for the story and the art. The student director acknowledged the studio director's influence, however, in reining them in to keep the film on track with university expectations: "He's the one that keeps us on track with remembering we are at the university making a university film, and so that does dictate, [or decisively affect], the content." He indicated that additional mentoring with respect to story and design depended on where students were in development. He pointed out that one of the instructors "strongly mentored . . . [the group] during the story part because that was what his interest and experience had been," whereas the studio director mentored "using strong [interdisciplinary] principles of design."

Vision for the film was coordinated early on in production in meetings with team leads, in weekly review meetings with the entire production crew, and as needed—when individual assignments met review criteria, or needed review. The student director described the process of establishing vision with team leads thus:

> Generally what would happen is we would meet as an entire group very briefly, then the producer, myself, and the team leads—our art director, lighting director, texture lead, and technical director—would stay in the room while everyone else left. We have a big screen on which to review artwork, textures, lighting, all of those things. We would review them individually and go over with each lead person, "Okay, this is what you are responsible for."

Then, because the director and producer shared roles on the film, they coordinated in reviewing scheduling for each team and continued their interaction with: "These are your deadlines; are they being met? What can we do to help facilitate that?" Weekly reviews with the entire crew, called dailies, followed a similar pattern; I describe them in detail in a following section illustrating the studio's routine productions.

The director's role in establishing vision marked the beginning and end of participants' work on the film, and the production as a whole. In the hierarchical pyramid of authority, the director had "the final say" on all artistic decisions. An interview with the student producer concerning studio workflow described the director's role in what he referred to as "the circular process" of task review. He conveyed an example of a studio member getting feedback on a model he built for the modeling team, following standard procedures of task review: "He takes it [the model he built] to the lead—the lead approves. Then the lead brings it to the director." He continued the example, expressing that the director's role in deciding when the task is final:

"The director approves, says 'okay—final; this works,' or sometimes the director says 'uh, this is kind of funky. Can we do that again?' and he kicks it back down to the modeler." These kind of interactions occurred as needed, though the director occasionally reminded students of the dynamic process—not to wait for formal daily reviews to show their work and get it approved.

Sub-theme 3: Studio Consultants. Interviews with the student director indicated that the faculty's consulting role materialized as "hands on mentors." Additional student participants broadly confirmed the faculty's role in establishing student ownership over producing, directing, and general decision-making on the film; the studio director indicated that this was critical to students' leadership development in the studio. The following description given by the student director captures how faculty mentoring focused on facilitating student ownership:

> They'll tell us if what we're trying to do is actually impossible, if our story needs work, but they won't tell us how to fix it. They'll say "Okay, this isn't working; you need to figure something out," and they let us do our own thing to try and figure something out. They'll tell us what's smart and what we should try; . . . if they have an idea they'll throw it to us and say "Hey, what if, what about this?" but they won't ever force us to do anything. If they disagree with some things with our story . . . they'll let us disagree with them; they actually encourage it. . . . It makes things better to go back and forth on stuff; . . . you can build it up with somebody else to make both of you happy with it, instead of just you.

This leads to another aspect of the faculty's role in establishing student ownership over production of the film—letting students learn from the experience of making their own choices on the film, whatever the consequence, good or bad. The student producer indicated that he

believed the faculty's "main . . . contribution" to production was in "keeping us from going into a disaster" without preventing them "from making mistakes" that would help them learn:

> We are free to make whatever mistakes we want to make and learn from them, but that's the thing; they don't want to prevent us from making mistakes. They don't want to hinder us too much, but they don't want to take away the experience of making mistakes; . . . they let us fail sometimes so we . . . learn what's wrong, and . . . can understand what's going on.

One of the students contributing as a team lead, or supervisor, on the film described how the ability to take ownership over his decisions affected his own development and capacity to contribute on the film:

> I think being able to take ownership of the choices that you make and the things that you do really help. I feel like, this is just my opinion, I feel like it really does something in your brain. It just makes you feel like you can break out of this little box of thinking when you can do it on your own. Well, *not* do it *on your own*.

He also indicated that the experience solving problems related to failures on the film made students "better prepared [for] the field when they're working for a company and something goes wrong."

Additional support for students' authentic participation came in the form of studio accommodations. Studio accommodations—an open computer area, a screening room for group reviews, the use of email communication, and so on—facilitated formal and informal team interaction and development to allow for a dynamic work model following "the circular process" described earlier.

Theme 3: Provisional accommodations. The studio's two on-site locations were in two separate buildings housed by two different colleges; this created proximal networking opportunities for students to associate and build relationships with other related departments in each college—communications, film, visual arts, illustration, and other computer science and engineering majors. The main studio location, the 3D Animation Studio has all the resources for making 3-dimensional (3D) animations; it had a medium-sized auditorium room and attached production lab; it is also where the studio's supercomputer was located—making project files accessible across campus. The 2D Animation Studio had a medium-sized room designed for storyboarding 2-dimensional (2D) animation.

Sub-theme 1: 3D animation studio. The hallway outside the main studio for creating 3D animations showcased posters presenting a selection of previous students' animation shorts, along with other popular animated films. The entrance to the main studio opened to a rectangular production lab at its southwest corner. The lab had two split rows of long computer tables running the length of the room from east to west; the tables stood parallel to the hallway outside. A small glass-enclosed room protruded along the northwest wall. Along the south wall protruded an out-hanging desk with shelves above containing instructional books.

A door on the north side of the lab's west wall opened at the fourth row on the east side of the auditorium's stadium seating. Framed posters advertising student productions lined the east and west walls of the auditorium room, along with a storyboard of the senior film toward the northern end of the west wall. At the other northwest corner of the north wall was an open display inlet with a doll of one of the main characters from a previous student production. A desk at the northeast corner of the room, situated parallel to the west wall, provided hook-ups for the student producer and other students to project production work from a personal laptop.

The projector was encased in a smaller glass-enclosed production room at the back of the room; it projected onto a large screen on the north wall. I never saw anybody use the encased production room during dailies or afterward. I only once observed the program director use the room to take a call during dailies. The west aisle led past the production room to a back door—an entrance used mainly by faculty, industry professionals, and students coming just for class.

Sub-theme 2: 2D animation studio. The 2D animation studio was in a separate building that housed another college. It was a small to medium-size room with a large desk lining the side of each wall. An island in the center room had out-hanging desk around the sides, with large drawing paper at each desk.

Theme 4: Routine production. At any given time, the studio had a number of animated shorts at various stages of production that students could choose to become involved with. The studio's open-door policy applied to all studio productions, including the senior film—the focal point of this study. Students could become involved with as many studio productions as they liked. They could join at any stage of a production at will, and withdraw, or shift attention from one assignment or project to another. One of the junior animation students we interviewed was concurrently working on three (soon to be four) different animation shorts alongside one of his own prototypes at the time of being interviewed.

Project ownership ranged from student-produced films, films produced by animation professors, and those produced at a distance by professionals. Most of the animated shorts were locally produced. The long-distance collaboration I learned about was a professionally produced short begun as a local collaboration between a student and faculty member, which later transitioned into a long-distance collaboration when the student graduated and took a job. I am unsure of how common this type of production was; the student who told me about it had been

recruited by the former student and faculty collaborator "to help push" it out, having heard he was a good with effects. The production involved "a lot of . . . email-telephone dynamics" between the student I spoke with, his "three or four other" colleagues on the project, and the graduate who was "keeping it all together" alongside his professional job.

At the time of interview, the student I spoke with had been involved on the film for about a year, and the film was at about 5-years in production. The student's main motivation for working on the film was "to get it done" because it was "so old;" thus he had made the film his "top priority;" the additional "two films" he was concurrently working on came "to a close second," with all his "other classes . . . way further" in importance.

The studio's senior film, its main student production, had a year to a year-and-a-half production timeline—begun midway through the Junior year. Shorts remaining unfinished upon graduation were typically handed off to younger students in the program to finish, though alumni could remain involved as needed or desired, as in the case described above, in which the alumni continued to oversee production to its completion. Students indicated that the studio's longest production period for an animated short was 7 years; however most were finished earlier.

According to student interview and observation, each project was indeed "very similar," though the formalities of student involvement in the learning environment varied according to the type of production students chose to become involved with—senior film, student film, faculty film, professional film. One of the students we interviewed described what he referred to as a "studioesque" similarity between each of the studio's various productions:

> I think that's a testament to how the program runs. . . . It's very studioesque in that you have your stuff, you have your leads, you work on your stuff, you get or give assignments, the director gives you feedback and he kind of has the ultimate final say.

> The only difference is in directing style. . . . They're different directors but really good. They know what they want and it's fun to work on the films.

The student-produced senior film served as a prototype of the professional production process for the rest of the studio's productions to follow. For this reason, most of our observations as researchers were focused on students' participation on the senior film, though many students (pre-seniors) were simultaneously engaged in working on other films in the studio as well.

Sub-theme 1: Senior film. Interviews indicated that the direction for the senior film took place half-way into the university's 3-year animation program and computer science-animation emphasis program—or 4 or more years if you include the year of pre-requisites, and the additional time it took some students to either find their way to the studio or to get accepted into one of the two programs. Initiation commenced mid-year with an open pitching event where junior students—per a traditional 3-year program time-line—voluntarily pitched "an idea," or story, "for a 3 to 5-minute animated short." Open discussion ensued—evaluating story merit and the appropriate "level of complication" for the group project—informing a blind vote, for junior students, only, to choose "their Senior film."

A couple weeks following the pitching event, junior students participated in another blind vote that designated student leadership for production: film producer and director, and team supervisors and directors—better known as leads. Film development continued with scripting the storyline; storyboarding to visualize "where everything's laid out;" designing character concepts, creating 2D animatics "to see the timing and everything," and creating 2D turnarounds visualizing characters' "look from every angle;" modeling 3D characters, assets, and animatic layout based off of the 2D turnarounds; "texturing the color, bumps, and shadows;" lighting to show the "light reacting . . . on all the characters," assets, and background; programming rigging

to add the skeletal structures that allow the characters to move correctly, making them animatable in 3D, and rendering to see how combining files from the project pipeline affects the look of individual pieces, and what kind of problems emerge in putting them together—if files are "referenced from somebody's personal folder and stuff like that things can get broken all over;" the computer needs to know "where to pull" all the files "from and . . . how to assemble it all."

Much of the production involved overlapping processes wherever possible; the student producer's apology for "bouncing everywhere" in relaying the details of production was in itself an indication of project complexity. Students developed storyboards while simultaneously working on concept designs, 3D modeling, and the 3D animatic. Texturing began while layout decisions were being made, and lighting tests ran, after which students ran additional tests pairing texturing with lighting to see what worked or not, and what they would "have to adjust to get everything to work." Meanwhile, other students were involved in the "complicated process" of character rigging. Rendering tests took place after texture-shading and lighting work had finished. The student producer's description of the film's design and development as "a very complicated juggling act of what to do when, and how much time to spend on it."

Sub-theme 2: Studio dailies. Dailies is an industry term noted for the daily review of pipeline work; the daily reviews for the senior production we observed was limited to twice a week. Senior production dailies were held on Monday and Wednesday afternoons at 12:30 PM, and lasted for 30 minutes to 1 hour. The student producer opened and conducted dailies, giving time to the professor at the beginning or close of the meeting, as negotiated prior to the meeting's start. If absent then the student director would lead out.

The student producer and director jointly coordinated dailies reviews in somewhat of a simultaneous and complementary dialogue; the producer pulled up pipeline work from his laptop at the production (projection) table while the director led the discussion on pipeline progress, pointing out areas of progress and completion, or need for further improvement. The students responsible for each piece in the review lineup volunteered specific background information and questions and answers as desired. If consulting was needed the professor would interject. Other students present would also candidly join in, though the director often requested that they refrain until after, or during dailies' pre-reviews that specifically covered the animatic.

The professor occasionally took time at the beginning or end of dailies to provide consulting advice for students throughout the various stages of production as deemed necessary. He would also use his time to introduce industry professionals, student alumni, and other career consultants visiting the studio. These individuals would occasionally take time at the beginning or end of dailies, or would be present to observe and occasionally participate in the dailies. They would usually stick around the studio afterward to provide additional mentoring, and to review and provide feedback on student portfolios for upcoming internships.

Sub-theme 3: Lab interactions. The studio's main production lab was available to participating students around the clock, and according to one of the professors interviewed, some students would literally stay around the clock to do their work and associate with their colleagues. A number of students had a computer that they did most, if not all, of their work at. Others would move from computer to computer. One student we interviewed was using more than one computer to run different processes for different projects simultaneously.

The work culture was very open and friendly for collaborative interactions and team building. Team leads could roam and review and instruct, and were around to answer

participants' questions impromptu. Students would glance at another's work in passing and stop to inquire or note improvement, or just to catch up on other things—a mutual class, experience, or just life in general. Students working at their computers would also call out others in the room for help or just to chat. Their expressions and interactions appeared carefree and confident in that I observed them to share their whole personalities in their studio work—with and around their colleagues, in conversation and in their personal work or approach to problem solving.

Meta-theme 2: Learning Ownership

Interviews with the studio director revealed that students significantly influenced the development of administrative, instructional, and other support for an animation studio experience to meet their own personal development needs and ambitions. In the early days, before the advent of the animation program, students had to blaze (pioneer) their own path to the animation industry. Some students worked their way into the profession after college. Others sought to forge their way during college, eliciting the help of faculty in learning the right tools. The efforts of the latter students from the university's various departments and colleges resulted in the development of an animation studio experience that eventually formalized into an exemplary interdisciplinary animation program. The students' initial faculty recruit was and continues to be a central asset in negotiating additional support for students' instructional needs and interests. (The process of recruiting faculty support is explained in detail in a following section.)

Caring ownership was an underlying motivator of students' involvement and success as instructional leaders in negotiating the development of learning opportunities and resources—students' care for their school, for animation, for their learning, their time at the university, their care for each other as friends and colleagues, for the support of the university and its resources

and talent, and for the production of animation. Students showed that they cared by reasoning and negotiating with instructional leaders for the support of their learning and instructional needs and interests at the university, and by embracing the collaborative design constraints of that endeavor. Their participation in these tasks enabled them to elicit the development of instruction for animation at the university.

Student engagement in the feedback process for organizational change and improvement, coupled with students' willingness to embrace their situational and inherent design constraints—participants' unique values, priorities, strengths and limitations—contributed to a shared understanding and appreciation for each. This provided a foundation for the negotiation of mutually beneficial compromises for the studio's development. In effect, student ownership over their learning goals led to the creation of additional learning opportunities—both professional and other learning opportunities for faculty and students alike—and the instructional leadership partnerships they created leveraged the resources and talent for instruction in animation at the university.

Students' care and passion for animation—their willing embrace of the challenge to pursue animation *alongside* their responsibilities as full-time students—drew the attention and eventual support of the university's faculty, departments, and colleges. Their initial faculty recruit, the director of the university's animation program, has continued supporting student ownership and participation as instructional leaders. Student leadership as such has continued to aid in the ongoing development of partnerships for further administrative and instructional improvement.

Student participation in the distribution of the university's instructional leadership began as an emergent response to satisfy a desire for instruction in animation. Students (individually)

took ownership of their learning in this area as they looked for and saw opportunity in university talents and resources that, while not dedicated to their discipline of interest, could be utilized for their support. Students who reasoned and negotiated with instructional leaders for the support of university resources created a foundation of understanding and appreciation for their learning goals among other students and university leadership.

Successful leadership interactions appeared to be dependent on students' leadership virtues, as manifest in their willingness and inclination to embrace the studio's collaborative design constraints. This included an acceptance of present, as well as past and plausible future circumstances as affected individual and collaborative limitations, opportunities, and vulnerabilities. Their roles and routines as key decision makers in film leadership and overall production familiarized students with industry management and development in a safe environment for learning and practicing leadership virtues. It also necessitated students' continued participation in identifying and managing needs, interests, and individual tasks to be done.

Theme 1: Feedback process. Interviews with the program director highlighted the importance of student participation in creating a demand for instruction, as illustrated in his brief description of the studio's origin: "The first group animation . . . was [in response to] a lot of students individually coming to me and saying that they would like to make an animation." Students' efforts in reasoning and negotiating with instructional leaders over their learning goals and needs created the understanding and appreciation they needed among university faculty they requested help from.

The feedback process students engaged in to reason and negotiate with instructional leaders over their learning goals and interests involved participation in the following common

tasks: (a) The first task I observed students taking was to look for and invite input on what might help with personal and shared goals and associated products, processes, and talents and resources; (b) The second task was to orient others to specific areas for contribution; (c) The third task students took was to share their ideas, desires, needs to be met, and to gain clarity via elaboration, validation, and rebuttal; (d) The fourth task in the feedback process was to invite and be receptive to others' feedback. These tasks were likewise demonstrable in students' ongoing negotiations during studio development for ownership and support of studio products, productions, talent and resources among their colleagues, friends, and other participants.

The studio director, who I'll refer to as Gilbert from here on out, gave a recount of the studio's origination that pointed to students' early engagement as primary negotiators for instruction in animation:

> Every once in a while we'd do a little animation where the car door would open or the hood would open but not really [an] animation program. . . . I always had a bunch of students go—
>
> > "Gilbert. This is all great but I want to go work on Star Wars or Jurassic Park."
> >
> > "Well then go to a different school."
> >
> > "Yeah but can you help us kind of figure out this thing?"
> >
> > "Okay look, my background's in architecture. I don't know anything about this stuff."
>
> [But] we had the stuff—the hardware and everything. My wife was very supportive. I'm a glutton for teaching; I love everything about it, so I added a special projects evening school class once a week for everybody in all these different disciplines who always want to do it.

Using Gilbert's description of student engagement as a reference, I'll illustrate how students applied tasks in the feedback process to win his instructional support:

Task 1. Look for and invite input on what might help with personal and shared goals and associated products, processes, and talents and resources. The students identified Gilbert as a possible resource for learning animation for the purpose of entertainment, their real passion. They gravitated toward him for help because he was the best fit. He was already teaching students how to use the tools, albeit for a different purpose—product design. He also had experience teaching digital media in the school of art before transitioning over to the school of engineering. Thus he was known by the students in different disciplines who reportedly "always want(ed) to do it."

Task 2. Orient others to specific areas for contribution. In this instance that Gilbert described, the students' first point of reference in negotiating with him was their class experience with him, learning animation as relates to product design. (e.g. "*This* is all great.")

Task 3. Share their ideas, desires, needs to be met, and to gain clarity via elaboration, validation, and rebuttal. After orienting Gilbert to animation as their area of interest or intrigue, they explained that their focal interest was in entertainment as opposed to product design (e.g. "This is all great, *but I want to go work on Star Wars or Jurassic Park.*"). They additionally clarified that they weren't interested in going anywhere else to get their needs met; their hopes were in him, at this university.

Task 4. Invite and be receptive to others' feedback. The students turned the conversation over when they asked Gilbert for help, and demonstrated their openness to and appreciation for his participation by embracing the constraints associated with their request. Though they

initially met resistance, Gilbert continued to think about their request and eventually returned with an offer.

Gilbert's description of the emergence of students' individual requests demonstrated the pervasiveness of the demand. The aggregate of student engagement in the feedback process thus described magnified individual requests and created a precedent for the help they required. Once they had faculty support, their negotiations over the nuts and bolts of film development involved participation in the same feedback process, as with the students we personally observed. I will only illustrate the latter, however; students' negotiations over the ownership and development of studio products, productions, and talents and resources are as follows.

Sub-theme 1: Product negotiation. Students reasoned and negotiated with their peers and colleagues for personal and shared ownership of studio products and tasks—animated shorts (i.e. short films), individual task contributions and portfolio pieces—in order to create unified, cohesive films and portfolios. Product negotiations occurred individually as well as collaboratively, though each was arguably relational-based and followed the same feedback process as I demonstrate in the examples below.

Story ownership. An interview taken mid-production with the shading lead—whom I will refer to as Ben from here on out—revealed that Ben didn't vote for the winning story. In spite of having different story preferences, however, Ben easily identified other reasons for supporting the story that *was* chosen:

> I was more enthused about other projects, but in the end my participation in the Senior film isn't reflective of me being artistically super passionate about just this certain project—like I saw the storyboard pitch and I had to be on it. It's more based around the

> relationships that I've had with the people that are here, and me feeling grateful toward the school for having a program and being a part of it.
>
> I wanted to work on the film no matter what it was for those reasons—to make a good film for the university, to work with the guys out there, and, either way, you know you kind of already committed to work as much as you're going to work on it beforehand. Even though I voted for a different film, just which film [won] I was going to work the same amount on really.

Ben's response to the chosen storyboard for the senior film demonstrated his openness to his colleagues' participation in the feedback process for choosing the product, or story, that would be developed. His reasons for supporting the story chosen by his peers centered on his valuation of the final product in context of his relational goals. He identified that his contribution to the chosen product would help build and show appreciation for the university and his colleagues, as he so easily pointed out to us in our interview with him. Not all product negotiations were plainly defined, as whether or not to support a major decision on the film's story as voted on by one's peers. Product negotiations over task output were often more minute and dynamic, involving careful consideration and compromise between participants and their leaders on the film.

Frame length. A lab interaction between the student director, who I will refer to as Oliver from here on out, and a student playing a supportive role on the film, who I will refer to as Horace, provides a typical depiction of participants' negotiations over smaller task outputs that took place throughout film production. Oliver and Horace's interest was in the length of an animated frame. The interaction began with Oliver pointing out a frame that he was happy with and another that he wanted modified, informing Horace that he wanted it trimmed. Horace

volunteered a clarifying statement, showing that he was open to Oliver's critique and wanted to verify that he was following Oliver's train of thought.

After Oliver confirmed that Horace understood him, Horace offered a rebuttal to Oliver's request, stating that "it [the frame] could still be . . . a little longer." He trimmed the length "just a little," explaining to Oliver that it was "because I think you'll actually animate it longer." Oliver's positive response (i.e. "okay" and "that's fine") communicated that he was open to Horace's feedback challenging his decision to trim. Later on in the interaction Oliver identified a piece of the frame that he wanted Horace to "hold . . . just a little bit longer," reflecting his change of mind on frame length—a direct result of Horace reasoning and negotiating with him, as we observed.

The fourth task in the feedback process that Oliver and Horace both engaged in, communicating openness to the other's feedback, was essential for creating a safe environment for learning in the studio; thus their manner of reasoning and negotiating with each other contributed in a positive way to organizational capacity within the studio. Their specific contribution also aligned with the leadership task to "create a safe learning environment" as outlined in the DIL framework (refer to Table 1 from the literature review).

Content Sensitivity. An interaction during dailies concerning the type of asset featured in the animation—in this case a furniture item—exemplified an additional type of product negotiation. The interaction took place between the student producer—who I will refer to as John, the student director—previously identified as Oliver, Gilbert—the studio director, and the students present for the review. The interaction began with John's introduction of the asset: "Alright, . . . here's a bunch of stuff that we've been working on over the weekend. This is our service table." Laughter ensued when he began to clarify the name of the asset, at Oliver's

behest, to "service *counter.*" Oliver reprimanded one of the students for laughing, which only incurred more laughter, albeit more quiet, and another student responded with a clarifying question: "We can't say bar?" Louder laughter spilled over the room, and Oliver answered with a verifying request: "Don't say that word." Oliver laughed too, then continued, "Gilbert will hear you"—to which Gilbert rebutted while more laughter erupted, saying "I don't—. You can say bar."

Oliver's input was to clarify the content sensitivity of the asset in the film, and though the studio director discounted his precautions, Oliver expressed an openness to Gilbert's feedback in clarifying a rationale that retained sensitivity for the content, exclaiming "It's true because this is an island. Ah so much better." Another student offered a clarifying suggestion that "they sell other things and stuff at the bar," expressing openness to the content sensitivity for the asset. Oliver volunteered "Sushi" as an example, followed with "but that's a juice bar," to clarify his artistic vision for the setting, as was his prerogative in directing the film.

Student openness to others' feedback (task 4) in delineating content sensitivities of the film's asset, the service counter, or juice bar, helped to create an additional measure of safety for participants to engage in the feedback process over content integrity and value. Thus content sensitivity was an area of product negotiation that extended the discussion of content fidelity and representation beyond that of visual realism as achieved through technical discipline.

Sub-theme 2: Production negotiation. Students negotiated the details of studio production alongside that of studio products and task outputs. They set major milestones together and reasoned with one another over individual and shared task processes deemed necessary to achieve mutual standards of excellence (and respect)—working as a cohesive whole. These discussions were also intended to verify viable tasks processes—old, and new, and

occasionally innovative task processes—against colleagues' and mentors' own experience. Student engagement in the feedback process while negotiating task process and overall production is illustrated in a studio interaction between the technical (tech) director on the film—who I will refer to as Bernard—and a supporting contributor on the tech team, who I will refer to as Frank. Frank was a senior majoring in computer science with an animation emphasis at the time, and Bernard, his tech lead, was a senior majoring in animation.

The interaction began with Frank calling Bernard over to his computer in the lab to show him a potential computer science (CS) solution that he was exploring to make the process of animation a little more efficient. Bernard made his way to Frank's computer and Frank proceeded to show him his "crazy idea." Following the second task in the feedback process, Frank pointed out what CS was currently being used in order to establish the context and placement for his proposed solution: "We already have these here, right? These work the way that yours do." Then, following the third task in the feedback process, Frank presented his idea for an alternative solution he hoped would make "things faster and easier for the animation." He showed Bernard how the solution worked and invited his feedback (task 4): "This guy, you can slide him around on the rope and then pull to slide him this way and . . . ooh, just like that. . . . Any reason why that wouldn't work?"

Bernard was able to provide validation and critique for Frank's idea. He gave Frank some pointers to the potential limitations to Frank's proposed solution and suggested a few resources to help him figure out the rest.

The negotiation of novel task processes, such as Frank's CS solution, provided continual opportunity for student *and* professional learning in the studio. Such negotiations were also really useful (conducive) to leveraging resources and talent among studio participants—students,

professors, and professionals. I referenced these contributions to the studio's instructional leadership in the previous section, though the interaction between Frank and Bernard takes a more detailed look at student participation in those areas.

Sub-theme 3: Talent and resource negotiation. There were many opportunities for studio participants to informally volunteer their talents and resources, of which Frank's novel contribution was but one type. Students were welcome to volunteer and negotiate team resources at any time during dailies and in the lab if it appeared that a team needed help, or if a student wanted to explore opportunities to build his or her skills and (develop) portfolio pieces in a particular area of production. Student leaders initiated other, more formal interactions to engage members in production and thus leverage studio talent and resources for more effective and efficient collaboration.

Interviews indicated that students' formal recruiting efforts included seeking God's help through prayer during a major data failure resulting in the loss of "3-and-a-half to 4 weeks of solid work." The student director explained his expectations in in opening meetings "with a prayer," saying "the Lord has promised, if you seek to obey His commandments you will be blessed." He expressed his belief that recruiting God's help on the matter could help make the event "unfair in our favor." We didn't capture any recordings of those prayers, however, to elaborate on in this section.

Examples of leaders' other recruiting efforts are described in detail in the section on routines for negotiating studio assignments. Consequently, this section focuses more on students' informal and dynamic participation, similar to Frank's contribution in the previous scenario. An interaction involving the negotiation of resources for camera work on the film exemplifies student engagement in taking ownership over studio talent and resources.

The interaction took place during dailies while Oliver, the student director, was conducting a review of students' assignments. One student had critiqued the animated frame being reviewed, and another supportive participant—who I will refer to as Archie—affirmed the critique, commenting "I think it's weird the elbow stops halfway through too" (following tasks 1 to 3 of the feedback process). Oliver responded on the student's behalf, explaining that the flaw would be corrected by camera-work, which wasn't final.

Archie inquired as to who was responsible for the camera-work and Oliver affirmed that it was he and another individual, though he had "gotten side-tracked" and was going to "try . . . multitasking" for "the first time ever." Recognizing a possible need, Archie volunteered to help with the camera work (tasks 1 and 3 of the feedback process). Oliver wasn't necessarily recruiting help, though he welcomed Archie's offer and proceeded to answer Archie's questions about task production for that particular assignment.

Archie's interaction with Oliver demonstrated his willingness to take ownership of the shared talents and resources required for task production. He might have volunteered because Oliver was already overly tasked, or it may have been to ensure that the camera work fixed the timing problem on the frame. It may have been both reasons. Either way, he was a ready resource to help support the team when the opportunity presented itself.

Students' initial involvement in recruiting instructional support was but a precursor to their ongoing engagement in the negotiation of products, productions, and talents and resources for their student-run studio productions and development. Their willingness to take ownership of the studio production—to look for ways to help and to orient others to the context for contribution, sharing their ideas, questions, concerns, and support, and inviting feedback—helped them to leverage talents and resources among studio participants. Their participation as

instructional leaders created additional opportunities for learning and improvement among students and their professors; it also helped to create an environment that was safe to be vulnerable in as they learned how to contribute and lead.

Theme 2: Leadership virtues. Students' contributions to the studio's instructional leadership communicated their leadership virtues—strong will, determination, faith, humility, and so on—reflecting their strong sense of personal and shared ownership and commitment. The studio's pioneers demonstrated their virtues in accepting the constraints of the university's limited resources and talent during the studio's initial development. I also witnessed students embracing the constraints associated with collaborative production in the senior film we observed. The constraints embraced by the latter group of students were a bit more scripted to familiarize them with the collaborative constraints in industry (as discussed in the first meta-theme).

The students' combined virtues were the metaphorical tools that established their care and created unity among stakeholders, thus contributing to mutually beneficial compromises among participants. Participants that didn't fully embrace studio constraints, but complained or withheld from fully participating in the feedback process were identified by the program director as cancers—a term he coined while working with and observing teams in the architecture industry. These individuals, or cancers, lacked the interpersonal leadership—the combination of values and virtues—needed to successfully carry out tasks in the feedback process and contribute to the studio's development.

Sub-theme 1: Pioneers. Interview data made it seem as though the value-laden tools for successful collaboration as instructional leaders were naturally present among those students who contributed to the initial development of the animation studio. Student pioneers

demonstrated a willingness to embrace design constraints during their initial negotiations for instructional support by insistently requesting Gilbert's help—in spite of his declared limitations coming from a separate field—and in their acceptance of their leadership role in organizing the films. Their virtues were more accurately depicted, however, in their willing persistence to learn via trial and error—in the absence of a defined studio product, production process, and talents and resources. Their determination and persistence established their sincerity and communicated their belief in the value Gilbert would offer them. It also established their belief in the value of the experience itself, however close they may have made it to achieving their goal.

Interviews with the program director revealed that Gilbert was fairly candid with the students in describing his constraints and the leadership roles they would need to take in order to pull it off. He recounted the basic compromise he negotiated with them:

> I'm just here to help you learn the software. I'll help kind of critique and all that stuff but I'm not going to get the film organized or anything; I don't have time. It's an evening school class. It's an extra class and I'm not getting any compensation for it. It's a night of the week that I'm going to be away from family, but I'll do it because everybody [has] wanted to do it.

Students' acceptance of the constraints he presented to them was evident in their perpetual demand for his help, as illustrated in his recount of student participation from that point forward: "Once other students knew that this group was making a film then the next group wanted to make a film, and then the next."

Students' will and determination in learning how to lead the production of an animated film was even more pronounced in their persistence through early trial and error. Gilbert's

description of student's first attempts at organizing an animated production illustrates their willingness to learn through and from failure:

> The first one [student animation production] was extremely democratic. Students would say, "well wait maybe we try this and maybe try that," and on the fly I would say "okay now, next Wednesday night when we meet for the evening school class this is what I want everybody to have." We never did make a film. (big happy smile) We just never made it.
>
> We did it again another semester with a totally different group and I learned a bunch. I was able to start to define, "okay this is what we've got to do by when, and this is what we can do. We need to get in production faster and not just sit around and talk like we're around a table drinking beer or eating pretzels."

Gilbert's recollection illustrates how the students' persistence and determination to learn from raw first-hand experience and failure allowed for additional student and professional learning opportunities that would not otherwise be available at the university. Students' participation in the instructional task of creating learning experiences for students and teachers alike further contributed to individual, organizational, and institutional capacity.

Though Gilbert had only committed to training students on how to use the software, his observations of students' attempts at organization helped him discern production constraints and guidelines that could help future groups. As these constraints became clear he began providing students with additional guidance on the organization aspects of the production. The additional guidance helped students to finally achieve success in finishing an animated film. This is illustrated in Gilbert's recount of the first films completed by student participants:

> The first films we finished were totally different, and we worked on them at the same time. One was a very small concentrated group that came to me with a story in mind; they already knew what they wanted, they knew the story, they knew exactly where they were going. The other group was trying to come up with an idea, and who was doing what, and everything.
>
> Both of them had their own set of problems to deal with and groups from both of those films got jobs. I was able to work and mentor both of them and find out what was working on one and what was working on the other.

Success on the first two completed films created a foundation for each production to follow. Their value, and the value of the entire process of D&D, is demonstrative in Gilbert's recount of how they relate to the studio experience I observed in the study: "Those two kind of mutated to where we are today. It's taken me awhile to kind of figure this out."

In essence, students' combined faith in the value of trying, and their humility in being willing to fail, afforded Gilbert the opportunity to learn and gain the wisdom necessary to help them eventually succeed. Though many students failed in the first iterations of D&D, their failures created the foundation for much larger successes. Endowed with confidence from a proven method of success, and a little beaten from a continual strain for more of his time, Gilbert began the process of streamlining instruction to fit a more formal educational structure. The university's higher administration took notice and responded with additional support.

Gilbert's account of the transition from extracurricular to curricular integration illustrates students' impact in creating a demand, and ultimately a foundation, for instructional leadership in animation at the university:

> Finally I said "this is beating me up. In the process [of D&D] I've learned what not to do, which way wastes a lot of time—I've got to make this streamlined; I've got to make it a little more formal, . . . there's so many students who want to go in this industry."
>
> By then I had moved from art and it was still kind of on the side, so we created this [digital design] emphasis in industrial design" to allow students to make a senior film. As we were starting that, I was having a conversation with the dean of engineering and the vice president on campus over undergraduate programs. . . . We would have these chats about "what we really need at the university is an animation major for these reasons." They got talking together and they're the ones that kind of helped force the issue through.
>
> By then the art department was coming back to me, seeing we're having success, we're making these films, and said—
>
> "We want to do animation."
>
> "Well you wouldn't let me do it when I was over there."
>
> "Well . . . we want to play with you."
>
> That's why we created the joint thing.

Gilbert had left the art department prior to joining the school of engineering because the school wasn't willing to support his interest in digital arts. Student leadership in the D&D of animation instruction at the university gave Gilbert the opportunity help prove its value and ultimately bridge the two colleges in support of the field.

Students' leadership virtues continued to play a large role in the success of bridging over their student productions into a formal educational structure, and in the studio's ongoing development today. The dynamic educational structure of the formal studio has been

intentionally designed to familiarize students with many of the same D&D constraints confronted by the studio's pioneering students.

Sub-theme 2: Participants. Observation and interview both pointed to the studio's constraints as mirroring those had by professional studios, as a means of familiarizing students with the constraints and virtues typically valued in industry management and development. Some of the constraints that students confronted in their studio participation included collaborative decision-making, varying skill-levels and -types, educational backgrounds and experience, interests, availability, and commitment or leadership. This section revisits the feedback interactions from the previous section to demonstrate students' interpersonal virtues in approaching studio constraints.

Able to add value. The collaborative constraints of studio production effected in a decision-making process that did not always serve, or agree with, individual preferences; students who found themselves on the opposing end of film decisions had to find ways to add value to the film in order become meaningfully engaged in a supportive leadership capacity. Such was the case with Ben, the shading lead that found himself on the opposing end of the decision made for the film's story. The story for the senior film was not his decision, though he was allowed a vote. The film's development would proceed regardless of his storyline preference; but whether or not he fully engaged to help make the story a success was still his choice.

Gilbert often described the value of students' ability to manage collaborative design constraints to students and to us as researchers. His statement below provides a negative example describing the divisive choices individuals make when they lack the ability to manage such constraints:

> If a different idea is chosen the human tendency now is to go pout, especially when you know, truly know your idea is better than the idea chosen. It happens all the time. We all have that, right? Most of us become a cancer and complain and whine and tear down our supervisors because they are stupid, because my idea really is better than my boss' idea and he's an idiot because he still wants to do his idea. It's easy to become that cancer.

The virtue of always trying to add value—in being willing to present one's ideas and to accept and support the ideas that do get chosen, regardless of preference (tasks 1 through 4 of the negotiation feedback process)—was Gilbert's focus in teaching students to embrace the constraints of collaborative decision-making:

> We're trying to help our students understand [that] you've got to present your good ideas and you've got to be, not bold but kind of bold—"I got this really great idea. I need you to hear it." But if your idea is not chosen you've got to then take the idea that is chosen and take ownership of that idea and make that idea better because you touched it, because you worked on it—"Okay, I can give this great idea. I put it out there. A different idea was chosen. Great! Move on. What's the idea that was chosen? Great! How can I make that idea better because I touched it, because I worked on it?"

The studio's leadership policy, supporting student involvement and continued responsibility for organizing the film's production, helped to create the relationships necessary for students to learn those leadership virtues necessary to respect and support their peers in leadership positions. Gilbert described the importance of this policy in comparing it to the individualized experience students received in other educational settings:

> For the most part education is an individual experience where you're in a room, you'll have discussions, most of the time students are being told what to learn—especially if you think of undergraduate students. There are some discussions, but very few times when student A needs to take student B's suggestion and run with it—and learn how to run with it—but in the career you do it all the time.

Ben alluded to integrity as another key virtue that helped him run with the story his peers chose for the senior film—"you know you kind of already committed to work as much as you're going to work on it beforehand," regardless of "just which film" got chosen. Another key virtue, or tool, that helped him take ownership appeared to be appreciation. He appreciated his colleagues, and he appreciated the university for providing the animation program and for letting him be "a part of it." Ben's appreciation and integrity thus influenced his desire to add value to the film, embracing collaborative constraints of film development in order to do so. It was a matter of relational-identity and -value.

Able to reason and negotiate with humility and courage. The studio's collaborative leadership constraints created additional opportunity for students to navigate how to reason and negotiate with peers across varying levels of leadership via humble and courageous interaction. Students in supporting roles needed to be able to have the courage to provide feedback and criticism to their superiors, and the humility to be able to do so in a manner that demonstrated respect for higher authority; students holding formal leadership positions needed to have the courage and humility to respond to the feedback of students in supportive roles, acting in a supportive leadership capacity.

The negotiation between student director and supporting member over the length of the animated frame dealt with these collaborative leadership constraints; the interaction necessitated

that each manage their leadership differences with regard to their roles and responsibilities on the senior film. The student director may or may not have been acting in the role of director in instructing Horace to cut the length of the frame; animator was one of his supportive roles on the film, and I could not clarify through observation which role he was acting in. The same constraints would still apply in either case, just in the reverse. The leadership dynamics would magnify with Horace as the lead, in that it would require Oliver to exhibit humility in accepting the constraints of Horace as his superior, though it was Oliver's role to provide authoritative artistic direction for the film.

Gilbert discussed the value of students' ability to work with peers of varying levels of leadership and authority in the following excerpt:

> You want to learn how to get along truly with two people? The odd thing with our group projects that's a little different than a business, which is a good way to learn it, [is] our bosses are . . . fellow students. It's not like "you're the boss and we're going to pay you more money and give you all this responsibility." No. The director on the film is a fellow student, and sometimes they're not paid, but these students—[the student director and producer we observed]—are getting paid to work, and this is all volunteer stuff. The director is chosen by these students but has to then keep it all organized and tell them what to do and chew them out if they aren't doing it.
>
> … So here's the director, but he wants to go as an animator and they've chosen an animation lead who's responsible for all the animation. So he's in a meeting telling the animators "okay, this is my vision for everything," and then he shows his work on the screen as an animator and the animation lead rips on him because it doesn't look very good. [But] you become a director by doing lots of other different things. So the director

might also be an animator. You don't go out in the industry [and say], "Okay, hire me as a director." The director isn't one of those "jobs."

Horace did not give Oliver a hard time about the direction to shorten the frame but he was straightforward in voicing his concerns and making a compromise to shorten the frame "just a little." Horace's respect for Oliver, a key virtue in their interaction, was evident in his clarifications and ultimate compromise on the length of the frame. He didn't react with passive aggressiveness; instead of accepting Oliver's direction only to complain about it afterward to his colleagues, he approached Oliver directly, in the time that his feedback was needed. Horace's care to approach Oliver with a rebuttal was necessary for him to demonstrate that respect toward Oliver. Oliver's own virtues of humility and mutual respect were evident in his open consideration of Horace's rebuttal to his instructions to cut the frame down.

Able to have interdisciplinary appreciation and respect. The studio's interdisciplinary constraints created additional challenges and opportunities for collaborative group work, that we observed students approach with appreciation and respect. The interaction between Bernard, team lead over tech, and his supportive team member, Frank, embraced similar leadership constraints to that of Oliver and Horace; though Bernard and Frank were on the same tech team, their interaction embraced interdisciplinary constraints as well. Bernard was a senior animation student leading the tech team on the film, and Frank was a senior computer science student with an emphasis in animation. Frank's interest in approaching his unlikely superior was to request help regarding an experimental CS process he hoped would quicken the animation.

Gilbert discussed the value of students' ability to appreciate the opportunities and challenges of collaborating in an interdisciplinary environment in the following excerpt:

> This group project is highly interdisciplinary. We make sure that we get students from lots of other places on campus—there are communications students oft times, film students, always computer science majors, oft times some kind of visual arts student, illustration or somebody else, the animation students—because we want them to understand there are a lot of people they're going to be working with for the next 30 years that have a completely different interest and passion, experience, and ability. It doesn't mean that your passion is better than their passion; it's just different, and in order to pull this off you've got to have a huge mutual respect for each other.
>
> I was an architect, or in an architect's office, for a [very] long time and there wasn't always the greatest respect between architects and interior designers, or architects and engineers. It was like you were a necessary evil, and they'd talk about that. That's an awful way to work, to think that you've got this adversary you have got to deal with. The animation industry, games, movies, whatever, they have to work together to create a really good product.

It was apparent in Frank and Bernard's interaction that both students valued the studio's interdisciplinary focus. Though an animation student, Bernard was able to answer Frank's questions with understanding and experience. Additional interactions between Bernard and other team members revealed a humble acknowledgement of his dependence on technology to make the animation look good, thus fueling his interdisciplinary appreciation and exploration of the technical component of animation. As a result, he was well qualified to lead the tech team, having personally dedicated time to learning the technology.

Frank's own humble acknowledgement of the purpose of technology in aiding the animatic led him to explore a new technical solution to make "things faster and easier for the

animation." He was also humble in his willingness to seek and take leadership from the team lead, though an animation major. He recognized the value of Bernard's experience in technology, though he came from a separate major; as such, training and major prejudices did not interfere with their relationship or team unity. Bernard exhibited additional interpersonal virtues in his interactions with studio participants that made him very approachable for Frank and other team members requiring help.

Able to manage participant engagement and value. The studio's volunteer participation constraints gave students a unique opportunity to manage participant engagement and value through helping participants take ownership and responsibility on the project; Bernard's interest in Frank's volunteer contribution to tech and animation on the film exemplified leadership support in this endeavor. Support for and value of participant engagement was also manifest in the interaction between Oliver—the student director—and Archie, the individual who volunteered to help out on Oliver's assignment.

The studio's volunteer-leadership policy allowed for and even called for such interactions. More importantly, perhaps, this policy emphasized the responsibility of students in supportive roles to actively engage in finding a way to contribute in mutually beneficial ways to the film. Students were not automatically given assignments; rather, it fell upon each individual to volunteer for studio assignments according to project need and personal interest, availability, and commitment. Studio dailies was a prime time for such interactions to take place, or at least for ideas to seed about how and where one might contribute on the film.

Gilbert discussed the value of students' ability to manage studio engagement and participation constraints in a way that enabled everyone to add value and contribute to the project's success in the following excerpt:

> In a company where you're paying people you really have to assign the teams and all that stuff, but at the same time, a manager needs to figure out how to help a person take responsibility. If you can energize that company and the people working there with responsibility and ownership—a way they can take credit on the project for the success [of it]—[then] you don't become the dumb boss that nobody can stand, and they blame you for everything and go home early because you're making stupid decisions:
>
> > "I'm going to get the paycheck whether I work hard or I don't work hard. If I can be included into a group and we're given responsibilities, we're given authority to make decisions, then the paycheck means way less to me than the success of the project does."
>
> I know a lot of companies that have a lot of crumbled workers because of the manager's attitude ([i.e.] "I'm paying you so shut up and do the work.").

It was apparent in the interaction between Archie and Oliver that Archie wasn't working on the project for a grade; he was participating to make the project better. When Oliver said that camera work would fix the animated arm, Archie inquired into who was responsible for the task so that he could volunteer to help and ensure that the problem got fixed.

Archie's personal responsibility for the film's quality motivated him to act, whereas if he took a more passive attitude to his participation on the film he may not have cared whether or not Oliver ever found the time. He may not have cared if Oliver saw the problem as he did and fixed it accordingly even if Oliver found the time to do the camera work, though he may have complained afterward if the problem had not been fixed. He may have even complained during production that the director wouldn't find the time amidst his other responsibilities. As it was, Archie's virtues won out and Oliver graciously accepted Archie's help. Oliver's humble

acknowledgement that he could use some additional help was another virtue that contributed to the success of their negotiation.

Able to manage member integrity. The studio's leadership and volunteer policies introduced additional constraints with regard to member integrity, and managing member integrity as influenced individual-, team-, studio-, and societal-development. Students were accountable for working with individual and collective discrepancies, or divisions, with regard to the services they offered and the artifacts they produced. The discussion that Oliver, the student director, led in defining the purpose of a bar featured in one of the scenes illustrated an aspect of integrity management on the film. His concern wasn't with the bar as much as what it represented. It was apparent in his implied justification of the bar as non-alcoholic that he did not want to recommend alcohol consumption as a societal value to viewers of the finished short.

The studio director described the value of students' ability to manage member integrity with regard to individual, collaborative, and societal values, in recapitulating industry request for such support. He recalled a meeting where industry professionals from various backgrounds and faiths approached the 200 students present on this particular aspect of integrity management in industry:

> I had … the vice president of a studio … telling 200 students that they need to take their ethics, morals, and religion with them to Hollywood because there's a battle of good and evil and that he and his friends who are trying to be religious and righteous can't do it alone. The HR lady . . . was dancing all over the back of that room. She walked up and said he's absolutely right—"You've got to bring your religion. Even though we don't … see eye to eye . . . you've got to bring your morals. You've got to bring your values."

The HR woman in this instance later apologized to Gilbert, the studio director, stating that she "had no desire to go up there, but . . . had a tangible feeling," or prompting, "to go up and say something." Gilbert thanked her for sharing an industry perspective with the students, and addressed in interview how the studio's faculty mentors approach student responsibility and accountability in this regard:

> I tell the students all the time, "You've got to go out there and keep your morals, your religion, your ethics. Do not compromise; stand up for what you know to be true. Don't dump it on them. Be careful of their opinions and feelings because it's a work environment. You cannot offend people—
>
> If it's a story or something . . . you have an opportunity to say 'You know what? I don't want my kids to see that; I don't want my parents to see that; I don't want my wife or husband to see that. Do we have to put that in the film?' Make them feel guilty for putting things in that every one of them know they're not supposed to put in the film. You don't say something [and] it'll be in the film because they can make money, (laugh) so go make them feel guilty. Then, if they still put it in, at least you did your part."

Oliver's discussion over the film's content sensitivity with regard to how they referenced the *juice* bar featured on set provided a good example of students' individual responsibility and accountability to approach member integrity as led by one's own conscience. Though Gilbert and several students present for the discussion directly denounced the content sensitivity for the asset, Oliver followed through in addressing his concerns with the members present in seeking to rectify his own conscience on the matter. Doing so influenced a change in participants' response from open derision to supportive conception of alternative representations that the bar might

convey; this may have inferred an acknowledgement of the value of individual and social sobriety, or regard for Oliver's own sensitivity to such, or both.

Sub-theme 3: Industry validation. Further interviews with Gilbert demonstrated broad alignment between the value of students' leadership virtues (in managing studio constraints) from university studio to full-blown industry production and career development. In discussing his interactions with student alumni he recounted students' expression of ease in embracing the collaborative constraints of production leadership in individual task review:

> The discussion almost always comes to how easy it was for them to move into the studio environment, because in the studio everybody is always looking at every single thing you do. Every step along the way they know if you work hard, if you don't work hard, if you can do great stuff—. . . . Virtually every student will bring up the fact that students they started with from other schools really, really struggle with how to react in these environments—. . . where do they fit and all that stuff. Some of them just get devastated when they put up their work and the director comes in and just rips on them and yells at them because they're wasting all this money and nothing looks good.
>
> Our students understand that that's all part of the process. You've got to refine it and refine it and refine it. You can't just throw up something—"yeah it's great. Let's run with it." Our students tell me they always have higher self-esteem and they don't get beaten down in terms of "I don't do anything good." They all understand that.

Student graduates have also expressed gratitude for their early familiarization with the interdisciplinary constraints and opportunities of professional studios, as recounted in our interviews with Gilbert:

> They all thank me because they realize how valuable everybody in that studio is coming from different areas. It's not like "well those are the dumb artists, or those are the nerdy tech guys." They all understand—"thankfully there are tech guys so I can do my art," or "thankfully there are artists that can make my technology look good." So there's this huge respect.

The value of students' leadership is further illustrated in an example Gilbert shared of three students' progress from intern to studio lead within a 3-year time frame:

> The bigger thing is watching how quickly the students end up in those leadership roles. We did a film a few years ago. Three of the main students on that film ended up on internships together at Pixar. They were together in the same room for six months. I got a couple of emails a few months ago—one of those students is responsible for all the hair and fur on … a new film with a $200,000,000 budget [that] comes out a little over a year from now. One of the other students is responsible for all the cloth simulation on that same film, and the other student was one of the main character set-up people on that film.
>
> They've been there for 3 years. They had been in multiple offices, [doing] multiple things. Right now they're all leading teams of people underneath them and they're back in that exact same office that they started out in 3 or 4 years ago as interns from here.
>
> I wish I could take credit for all that leadership stuff. I tell the studios it's because it's what they learned in the program. I don't tell them they're all Elders Quorum Presidents—[male leaders who are authorized to act on behalf of God as stewards over their local jurisdictions to serve, teach, and perform sacred acts and ceremonies in ministering the gospel of Jesus Christ, as restored to Joseph Smith in the 18th century

> AD]—and Relief Society Presidents—[female leaders authorized to act on God's behalf as stewards who likewise minister the gospel of Jesus Christ in their local jurisdictions]—and they're all missionaries, and they learned a lot of it [there]. We have great students and we've figured out a way to, not take advantage of what they do, but enhance all these other things. Luckily the university lets us play this odd interdisciplinary game. I don't know if we could do it at many other schools, especially at an undergraduate level.

Gilbert's conversations with student alumni align with my observations and analysis of studio interactions and development, further illustrating the value of students' leadership virtues in negotiating mutually beneficial compromises throughout all phases of studio development *and* professional development. Though interview data points to the natural virtues of the studio's pioneering students, triangulating evidence supports an argument that religious faith and service likely contributed to their leadership as with the student alumni that Gilbert referred to in interview. The studio helped to enhance those virtues by affording students a safe environment for experiencing and responding to leadership constraints and opportunities.

It is essential to emphasize, in clarification of what I mean by safe learning environment, that the safety provided was not an emotionally sterilized environment that provided psychological safety *from* interpersonal conflict; rather it was a safe setting for introducing and immunizing students, so to speak, to the interpersonal and technical challenges of studio production—that students may develop honest expectations of such challenges, and a healthy approach toward problem solving as contributes to individual and organizational capacity. The studio's success in this regard is evidenced in the confidence and resiliency expressed by his returning alumni. Interview and observation revealed that it is also evidenced in alumni advocacy of the same in mentoring students involved in studio productions.

Studio participants learned through guided experience that leadership isn't achieved at the expense of the group through competition for talents, resources, and ideas, nor is it achieved apart from the group, but—in helping unify their talents and resources for the mutual benefit of the individual members, the team, and the production. As such, students' virtues in approaching studio constraints and interactions with a humble value-added mindset helped them become key contributors to the studio's instructional leadership.

Theme 3: Assignment administration. Students demonstrated their virtues in administering studio assignments and leadership transitions throughout the various phases of film production. Students' responsibilities as key decision makers in determining film leadership and overall production, in accordance with the studio's student leadership policy, helped to familiarize them with industry management and development—as I discussed previously. Their involvement in managing studio assignments created a relational environment where the presence and lack of leadership among participants could be more easily felt, understood, and improved.

Student leaders administered individual studio assignments according to student interest and project needs, and organized formal and impromptu team trainings to provide instructional oversight for each assignment; they also oversaw the collaborative review and (hierarchical) evaluation of studio assignments with respect to milestone goals and achievements. This section looks solely at studio routines for the initial administration of assignments as overseen by the student producer and director at a high level—what I refer to as high-level assignment administration—and the more specific oversight of assignments by team leads. It also looks at the supportive contributions of animation professors and other student participants in negotiating assignments.

Sub-theme 1: High-level assignment administration. The student director routinely took time at the end of dailies to spell out general and specific task needs related to project development, giving other students an opportunity to inquire and volunteer. He mainly served as the steer-guide, directing students to the right leaders to talk to about specific opportunities in their area of interest. The facilitating professor and supporting students—leader or other—would interject as necessary to clarify and occasionally correct perceptions of project needs and assignment opportunities. The following "end of dailies" interaction between the student director (Oliver), studio director (Gilbert), and supporting students Earnest and Luke provides an example of high-level assignment administration.

Closing dailies. The "end of dailies" interaction, per example for our review, began as Oliver ended the meeting with an overview of the group's progress up to that point—where they were at in the project and how close they were to assembling the scene, per Gilbert's advice:

> "Okay, we're moving along," began Oliver. "We're getting to the point now where we can actually . . . probably . . . definitely start to address the scenes that only have Lula or Telula, and start on animations so that we can start assembling everything into our scene like Gilbert was talking about a couple times back—moving vertically instead of horizontally. That way—horizontally—."

Gilbert jumped in when Oliver started to get stuck in recapitulating his advice, interjecting to clarify what he had mentioned "a couple times back," and to verify where individual tasks, or assignments, were at—in preparation for the next step:

> "Yeah pick two or three shots so you can start lighting and see what the lighting looks like," said Gilbert. "Is—I assume Lula is all rigged and—."
>
> "Lula and Telula both are all done model-wise, and rigs," responded Oliver.

“Cool, shaders?”

“Uhhm, No,” said Oliver. “Dakota is our resident skin person; she is at work right now. She is working on Lula. I asked her to try and assemble a skin team but I haven't—I still need to talk with her a little bit more about that. Who should we get going on that?”

“Other than Lesley who's lighting?”

“Remmy wants to,” responded Oliver, “but we need them to work with Levi Birr a little bit because Levi's who we have running our dirt effects right now.”

“Yeah he won't be around much.”

“No?” asked Oliver.

“He got an internship; I don’t know, when does it start Earnest? Do you know?”

“Uh, beginning of July,” replied Earnest.

“So he has a six-month internship with Real Effects in Dallas, so he'll be gone,” clarified Gilbert.

“Oh really?” exclaimed Oliver. “Okay. Good for him. Alright, we need to make our old tech people do dirt stuff.”

Gilbert chuckled, “and Lacey won't be around to light because it looks like she's going to have a sure offer at DreamWorks. I don't know if she goes before their wedding or if they're able to work it out so that she can go after the wedding.”

“Right. Okay,” said Oliver. “Umm, I think—hopefully Lesley has gotten enough practice on the other film [concurrently in development], and with the time Tom had the lighting guy come out; he should be able to handle that.”

“K.”

“Uh, so—. What now?” Oliver asked Luke, who brought something else up.

> “This is—,” Luke asked, trying to clarify who Oliver last referred to.
>
> “Lesley,” Oliver clarified. “It wasn't? I know he was for a little bit, I thought. I know he was there for that training; but—.”
>
> “I'm planning on doing lighting tests as soon as this ring is done,” said Luke. “I can throw it in, but, I don’t know—I have a lot of other things I'm doing. I'm just saying I can help a little bit.”

Gilbert’s verifications led to the discovery of some holes, or assignments, that needed to be filled to continue their progress. They discovered that they didn’t have a reliable lighting team; some students were going away on internship and another was mistaken for having been involved in the lighting training.

Luke responded to the needs presented by volunteering to help out with the lighting on that assignment along with his other engagements. He had already “planned on doing lighting tests” on the ring, but he made sure to clarify that he could only offer “a little bit” of his time as he was already involved in “a lot of other things.” Oliver referred Luke to Gilbert for instruction on lighting, considering the availability limitations of his other lighting resources that had been leading the lighting team up to that point: “Okay. Maybe what we need to do is tie Gilbert to a chair at a computer and make him teach you everything he knows about color. It should only take 5 or 6 years. (chuckles)”

Gilbert responded affirmatively, albeit discounting Oliver’s exaggerations on the time constraints of the task:

> “Yeah, well we can do that. It wouldn't take very long to cover everything I know. We've got 5 minutes, but I would pick a shot and say ‘who's finishing the textures? Who's set dressing this thing? Who wants to start setting up the light on this thing?’”

Gilbert then went on to continue validating their preparation for the next assignment, teaching via example and verbal instruction the importance of assignment definition and preparation throughout the different stages of production.

Gilbert engaged in the same feedback process I outlined earlier to consult with Oliver and the rest of the students on assignment administration during the transitional phases of film production. Stated in more explicit terms, Gilbert engaged in task 1 of the feedback process when he identified that the students needed to learn to validate their level of preparation for the next major assignments in production while finishing their present assignments. When Oliver set the context, indicating that the production team was about ready to move on to the next phase of production that Gilbert had talked about, he was engaging in task 2 of the feedback process; when Gilbert responded to clarify what he had talked about, to show students how to define future assignments, and validate the availability of resources and talent for each new phase of production, he was engaging in task 3 of the feedback process. Oliver's positive response to Gilbert's advice showed that he was open to Gilbert's participation in the feedback process, and valued his instruction—engaging therewith in task 4 of the feedback process.

High-level assignment administration of this type occurred on an as-needed basis during student dailies (and in the lab) when needs emerged and interests converged. Not all administration required the professor(s)' additional assistance and clarification. This example is unique in that it highlights the professor's role as consultant in ensuring that specific assignments were validated, rather than assumed, at the right times throughout production. This helped to improve the flow of production and enabled students to learn important problem solving skills for technical and interpersonal leadership.

Gilbert was not present in every meeting, but it worked out well that he was present to provide some additional guidance and instruction. His knowledge about the future availability and commitments of some of the team leaders on the film was also useful. His own technical expertise was called upon to meet the talent and resource gaps that his consulting helped to reveal. For example, Oliver pointed Luke to Gilbert for mentoring on how to do the lighting he volunteered to help with on the next assignment.

High-level administration was not self-contained during dailies; it occasionally spilled over into individual team trainings where Oliver would make introductions between team leaders and interested students so team leaders could conduct more specific assignment negotiations. The following interaction is an example of this.

New members. The interaction began when Oliver and a new student, who I will refer to as James, entered the auditorium room where Bernard was holding a meeting for students interested in his tech team. Oliver was in mid-conversation, explaining the time commitment expected of student participants, as they entered. He pointed out Bernard at the front of the classroom, and made introductions—reiterating his expectations on time commitment and respect for Bernard's time:

> "Uh still like 18 hours in the lab [every week]," said Oliver, speaking to James as they walked in the room. "It's a stretch. It's hard to do but if you can do it—. Bernard, put your hand in the air. Raise the roof."
>
> "Raise the roof," repeated Gary, already in the room.
>
> "Who's that?" asked Bernard.
>
> "Tech buddy," said John—the student producer—from the production desk.
>
> "You want to work on some tech?" asked Bernard.

"Now we do ask though—Bernard is super crazy busy," said Oliver, speaking to James again. "If you can't commit to it, this is going to sound mean, but if you can't commit to it—don't waste his time."

"James are you a sophomore?" asked Bernard.

"Yeah," replied James.

"He just got in, yeah," said Oliver.

"Cool and look at his shirt," exclaimed Bernard. "It's [a] Book of Mormon [ad]."

"Yeah you'll get along," said John.

"Yeah you'll get a long way with Bernard on that one," concurred Oliver.

"Yeah dude," said Bernard, to James—"come down here and I'll tell you what the options are, because he just asked, and you can choose what you want. This is what I'm in charge of doing—I've got the cloth, the fur, the hair, the rig, the crowd sims, so if you're interested in those—the cloth, fur, hair, rig, crowd sims."

Oliver hung around for a while afterward while Bernard welcomed James and negotiated specific assignments with him and the others already present. He chatted with the student producer on the side, but before leaving the room he once again interrupted Bernard's team meeting to reiterate his expectations of commitment and respect:

"Another thing really quickly again," said Oliver, speaking to the whole group this time: "I already said it to James, and you guys already heard me. I'm going to say it all again—if you won't commit, if you can't commit, do not waste Bernard's time."

"Ha," exclaimed Bernard.

"We had a big problem this past semester, uh last winter," continued Oliver, "where we had a whole fun big tech team and then they all vanished a couple weeks into it—so

> Bernard has become absolutely indispensable, so do not waste his time or I will sit on you."
>
> "Okay, yeah but he's right," said Bernard. "A lot of people had me teach them all this stuff and then they bailed. It was kind of lame because I'd come here hours early and teach them a bunch of stuff and then they would never do anything with it. If they had a question they would either come to me or just be like 'uh, I don't really like this.' And so they would go do whatever."

Later in the meeting Bernard clarified his own expectations of team members, softening Oliver's request for commitment and respect. He also engaged in some high-level administration to ensure the students approaching him were joining the right team—that their interests didn't lie elsewhere in production. I cover Bernard's interaction, and the similarities between assignment administration and negotiation in my next section on students' routine negotiation over specific studio assignments.

Sub-theme 2: Specific assignment negotiation. The negotiation of specific team assignments followed a fairly similar pattern to high-level administration up front. Both operated on the basis of inquiry and volunteer work. Team leads spelled out general and specific needs related to the their specific areas of project development—pointing out and clarifying assignment options and desired outcomes. They also defined assignment coverage, specifying preferences and limitations in task design, process, and procedures for specific areas of focus.

Interested students would interject as necessary to clarify project needs and assignment availabilities. The director, if present, would occasionally participate. The team lead would redirect interested students, as necessary, to leaders elsewhere in the production line when their responses indicated other preferences. The discussion typically ended with scheduling and

appreciation for students' help and interest. For illustration we'll revisit Bernard's new member meeting from the previous section.

Bernard, the tech lead, was already in the middle of reviewing available assignments when Oliver interrupted him. He had begun the meeting with an overview of possible assignments, first expressing the need for help before listing off the team's responsibilities and consequent opportunity for skill development.

"I'll end up doing it all by myself unless someone else—," began Bernard.

"Yeah I don't know much," said Lewis. "Well—."

"Let me know what you'd like," Bernard continued, ". . . I've got hair. I've got fur, rigs, and let's see (holds up four fingers) crowd simulators—any of those."

This was just moments before Oliver interrupted to introduce James, after which Bernard repeated the same options to James.

Undeterred by Lewis' uttered ignorance, Bernard communicated that his focus was on student interest rather than ability. He was sensitive, however, in categorizing assignments by their level of complexity in further clarifications. This is evident in his response to James' question about the rigs:

"With rigs you mean like how to control a character and stuff?" asked James.

"Uh-huh," replied Bernard, "so like the bones inside of him, and I can show you more. And you guys the cloth—it's simulating cloth over top of already animated stuff; same with the hair, umm, and then the fur is probably most simple."

"So those are the options," Bernard reiterated. "Anything you guys are interested [in] let me know and I'll . . .—there is something waiting to do on every single one of those things. If you want to do rigging there's the ring, and just the ring because the others are

fixes and no one's going to want to get in and do those fixes unless they have quite a bit of background. So there's the ring and—."

Bernard's additional clarifications categorized assignment options according to portfolio value, where the studio and team were at in the development of new task processes and procedures for various assignments. Yet his flexibility and willingness to have team members take responsibility, or ownership, of task processes for each assignment is also evident in his response to students' concerns:

"For the fur there's paddy's fur—his chest and everything, which would be quite a big thing to add on a portfolio for the younger guy," explained Bernard. "For the hair—if you really want to do hair then we can go over that because hair's got kind of a new process that we're developing right now. So that's an option, Shmebe's hair, if you really want to do hair."

"The crowd simulations are the last thing," he continued, "and the reason we haven't started on those is because I haven't asked them for the software yet, but we're getting special software to do that. So those are the options."

"Are we doing hair for the, for the crowd?" asked Gary.

"Yeah."

"How much rendering time is that going to take?" asked Gary.

"I don't know," replied Bernard.

"It makes me scared," said Gary.

"Well we can do textures," said Bernard. "Do you want to just do textures?"

"I think we should," Gary replied, "I think we should do texturing while we're doing hair, yeah."

"Yeah, so hair can include textures if you want to do it that way," confirmed Bernard.

"There are multiple ways of doing it. You can even do planes where you just texture on planes."

As texturing fell under the painting team, Bernard engaged in some higher-level task negotiation with Gary, pointing out which leader to contact and how best to learn from him if that was Gary's desire:

"So yeah, let me know . . . what you guys are interested in," said Bernard,

"Cool. Cool," responded Gary, "yeah, just texturing."

"Gary you should definitely—if you're interested in painting and not interested in tech stuff—," continued Bernard.

"Like dress—," Gary began, articulating his interests.

"I say you can help with Tanner and copy what he's doing. It will benefit you in the long run," finished Bernard.

"I'm interested in everything but I figured tech is a good place to start," affirmed Gary.

"Tech is, yeah, if you guys all want to do tech stuff Ben needs help too," said Bernard.

"He needs help more on the painting side—."

"Yeah he's got most of the rigging put together," Gary cut in.

"It might be easier to funnel in that way," Bernard continued. "Tech definitely has a bigger learning curve; it takes a little bit of knowledge of MIA, photoshop—."

"Okay, well yeah, so you want to do tech stuff then awesome," said Bernard.

"I've never done anything with hair and very little with cloth and so—," Gary paused.

"Okay yeah, most people haven't so just let me know what you're interested in," replied Bernard. "Whatever one of those makes you feel awesome, let me know."

"Are we going to be using . . .," asked Gary, in a muffled voice.

"Yeah," replied Bernard.

"Okay," said Gary.

At this point in the negotiation, none of the students had volunteered for a specific assignment, so Bernard briefed them on the lab's open hours and left scheduling to them:

"This lab is open 24 hours a day," explained Bernard.

"What's the code to the door?" asked James.

"Okay yeah, so you have to—," answered Bernard.

"Yeah so I'll leave it up to you guys to get back to me okay?" Bernard reiterated, "Because I just work all day and all night. If you want to do stuff on this you come find me, or email me, or ask me, and then I'll give you a file and I'll tell you what to do, okay? If you need help doing it I'll walk you through, okay?"

"I think—," Gary volunteered his preference muffled voice.

"Fur?" Bernard asked, "So uh—."

"Bernard, did you need this?" interrupted John, pointing to the screen."

"No, that's okay," replied Bernard.

"Okay," said John.

"Okay, so we should make a time to come in here," said Bernard, speaking to Gary now.

"In fact, are you busy now?"

"No," replied Gary.

"Okay," said Bernard, "I can walk you through how to do it then."

Once Bernard clarified his scheduling expectations Gary volunteered an interest in taking the fur assignment. Bernard's response was immediate. Taking advantage of the moment, he began negotiating a training schedule for Gary's new assignment and started training him immediately.

The need- and interest-based nature of studio assignments gave all assignment negotiations a personal, meaningful, and relationship-based quality. The volunteer-based nature of studio assignment required that all students—seasoned leaders and new members—participate in the feedback process to identify individual and shared needs, interests, and tasks to be done. As such, not all assignments were formally negotiated at the beginning of team meetings or end of dailies. Some assignments were negotiated impromptu during dailies and in the lab (e.g., Archie's volunteer initiative during dailies to help Oliver with the camera work so he could help ensure the animated arm wouldn't jump awkwardly in the final production, and Frank's volunteer initiative in the lab to improve a task process to make it easier to animate.).

The individual task-based nature of studio assignments that doubled as portfolio work contributed to the need- and interest- based quality of assignments in production. Students needed these assignments to showcase their work in personal portfolio reels for internship and job proposals. Though all students were given feedback on their assignments as related to project needs and an occasional portfolio review, it was the responsibility of each student to do their own work in completing these portfolio assignments. Thus student integrity and commitment were integral to the flow of production.

The volunteer-based negotiation of studio assignments necessitated and made visible additional leadership virtues for successful studio collaboration. Consider the following examples: Luke's willingness to take on a need-based assignment when it was realized that other participants would be away on internship, his open acknowledgement of project load and

associated limitations to helping on the assignment; Bernard's positive attitude and empathy in working with individuals interested in joining his team, in spite of having had his time taken advantage by insincere individuals in his previous trainings; James' willingness to respect the student director's expectations of commitment and availability, his open acknowledgement of schedule limitations, and his desire to prepare in whatever way he could to be able to contribute in the future.

Students' interpersonal leadership, thusly described, was directly observable in all studio interactions I personally analyzed, as well as indirectly in Gilbert's recapitulation of students' negotiations with instructional leaders during the studio's initial phases of development; it was possible to analyze all studio interactions—past and present—according to which feedback task participants engaged in, what leadership virtues they used to interact with, and what formal or informal assignment routines guided their participation where applicable.

Summary of Findings

Student participation as instructional leaders in contributing to the studio's initial and ongoing development is a hallmark of institutional and professional success. Student participants contributed through taking active ownership of their learning and development. They did so through reasoning and negotiating with instructional leaders over their learning and professional development—their individual and collaborative goals related to instructional products, processes, and talents and resources. Their leadership virtues, or tools, honed through their willing participation in both formal and supportive leadership roles and routines, have helped them in identifying and managing needs, interests, and individual tasks to be done, thus influencing the negotiation of mutually beneficial compromises over studio instruction and production.

The value of student involvement as instructional leaders was evident in students' relational-based influence and seamless success from institutional to industry development. It was evident in their ability and motivation to contribute to (and build on) personal and shared goals and relationships they care about. It was evident in their ability to see and function beyond the present—in their willingness to learn in context of past, present, and future experiences, roles, and responsibilities, etc. It was evident in their willing embrace of the constraints and limitations of design and development throughout the many phases and contexts of learning and growth.

Overall, the studio's distribution of instructional leadership to include students as key decision makers has given value to and necessitated the participation of the studio's other stakeholders—institutional, professional, and charity. Interviews with Gilbert indicated that as long as students continue to align their participation with their religious virtues and faith, the studio will be successful and secure in retaining stakeholder interest and support.

CHAPTER 5: Discussion

The central purpose of my study was to explore student involvement in a distribution of instructional leadership to unveil the value of their participation and discover situational patterns facilitative of leadership development. As such, my explorative study examined the core tasks students engaged in as instructional leaders in the animation studio, and the associated tools and routines used in carrying them out. It also examined the value of their participation in those instructional leadership tasks, and the studio policies, values, and so on that supported their involvement and development as instructional leaders. My analysis yielded rich themes answering the three exploratory questions; the substance of my findings captured those themes only in part.

Student Involvement in the Distribution of Instructional Leadership in this Learning Environment

The DIL framework recognizes instructional leadership contributions of ordinary members through capturing "patterns of leadership interaction"—primarily tasks, tools, and routines—that affect organizational and team motivation, direction, and strategy (Halverson & Clifford, 2013, pp. 28-29; see also Spillane et al., 2001). This study's findings highlight student involvement in instructional leadership, and by so doing helps to address the literature gap between teaching and learning in educational settings (Halverson & Clifford, 2013; Jenkins et al., 2007; Young et. al., 2011). As suggested by Halverson and Clifford (2013), the study's focus on students' leadership tasks and associated tools and routines helped to identify common patterns of leadership interaction within the animation studio; it also helped to unravel students' unordinary position in the distributed cognition of their instructional leadership environment.

Findings from the study suggested that student involvement in the animation studio's instructional leadership was voluntary and emergent. Students became involved through voluntarily negotiating their individual and shared learning goals and interests. Their negotiations resulted in additional learning opportunities for professors and students, as well as additional administrative and instructional support for those learning opportunities. The feedback process for negotiating ownership and support of students' goals and interests was the same for both groups—the students I personally observed, and the studio's pioneering students that I learned about through interviews.

Student engagement in the negotiation feedback process involved participation in the following tasks: (a) Students looking for and inviting input on what might help with personal and shared goals and associated products, processes, and talents, and resources; (b) Students orienting others to specific areas for contribution; (c) Students sharing their ideas, desires, needs to be met; and gaining clarity via elaboration, validation, and rebuttal; (d) Students inviting and being receptive to others' feedback.

These tasks are unaccounted for in DIL's observational framework. The framework does not preclude or exclude such analyses, though it does not (really) support them either. The framework briefly mentions language as part of the distributed cognition of a learning environment, that, along with tasks, tools, and routines, can help to create or thwart effective leadership and instruction (Halverson & Clifford, 2013; Spillane et al., 2001). Negotiation tasks are conducted through the use of language, the tool for communication; the study's analysis of language students used to interact one with another revealed negotiation as their primary task as instructional leaders.

The DIL framework briefly mentions negotiation with reference to effecting change by negotiating routines for instructional leadership (Halverson & Clifford, 2013), vaguely hinting to its importance. The framework fails to consider how negotiations underlie the creation, alteration, and dissolution of instructional leadership tasks and tools, in addition to routines. Thus, the framework is insensitive to a major aspect of instructional leadership. A clear understanding of participants' negotiations is necessary to appreciate the tasks, tools, and routines that instructional leaders engage in, to identify alignment and misalignment of stakeholder values and priorities.

Furthermore, the primary tools students employed in carrying out their fundamental tasks for negotiation were not tactile like many of those spelled out in the DIL framework; the framework does account for role-based tools, however, of which leadership virtues can be considered a type. The framework does not elaborate on role-based tools; the discovery of students' leadership virtues as elementary tools in reasoning and negotiating with instructional leaders—reflecting a strong sense of personal and shared ownership and commitment—is a major contribution to the literature. The studio's formal and supportive leadership roles functioned on this basis—student involvement created a relational environment for learning and developing these leadership virtues, as preparatory to and enabling of their success in industry.

The DIL's observational framework helps instructional leaders and researchers discover and map out but a generic understanding of instructional systems. The framework helps to inductively identify the strengths and weaknesses of instructional leadership, and where room for improvement lies. The understanding generated thereby is limited, however, by the framework's oversight of participants' negotiations, values, and virtues that either contribute to, or draw away from, instructional leaders' tasks, tools, actors, and goals, and overall organizational capacity.

The Value of Student Contribution

The DIL framework helps to discern management and change within schools' complex cognitive systems via the distribution of tasks, tools, and routines (Halverson & Clifford, 2013, p. 2)—the focus being on the capacity of individual members to contribute as needed to enhance the opportunities, creativity, and productivity therein (Harris, 2008). Cohen and Ball (1999) assert the variability of teachers' influence in eliciting student contributions—the effect of biased perceptions of student value and participation. They acknowledge the influence of students' interests and commitment, understanding and experience, and other engagements on the instructional capacity of a learning environment. This study, however, depicted students' active engagement and effect in eliciting the contributions of professors and administrative leadership to help meet their learning needs and interests. It also depicted transference of value for students' continued participation in instructional leadership from academia into industry.

As demonstrated in the study's findings, students manifest their value as instructional leaders throughout the design and development of the university's animation studio, in ongoing student management of studio productions, and in their career development as industry leaders. The studio's pioneering students held a central role in instilling value in graphic design and artist collaboration where there had once been refusal of administrative support. An unlikely partnership of interdisciplinary departments and colleges developed in response to students' successful efforts to utilize the university's limited resources and talent. Corresponding administrative innovation in interdisciplinary collaboration indicates value in student assessment and construction of their learning environments to meet their needs and interests, as recommended by Halverson and Clifford (2013) and others (Jenkins et al., 2007; Young et. al., 2011).

Student participation as instructional leaders also drew the interest and support of professional stakeholders that valued student leadership—their virtues in managing the studio's collaborative constraints throughout production. The study's findings demonstrated students' emerging capabilities: Their ability to quickly find their place in their production teams with greater ease and confidence; Their familiarity with studio management and development; Their working disposition and ability to create additional value for their production teams and companies; Their ability to negotiate mutually beneficial compromises for studio members.

Students' focus on developing the leadership virtues necessary to thrive and contribute in a mutually beneficial capacity demonstrated their interdependence and developing cognitive awareness—their appreciation for how participants' individual behavior affect the whole—just as Harris (2008) has recommended for building instructional capacity. The negotiations they routinely facilitated, in both formal and supportive capacities, also helped to capitalize on participants' individual talents and strengths—thus contributing to a sense of interdependence and responsibility to the whole (Harris, 2008; Louis & Marks, 1998; Mitchell & Sackney, 2000).

The DIL framework accounts for situational distributions of tasks, tools, and routines among instructional leaders; accordingly, the framework assumes that the value of each situational distribution will vary according to the needs and interests of each learning environment. The study's findings indicate, however, that the tasks and tools underlying student development as instructional leaders were fundamental across the various interdisciplinary academic and professional cultures they engaged in, and were influenced by. The director's initial valuation and prioritization of students' leadership experience and training, in enabling students to contribute in both formal and supportive leadership capacities, stemmed from his experiences and observations as an architect. The validation his students have achieved—at the

university, in their internships, and in their career development as industry leaders—offers support for considering possible universal application and value of the tasks, tools, and routines students engaged in as instructional leaders.

They enabled the students to optimize the personal and collaborative investment of members in each setting, throughout each phase of design and development—the university's instructional leadership in support of animation production, the production teams they worked with in the animation studio we observed, and beyond. Thus, as Harris (2008) predicted, students' leadership strengthened as an organizational resource; academic and professional environments benefitted from student contribution to instructional leadership, and each environment rewarded them accordingly.

Patterns of DIL Facilitating Student Involvement

Harris (2008) has argued that "the way that leadership is facilitated, orchestrated and supported" can affect "internal capacities to develop, grow and innovate" (pp. 173, 183; see also Leithwood, 2007; Stoll & Seashore Louis, 2007). The study's findings illustrated patterns of faculty leadership and administrative support that contributed to successful student involvement. Primarily, it is important to recognize the significance of negotiations between the studio's pioneering students and their initial faculty recruit, which enabled the development of the animation studio. Secondary to those negotiations were the studio's policies and administration that served to support students' continued influence.

Primary-support negotiations. The study's findings revealed that the pioneering students' initial faculty recruit helped facilitate student involvement, first and foremost, by acknowledging their requests for instructional support. His willingness to negotiate with students positively reinforced their leadership in approaching him to expand their resources and

talent. It also positively reinforced students' leadership in contributing to the design and development of additional learning experiences to meet their needs and interests in animation production.

In essence, the students' initial faculty recruit allowed himself to be influenced by their repeated requests for help. In so doing, he created an opportunity for students to contribute further as instructional leaders; his negotiations with them included handing them responsibility for designing the initial production experience—an area that he was personally unfamiliar with, though he understood and could teach how to use the right tools. In that role, students became the resources to support teacher initiative on instruction change. Student involvement in the creation of their learning experience—their iterations of production design and development, coupled with the faculty members' careful observations of their failures and success—provided instruction and wisdom he needed to guide their learning and production experience. His success in mentoring student learning paved the way for instruction and administrative leadership change within the departments and colleges that collaborated to offer their support.

In a sense, the collaboration of students and faculty member could be considered a type of professional learning community for designing learning opportunities in animation production. Their collaboration continues to function for this purpose; new students get to experience the process of design and development alongside their more experienced peers, with the guidance of their even more experienced faculty and professional mentors. Student acknowledgement and capacity for leadership thus serves to enhance the studio's development efforts to provide and expand opportunity, increase productivity, and spark creativity, as Halverson and Clifford (2013) recommend. This brings me to the study's secondary findings

illustrating faculty and administrative facilitation of students' successful contribution to instructional leadership.

Secondary-support policy and administration. The study's findings indicate that the studio environment provided for student participation via policy and the establishment of expectations and role descriptions for formal and supportive leadership positions. The studio's interdisciplinary partnerships gave further support by effectively leveraging student access to the studio and the associated resources and talent (provided therein); this created a safe and appealing environment for students to interact with instructional leaders concerning individual and collaborative interests, and to become familiar and comfortable with typical development constraints and leadership expectations in the process.

The animation faculty took on the role of consultants in order to facilitate students' authentic participation as leaders and key decision makers. In some circles this would be considered a form of guided autonomy (Benson, 2001; Breton, 1999; Crilly & Sloan, 2013; Fukuda, Sakata, & Takeuchi, 2011); the expectations for formal and supportive leadership were communicated by professors, mentors, and the student leaders themselves. The studio's policies and associated student leadership roles and routines, simulating studio relationships, in effect transformed the context of studio leadership from arbitrary dogma to living reality. It helped authenticate the studio's relational environment, thus enabling the studio's participants to more easily feel the need for, and improve, their leadership virtues and associated ability to contribute.

Student leaders' autonomy over organizing and managing their respective teams came with a responsibility to create partnerships with students and departments across campus and elsewhere professionally, as necessary, to leverage their teams' resources and talent. They held responsibility for developing and implementing team training, for establishing team expectations,

and defining schedules that aligned with the studio's leadership and open participation policies. The studio's room accessibility gave leaders the ability to schedule meetings for training and production review on-site as needed.

Student leaders were also responsible for creating a safe learning environment for interested participants; their mentoring relationships with novice students can be considered a form of mentor-apprenticeship—an underlying contributor in making the studio a safe environment for learning. These mentoring roles and responsibilities facilitated students' active involvement and contribution to the studio's instructional discourse, as recommended by Wolff (2007). The beneficiary relationships facilitated through studio involvement, from novice-apprentice to experienced mentor, established a precedence for students' role as mentors; it became a means of giving back and showing appreciation for the opportunities and relationships students had developed in the studio. This helped to mitigate the perceived burden of managing the constraints of working with participants' varying skill levels, interests, commitment, and availability.

Last but not least, the structure of studio assignments facilitated students' supportive and formal involvement as instructional leaders in taking ownership of individual and shared needs, interests, and tasks to be done. The volunteer-based nature of these assignments required that all students—seasoned leaders and new members—participate. The individual nature of studio assignments further enticed students to participate, as their involvement in contributing solitary tasks, pieces of animation or computer science effects, helped them to build their personal portfolios. Thus, all participants had the opportunity to learn how to participate in a mutually beneficial way that added value to the team, the animation studio and program, the university, and their future companies.

Halverson and Clifford's (2013) scholarship recognizes the influence of external motivations—such as individual studio assignments that doubled as portfolio pieces, and the need to understand and work within typical studio constraints in order to be productive and successful—to students' voluntary participation. The studio's simulation of professional industry constraints and expectations successfully integrated students' external motivations, giving students the information to control their learning in a manner conducive of individual and collective progress.

These findings give reason for considering and facilitating students' roles as user-designers of their own learning and instruction, as promulgated by Reigeluth (1999; see also Banathy, 1991; Spillane et al., 2001). Doing so would incorporate a more holistic understanding of curriculum and instruction that Cohen and Ball (1999) have advocated, to include the dynamic interaction between students and their professors, and instructional materials. Faculty and administration can facilitate student success in contributing to instructional leadership through primary negotiation and secondary administrative support. Appreciation of student membership in this regard, for their developmental role as instructional leaders, would provide for the mutual benefit of individual students, and organizational capacity.

Limitations and Implications for Future Research

Limitations affecting study scope and analysis included the following: A 4-year time-lapse between data collection and analysis for this study, partial data collection of the phenomenon, partial scope of the phenomenon, and possible research interference with the phenomenon. Some of these limitations provided value that would not be tenable without the study's constraints. The study is believed to provide an adequate portrayal of student

involvement, in spite of study limitations. Recommendations are given that will benefit the scope and analysis of future studies.

Time-lapse constraints. Data collection and inductive analysis of the phenomena began 7 years ago, without a question in mind other than to observe and identify leadership dynamics characteristic of studio participation during dailies and in lab interactions; this initial analysis is separate from, and in addition to, the one I conducted for this paper. My search for a meaningful conversation to contribute to—that would allow researchers and practitioners to learn the most from the animation studio and the data set we had of it—took years. When I finally discovered the DIL Framework and began reanalyzing the data for the purposes of this study, I was unable to follow up on questions that arose during data analysis as I would have been able to do otherwise. Though I had contact information for students who participated in this study, it may not have been feasible or reliable to conduct further member-checking to verify the authenticity of data analysis.

Additionally, the video recordings did not always capture the faces of the students and other participants as they contributed to production critiques. This presented some challenge in discerning patterns in interacting roles during studio interactions. It is believed, however, that the abundance of data served to mitigate the study's inherent drawbacks.

It is also important to appreciate that in spite of constraints, the time-lapse provided value in offering more time to ponder the data and consider its value for the field of instructional leadership. It allowed for other forms of triangulation in the form of interactions with subsequent animation students, and so on, that helped to clarify studio values, and studio participants' values, as well.

Partial data collection constraints. Another limitation of the study was that data collection of studio dailies and interactions discontinued partway through the senior production, which was the focus of this study. Nor did the study include interviews of industry professionals that participated in mentoring students, though their participation was invaluable. Interviews with industry professionals could have been used to triangulate with the data drawn from animation faculty and student interviews and observations. Sampling from the project's later stages of development would also have helped to observe any changes in student participation throughout. We did continue to interview students after we stopped recording dailies and lab interactions, however. This helped to mitigate some of the footage gaps.

Study scope constraints. With regard to generalizability, because this study (a) involved the analysis of but one setting—albeit an interconnected setting with multiple intermeshing connections between different academic disciplines, industries, and faiths—, and (b) was very informative of the questions asked of it, I would recommend that it be followed with comparison studies to broaden the scope and perceived application of study findings. A follow-up comparison study between groups that vary in their approaches to teaching leadership, as well as those that have no such instructives, would help to broaden the study's findings and show interesting contrasts across contexts. I would also recommend conducting a comparison study of students' interactions with instructional leaders over learning goals and desires, their involvement in negotiating tasks and tools for instructional leadership, and the influence of their leadership virtues, across industries, academic environments, and religious and cultural divides.

Research interference constraints. In addition to data collection and study scope constraints, this study has possible research interference; it is probable that data collectors may have somehow interrupted studio interactions, though I do believe that the interactions we

observed *are* representative of the studio culture our participants engaged in. In order to prevent data contamination in future studies, and to safeguard participants from alternate behavior associated with possible researcher interference, I would recommend the use of less obtrusive methods for collecting additional data. Precautions might include the use of discreet *fly-on-the-wall* cameras; it could also involve training and utilizing teaching assistants in conducting informal and formal interviews of participants. Working with teaching assistants in this manner could help participant interviews appear more natural and less study-focused, thus reducing research interference and bias.

Implications for Practitioners and Research Assistants

This study has relevance for practitioners in a few different application areas. Firstly, the study has relevance for how practitioners observe their own instructional leadership environments. The DIL framework used in this study was useful in identifying key tasks, tools, and routines that participants engaged in to influence change, as benefitted each of the studio's many stakeholders. It was also useful for identifying patterns of engagement throughout design and development that helped to encourage student participation, and successful collaboration among instructional leaders. I recommend the tool, and my proposed accommodations to it, to practitioners for their own development efforts; "first observe, then serve" (Burton, 2012).

Secondly, the study has relevance for how practitioners elicit student involvement in instructional leadership environments. Traditionally, practitioners employ university-sponsored student-rating surveys to elicit student feedback on their instruction and learning. Such surveys allow but passive involvement as instructional leaders. They are also impersonalized on both ends—the survey administrator, and the student. The focus on anonymity does not allow for the type of face-to-face interaction and negotiations that this study highlighted as students' number

one task of involvement as instructional leaders. Nor does it allow for definition and development of students' leadership virtues, as affecting their ability to contribute in a mutually beneficial manner to the instructional leadership of both academic and industry environments.

The intentional facilitation of students' instructional leadership can help them develop respect and appreciation for each other, and their individual and collaborative constraints. This may also involve integration of class and program policies, and so forth, that facilitate student leadership and participation. It may also involve facilitation of student leadership routines to create meaningful relationships and elicit additional student participation.

Thirdly, the study has relevance for how practitioners value student participation as instructional leaders. Researchers and practitioners recognize students' experience, prior knowledge, experience, and habits of mind as influencing "how they apprehend, interpret, and respond to materials and teachers" (Cohen & Ball, 1999, p. 10); thus they recognize students' passive influence on instructional capacity. They also recognize students' potential for influencing instructional capacity through peer mentoring, and through assessing and constructing learning environments.

The study's findings demonstrated the actual value of students' active contributions as instructional leaders across academic and industry environments: Their negotiations for ownership and support of instructional products, processes, and talents and resources as aligns with their individual and collective needs and interests; Their virtues in managing individual and collaborative constraints for mutually beneficial negotiations; Their ability to facilitate authentic mentor-apprenticeship relationships between one another—students, faculty, and industry professionals—as contributes to instructional capacity and relational value among and between studio participants.

This has particular relevance for practitioners who seek to help instill mature moral realities of relational interdependence in students willing to contribute as instructional leaders in the classroom and beyond—in their careers, in their families and communities, and in society at large. Individualist environments confound students' ability to participate in a contributing manner as collaborative constraints are therein perceived as hindrances to individual potential and progress; thus individualist cultures are incompatible with practitioners' efforts to increase instructional capacity within and among distributions of instructional leadership in learning environments. They limit members' capacity for leadership and success therein.

My Hope and Belief

I hope that practitioners and research assistants will take the time to consider the results and recommendations of this study over an extended period of time, and relate what is learned to all aspects of their lives—not just their teaching and research careers. This is because I believe that the philosophies that guide our way of living day in and day out are very much related to the philosophies that guide our way of teaching and researching. If we cannot self-evaluate in a holistic context, we will be greatly impinged in our ability to do so in a professional context where the interests of others are also at stake.

If pondering the study's results and associated recommendations is a fruitful exercise, which I believe it will be, I hope that practitioners will be creative in reconstructing their classroom experiences to align with their beliefs in the value that students provide in participating more fully as instructional leaders. If practitioners do not represent what they believe in such fashion, they cannot expect students to believe either. Nor can they expect the genuine investment and commitment they seek from students. If practitioners desire more than a

temporary transaction between their students and colleagues it is well for them to consider these things, and apply what they can where it makes sense to.

Conclusions

The explorative study answered questions as to how students can be involved in distributions of instructional leadership in a studio learning environment, what the value of their contribution is, and what patterns of DIL facilitate student involvement. The setting of studio learning environment was chosen on account of its collective-leadership structure of studio management and production. Ethnographic and other associated methods of data collection and analysis guided exploration of the three questions.

The study revealed negotiation and leadership virtue as students' primary task and associated tools for participating in and influencing the studio's instructional leadership. Their unprecedented influence in the design and development of additional learning opportunities led to the collaboration and support of stakeholders across interdisciplinary academic boundaries. Studio leadership and participation policies supporting students' continued participation as instructional leaders serve as models practitioners and researchers can draw from in their own development efforts.

Future research should replicate the study in different contexts to add perspective to the questions asked. It should also assess the verity of the patterns of negotiation, leadership virtues, and student-leadership and participation policy that this study delineates as contributing to school development.

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APPENDIX: Coding for Negotiation Tasks

Data Type	Interaction	Coding
Dailies	Oliver: "Jules, you had something to say." Jules: "Oh, I was just wondering what all Tilbert's doing for effects." Oliver: "He had been morphing Houdini on doing some dust hits, . . . And I know your interests lie more in the tech stuff anyway, so, you and I need to talk this evening." Jules: "K, yeah."	Jules: TN (task-negotiation)—Inquires into tasks of interest; Keep self meaningfully involved.
Lab Interaction	Oliver: "If you two will come up with a really simple facial model—." Boy: "This is what I think would really help us . . . is to know what shots we're going to be doing." Oliver: "I will email you what deformation—." Boy: "Like what the frame's going to be, because if the frame is going to be the head, it'd be easy to make separate frames." Girl: "Well, I'd probably cut it off at the torso and then just work on the cloth and the head. You want to keep at least—yeah."	Boy: Task Owner (TN)—Describe what he needs/what would help him get started on the task; Inquire the director about the context for the tasks; Clarify what he needs from the director, I think. Girl: Task Collaborator (TN)—Clarify task process/procedures using the tool.
Interview	Bernard: "Tim has been really good at helping everybody understand . . . it's not all about you. Can you help *other* people who aren't as technically savvy, and make the process easier for *them*?	Tim, Industry professional (TN)—Teach a service-oriented approach, and proactive mindset.