

4-24-2015

Alive in the Hive: Exploring Teacher Roles and Human Capital Needs in Secondary Personalized Blended Learning Models

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Alive in the Hive: Exploring Teacher Roles and Human Capital Needs
in Secondary Personalized Blended Learning Models

Michael L. Vose Ed.D

University of Connecticut, 2015

Abstract

There is no doubt that our society, spurred on by ubiquitous and affordable technology, is more connected now than ever before. As educational leaders, it is evident that our educators need strong support as new and current teachers will live and work in a drastically different learning environment which demands they blend together the best technology-based resources with engaging pedagogical strategies both online as well as in face-to-face settings (Archambault & Kennedy, 2014). The focus of this research is on how teachers personalize student learning in a blended flex model while servicing urban students in a high school virtual academy. This qualitative case study methodology uses the Community of Inquiry (COI) theory as a conceptual framework exploring (a) teacher pedagogical choices for personalizing student learning, (b) evidence of transformative teacher role changes, and (c) how teacher teams manage any emergent human capital needs. Data collection uses the Seidman (2006) three-part semi-structured interview series, multiple learning center and workshop observations, and extensive journal documentation. Findings include teachers as coaches and interventionists personalizing lessons in Edgenuity, a commercial course delivery system. Teachers collaborate to design, facilitate, and direct a social presence setting climate in their student advisories, a teaching presence in workshop interventions and learning center supports, and a cognitive presence using real-time student data supplementing and enhancing Edgenuity lessons. Conclusions indicate

teacher pre-service experience as woefully inadequate for their work in a flex model.

Additionally, teachers want better understanding of real time data analytics as relates to intervention and or lesson design. Teachers identified spending more time on front-end preparation, enhancing or supplementing personalized lessons around Edgenuity. Policy recommendations for departments of education include (a) clinical teacher preparation programs in personalized pedagogical innovation zones of practice, (b) funding to continue professional development in high school personalized innovation zones, (c) autonomy for high schools in credit versus competency transitions, (d) training programs offering micro-credentialing for blended learning master teachers, (e) digital leadership competency-based training for school leaders in personalized clinical settings using growth model evaluation tools.

Alive in the Hive: Exploring Teacher Roles and Human Capital Needs
in Secondary Personalized Blended Learning Models

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A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Education

at the

University of Connecticut

2015

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Michal L. Vose

2015

APPROVAL PAGE

Doctor of Philosophy Dissertation

Alive in the Hive: Exploring Teacher Roles and Human Capital Needs
in Secondary Personalized Blended Learning Models

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2015

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Problem of Practice

There is no doubt that our society, spurred on by ubiquitous and affordable technology, is more connected now than ever before. In 2013, 89% of surveyed high school students accessed resources through smartphones everyday (Speak Up, 2013). We are in a global society built on networks and connectivity. As devices get smaller, more affordable, with more powerful tools and services, our abilities to navigate and participate in the informational network redefine, for those with access, our levels of productivity in our personal and professional lives. As educational leaders, it is evident that our educators need strong support as teachers will live and work in a drastically different learning environment which demands they blend together the best technology-based resources with engaging pedagogical strategies both online as well as in face-to-face settings (Archambault & Kennedy, 2014).

As educators, our children need our best projections about what their post-graduate career skills will demand. Our best efforts require educational leaders understand and implement appropriate policy, resources, and necessary vision in order to transition from our current 20th century one-size-fits-all, assembly-line learning to personalized, competency-based 21st century learning models requiring digital literacy skills to master collaborative inquiry tasks (Patrick & Sturgis, 2015).

Today's technology has dramatically changed how teachers and students can have 24/7 access and interact with content, services, real-time data, and a community of knowledgeable people (Patrick & Sturgis, 2015). Online education at the K-12 level is in the early stage of an exponential growth pattern that will ultimately result in an entirely new educational paradigm (Miller & Ribble, 2010).

The transformation has enormous potential and it is underway. However, the teacher—the most important person in the process—is understudied and underprepared for this shift towards personalized competency-based models.

Meanwhile, Speak Up 2013 (2014) published statistics that showed teachers recognized digital learning as part of the educational landscape and 57% of those surveyed want more professional development on differentiation. However, in the same survey, 27% of teachers responded positively to implementing a blended learning classroom. And yet, 1.3% of pre-service teachers in formal education programs are even offered a field experience that involves teaching online, let alone formal course work (Kennedy & Archambault, 2012b). Meanwhile 40% of principals acknowledge currently offering online classes in their schools. Can you sense the loose couplings (Weick, 1976)?

In my experience with multiple technology integration initiatives, the primary point of failure was in the leader's single-loop thinking and wrong drivers (Argyris & Schon, 1978) (Fullan, 2011). The central office and building level administration issued directives to integrate technology as one solution to increase student engagement and mitigate a significant dropout problem that was identified by the Board of Education. Staff training often centered on tools rather than pedagogy. Rarely have I heard any double-loop thinking references to the districts underlying assumptions on student engagement or disillusionment (Argyris & Schon, 1978). Specifically missing was any visionary leadership on underlying assumptions regarding 21st century pedagogy's impact on student achievement.

Unfortunately, American school leaders' efforts to fuse technologies with pedagogies have mixed results, often not providing a strong return on investment (Cuban, 2009). Through various levels of loose couplings and/or single-loop thinking, it is often left to teachers to

interpret how best to establish policy and how to make new initiatives successful. Referring to this as “street level bureaucracy,” Lipsky (1980) posed that teachers in the front lines, lacking clarity of purpose and direction, often survive the initiative without appropriate time, tools, or trust, and subsequently domesticate the initiative into current practice. As predicted by McLuhan (1965) and substantiated by Bonk and Graham (2005), new media invariably gets consumed by old media as evidenced by teacher uploading files for students to print, work on, and hand in or simply recording lectures and posting as podcasts. A purposeful coupling is necessary.

It is the acceptance and adoption of blended learning by mainstream education where we are beginning to see the greatest, and perhaps the most transformational change in our educational systems to date. The question of the moment is, do we have the capacity and wherewithal to support the kind of overhaul needed to manifest a disruption as great as this (Rice, 2014)?

Vaughan (2013) refers to this as the cross-section of visionary leadership and courage.

In *Rise of K-12 Blended Learning* (2011), the authors Michael Horn and Heather Staker of the Clayton Christiansen Institute state 2% of the nation’s K-12 students take some form of online learning and project that by 2019, 50% of all U.S. high school courses will be delivered online in some digital capacity. *Keeping Pace with K-12 Digital Learning 2014* lists 30 states having online schools across their entire state. In the same report, Connecticut, under its high school reform act 2010 PA 10-111 requires high schools with 8% or higher drop out rates to establish online credit recovery programs.

The annual report *Digital Learning Report Card 2013*, from the Foundation for Excellence in Education, rates Connecticut’s policies on digital learning as failing, scoring 41% overall on their 10 element metric (2013). On their scale, Connecticut scored a zero in personalization. The same report mentions Public Act No. 13-108 that allows students to earn academic credit towards graduation through non-traditional methods; however, the state still

demands time-bound Carnegie units.

In the 2011 report “NextEd: Transforming Connecticut’s Education System”, leaders from the Connecticut Association of Public School Superintendents (CAPSS) presented a series of recommendations for transformations:

CAPSS believes that the most effective way to work on complex problems like these is to transform the entire system. Only by reconfiguring and repurposing parts of the existing system, challenging assumptions that have been entrenched for so long, and tapping into the creativity and inventiveness of those who are truly committed can we hope to generate the innovative and effective solutions that these complex problems demand — and all students deserve.

Meanwhile, there is an explosion of technology products and services challenging educational leaders to make critical, expensive, and potentially disruptive decisions. At this point, it is fair to say that blended learning (BL) is outgrowing policy and leaders are looking to understand what is required to integrate these models effectively.

Understanding new teacher roles in blended learning environments is a key piece to this decision-making process, including professional development for current teachers as well as new pre-service models for undergraduate teacher candidates. On the whole, however, teacher preparation in this country currently remains constrained, inflexible, and disconnected from shifts in the classroom as well as from emerging opportunities to support learning (Cator, Schneider & Vander Ark, 2014). Exploring teacher roles and needs is a start and this study is intended for those educational leaders looking to understand and support these emerging changes in the transition from traditional schools to personalized blended learning environments.

Review of Literature

This literature review has three subsections. The first defines blended learning as it relates to personalization. The second looks at why leaders should choose learning blends over

current practices. Lastly, the final section identifies the current research landscape for blended models at the high school level.

What Is Blended Learning?

Blended learning is purposefully a broad term encompassing many different meanings and models, which makes identifying and researching variables a difficult task (Labanca, 2013). The most cited definitions (60) are from Michael Horn of the Christensen Institute and Charles Graham (814) of Brigham Young University. Horn defines BL as:

Any formal education program in which a student learns—at least in part—through online delivery of instruction and content, with some element of student control over time, place, path and/or pace at least in part in a supervised brick-and-mortar location away from home (Horn, Staker 2012).

Watson, citing BL as an evolving landscape, states a definition based on a 30-70% ratio of online instruction to face-to-face (FTF) instruction in either direction (2008). Graham also identifies vertical implementations at the course, program, school, or institutional levels, as well (2013). Gerbic refers to blended learning as a combination of virtual and physical learning with an element of e-learning in the physical classroom, citing examples of physical workstation rotations with technology-based curricular blends offering multimodal instructional opportunities (2011).

Vaughan moves away from this type of polar dualism and states personalization through blends is a social constructivist mindset in a collaborative community where everyone is constantly responsible for their learning (2013). This creates role complexity far beyond teachers being solely responsible for decisions to spend 30% on FTF learning for one activity and 70% with students in front of computers (Vaughan, 2013).

Furthermore, Bonk and Graham (2005) identified three categories at the instructor level as enabling, enhancing, and transforming blends. The enabling and enhancing blends use technology to provide access to supplemental materials supporting current instructional practice. This layering approach building on current practice runs contrary to the Community of Inquiry (COI) model and its innovative stance on teachers and students engaging, interacting, and contributing to learning in new ways (Garrison & Arbaugh, 2007; Vaughan, 2013). Instead, Vaughan and Garrison posit this role complexity as teacher mindset, to engage and enhance learning with a purposeful fusion of the best face-to-face pedagogy and online activities (Vaughan, 2013; Garrison & Cleveland-Innes, 2005). Key to the innovation is that transforming blends provide intellectual activity through social learning media not available without the use of technology (Bonk & Graham, 2005).

Therefore, transforming blends in particular, flex models, are a focus of this study. Horn and Staker (2012) define two models as transforming blends: the virtual school, with online coursework, and the flex models, where students are in a physical building with customized teacher access during the school day. In addition, they both have 24/7 access to learning with reasonable flexibility and control over their pace, place, and coursework. Recent discoveries indicate high school students don't do as well in virtual schools and Horn and Staker predict leaders looking more to the disruptive flex models in transitioning to personalized learning (2012).

Briefly, personalized competency-based environments are defined as a shift in the power relationship characterized by students who are: active (rather than passive) learners involved in deep project-based learning and have increased responsibility and accountability, with a sense of autonomy, student choice, and mutual respect that is built on strong student-teacher relationships

(Lea, Stevenson, Troy, 2003). The U.S. Department of Education (2014) posts definitions for personalized learning, allowing students to demonstrate academic mastery regardless of time, place, or pace of learning. In their report on research reviews for Nellie Mae Foundation, Moeller and Reitzes (2011) concluded the role and mindset of the teacher determines the transformative nature of personalization as long as there is support, a systemic initiative, and access to ongoing professional development. Mindsets, qualities, and skills are the major attributes identified in the new BL teacher competency framework from INACOL (Powell, Rabbitt, & Kennedy, 2014).

Why Blended Learning for Personalization

In 2009, the U.S. Department of Education published a meta-analysis of online and blended learning in collegiate settings using 51 independent effects. In *Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies*, the findings concluded that blended FTF classes with an online (OL) component experienced better student performance than same course content in a traditional classroom. The researchers were surprised to find that no studies were available prior to 2006 in K-12 blended or online learning and not prevalent enough to make generalizations post-2006 (Means, Toyama, Murphy, Bakia & Jones, 2009).

In 2007, Picciano and Seaman published survey results and found BL drivers to include improved ability to personalize learning and reduction in achievement gaps as a significant reason for initiating BL programs (Picciano & Seaman, 2007. p.128). Speak UP cites 40% of principals surveyed plan to initiate some form of OL and or BL in their high schools (Speak Up, 2013). Barbour and Reeves (2009) found BL offers courses otherwise not available, meets

needs-based instruction, extends the reach of highly qualified teachers, offers credit recovery options and Advanced Placement enhancement, increases student engagement, reduces schedule conflicts, and narrows the digital divide. Fullan refers to these as “right drivers” focusing on strategies that build capacity throughout the school community (2008).

A number of organizations such as INACOL and Digital Learning Now are promoting personalization through high quality in-person teaching combined with blended pedagogies, using effective course delivery systems complete with robust data analytics, digital resources, and common core aligned curriculum. Non-profits such as The Learning Accelerator (TLA), The New Teacher Project (TNTP), the Clayton Christensen Institute, and the Michigan Virtual Learning Research Institute have just started publishing white papers and promoting webinars during the last two years with early adopters on personalized blended learning models.

Lastly, according to the U.S. Department of Education, personalized BL program structures provide access and equity by offering all students chances they don’t get in traditional classrooms (2015). These potential advantages include self-pacing, course choice, 24/7 access to digital instruction, instant feedback on formative assessment, progress analytics, specific teacher feedback and personalized intervention, high interest and high relevance materials at appropriate reading levels, real- time communication tools, archived portfolio systems, vetted common core aligned lessons, and experience with college and career readiness tools (Watson 2008).

Current Research on K-12 Blended Learning

There is a dearth of research on blended learning models at the secondary level and the general lack of understanding of teacher leadership roles in BL models by school leaders and policy makers (Halverson et al. 2013). In an email from Allison Powell, Assistant Director at

INACOL, she states:

We did a full literature review there isn't much out there, so we also looked at job descriptions and other frameworks. The field is still so new that there is no right or wrong framework or idea at this point. We are hoping researchers will take our framework and other standards to see if these are the right standards we should be measuring teachers and content and programs against (A. Powell personal communication, January 22, 2015).

In the U.S. Department of Education report, Means et al. remind K-12 policy makers on the shortage of research-based best practices (Means, et. al. 2009). In their 2012 meta-analysis of BL scholarship, Halverson, Graham, Soring, Drysdale, and Henrie analyzed the most highly cited BL research during the years 2000-2011. They selected the top 50 articles, 25 book chapters, and 10 books and found only two publications meeting their K-12 criteria (Halverson et al., 2012). Interestingly, only 11 studies contributed to specific theory building with a noticeable lack of research on BL design.

Halverson et al. (2012) list three top-cited works making mention to teacher roles and transformative practice: Dziuban, Hartman, Moskal, 2004; Graham & Robinson, 2007); and Garrison & Vaughan, 2008. Additionally, the team found only 3.5% of cited publications addressed professional development (Halverson et al., 2012). Lastly, the research team pleaded with researchers to consider studying demographics in relation to theory, citing a lack of teachers' perspectives on their roles, professional development, and implementation in BL programs (Halverson et al. 2012).

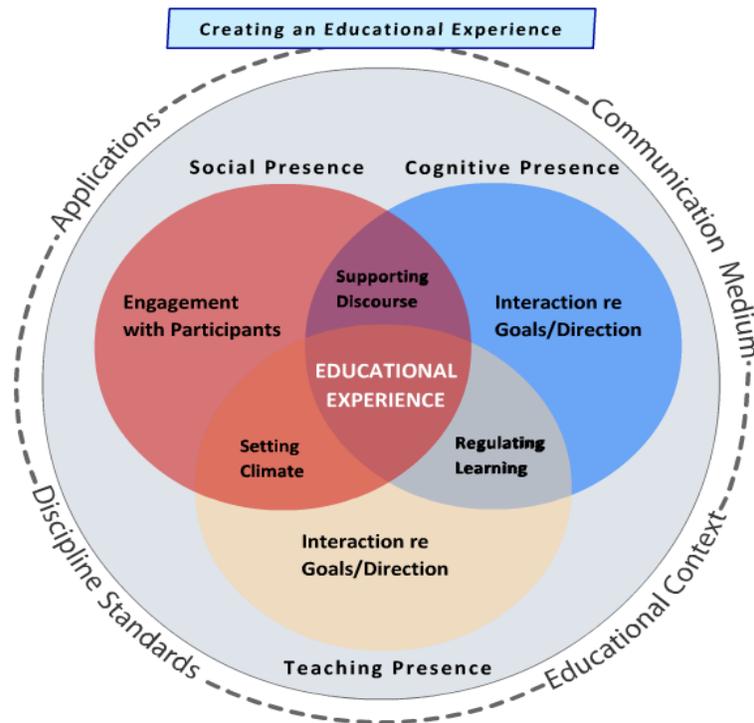
In 2013, Drysdale, Graham, Halverson, Spring conducted analysis of research trends during 2002–2012, analyzing 200 dissertations and theses studying BL. They identify K-12 research as significantly lagging behind K-12 BL implementation. Consequently, they advise upcoming studies to use theoretical frameworks for shaping research questions on teacher

leadership, technology tools for personalization, and teacher roles as relates to capital (2013).

They state K-12 teachers and administrators are moving blindly into BL pilots and theory-based research will help establish empirical evidence for effective BL implementations (Drysdales et al 2013). This study on secondary BL initiatives fulfills a growing need to examine BL models in K-12 schools, especially at the secondary level (Graham et al., 2012; Halverson et al., 2013; Means et al., 2009; Picciano & Seagram, 2009).

Conceptual Framework

In 2000, Garrison, Anderson, and Archer posited a framework designed to categorize and understand universal features of computer-mediated communications in higher education online courses. This framework became known as the Community of Inquiry (COI). Currently, Google Scholar has their seminal article *Critical inquiry in a text-based environment: Computer conferencing in higher education* cited 2085 times. Briefly, the framework is anchored in social constructivism and posits three overlapping recursive concepts referred to as presences. They include teaching, social, and cognitive presences. The intersecting center is referred to as educational learning, the focal point of in Figure 1(Garrison et al., 2000).

Figure 1*Community of Inquiry Theory (Garrison, 2000)*

Despite numerous refinements over the years, this core remains the same, representing a social constructivist epistemology originally situated in higher education online learning and now appearing more in secondary and tertiary blended learning research (Rourke & Kanuka, 2009). It should be noted that these are purposefully broad attributes on role changes, with overlapping indicators resulting in the appearance of redundant evidence. The research has also suggested the role of the teacher changes in these settings. Teachers need to be prepared to succeed and that preparation involves skillsets that overlap and are different from how they are trained to engage students in traditional settings (Moeller & Reitzes, 2011).

Social Presence

Social presence involves trust, group cohesion, and open communication (Shea, & Bidjerano 2009). The confluence of the affective and cognitive domains happens in the social presence. As such, a well-designed task has participants identify with each other practicing purposeful communication in a trusting environment. Social constructivism relies on sense makers working with each other to build knowledge (Garrison, 2009). Participants with high levels of social presence indicate high levels of course satisfaction (Akyol & Garrison, 2008; Richardson & Swan, 2003; Vaughan, 2004; Vaughan & Garrison, 2006).

Again, Kanuka and Rourke found that high satisfaction alone does not indicate deep knowledge and understanding (2009). This is a significant point for investigation, as students' sense of belonging as an important capital need does not guarantee high levels of learning. The level of student maturity within social media is a challenge in secondary education and requires strong teaching presence in digital citizenry (Ribble, 2009).

Teaching Presence

Garrison et al. (2000) characterize teaching presence as three over-arching components of design, facilitation, and direct instruction that he later refers to as participatory architecture (2012). These overarching attributes, indicated by Figure 1, are considered the indicators of interrelationships in these presences (Garrison, 2000). Vaughan refers to teaching presence as the effort and activity focused on design, facilitation, and direction of the social and cognitive presences in communities of inquiry (2013). Chen and Breyer, in their 2012 qualitative study, found that when teaching presence is restricted either externally by technology or intrinsically by the instructor(s) that student engagement lagged, participants felt isolated, and courses resembled

more enabling or enhancement blends indicated by Graham (2013). Casey and Evans using an action research framework, found in four 1:1 laptop programs in Australian high schools that as educators failed to create student-centered teaching presences, “walled gardens’ emerged as learners isolated themselves and became dependent on teacher-centered controls (2011).

Garrison points out a need for understanding about teaching presence, theoretically and practically, regarding interactions with social and cognitive presence claiming it as the least studied presence (2011, p. 61).

Cognitive Presence

A cognitive presence, as described by Garrison & Cleveland-Innes, has the Practical Inquiry Model at its core (2005). The four-step process includes a triggering event, exploration of a problem, integration and sense making, and resolution by applying, testing, or defending conclusions. Kanuka and Rourke point out that many students don’t get past the first two steps (2009). Garrison counters with the importance of pursuing integration and resolution through an ongoing teaching presence focused on process over product, particularly processes that are typically high quality design with needs-based balanced facilitation (Garrison & Anderson, 2003; Garrison & Cleveland-Innes, 2005; Garrison & Anderson, 2007).

In a mixed methods study, Capdeferro and Romero found that college learners situated in computer-supported OL learning experienced greater frustration with the absence of teaching presence in design, primarily shared goals, lack of collaboration as facilitation, and teacher inaction regarding direct instruction (2012). In the absence of teaching presence, student discourse diminishes (Rourke & Kanuka, 2009; Garrison, 2011). Gerbic (2011) concludes that teachers have the challenge of understanding new pedagogies for BL environments and

personalization indicating a strong need for research having a theoretical perspective as highly valuable.

Blended learning is more than equipping students with the right technology tools and providing reliable access to learning. Teaching presence requires rethinking the teaching–learning relationship (Garrison & Kanuka 2004). This will require teachers to find an ongoing balance between teacher control and student autonomy as teachers design, facilitate, and direct learners in using 24/7 technology access with personalized learning environments that often require self-regulated learning (McLoughlin & Lee, 2010).

Adaptation to K-12

Garrison and Vaughan (2004) posit the COI framework as being built on a social constructivist epistemology where the intersections of the presences determine interrelations designed and facilitated by teaching presence. In this study, the intent is to see how teacher mindsets, skills, and behaviors can design, facilitate, and direct student learning in an inner city charter school through a teaching, social, and cognitive presence.

While the COI theory has been developed and extensively studied in higher education settings, I have to find out if there are major adaptations that happen for K-12 teachers and students. In addition, since the three presences started out in an exclusively online learning environment, my intention is to add to the body of research exploring transferable attributes of the COI theory to high school BL programs.

Methods

Using an interpretivist theoretical stance, I conducted exploratory case study research at a virtual charter school. I accomplished this exploratory embedded single case study using qualitative case study methodology as defined by Robert Yin (2012), Robert Stake (1995), and John Creswell (1998) and developed and carried out data collection and display tools by Miles and Huberman (1994). What follows are the specific research questions, researcher background, contexts, data collection and analysis.

Research Questions

INACOL #9. A limited amount of research has examined the shifting roles of educators in new learning models. Therefore, research is needed to explore the human capital needs in K-12 blended and online learning environments.

- RQ 1: How do teachers use 21st century pedagogy to create authentic personalized learning experiences in a 9-12 blended learning breakthrough model?
- RQ 2: What transformative changes in educator roles emerge in 9-12 blended learning breakthrough models as aligned to the Community of Inquiry framework?
- RQ 3: How does the teacher team manage emergent human capital needs when participating in a 9-12 blended learning breakthrough model?

Yin (2009) states that even an exploratory study should have some purpose in the form of propositions. I include these propositions:

- Proposition 1: BL models and ongoing developments in course delivery systems are enabling changes in pedagogical strategies and are disruptive, requiring teacher leaders to

rethink personalized competency-based learning designs.

- Proposition 2: With appropriate time, tools, trust, and transparency, TEAM leadership can create, support, and assess BL models in creating personalized competency-based learning designs.
- Proposition 3: The COI framework has three presences that, when successfully evident, enhance the likelihood of teacher and student effectiveness in a BL environment.

Context

This study site, My Virtual Charter, is a non-profit serving 25% suburban and 75% inner city students in a charter school dedicated to reducing their state's drop out rate and closing the achievement gap. From their website:

Technology has changed the way we work, think and relate to each other and the way we prioritize the rhythm our lives ... We believe that to best serve today's students we need to harness the power and improve the access to technology and to allow students to learn in a safe environment which will prepare them for post-secondary school and the work environment of the future.

It is a school of choice in an urban setting. Their current enrollment is 165 students in 9th through 11th grade with a wait list of 270 students. They have 88% students on free and reduced lunch, with 13% special education students. Their demographics are 60% Hispanic, 25% African American, 12% White, and 3% Asian. Student attendance is 91%. There are 17 certified teaching staff, 40% of which have dual certification in special education. The school is heavily vendor-dependent on technology infrastructure, with each student having access to a virtual desktop computer and each staff member an Android tablet.

The school uses a Flex model (Horn & Staker, 2011). Students are arranged by grade in three learning centers (LC) that house between 30 to 60 student cubicles. Teacher breakout rooms are on the periphery of the cubicles. Their course delivery system (CDS), Edgenuity,

provides high school students with a comprehensive computer-mediated middle and high school curriculum aligned to Common Core standards and college and career readiness.

The digital format is available 24/7 to students and teachers and includes a routine of video instruction with note-taking, interactive activities, and formative assessments. The assessments are multiple choice and essay formats, using a default threshold set at 80% (adjustable by teachers). Two failing scores locks the lesson, requiring either a reset or review by the teacher. Students and teachers have data dashboards to monitor real time data analytics on each student's performance, such as how long a student is in a session so teachers can respond to alerts indicating a student is having difficulty with the material. Teachers can also analyze collective student performance on each Common Core standard, using reports indicating percentage of students struggling, number of attempted assessments, and time on task. Edgenuity has major BL clients such as Carpe Diem, Rocketship Learning, and KIPP Academy, offering grade level courses from 6-12 in the core areas and electives.

Ethics and Researcher Role

As the researcher, I am the primary instrument for exploring the research questions in this study. My qualitative professional experiences include coordinating the descriptive classroom rounds model, conducting classroom walkthroughs, regular calibration under Connecticut's teacher evaluation program, training mentors in the Connecticut's teacher induction program, and lead learner and developer of an Instructional Learning Team model. I wrote a vetted evidence-based domain 3 of the Connecticut teacher evaluation document for library media specialists.

My personal qualifications for conducting this study include the following items. First, I have memberships in the Community of Inquiry, The International Association for K-12 Online Learning (INACOL), and the EASTCONN Regional Technology Council. Second, in the spring of 2013, I conducted a six-week qualitative single pilot case study using BL strategies in my high school. Results were presented to the EASTCONN Regional Technology Council and as a pilot case study project in EDLR 6050 graduate course at the University of Connecticut. Currently, I facilitate two BL programs in my high school, one in credit recovery using Edgenuity, and another using Edmodo as a learning management system (LMS). I designed and facilitated our summer school credit recovery program using Edgenuity.

In Spring 2014, I participated in EPSY 5240 Interactive Learning Environments at the University of Connecticut. During the course, I coded over 50 pages of participant online discourse transcripts using many of the COI codes outlined in this proposal.

All University of Connecticut Institutional Review Board (IRB) procedures, documents, consent letters, Appendix A, and recruitment materials were prepared, routed through IRB and the study's primary investigator. I passed the Respect for Responsible Conduct Human Subjects Research modules at Collaborative Institute Training Initiative. This study observed all restrictions and guidelines under UCONN IRB regulations. The school is referred to as My Virtual Charter and teachers as 001, 002, and 003.

Researcher bias can be a significant validity concern in qualitative research. I have a bias stance for technology and digital learning having spent 20 years in the classroom using networked computer mediated educational tools and products. For 20 years, I practiced personalized competency based learning as an alternative education teacher. I have a bias toward programs focused on underserved and underrepresented youth. Efforts containing biases

required frequent check-ins with participants, member-checking all documents, and maintaining a reflexive journal.

Using a digital recorder, reflexive memos challenged objectivity by questioning observation points and using both inductive and deductive questioning strategies in journal notes. I maintained transparency and objectivity through frequent memoing, chart building, and ongoing matrix analysis.

Verification bias was anticipated, predicting participants, as new teachers, may be steering the study to meet their own ends of promotion. Likely akin to this is response and non-response bias, as participants may want the propositions to prove true or false depending on what outcome they envision. In conversations I was attuned to clues that participants were talking a “party line”; however, this did not happen. Teachers and primary and secondary advisors each had access to instruments, such as my codebook, interview questions, transcripts, and observation tools as additional bias checks (Yin, 2009).

Units of Analysis

My embedded units of analysis are the teachers’ response to interviews and their observed relationships as they manage any changes in their pedagogical and social roles. Multiple nested resources in the learning center create data points for exploring the three prespecified COI presences (Miles & Huberman, 1994), as well as being wide open for unanticipated emergent data points (Yin, 2009. p.30).

Sample

This study used a purposeful sampling strategy (Creswell, 2007). I met three times with the superintendent, explained the study, and conducted recruitment. The charter has grades 9-11 operating in three learning centers (LC) and I was given observational access to all three with intentions of selecting one for the study. I selected LC2, as this was the only team that had teachers from the charter's first year of operation, had the highest enrollment (65 students), a five-person teaching team, and the largest physical space in the facility. After a detailed recruitment, covering issues on confidentiality, benefice, and privacy, three teachers—subjects 001, 002, and 003—volunteered and signed IRB consent forms for the study.

Data Collection Methods

My data collection utilizes Seidman's three-part series of three progressive interviews on Focused History, Current Practice, and Reflections through December 2014 through February 2015 (Seidman, 2006). I made twelve scheduled visits to the study site, spending approximately three hours per visit. The semi-structured interviews were conducted and audio taped in three-part sequence with each teacher with approximately two weeks between sequences (Seidman, 2006). Table 1 shows frequency and time data on observations and interviews.

Table 1

Observation & interview procedures at study site December 2014 – February 2015

U of A	Observations	Length	Interviews	Length	Artifacts
001,002, 003	12 separate observations of all teachers in LC	2-3 hours each observation	3 Semi-structured each	45 -60 minutes each	FTF taped interviews and journal notes & memos

Total	12 separate observations of all teachers in LC	30+ hours	9 Semi-structured Interviews	460+ minutes 8+ hours	272 pages as transcribed records
	3 Team Meetings approx. ½ hr. each				3 records using TNTP Rubric

Note: Adapted from Miles & Huberman (1994) FTF – face to face; LC – learning center

All recorded interviews were sent for professional transcription. Afterwards, all transcribed files were sent electronically to interviewees for member checking and editing. All data collection used conceptual and methodological memo sections for immediate and reflective feedback and as part of a reflexive journal (Miles & Huberman, 1994).

During the twelve scheduled visits, I also conducted non-participant observations involving journaling of LC activities, totaling about 30 hours of observations. I observed the LC on different days of the week and at different times. Journal notes were paper-based, word processed, and/or audio files. On three occasions, I used the TNTP observations tool for BL classrooms.

Content Analysis

I used Dedoose for descriptive data analysis, uploading 272 pages of transcribed interviews and observation notes in three separate waves as the study progressed (Yin, 2009). My codebook used provisional codes from the COI research community and vivo codes as emerged from observations (Saldana, 2011). For example, I coded design, facilitation and emergent codes, such as innovation and collaboration. The codebook (Table 4), as part of construct validity, was reviewed and approved by study advisors. Data reduction (Creswell, 1998) started with first-round coding by hand using printed interview transcripts. As they

emerged, vivo codes were determined and recorded.

Second-round coding performed in Dedoose, used excerpts from round one and additional excerpts from deeper occurrences, strong quotes, and category development. I used Dedoose code chart features for code frequencies and category building. I reduced data to export into Excel spreadsheets and constructed bar graph charts using response percentages by code and category (Creswell, 1998). For interpretive analysis, I developed Table 5, a dynamic case-ordered matrix (Miles & Huberman, 1994) and constructed preliminary relationships between emergent categories, provisional codes, and the three research questions (Saldana, 2011).

Further maintaining construct validity involved triangulation of interview data, observational journaling, and reflexive memoing, establishing a chain of evidence over the duration of the study (Yin, 2009). Participants each had three opportunities to review interview transcripts and provide commentary on journal notes. Initial updates and data reviews were posted to study advisors either through email or FTF meetings.

Findings

It is important to understand the recursive nature of the COI theory and interrelations between presences leading to apparent redundancies in findings. Therefore, findings are reported by the research themes embedded in each COI presence. Design, facilitation, and direct instruction are overarching themes from COI; innovation and flexibility are overarching emergent themes.

In general, I found the three teacher subjects demonstrating many characteristics consistent with the social constructivist epistemology of COI theory. These include teacher roles as social and behavioral directors in student advisories, and design and facilitation experts to

Edgenuity, the content delivery system (CDS). They function daily as customizers, explainers, enhancers, and interveners to the CDS.

Social Presence

Data collected from the interviews, observations, and journaling provided evidence supporting categorical attributes of social presence.

Figure 2

Social Presence: Percentage responses by code indicator

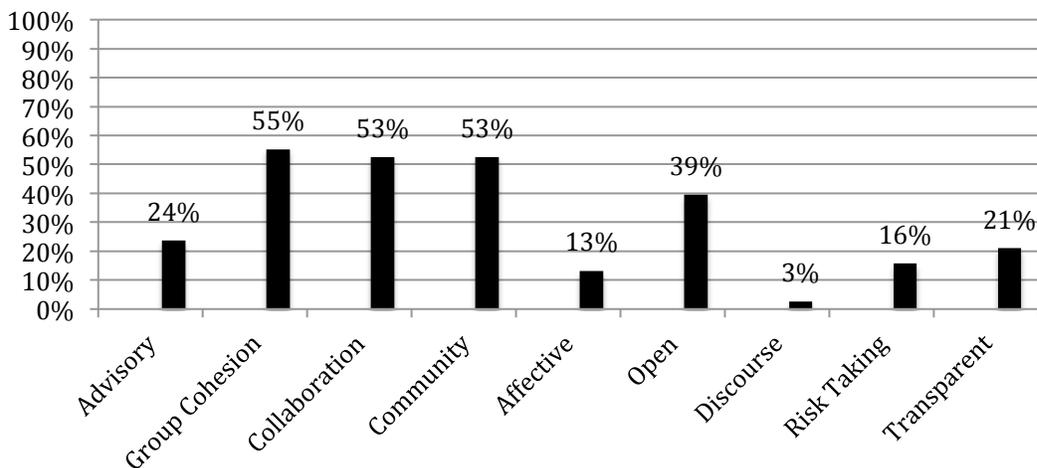


Figure 2 lists the percentage of responses to code categories from first and second coding of interviews and observations, data regarding strategies teachers used to create a social presence. The data indicates that findings, consistent with social presence, happen FTF in the LC, contrary to what one might expect in a computer-mediated environment of a virtual school. This was the clear pedagogical choice made by teachers and administration for establishing social presence. For example, in interviews, the subjects spoke about developing personalized

relations almost exclusively in both their advisories and their interactions with students on the LC floor and not online or in social media or Edgenuity's communication tools. While teachers meet the principles of open communication, trust, respect, and responsibility, both the observations and interviews offer little evidence of critical reflection and discourse either FTF or OL pivotal to COI (Vaughan, 2013).

Personalized pedagogy. All three teachers cited the advisory, 24% of responses, as their primary teacher-student time for team building, acknowledging this was part of their professional development orientation and expectation from administration. With students coming from different towns, teachers spoke about students recognizing and respecting diversity, cleaning up their language, and participating with teachers to acknowledge norms of behavior as a learning community. Teachers clearly owned the advisory process. Teachers 001 and 003 state:

We had two PDs in the start of the year, in August. Two days set aside for just that, for community building and it came up with a lot of ideas, great ideas of how to do circles, how to really bring them together, how to get them to open up to us.

I think that the advisories are tremendously important in terms of the social, cultural interactions, especially in this LC since it's such a large group of kids. They're all coming from different schools, some of them are friends, but the advisory serves as a space for kids to do some community building.

Teacher 001 stated that they had to set norms for the LC early on with daily morning meetings. Meetings were primarily in use of language, eliminating swearing, and establishing trust for affective expression (13%). Throughout the LC walls are large student-generated posters listing behavioral norms as social contracts exhibiting open communication (39%). When asked about the contracts, a student responded how it was needed in the beginning and now they were like family.

Teachers were observed in a number of open communication formats on the LC floor as motivators encouraging student progress, explainers of daily goals and obligations, and enforcers of behavioral expectations. When asked about personalizing the LC, teachers 002 and 003 go on to say:

So we've had a few LC-wide conversations. And they were more solemn at the beginning of the year, because when we walked in; it was kind of a little more mayhem, a little more havoc. I would say in a solid month and a half to two months, the place had done a 180.

By checking in with every student, almost every day, opens the door to that student realizing and knowing that I care about him or her as a person.

Observations revealed teacher roles as designers and facilitators of a calculated social presence through collaborative pedagogical choices on open communication and considerable efforts at modeling affective expression. This is evidenced in Figure 2, showing the majority of coded responses as group cohesion (55%), collaboration (53%), and community (53%).

At first this didn't seem like 21st century pedagogy, a juxtaposition presents with all the social and learning media readily available to staff and students. After all, students all had cell phones and computers. When asked why they don't use social media, the response from 002 sums it up:

They spend all day on the computer and some at night. We don't want to add another layer of school communication on top of that. Sometimes students need to unplug.

One thing that's interesting, is despite all of the talk of these kids being digital natives, and having a lot of 21st century skills, a lot of them just want to unplug sometimes. A lot of them veer towards just having this physical notebook. And I sympathize with that.

In explicating this, teachers stated they chose to build community via FTF strategies as they had experimented with social media and it really didn't take off, stating students preferred to keep Facebook and Twitter separate from their school life. Teachers stated it didn't seem to

make sense to them the idea of using additional layers of communication for the sake of using the technology. This is consistent with Kaleta, Skibba, & Joosten, (2007) referring to these extra layers as the course-and-half syndrome when teachers get carried away and upload too many files, initiate too many apps, or online services.

Emergent roles. However, their experience typified the new 21st century teacher's role as advisor as was outlined by Opportunity Culture, a non-profit pioneering blended learning models for secondary schools. They posit how FTF time with students lets excellent teachers continue to provide the motivational, behavioral, time-and-task management, and social and emotional development crucial to students' overall success (OpportunityCulture.org, 2012). Teacher 003 stated, "So we're trying to teach them how to self-regulate. That's a skill that a lot of them don't have, and that's through advisory." This mindset was exemplified in all observations documenting teacher transparency (21%) about the school's goals and objectives. Teacher 001 stated, "Your teachers are communicating and we're not gonna give up." This concept of FTF personalization is consistent with the case study literature from a similar flex model, Carpe Diem schools (Han & Barrett 2014).

In the second-round interviews on current practice, teachers spoke about their collaboration as essential to their sense of group cohesion. In fact, this social presence data point ranked at 55% of coded items from double-coded transcripts in this category closely followed by community (53%) and collaboration (53%). From teacher 001:

Well, here, we get the entire picture. We're all working with them, and maybe that student's opening up to one teacher about what's going on with them. Because we're always with them all the time, and it's always going to be one of us, we really get to build the connection with them and understand like, what we need to do.

During twelve observations over the three months of the study, teachers were often observed standing in the aisle making in-the-moment decisions often consulting with one another or just prioritizing on the fly which student(s) to attend to or what issue(s) needed attention. Specific journal notations refer to a buzz of activity and teachers having a sense of the pulse on the learning center floor. Notes indicate how students watched and reacted to these teacher-to-teacher communications and learned to wait their turn, meet teachers in the aisle, pull work samples into workshop, and actually help each other out when all teachers were busy with other students. Teacher 002 says:

They help each other out. They will do it on their own freewill; too, they'll say like, "Oh, this person's struggling." They'll go over and help tutor another person, help them work through their problems, or understand a lesson. So the kids will take the initiative.

Journal notes from January and February indicate this happening often; however, it was primarily procedural about navigating in some aspect of Edgenuity, and yet students still seemed empowered to help each other in content areas as well. Vaughan posits as teachers facilitate these actions, social presence emerges and cognitive presence evolves (2013, p.61). This is consistent with one of Pollock's findings of humans as peer supporters (2014). My observation notes take this a step further to include teachers as peer supporters, as well, further indicating this personalization as an emergent role.

From 001, 002, and 003 on modeling collaboration and cohesion:

I think we have an awesome team. Different members of the team play really well with different subsections of the students, and we all jump in, we can look up anybody's courses, anybody's grades, so we can do a lot of it on our own.

Students know that when we invest in them it makes it motivating for them to invest in themselves. It's important for the students to know that we are united, that we make decisions together and we debrief the day at the end of the day as a team. If you disrespect one teacher you disrespect all of us.

I selected The New Teacher Project (TNTP, 2014) Core Teaching Rubric for Blended Learning for three observations in order to measure evidence of personalization in the social and teaching presences. During a two-hour observation in January, students were rated as developing instead of effective in their transitions and routines as exemplified by some who seemed to wait for teachers to provide directions when they finished early or to verify scores on summative assessments. Often teachers were redirecting and refocusing students while one or two were noted in “downtime” waiting for teacher attention, verification, or feedback. Notations indicate effective ratings for most students following behavioral expectations, following directions, and asking appropriate questions.

Emergent needs. Overall, the three teachers choice of FTF strategies is consistent with Vaughan’s position that teachers collaborate in a COI as facilitators establishing community by designing interactions that encourage, model, and support each student in making connections. The strength of those connections determines the cohesion of the group and its transition into a community (Vaughan 2013, p.49). When asked how they manage their capital needs, all three stated that they “find ways to make things work.” They indicated they had the autonomy and the trust from administration to run their LC as long as they delivered on personalized student achievement.

However, social presence alone does not necessarily guarantee impacts on cognitive presence (Annand, 2011). Cognitive presence is highly correlated with social presence in learner-led synchronous contexts as in blogs, wikis, forums, and debates (Wanstreet & Stein, 2011). Teachers stated they were bound to Edgenuity; yet the only evidence of content creation from purposeful inquiry came from a one-time exhibition students prepared individually and

presented orally to their class.

The subjects all wanted more time to review student data, plan team activities, and have additional learning specialists on site. Teacher 002 stated, “I have no time. I’m on the go the minute I hit the floor.” I discovered in scheduling interviews that administration scheduled meeting time by initiating an early release schedule on Wednesdays. Students leave early at 2:45 so teachers can meet, reflect, and plan together until 4:00 pm. Teacher 003 said “this is our time to really get together with no one else around and review and reflect on how the LC is working and what we can do about it.” I observed three of these meetings as teachers were formulating their new house model: a design to invigorate spirited competition based on team performance standards.

Teacher 001 comments on his experience teaching in isolation at a traditional school:

I felt much more isolated during a traditional school. If something was going wrong in the class, well, I still have all these students in front of me. I can’t do one-on-one with that student right now, in general, and do I call the office, and have somebody have to come down? Do I have to have a teacher next door come in? It felt so much harder and so much more on me, while here, we have a community of teachers that are right here, and can always help out.

Because teachers had the autonomy to figure things out they needed consistent time for collaboration around problem solving and decision-making. In addition, there is a programmatic need for a highly qualified mater teacher to facilitate these collaborations.

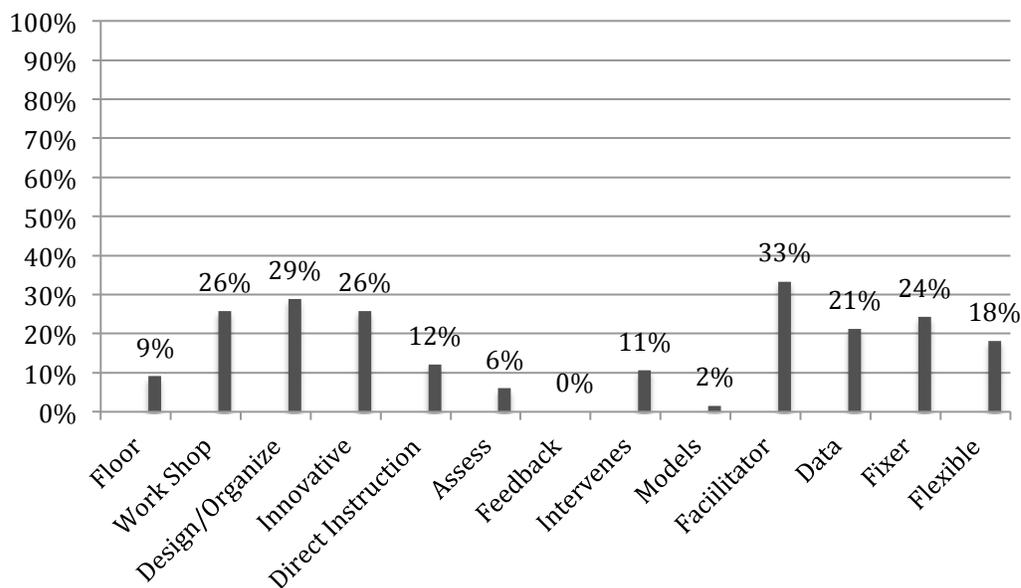
During 30 hours of observation over three months, I heard no swearing, saw one minor disciplinary issue, and often recorded in journal notes the overall tone of respect in the beehive despite the ebb and flow of movement and activity. Teacher 003 said, “So when the kids self-regulate really well, the LC itself becomes like an organism.”

Teaching Presence

Personalized pedagogy. Through all three rounds of interviews, participants made numerous references to innovation (26%) as a necessary teaching skill. Commentary from further probing was coded with 29% of responses in design and 33% in facilitation. These are major overarching tenets of the COI model as indicated by Garrison (2011) and Vaughan (2013). Data indicates a secondary skill set including use of live data (21%), flexibility (18%), and adaptive troubleshooting of procedural issues (24%). The occurrence of these data points and the over-arching categories of innovation, design, and facilitation are consistent with the similar study completed by Pollack (2014).

Figure 3

Teaching Presence: Percentage of responses by code indicator



Many of the design responses were also coded to the workshop (26%) and less to the LC floor (9%). This is consistent with cognitive presence as teachers see themselves supporting the product on the floor and designing supplements and interventions in their workshops. Teacher 002 states, “Currently, I tend to use the objectives from Edgenuity but do a lot of the instructional stuff myself on how I’m gonna deliver it.”

These responses reinforce the finding of a co-teaching presence between qualified teacher(s) and computer-mediated instruction. Asked how they personalize this relationship, teacher 002 responded with this example that also reinforces the notion of collaborative design:

Yeah, so then they’ll essentially go to workshops for those, to answer that specific prompt, given information from the teacher, but also kind of taking information that they’ve gotten from their sources. And then from there, usually we try to keep these projects to a two-week maximum. So from start to finish, content, the writing process, presentation and turn in paper, we would like all of that to happen within two weeks and so we nail it out to be like contents introduced first and then they start the writing process. All teachers are involved in the writing process.

Teacher 002 reported additional designs for personalization along this same collaborative stance indicating that the close physical proximity enhances the sense of shared community.

I do a significant amount of supplementary things. I also do a lot of meta workshops where we’re looking at, okay, you’ve gone through these units or lessons in Edgenuity, but do you understand the terminology? Do you understand how it all ties together? So let’s build on that, and let’s explain that. And then other times it’s tying in things that maybe they’ve done long ago in my class but they’re touching on now in something like ELA. ELA 9 or 10 has an essay on the Nazis’ use of infrastructure and the Holocaust. Well, okay, you guys did that with me in world history way, way early on when you were finishing up the world history course at the beginning of the year.

From teacher 003:

In science, it’s different, and I tend to build the science discussions into some sort of ethical, outside dilemma, in which regardless of where you’re at in the curriculum you’re able to give your opinion or give insight into what you think. That’s how I do it in biology. I know history could be very similar because you’re looking at the social science part of society.

This idea of physicality is a key data point for the COI theory as it transitions from an online theory to a BL theory. In the OL environment there is no physical proximity (Annand, 2011). All three teachers said they chose innovative personalized pedagogical strategies to engage students beyond their singular lesson delivery in Edgenuity. However, these examples were the closest responses indicating the beginnings of purposeful inquiry dynamics. When pressed for details about high interest assignments with Common Core prompts teachers went back to making references about supplementing tasks in Edgenuity that were already Common Core aligned. During the three months of the study, I saw no evidence of teachers initiating collaborative inquiry-based projects utilizing student discourse.

Emergent roles. Teachers also responded on their roles as facilitators of personalized learning (33%). Often they spoke of the flexibility of the program, accounting for 18% of responses coded to this indicator. Flexibility was central to so many comments on design and facilitation that it became a code category. Flexibility is a mindset that makes facilitating personalization work as time and location become variables unlike their fixed entities found in a traditional school.

There is so much flexibility with this model that I can adjust as I see fit that it's a very different environment. So I have five workshops on a math day and set schedules for the kids that need to be there, but there's flexibility in that if they are on a test right now for another class, I can have them come to a later workshop in the day.

We've said there's five workshops a day, and Monday and Wednesday are English and science, Tuesday and Thursday are history and math. But that's the workshop. That doesn't mean Monday and Wednesday you have to be working on English and science. If anything, work on the subjects that don't have workshops that day. Because that way those teachers are probably going to be out in the LC, and be able to help you.

This notion of teachers encouraging students to self-regulate their choice in class schedules, time on task, and flexible assessments is contrary to the one-size-fits-all time-bound model of traditional high school (Silva, White, & Toch, (2015). Subsequently, I observed students experiencing more control over their learning.

Another significant finding from all three interview series and observations was that of teachers as data managers. Pollock (2014) identified humans as providers of feedback and assessment, but does not reference humans as data managers. This is a significant role change because of the instantaneous availability of performance data. During observations it was noted how each teacher always had a mobile device with some form of monitoring software facilitating and monitoring student progress using Edgenuity's dashboard and data analytics. Teacher 003 states, "I'm monitoring everybody. I'm seeing where they are, how long they've been stuck at something, if they're ready for a test, so I'm talking to them all the time." Teacher 001 said, "Data kind of drives everything that I do in terms of whether I'm pulling kids into workshop, whether it means touching base with a student to make sure that they are gonna do their quiz corrections or test corrections." Teacher 003 kept a weekly data wall of her advisory posted in the LC.

Not only was data on teacher devices students also used their Edgenuity dashboard tools to monitor their progress and performance. During multiple observations, students shouted out their quiz score from their cubicle. "Hey, I got a 90!" Teachers use the progress-monitoring feature to make weekly goal sheets and also collect the student's daily one-page paper production form for administrative data collection.

From teacher 001,

We give them trackers that they fill out, where they monitor their own progress during the week. And at the end of each week, we conference with them and see,

“Okay, you hit these goals, we did not hit this one. Next week we’re going to plan your new goals so it’ll reflect that.

Lastly, the ability to intervene (11%) at a moment’s notice is a significant finding.

The student performance data was compiled daily and as students finished courses, their transcripts automatically update giving them anytime-access on their progress. Students could view transcripts and see a projected graduation date based on their current rates of course completion. I observed teachers acting as motivators and personalizing this level of progress awareness, encouraging students to stay on pace and graduate early. When implemented effectively, a blended learning program can make better use of instructional resources and facilities, and increase content and course availability, thus speeding up the pathway to graduation for students (Dzuiban et al., 2004).

Co-occurrences with design and facilitation coding again support these overarching categories indicating teachers chose to intervene using the data by design to facilitate explaining or enhancing the sequential delivery in Edgenuity. Teachers commented that their role change, based on co-teaching with the product, actually opened up time for creativity as well as surgical interventions. Teacher 003 states:

I’m not so much doing the assessment, evaluation and not so much designing and finding materials for a unit, that’s already there. So now I can progress monitor and actually intervene at the points I’ve already predetermined and I know how much I need to intervene.

From teacher 002,

Yeah, and especially even in just the environment out in the LC, if there’s a student who’s having trouble with a science question or an English question, and I’m comfortable with what the question is, to help them out with it, I’m not going to sit here and just, “Oh, no, you have to wait for Mr. so and so. The situation is resolved, if he needs more help, we’ll get the other teacher. I have saved that teacher a problem. I’ve saved myself issues. I’ve helped out the student from becoming aggravated. And now I can focus on my student even more.

I often observed students plugged in with headsets as they were engaged with their lessons in Edgenuity, meanwhile teachers were able to handle data-driven conferencing and interventions as necessary, FTF with other students. I observed in some cases teachers using appropriate selected lessons in Edgenuity as computer-mediated instruction for one group of students, thereby allowing the teachers to perform targeted specific human instruction for those in need. This is also a central feature of Carpe Diem, as well (Han & Barrett, 2014).

Emergent needs. During the third round interviews on reflective practice, teachers responded to questions on capital needs and pre-service training. All three teachers came from different backgrounds; however, each one agreed that working in the LC was exhilarating, yet time consuming. Teacher 003 said, “Kind of stretched, I would say in terms of what I’m having to do on the day-to-day, sometimes I wish there were like six of me.” Once again, observation notes make frequent references to the levels of activity in the LC. Teacher 002 said, “I was never taught how to operate in a blended learning environment.” Even teacher 001, with his technology background stated,

Because it is a big interest of mine there were a couple of really strong education courses with technology that turns out didn’t directly apply here.

Teacher 003 stated,

In terms of curriculum design and those types of things, lesson planning, I pretty much threw that out the window the first day that I got in here. Just because it is so different and from what I was taught in my training, it needed a tremendous amount of changing in order to work here.

Teacher 002 commented,

The biggest components that set this environment apart is being able to utilize daily data, monitor student progress, develop best practices for learning and management, at this point in the game, if you’re not using technology, you’re behind, you’re significantly behind.

These comments strongly indicate two sets of needs, one from pre-service teacher preparation programs in terms of methodologies and a second from site-based leadership on training strategies specific to their chosen BL model. Regarding pre-service, all three teachers had noticeable negative reactions when asked how well prepared they were for teaching in the flex model. I asked what they would tell their professors; teacher 003 summed it up saying, “come on down and see what I do here.”

While they were all using data all the time, the concept of robust data analytics is new to all of them. They were observed using data to progress monitor student performance in Edgenuity, sometimes sharing custom made tools and spreadsheets.

Asked about what they need, teacher 002 stated they were always on the go and do not have prep periods. The administrative responded with a reduction in LC enrollment from last year’s 85 students to the current 60 students.

On March 30, 2015, well after my data collection, American Journal for Education editor Bryan Mann interviewed Michael Horn of the Clayton Christensen Institute. He asked Horn what he is hearing about their needs from teachers on the ground. Horn replied, they know the kids better, the job is more difficult, the pre-service was not applicable, and they are all figuring things out.

Cognitive Presence

Personalized pedagogy. Analysis of coding reveals cognitive presence received the fewest responses of the three COI elements, with the code “product” accounting for 66% of the coded responses for this element. This is referring to teachers’ relationship with Edgenuity. Although explicated in the teaching presence, this is a significant finding in that teachers

frequently make references to their relationship with the product, not only in design and facilitation but also as a control issue. Some of this is bureaucratic, as Edgenuity is the academic foundation of the program. Teachers 001 and 003 state:

Honestly a lot of times, I'll use the product rubric, because I know that like, part of our charter as a school is we have to be predominantly based on Edgenuity.

We have to use the product. That is what our school is built on. We are a virtual school and we use Edgenuity. Some things I can change and other things I have to use. I like the idea that I have the freedom to pick how I want my students to interact with the product. I can set the threshold on quizzes and the number of retakes.

As far as the control issue, when posed the question whether these products will replace teachers, they vehemently stated “No way! But it definitely changes what I do.” All agreed that they spent considerable prep time learning the product, its instructional modalities, assessments variations, and the teacher data and course customization tools. As a result, leaders have to account for this transition from print media to digital learning tools with adequate support for staff.

Observation notes and interview comments indicate teachers making pedagogical choices in designing personalized learning tasks based on two circumstances as either intervention or project-based supplements. For instance, one afternoon, a teacher asked five students to copy paste the first four pages of an upcoming story in Edgenuity and bring into workshop. There the teacher led students on a close reading activity. When asked why, the teacher discovered a better understanding of the learning tasks and assessments after doing this check for student readability and understanding where to make strategic instructional adjustments for each student. “It cuts down on my intervention time on the backend.” In the Pollack study, teachers did the same thing since the content delivery system is a single sequence instructional tool, meaning it can't re-explain or re-define student misunderstandings (2014).

On another day, the science teacher pulled three students that failed the Edgenuity science content quiz three times. With the passing threshold set at 80%, the product locks students out until the teacher reviews their work using the product's item analysis tool and makes a decision based on the identified misunderstanding. This is a significant finding of the teacher's ability to make timely pedagogical choices about task designs specific to each student's needs. Teachers told me they are assisted by the technology's capability to do live assessment, grading, and item analysis requiring timely teacher pedagogical decisions with minimal downtime for the student. Teacher 001 reflects on similar circumstance:

I download the file of what they did today and I can personally see this person did this much math as a percentage, that their grade is this that I can see right away if they're stuck on a quiz. If they had too many attempts, or if they're about to be taking one and using all of that information, I can plan out my next day to see them in workshop.

In both examples, humans co-teaching with a robust content delivery system have additional pedagogical tools and decisions to design tasks that further personalize student learning in an accurate, specific, and timely manner.

For instance, during third-round interviews on reflections, two teachers talked about pedagogical choices in building thematic supplements to Edgenuity for use during workshops. Different than interventions, these assignments were enhancements to Edgenuity's courseware.

For example, one of the things I'm doing is, with my class that's now on the Progressive Era, they're going to go through a series of workshops, and then they need to make YouTube video reactions on the Progressives and explain why they only went so far on women's issues, race issues, and class issues.

With the math, students are extremely reluctant to do notes, so I have to take what Edgenuity is offering me, and make it relevant, make it exciting, make it interesting, so one of the cool things I did was during the unit on transformations, I found a lot of videos and resources that connected to how Disney and other of those animation production companies, how they use transformations in all of their designs. So by showing things like that, the kids see how it's used in the real

world, it's exciting, it's interesting. It's something that they like, "Oh, yes, I've seen that movie, I love this."

In Pollock's study (2014), she refers to humans as extenders of content, finding the same experience with teachers extending the product's sequential instructions and designing lessons either in response to students' needs or for deeper learning.

Emergent roles. In each interview series, all teachers acknowledge having to develop some type of working relationship with the product, mostly as designer, facilitator, fixer and interventionist. They each spoke to their own levels of innovation and the underlying autonomy from administration as they make adjustments to the product, enhance the single sequence learning process, and extend the rigor in assessments. Pollack (2014) identified teachers as autonomous fixers of problems and digesters of content meaning they required having a deep knowledge of the product's content. Teacher 002 echoes this, stating, "I can have students at different places in three different history courses asking me questions simultaneously. I have to know my content and how Edgenuity presents it." Here, teacher 001 comments on the role change after experiencing students progressing at different paces:

Students move through at different paces making it difficult to plan a unit in the workshop and so I had to choose short burst thematic activity in the workshop along with using it as supplemental intervention.

One of the big things I just did during my winter break was coming up with these detailed notebook guides for every single section that they would go through.

So a model like this, where they all move, as they need to, at their own pace, I think that's extremely ideal for them.

During an interview on current practice, teacher 002 mentioned students could negotiate how long they stay with a particular subject area and course assignment. The suggested course schedule is adaptive on non-workshop days, further personalizing the student experience to the suggested pace and encouraging self-regulation.

Force yourself; regulate yourself to kind of say, “No, I’m going to finish this. I’m going to finish this lesson, get through the quiz, or if there’s an assignment, a case at the end, whatever, I’m going to finish this, wrap this up in my brain, then transition to something else.”

There are a lot of options that we could do. It could be doing forced modifications, where we’re moving them into a different course. Or if they’re neglecting some of their courses, we can archive the other ones so they have to work on the ones they’re neglecting.

While the learning is highly individualized, it is personalized almost completely to enhance the product. When asked how they help students make connections, teacher 001 shared flow charts developed to show steps in problem solving. In looking around the room, I noticed tables with different types of teacher-designed, organizational note-taking worksheets that tasked students to connect ideas from previous lessons in Edgenuity. The emergent teacher role is the necessity to customize and enhance highly personalized cognitive tasks based on student interest, pace, or needs outside Edgenuity.

Another perspective, however, reveals the limited evidence of student-to-student discourse, which Garrison posits is fundamental to the cognitive presence (2011). When asked about students interacting in Socratic circles, literature circles, group debates, online forums, collaborative Google documents, or any other strategy promoting discourse, the only evidence teachers provided was some discussions in the workshops. Journal notes indicate minimal evidence of significant discourse in workshops other than students answering teacher-led questions or clarification on procedural matters. This is a principle corner stone of the COI

model and indicates an emergent shift in current role.

Emergent needs. The second most frequent code was regarding teacher needs.

Teachers felt driven to expand their role as curricular designers beyond what was provided by Edgenuity sequential delivery system. Teacher 002 said, “I want to pare down the content in the product to allow more time for inquiry-based projects with students as collaborators.” Teacher 001 talked about making changes in the product:

The day before break, the entire math department would meet and we’ll set, “This is what the ninth grade one will look like, the tenth grade, the eleventh, and twelfth.

Interviewer: Through Edgenuity?

Interviewee: Yes. We’ll design the Edgenuity one exactly as we want it.

I’ll write it out, and bring it to admin, and say, “Is this fine?” Very rarely is there like, an issue that says, “No, you can’t get rid of that.” Mostly the concern would be, “Well, are you covering what you got rid of in some other way? Are you making sure there’s not any Common Core missing?”

Teacher 003 wanted to increase rigor saying, “I’d like to see groups doing project-based learning as the summative assessment rather than relying on Edgenuity’s multiple choice and essays.” Lastly, the Director of Academics and all three teachers expressed a need for a robust portfolio system, an adaptive testing feature in Edgenuity, and greater opportunities for supplementing what they saw as the sequential delivery aspect of Edgenuity. These findings are consistent with Pollock’s identification of humans as explainers and extenders of content (2014).

Conclusion

In summary, these findings indicate building a personalized community of inquiry requires teachers functioning effectively in the interrelationships of the social, cognitive, and teaching presences as designers and facilitators setting climate, selecting content, and supporting

discourse (Garrison & Cleveland-Innes, 2005). Table 2 lists my observed differences between a traditional classroom and a flex model learning center.

Table 2

Comparison: Traditional high school teacher with BL high school teacher

Teaching in traditional model	Teaching in Blended Learning Model
Teacher-centered instruction, lecture	Student-centered inquiry model
Teacher as content gatekeeper	Students have 24/7 access to content
Mostly paper and text based materials	Mostly digital materials
Mostly passive learners no control	Active learners with choice
Teacher's pace	Student's individual pace
Teacher designed assessments	CCSS aligned assessment
Choice on frequency of formative tests	Mandatory formative frequency
Teacher records data	Dashboard records data
Teacher decides to give feedback	Teacher /Product shares instant feedback
Teaching in isolation	Collaborative team teaching
Teacher independently generates curriculum	Teachers enhance supplement curriculum
Class relies on competitive independence	Learning community collaborations
Grades are gradients of content mastery	Focus on inquiry & competency
Students learn as cohort	Students demonstrate competency

Note: Adapted from Miles & Huberman (1994)

In terms of description, what emerged from three months of interviews, observations, and journaling is the metaphor of the learning center as a “beehive” of activity. Observation notes often make reference to the “buzz”, the frequent fluctuation of activity, as teachers were in constant motion hovering from cubicle to cubicle guiding, refocusing, and answering student questions.

First, code analytics reveal new teaching staff trying to make sense of what works best in a new flex model. During three different team meetings teachers were observed problem solving issues and making decisions for the LC. Their pedagogical designs and practices involved problem solving three levels of blended instructional interactions: (a) face-to-face in advisories

and teams, (b) a blend of technology and instructor in the workshops designed either for intervention or thematic supplements, and (c) students fully online exclusively with Edgenuity with instructor assistance on the learning center floor. This is consistent with Carpe Diem, a similar flex model's early start up as reported by Han & Barrett (2014).

The pedagogical shift seems to be the teacher relationship supervising student choices for individualized learning strategies in conjunction with a content delivery system's predetermined curricular sequence. Teachers discovered they had to develop an innovative and flexible working relationship with Edgenuity, going beyond relying on the software as simply a course in a box baseline instructional tool in student-centered classroom. Instead, their role required taking pedagogical control of student learning by designing lessons that expanded thematic knowledge and cognition in relevant ways for some and re-taught lesson concepts for those in need (Drexler, 2010; Garrison & Cleveland-Innes, 2005; Vaughan 2013).

Second, further findings indicate significant role changes from those of a traditional teacher in a traditional school (TNTP, 2014). Teachers cite academic and behavioral innovation, motivational coaching, decision-making and adaptive flexibility as necessary qualities in supporting their roles as designers and facilitators of their personalized learning community. This required learning center ownership and collaboration by teachers as student advocates for the success all students (Christensen, Horn, & Staker 2013). Unlike a traditional classroom, social presence was the foundation of the program (Garrison, 2011). Again this is consistent with the charter's closest model, Carpe Diem (Han & Barrett, 2014).

Lastly, findings on teachers' emergent business capital needs indicate a heavy front-end workload requiring time, commitment, a student portfolio system, and robust mobile analytical data tools. Teachers also yearned for larger workshop facilities, as things were cramped in the

LC and finding private areas to conference one or two students was difficult.

In terms of professional capital needs, teachers were satisfied with their social capital and autonomy, yet wanted leadership support for professional capital needs through practical training on flex model strategies. They exhibit strong group cohesion, part of social capital; however, being new teachers in a new program has them looking for additional pedagogical support in developing cognitive tasks (Garrison, 2009). When asked how they get their training 003 said, “They kind of do it on their own.” Teachers all said they have to figure things out with no ongoing training beyond orientation. For instance, the concept and practice of data mining needs exploration as the availability of instant performance analytics is robust and consuming for the instructor underprepared for this type of practice. In addition, they expressed interest and made some attempts at inquiry activities at the individual student level and expressed uncertainty on how to go about that in a personalized environment (TNTP, 2014).

Therefore leaders looking to staff flex models are advised to hire to the INACOL teacher competencies framework of mindset and quality in addition to adaptive and technical skills (INACOL 2014). Qualities such as innovation and flexibility are critical mindset characteristics. The document *Redesigning Schools: Teacher & Staff Selection, Development, & Evaluation Toolkit* from Opportunity Culture has everything a leader needs to hire the right staff to these INACOL teacher competencies (“Redesigning Schools”, 2012). These include job descriptions, screening tools for interviews, and competencies for evaluation. Each individual job description has critical competencies identified with definitions and specific behaviors along with an interview script with questions germane to that position. Evaluation tools also accompany each job description.

Table 3 includes effects ratings based on data reduction, category building, and frequency

of evidence as aligned to each of the three COI presences. An unexpected finding was the medium to low rating on administrative support in comparison to the expected high rating of teacher peer support.

Table 3

Effects Matrix- Ranked evidence of COI variables to research questions

	Social Presence	Teaching Presence	Cognitive Presence
Personalized Pedagogy	Medium - FTF only, no digital social presence in any cloud apps or LMS.	High – Creative Innovators and facilitators of product support & enhancement	Medium –all learning bound to product curriculum with frequent teacher-design supplements No discourse
Emergent Teacher Role	High – developing highly personalized learning community	Medium – Design, facilitate, and provide feedback on student learning using live data but bound to Edgenuity	Medium – Know and interact well with Edgenuity FTF and OL. Starting to design basic thematic projects/portfolios
Admin Support for Emergent Needs	Medium – Admin has high contact with students and low contact with teachers. Admin provide PD on team building. Teachers have autonomy	Low – Administration sees/expects high staff turnaround Admin reduced LC roster 85 last year to 60 this year Teachers own their own for PD	Medium – strong staff training and support from Edgenuity No school based professional development on BL strategies Cognition bound to Edgenuity
Teachers Support for Emergent Needs	High - Teachers respect each other’s intellectual and physical space Positive outlook on making model work. Teachers create new house teams	High – Teachers collaborate and innovate daily as they design and facilitate student learning Teachers cite own their own to figure out model	High - Teachers cover each other’s content when necessary, trade tips in Edgenuity and workshop practices. Collaborate on common goal/data forms

Note: Adapted from Miles & Huberman (1994) LMS - learning management system

Limitations

The primary weakness of this case study is its small size; however, generalizability is usually not a goal with exploratory case studies. Instead, the size becomes a strength, allowing for rich depth and vivid descriptions of practice (Miles & Huberman, 1994).

In regards to limitations on research questions, I was expecting greater use of 21st century pedagogies in a virtual charter school, especially in digital literacies— particularly written student discourse through digital writing venues and portfolio development. This expectation is influenced by my personal biases and idiosyncrasies. As a result, I had to make quick adjustments to my interview questions. Since I was working alone, this left all interpretations dependent on my skills to remain descriptive as a non-participatory observer.

Demographics is a limitation in this study, as the sampled three teachers are all Caucasian and in their early twenties with less than three years teaching experience. Once again, I had to adjust interview questions to these conditions. I wondered if I would get the same data on teacher roles from a different learning center at a different grade level with teachers from different backgrounds and experience. I maintained rigor in observations, yet my presence, age, and experience during data gathering (which is often unavoidable) may have affected the subjects' responses. A wider sampling of staff including specialists is a potential research condition for a future team of researchers.

Further limitations in emergent capital needs appeared in the third month of observations. I noticed a disconnect between administration and the LC teachers in terms of support, as my purposeful delimitations were the administration, students, and student artifacts. Here my delimitation not to include the administration left me to pursue informal conversations with them

about their views on how they gauge effective teachers in the learning centers. The concept of shared or distributed leadership in BL models is a key item for additional research exploring the continuum of autonomy, support, and direction.

The entire study of the teachers was dependent on my skills as a researcher operating alone in the study. As the lone coder, the volume of data made analysis and interpretation time consuming and laborious and at times unwieldy, mostly in the broad domains of the COI theory and additional emergent themes.

I also found that using both a deductive and inductive process added additional layers of complexity to analysis resulting in difficulty visualizing the data. Over four months, I made numerous different types of matrices looking for ways to explicate the research questions. I also sketched numerous network maps looking for ways to link categories emerging from the coding process. Further design-based thinking may lead to choosing a more specific study investigating interrelationships in the COI model such as how digital literacies exemplify cognitive presence, as an example.

Recommendations

Study recommendations. Study recommendations include transitioning to a mixed method study strategy using the COI survey with modifications for high school students. This will add additional data points as the COI community expands into the secondary education field. Additional survey data points are necessary to understand both the teacher and student perspectives on the course delivery system and all three COI presences. In addition, building and adjusting a large database of interview questions applicable to teacher age, experience, and demographic provides adaptive sets of interview questions.

Adding quantitative statistical analysis may add additional layers of validity, thereby checking any perceived inherent weakness in the qualitative model. Triangulating qualitative code categories with statistical analysis may enhance internal validity as the study evolves into causality and explanation. Migrating to a two-person research team for interviews could reduce verification bias by respondents and add additional journal calibration during observations. Shared data coding will save time and provide additional validity in calibrating codes, adjusting the codebook, and category development. These modifications better serve issues of causality, transferability of findings, and generalization to practice.

Field recommendations. The following field recommendations have three phases based on INACOL recommendations for alignments between K-12 and higher education (2014). In addition, field recommendations include leaders, designers, and practitioners to coordinate collaborative efforts using distributed leadership strategies. I propose an evolution in BL models that combines the Rotation model with the Flex model as “innovation zones”, replacing cubicles with open pods, including soft skills zones for face-to-face social interaction and breakout areas for instructor led hard skills enhancements and remediation. A series of makers’ islands offer students hands on “tinkering” zones for project-based learning; large open spaces will host these physical accommodations, as learners and instructors migrate through each learning mini-zone based on suitability to instructional learning needs.

Pre-service. For instance, both sets of recommendations offer calls to action for capacity building through clinical experiences in preparing, training, and supporting teachers and administrators as 21st century practitioners. The CAPSS NextEd document has six subsections under the main heading *Boosting Teacher Quality* (2011). In the second subsection, CAPSS

recommends education preparation programs equip teachers and leaders with the skills they need to prepare students for the complex demands of living in the 21st century, saying preparatory schools failed to

Prepare teachers and leaders through forward-thinking programs that emphasize how to teach, learn and lead in a transformed system and assign them to positions that capitalize on their strengths (2011).

Their recommended actions for teacher preparatory programs include clinical internships, coaching and mentoring supports, and demonstrated competency in 21st century teaching skills in serving students from diverse backgrounds (CAPSS, 2011). The INACOL recommendations call for pre-service preparation programs to include specific training for teaching in online, blended, and competency-based environments (Worthen & Patrick, 2014), questioning policy on certification requirements and university definitions of those requirements.

Therefore, offering pre-service training opportunities for teacher candidates to safely experience disruptive models such as rotation, flex, and virtual models, demands experts and coaches at both the higher education levels and in the K-12 environment. The NextEd document refers to this as student-centered, relational staffing, featuring professional partnerships with experts, certified staff, community resources and mentors (CAPSS, 2011).

My recommendation suggests methodology classes provide training in designing, modeling, and instructing these BL models as clinical innovation labs aligned to the INACOL blended teacher competencies framework. These competencies provide a curricular backbone to build appropriate coursework on the four framework tenets of mindset, qualities, adaptive skills, and technical skills (Powell, Rabbitt, & Kennedy, (2014). Using this framework, pre-service teachers need to train in COI-based courses that model and require demonstrable cognitive

mastery in personalized BL pedagogy, data analytics, assessment feedback, and instructional intervention. Teachers will experience social presence in building social and cultural capital online and face-to-face using learning management systems and appropriate digital literacies. Teacher can design and facilitate webinars and video chats with field-based virtual mentors already in working in BL models. While these labs are not a new concept, exploring partnerships with 21st century tools and apps pushes learning communities into new arenas of connectivity.

Master teachers. INACOL frameworks suggest graduates demonstrating clinical competency earning micro credentialing as BL master teachers (Worthen & Patrick, 2014). State departments of education will have to support alternative credentialing while universities offer practitioners interested in becoming master teachers advanced course levels supporting an educational specialist competency as BL master teacher. This master's level class based in COI theory will require competency in all the features of a 21st century LC with emphasis on innovative teacher leadership, collaborative community building, rigorous digital discourse, and robust data analytics in simultaneous multimodal BL environments such as Flex and Rotation models. Part of their training will require praxis with pre-service teachers both online and in the innovation lab. This concept of demonstrating clinical competency over seat time is consistent with the NextEd policy recommendations for this position as well (CAPSS, 2011).

Digital leadership. Further policy implications surrounds concepts of digital leadership as innovation centers will push visionary leadership into creative improvements requiring attention to human capital and systemic capacity for change. Currently, education leadership programs offer minimal preparation for 21st century leaders participating, promoting, and collaborating with stakeholders using digital learning tools. In response, universities could align

leadership coursework to purposeful experiences using evaluation tools observing master teacher trainees and pre-service teachers in their innovation labs either FTF or online.

Coursework would emphasize the INACOL Teacher Competencies Frameworks (2014) and a host of digital leadership competencies. These include legal ethics in privacy and cloud-based student information, school communications and branding with social networking tools, data management and digital portfolio systems for teachers and students, and effective use of teacher and program evaluation tools.

Functioning in these clinical environments, digital leaders learn to enhance teacher capacity in personalized competency systems building appropriate growth models, develop systemic data systems, and coordinate with educational vendors for product alignment to specific program goals and needs. In addition, as connected leaders, they can explore building their professional learning networks and sharing inquiries, issues, and results from observations of practice applicable to their school's zones of innovation with other leaders throughout the world. Cautions include funding and staffing clinical learning centers with appropriate physical and virtual resources.

Policy Implications

This section looks at policy recommendations for school leaders transitioning to personalized blended learning models with a focus on (a) improving human capital through personalized training programs that are competency based using BL delivery models (b) comprehensive supports for innovation zones (c) supportive policy flexibility aligned to district personalization goals (Patrick & Sturgis, 2015).

These policy recommendations come from the 2014 INACOL state policy frameworks (Worthen & Patrick, 2014) and the Connecticut Association of Public School Superintendents (CAPSS) NextEd policy recommendations for personalized learning in Connecticut (2011). Both documents call for state departments of education to exercise latitude for exploring the implications of high quality BL programs on existing policy structures.

Human capital. Improving human capital starts with improving human capital support systems. Using the field recommendations, state departments of education can fund and expedite transformative designs in pre-service, current service, and leadership education programs. Transformative practices outlined in the recommendations, build human capital through upgraded competency-based licensure programs and standardized online professional development options. States can build credentialing opportunities for teachers pursuing BL micro credentials through financial incentives. These options can be asynchronous on demand training modules or BL delivery models run by schools or regional education support centers.

Flexibility. Both NextEd and INACOL policy briefs call for state flexibility for creating innovation zones. Flexibility in policy includes autonomy for schools to figure out pacing guides, attendance policies, and transitions to competency credits based on mastery rather than seat time. States will partner with vendors of high quality common core aligned courseware systems affordable to financially challenged districts. Teacher role definitions, contracts, and certifications require leeway and latitude for practitioners yet accountability for performance data and transparent practice (INACOL, 2014). Cautions include political will, time, resources, and funding.

Autonomy. Lastly state policy should support district autonomy in contextual program designs. Policy leaders can develop checks and balances ensuring that locally designed programs have assessments and curricular goals meeting state standards. State policies should support district innovations in alternative scheduling options for these competency-based programs serving over age under credited students, fast track gifted and talented, and thematic pathway programs (Patrick & Sturgis, 2015).

The PELP coherence framework provides visionary digital leaders building innovation zones throughout a district, a structure to develop purposeful loose/tight couplings working with creative stakeholders to coordinate these policy implications (Childress, Elmore, Grossman, & Akinola, 2004). Stakeholders will develop hiring credentials, certification and contract issues, on-site and online capital support, staff and program performance evaluations, and continuous growth benchmarks. This will push district and school leaders mindsets as distributed leadership structures emphasize adaptive systems for design, implementation, and evaluation of innovation centers. This systematic approach to improving human capital will result in enhanced learning and increased achievement for children (Worthen & Patrick, 2014).

In four years with the Carnegie Teachers for a New Era (TNA) at the University of Connecticut, I experienced a collaborative community of inquiry dedicated to supporting new teachers in the field through this type of proposed partnership. This could be the next level of work in the evolution of both teacher and leadership training and support focusing on meeting policy recommendations building competency-based personalized learning environments for all Connecticut educators and their students.

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Table 4*Case Study Code Book*

Themes	Categories	Provisional Parent Codes	Child Codes (Indicators)	Notes on Use
Teacher roles (RQ 1)	Teaching Presence	Design Organization TP	Innovates, Designs	Personalized Learning – Teacher facilitates student centered learning
21st century BL pedagogy (RQ 2)		Facilitate Discourse TP	Motivate Implement Diagnose	Facilitates FTF Workshops 5 per day
Teacher capital needs/supports (RQ 3)		Direct Instruction Feedback TP	Model Intervene Assess Reflect	Supplements Product activities assessments
				Teaching presence with Social presence regulates learning
	Social Presence	Affective Expression SP	Humor, Reflect, Advice	Educational Relationships – Teacher facilitates;
		Open Communication SP	Trust, Risk-taking, Discourse	Advisory, proactive mentoring, group meetings
		Group Cohesion SP	Social sharing, Community	Diversity Team model, belonging, collaboration
				Social Presence with Cognitive presence supports discourse
	Cognitive Presence	Trigger event CP	Inquiry prompt	Rigor – teacher designs and has students;

		Explore CP	Research Analyze	Action research and exchange information. Looking things up. Note taking
		Integrate CP	Construct	Make connections ideas Writing
		Resolve CP	Present	Demonstrates new learning
				Cognitive presence with Teaching presence regulates learning
	Categories	In Vivo Parent Codes	Child Codes (Indicators)	
	Mindset	Values	Persistence	Attitudes and beliefs
			Mission	Personalizes program purpose
			Growth	Constant learner
	Behavior	Flexibility	Change	Makes and handles negotiated changes
		Grit	Perseverance	Sees things through
		Diagnostic	Data	Data manager
	Adaptive	Collaboration	Decisions	Group Problem solving
		Troubleshoot	Fixer	Individual problem solving
	Technical	Software	Content expert	Knows and interacts with the product
				Uses Telematics and apps outside product

Note: Adapted from Microsoft Excel Spreadsheet

Table 5*Case-Dynamics Matrix: Learning Center's capacity for change analysis and response*

Strains	Issues as seen by staff	As seen by researcher	Teacher actions	Current resolution
Dynamic Teacher role	LC has different teaching styles. Everyone trying to figure this out. We want to be in control. Workload	Physical space constraints New teachers trying to build protocols Teaching presence – design and facilitation. Heavy Front-end Workload and no preps	Staff recognize/use individual strengths. Collaboration on floor covering each other. Respect each other's space. Teachers as flexible innovators	Formal Team meeting time every Wednesday. Daily informal meetings. Reflective on tweaking the LC's performance
Balancing Instruction - Workshop and Learning Center	We are here to supplement the product. We have to monitor live student performance data in product. Daily adjust to instruction.	Finding balance between OL and FTF. Use data and student learning style to make determination. Constant activity between both LC and WS	Team met to determine schedule. Created & posted 45-minute block schedule with student choice of class subjects to work on.	A/B block schedule with each teacher having 5 WS on every other day rotation. On non WS day, teachers monitor LC floor so others can do FTF WS
Working with Workshops	Staff say students feel WS is intruding on OL time in product. Staff wants to expand on themes as supplements and do projects.	Students avoiding direct instruction, as they are held accountable to the teacher.	Teachers discussed workshop role as data driven by student performance. Teachers want to supplement product with projects in WS	Teachers developing projects and requesting cloud based portfolio system so students create in WS.
Working with Product	Students are resistant to watching teaching videos in product.	Students do not use interactive digital notes during instructional videos. Product not	Teachers mandate paper notebook and design worksheets for videos	Almost all students have paper notebook binders. Quiz score threshold set

	Students rush through to quiz	adaptive. Teachers concern with product as focus of program		at 80%
Maintaining Student Progress	Constant ongoing monitoring of student academic and behavioral performance in LC and WS	Determining what is daily academic performance in the product at 1.2%	Staff create house teams on point base performance system	
Role of Advisory	Teachers recognize need to address student diversity. Teachers want FTF time to build community	Advisory time builds community and group cohesion. Teachers progress monitor in advisory.	Teachers pick certain themes i.e. successful tips in product, setting goals, time management, and productivity.	Teachers also do field trips, clubs, and fundraisers. Teachers finding an overlap with additional team model.
House Model	Teachers recognize students low in participating as learning community.	Seemed to overlap advisory possible redundancy. No efforts to explore online learning community.	Teachers choose to use point system for academic and behavioral performance	Goal is to develop academic and behavioral mindset through positive team structure. Teams compete for weekly prizes and status based on earned point system.

Note: Adapted from Miles & Huberman (1994)

Table 6*Three Month Analytical Progression Questions aligned to codes*

Seidman Questions	Focused History	Current Experience	Reflection
Indicator	December	January	February
Cognitive Presence Inquiry Discourse Reflection	Organize content and activities	Monitor adjust tasks, content and activities Interventions Supplements	Evaluate content, interventions, and activities
1 trigger events	Share your experience with initiating student thinking in lessons	How does technology change your ability to initiates student thinking?	What strategies worked best to trigger student imagination and engagement?
2 exploration	How did you share and explore information gathering?	Are students able to receive and organize information better than before?	To what extent did children have success developing opportunities and overcoming challenges in collaborations?
3 integration	How did students make connections to learning prior to starting the program? What skills did they come with? Discourse?	How would you assess students' ability to make connections and integrate ideas with themselves, others, and the content?	What adjustment would you make looking back on how students interacted with each other and the materials? Discourse?
4 resolution	How did students peer and self assess prior to the start of the program?	To what extent were students able to present and defend resolutions and current information and apply those to other course assignments? Connections?	How would you assess student levels of relevancy, critical feedback and lessons learned from the discourse? Inquiry learning?

Assessment	Formative strategies Data process	Interventions data collection Results?	Summative strategies Data decisions/results Results?
Social Presence	Focused History	Current Experience	Reflection
1 expression	What strategies did you used to establish a community of trust in your classroom at the start of the program?	How did you assess the classroom norms and if you had to make adjustments what strategies did you used to do that?	Upon reflection what evidence did you discover of student role changes or adjustments? Self-regulation? Pace?
2 Open Communication	What classroom discourse procedures do you have in place at start of the program? How did you maintain respect and integrity?	How would you assess your classroom discussion protocols for online discourse and face-to-face discourse and impacts on learning?	What if any unique features did you discover about digital citizenry and social norms either online or face-to-face?
3 Group Cohesion	Prior to the program how did you establish norms and opportunities for learner-to-learner contact setting climate?	During the course of the class how did you establish a sense of community using social media and resolve relational conflicts?	Describe how the use of social media did or did not impact any adjustments in teacher or student rolls?
Teaching Presence	Focused History	Current Experience	Reflection
1. Design	How did you get involved in program? Expectations? Preparation? Software experience?	Describe your current involvement in the program? How do you partner with the product?	Share if you would consider teaching in a BL environment again? Recommendations for Edgenuity

2. Direct Instruction	What evidence would you share in considering your previous teaching strategies to be more teacher- centered or student-centered?	How did you determine the right balance of cognitive load? How did those choices determine influence your pacing guide? Workshop model?	Looking back or direct instruction discuss what worked and what needed adjustment Innovations?
3. Facilitation	Describe your previous capacity for designing scaffolded instruction?	Discuss your role as a digital facilitator. How did you overcome challenges to building understanding in the digital classroom?	What steps did you take to be considered the expert in the room even in the virtual classroom? Flexibility?
Other Inquiries.	<p>What experience or prior opinions do you have on your instructional philosophy?</p> <p>What does it mean to be a teacher in the 21st century?</p>	<p>What steps did you take to personalize learning for students working online?</p> <p>What does it mean to be a teacher in the 21st century adjusting to challenges?</p>	<p>Think about your performance of the last year and identify any significant changes to teachers' roles?</p> <p>How do 21st century teachers build personal and team capacity? Teacher roles?</p>

Note: Adapted from Miles & Huberman (1994)

Appendix

Edgenuity website materials (2015)

About Edgenuity

Edgenuity provides engaging online and blended learning education solutions that propel success for every student, empower every teacher to deliver more effective instruction, and enable schools and districts to meet their academic goals. Edgenuity delivers a range of Core Curriculum, AP®, Elective, Career and Technical Education (CTE), and Credit Recovery courses aligned to the rigor and high expectations of state, Common Core and iNACOL standards and designed to inspire life-long learning.

Redefining student engagement and achievement

When transitioning to a blended learning model, course content and curriculum that is both rigorous and engaging is critical to your success. That's why Edgenuity offers a broad catalog of over 200 core and elective courses with an instructional model grounded in research. As the first educational publisher to be recognized as a WebbAlign® Depth of Knowledge Partner by the Wisconsin Center for Education Products and Services, we are committed to implementing the Depth of Knowledge framework into our curriculum and assessment materials.

Edgenuity's courses engage students with direct-instruction videos taught by expert, on-screen teachers, interactive learning tools, and checks for understanding embedded strategically throughout each lesson. And because we believe the role of the teacher in the classroom is vital to the success of your blended program, we provide a learning management system that empowers educators with real-time, actionable data, allowing them to easily monitor student progress and achievement.

Educator Experience

Our powerful and flexible learning management system allows educators to measure and monitor student engagement, progress, and achievement—all in real time. This data empowers educators to do what they do best: motivate students and ensure they are truly understanding course material.

Student Experience

Every Edgenuity course features direct-instruction lessons led by expert, on-screen teachers. Media-rich content keeps students engaged, and interactive instructional tools help them build knowledge and skills with the right level of scaffolding and support.