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Amalgamating Information Technology With Library Services In The School Environment: A Learning Commons Transformative Model

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AMALGAMATING INFORMATION TECHNOLOGY WITH LIBRARY SERVICES IN THE
SCHOOL ENVIRONMENT: A LEARNING COMMONS TRANSFORMATIVE MODEL

By

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Presented to the Affiliated Faculty of

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A Learning Commons Transformative Model

ABSTRACT

At a private New York City school, a library becomes the nucleus for students and faculty engagement with technology and support. This synthesis of modern technology fused with a traditional source for knowledge emerged a hub of creativity, collaborative activity, and participation known as the Learning Commons (LC).

This study was inspired by the need to explore the teachers' and staff perceptions of the new LC, or implementation of the Learning Commons Transformative Model (LCTM). The researcher sought to evaluate the newly designed space and the influence it had on teachers' instruction and subsequent student learning outcomes. This model set the stage for this study by distinctly aligning clear goals with specific criteria of importance. These criteria included Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space and Enhanced Teaching.

Documentation of the LCTM characteristics was analyzed in relation to the school's mission, vision and goals. Second, interviews were conducted of faculty and staff about their perceptions of LCTM elements. An analysis of the mission, vision, and goals in relation to the elements of the LCTM indicate a strong alignment between those goals and many aspects of

instructional space and technology provided within that space. Findings from the interviews suggest that the LCTM elements were evident to staff along several criteria of importance. The elements provided an effective evaluation tool for this specific school's Learning Commons. Participants reported examples of collaborative engagement, integrated learning, fostering literacy, and enhanced teaching, with a strong focus on use of technology within the LC. They reported few examples of direct evidence of enhancement of knowledge building and creativity. Implications of the study include recommendations for action, which are: Expand on fostering literacy, designate space for efficient use, promote creativity, and foster social development and safe space.

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Chapter One

Introduction

At a private school nested in the heart of New York City, a library becomes the nucleus for students and faculty engagement with technology and support. Yet, from this synthesis of modern technology with a library as a traditional source for knowledge, emerged a hub of creativity, collaborative activity, and participation. This space is simultaneously conducive to many learning styles, while fostering opportunities that extend beyond the conventional school environment. This space was not always set up for this purpose and, as such, was transformed by using a Learning Commons Transformative Model (LCTM) - a distinct model created by this researcher, which is the focus of this dissertation.

The idea of transforming and merging library services with information technology took form in the mid-1980s paralleling what is known as the IT (Information Technology) revolution (Beagle, 2006, 2009, 2012). The microcomputer market drove this revolution during this era, intriguing some scholars and researchers, one of whom is the notable Harlan Cleveland. In his book, *The Knowledge Executive*, Cleveland (1985) discussed many concerns and possibilities pertaining to the emergence of computers and how society would become interconnected.

Gaining more traction in the 1990's, the LC model started to emerge primarily in college and universities under various titles such as: Information Commons, Digital Commons, Physical Commons, Teaching Commons, Information Arcade, Information Hub Virtual Village, Scholars Commons, and Media Union (Heitsch & Holley, 2011). Cleveland (1985) used the term *commons* and contrasts this definition, explaining the "older commons, such as those for sheep and cattle, have disappeared through enclosure.... The idea of commons has now been revived in a big way, as the basis for worldwide cooperation in the environment that.... belong to no one or

everyone (deep ocean, Antarctica, outer space, p. 101). It is, therefore, with regard to the concept of “commons” that this study explores the “common”, once again, in its contemporary form: The Learning Commons.

Amalgamation refers to the result that is produced from the process of embedding, fusing, or combining elements or variables, together. Thus, it is the combined product of fusing the elements of the traditional library with IT services, the creative use of space and a large inventory of media tools that is the focus of the study presented here. The pages that follow describe the LC concept, emphasizing the factors that make this model distinct, beginning with its creation and application for a secondary school, ages 11-19 population. This discussion begins by elaborating on the distinctions between a traditional library and the Learning Commons model.

The Traditional Library versus the LC Model

In general, according to Reiersen and Davies (2015), a traditional library is often viewed as a “quiet place full of printed books, people reading, and librarians ‘shushing.’” In stark contrast, a learning commons is “a hum of activity with students talking, learning, searching for information on a variety of devices, focusing on content creation and synthesizing of information” (Reiersen & Davies, 2015). Therefore, while the first is often associated with quiet studying, a learning commons is described as a place that is both “physical and virtual – a place to experiment, practice, celebrate, learn, work and play” (Loertscher, Koechlin, & Rosenfeld, 2012, p. 4). But, what exactly does this mean and what characteristics distinguish one from the other? These tangible distinctions are detailed below.

Technology. Technology is a defining characteristic of a learning commons versus a traditional library (Lippincott, 2014; Reiersen & Davies, 2015). In a conventional library,

technology is often restricted to workstations, which only allow the user to conduct a few, primary functions (Lippincott, 2014). More specifically, a student or user can access certain information products or check the library catalog (Lippincott, 2014). In contrast, technology in the learning commons is a nearly ubiquitous element, which also affords staff and students the ability to engage in a broad spectrum of activities (Lippincott, 2014; Reiersen & Davies, 2015). As opposed to the aforementioned, students can often access large files that are not possible with the limited functions of a computer system in a traditional library, affording the ability to use multimedia tools for a broad variety of tasks (Lippincott, 2014).

In addition, users have access to software for creating school presentations or to develop projects that integrate various aspects of media, including writing papers with word processing, creating spreadsheets, designing slide presentations and animated video, while gaining the ability to use statistical software, such as SPSS or Excel (Lippincott, 2014). Ultimately, the primary goal in the learning commons is to create an environment where a user, teacher, or student can create a comprehensive project, all in one sitting, at one location, resulting in a “seamless” experience (Lippincott, 2014). This space differs from a conventional library in that the Learning Commons generally has far more technological features, which is at the core of the commons and its purpose. In addition, unlike most traditional libraries, support staff are available to assist students as well as teachers to integrate technology into the curriculum or simply inform users about new ways to implement it. The space is complemented by opportunities for professional development and ongoing support from LC staff.

The Presentation of Space. The use of space is another defining characteristic of a learning commons versus the traditional library set-up. In the conventional library setting, there is generally space allocated to quiet, individual study and, in some cases, a limited number of

rooms (generally only a few, at most) dedicated for small group study (Reierson & Davies, 2015). In a learning commons, a majority of the space is set up to foster collaboration, promote group study or small group projects, and to allow individual and combined efforts, alike (Lippincott, 2014; Reierson & Davies, 2015). This is often achieved by casual, comfortable seating, including couches that allow people to sit together and interact (Lippincott, 2014; Reierson & Davies, 2015). Large tables are often available for individuals to work on their laptops, while participating in a group project or study group (Lippincott, 2014). Conversely, there are computer stations set up with seating around the one computer, allowing students to all view and work at a single station (Lippincott, 2014). The portable nature of the furniture allows students to accommodate their needs and create a space that is as large or as small as they would like, while arranging it to their specifications (Lippincott, 2014; Reierson & Davies, 2015). This not only fosters efficiency, but encourages interactive learning and differs from a traditional library in that the space and its contents are designed directly around the technology as opposed to the technology being added into the existing design of the library and its book-centered focus (Lippincott, 2014; Reierson & Davies, 2015).

Ultimately, the learning commons can be described as a place that caters to “user services, not just information services” as the traditional library may be classified (Lippincott, 2014). The range of functions that are accessible, and the tools to support these goals, combine what might be found in a traditional library with the technology that would be located in the school’s computer lab, as well as the small group study format and writing support that would be accomplished separately in the writing center. As a result, the end product is what some may refer to as “one-stop shopping” for academic needs, which includes staff that can assist in all areas (Lippincott, 2014). Finally, the LCTM is a resource for teachers, as well, in that it provides

the staff support needed to integrate technology into the curriculum and encourage new ways to present lessons, promoting student interest and learning and providing a means by which the teachers can learn to do so (Lippincott, 2014; Reiersen & Davies, 2015).

The LCTM. Elaborating on the uniqueness of the LCTM, specifically, the model for a learning commons, in general, is a flexible concept that focuses predominantly on the implementation of integrative learning and technology (OSLA, 2014). Programs are supplemented with varying uses of media and the creative use of space that facilitates many different purposes, including presentations, group study, and more private, individual areas, to name a few (OSLA, 2014). Essentially, the combination of elements and utilization of space is determined by the needs of the students or the school (OSLA, 2014). However, there is little evidence in the literature of any concrete model that mandates a set of components or requires a specific inventory of elements for achieving a certain set of objectives.

As a result, this model is different than the general LC model, because it incorporates key elements that function to produce a definitive inventory of specific outcomes with the inclusion of each component supported by empirical evidence. Therefore, this model is consistent with the concept of evidence-based practice and it fosters a best practices approach for getting the most out of a learning commons model. Unlike other LC models that employ only a few key elements that are conducive to the needs of the students, the LCTM is one that is comprehensive in the functions it serves, resulting in an optimal use of space that leverages all possible advantages of the learning common concept. In light of this goal, this study examines the impact of the LCTM as it was implemented in one school, assessing its outcomes compared to learning commons standards. The LCTM will be described by school staff who used it and the outcomes that resulted for students, as well as the impact on teaching that fostered these outcomes.

Purpose of the study

The purpose of this study is to evaluate the design and implementation of an LCTM within the 21st century private secondary school. Specifically, this study focuses on an evaluation of the LCTM as it functions in relation to several criteria of importance. These include Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space and Enhanced Teaching. Assessment of these goals and the effectiveness of the model as a whole will be addressed by the research problem posed below.

Research Problem

This study explores the users' perceptions of the LCTM particularly with regard to its influence on teachers' instruction and subsequent student learning experiences. The absence of formative assessment of the LCTM's implementation and its respective alignment with the vision and mission of the school, the experiences of users, and the ways in which it promotes improved instruction, leaves the effectiveness of the model in question. Therefore, in order to demonstrate its benefit and illuminate areas for improvement, as well as explore its potential as a model for others to follow, this study examines users' perceptions of the LCTM. This evaluation was achieved primarily through staff assessment of the model's intended functions and staff responses were analyzed against the criteria of importance. These include Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space and Enhanced Teaching. Finally, the use of IT, as it pertains to staff learning and teachers' ability to improve curriculum through the integration of IT is examined.

Synopsis of Criteria of Importance. Briefly elaborating on these elements, *Knowledge Building* involves the use of guided inquiry, interactive learning and problem-solving to build on prior knowledge and gain added insights (Hushman & Marley, 2015 OSLA, 2014). *Collaborative Engagement* involves the sharing of ideas, such as collaborating with teachers, peers, or in small groups and, as a result, participating in the learning process. *Integrative Learning* may involve the integration of technology, but it may also involve the integration of curriculum from various courses in a collaborative approach, such as in the case of cross-disciplinary projects (OSLA, 2014). It may also include the integration of various modes of teaching and a variety of tools, in an effort to reach the majority of (if not all) learners (OSLA, 2014; Yamada, 2015). In this context, it refers to all of the above in that integrated learning entails students being exposed to technology, a variety of other tools for learning, an array of teaching modes, and assignments that draw lessons from two or more courses in an overall effort to appeal to the diverse and varied learning styles of all students.

Fostering Literacy refers to promoting the ability to express one's self sufficiently through a variety of mediums, including technology (Bradley, 2013). These literacy skills are used in the classroom environment, but are also utilized in many functions of contemporary living on a daily basis, including social communication, work-related tasks and communication on the job, as well as throughout varying facets of society (Bradley, 2013; Kramer, 2011; Todd, 2013). The *Efficient Use of Space* is critical to the contemporary school, but is essentially self-explanatory, as is the promotion of *Creativity and Expression*. Meanwhile, *Enhanced Teaching* involves teachers' perceptions of the model and improved student outcomes, as well as other benefits to teaching and learning that emerges from the teachers' perspective. Finally, the *Promotion of Positive Social Development* includes the provision of positive role models, a safe

and productive means of congregation, and the opportunity to use and develop social skills in a positive way through social interactions (Stepney et al., 2014).

Within this context, the LCTM was evaluated with regards to staff use of technology for student interactive learning, which can foster greater knowledge building among students (Liang, Su and Chen, 2012). In addition, the LCTM was examined for its effectiveness in the promotion of student engagement, the exchange of ideas, and the benefits of learning that emerge from Collaborative Engagement as a goal component of the model. Another goal is to identify how it supports Integrative Learning, which when implemented effectively, can enhance learning for students with various learning styles compared to the traditional library (OSLA, 2014).

This study focuses on the LCTM objective of Fostering Literacy as it relates to the ability to communicate in a variety of ways (Bradley, 2013), and Fostering Creativity, leading learners from divergent to convergent learning (OSLA, 2014). Further, this study aimed to find if the LCTM was effective at promotion of Positive Social Development, which has proven a benefit in other programs and is a necessity for the maturing student (Montroy et al., 2014). Each of these elements provides a potential benefit to students, while improving instruction and teaching. Finally, the impact of the LCTM on student outcomes will be examined through the teachers' perceptions, contributing to an assessment of the utility of the LCTM.

As an element of the program evaluation, this research will explore the LCTM implementation, pertaining to the efficient use of space and its ability to enhance teaching through an improved learning environment. These objectives presented within the research problem are guided by the research questions below.

Research Questions

1. How does the model align with the school's mission, vision, and goals?
2. How do users (specifically teachers and staff) experience the LCTM in relation to reaching instructional goals with regards to the criteria of importance?
3. How are teachers' perceptions of the criteria of importance represented in the data?

Conceptual Framework

The conceptual framework for this study is based on the implementation of the learning commons transformative model (LCTM). Therefore, it is unique to this particular model, as well as the application to a private secondary school population. However, it loosely builds upon the many similar frameworks for LC within the literature, selecting relevant components and revising them, as necessary, to fit the sample population and goals of inquiry. The original framework used within this study contains the following components for evaluation: Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, combined with the Development of Positive Social Maturation, as well as the Efficient Use of Space and Enhanced Teaching.

Mihailidis (2012) presents a framework for assessment and application of learning commons that uses the components of Access (leveraging the power of digital tools), Investigation (creating efficient researchers), Critical Analysis (the ability to distinguish between the quality and credibility of online sources), Expression (creating an identity online), and Appreciation (promoting creativity and empowerment). While these key elements are generally similar across frameworks presented within the literature, they are not optimal for evaluating a secondary education targeted model. As a result, the original framework adopted is one which combines the target population of secondary students, faculty, and staff, while also incorporating

the application of elements within the context of an urban school.

Although these components are detailed in greater depth in the Literature Review that follows, each of these was selected due to its fit with the learning commons model (Midler, 2012; OSLA, 2014). In addition, the findings of prior studies concluded that, if these elements are implemented effectively, their intended functions can influence outcomes of an exceptional learning commons, such as Knowledge Building (Hushman & Marley, 2015; Huang et al., 2012), Collaborative Engagement (OSLA, 2014), Integrated Learning (Alizadeh & Heidari, 2015; Vasileva-Stojanovska et al., 2015), Fostering Literacy (Bradley, 2013; Todd, 2013) and Creativity (OSLA, 2014). Further, each poses a benefit to students, including improved academic performance (Deakin et al., 2014; OSLA, 2014; Yamada, 2015), as well as skills necessary for later success in life, including tech-related skills (Bradley, 2013; Kramer, 2011).

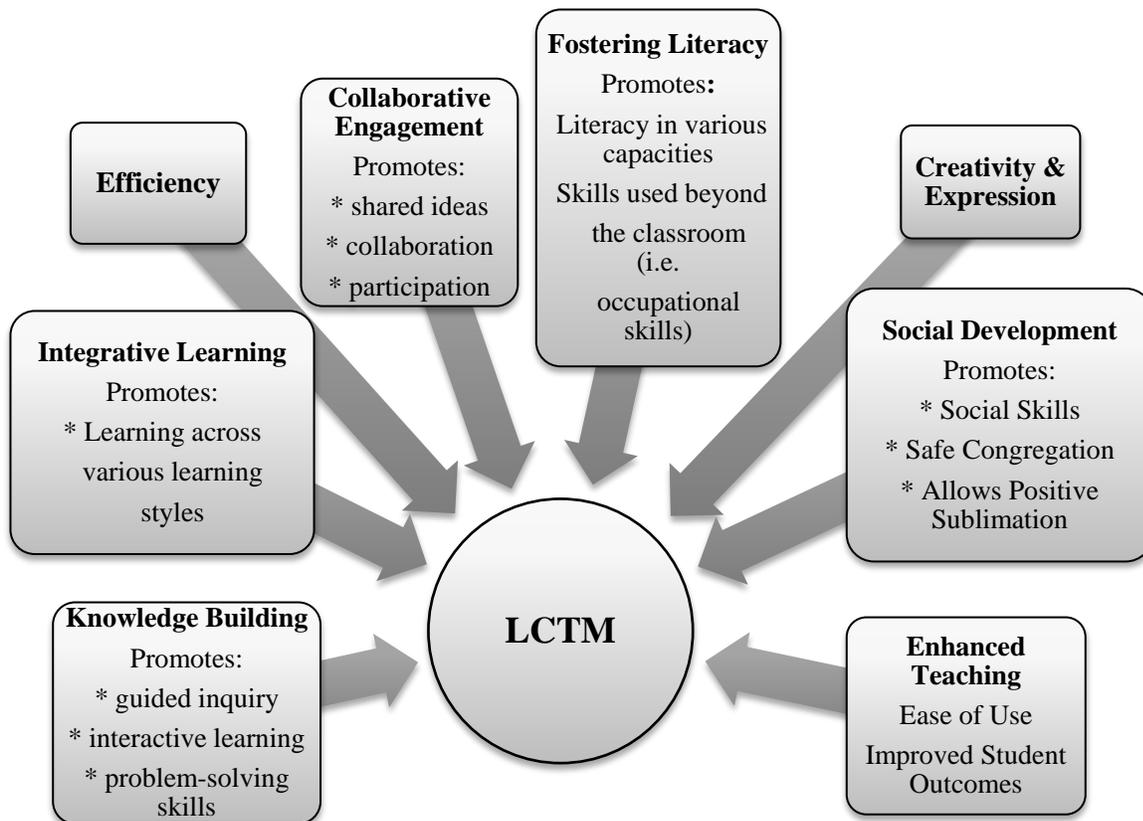
Of particular interest within this study, these many components present a benefit to teachers, including the ability to reach a greater number of students (Alizadeh & Heidari, 2015; Gavigan & Lance, 2015), creating enhanced student engagement, which makes teaching more effective (Yamada, 2015), as well as the integration of technology into the curriculum (Todd, 2013). Finally, those elements that were not previously examined within the traditional LCM were selected specifically for the LCTM, because of the added benefit they provide for the metropolitan school environment. These elements include Positive Social Maturation, which is crucial for at-risk youth or youth who may be more susceptible to negative influences in an urban environment than their suburban counterparts (Stepney et al., 2014). These are illustrated in Figure 1-1.

As a supplemental framework of reference, Sridharan and Nakaima's (2011) Ten Steps framework will be used for evaluative purposes. While the original model discussed above

serves as the conceptual framework for examining the LCTM, itself, the Ten Steps Framework is used to examine the application and effectiveness of the evaluation of the LCTM.

Figure: 1

Conceptual Model for LCTM.



Limitations of the Study

The findings from this study reflect a single program and a group of participants from the same academic institution. Their perceptions will represent one staff's experience and may not be generalizable to other sites.

Definitions of Terms

To fully understand the complexity of this research, it is critical that the reader become familiar with the following list of terms and definitions:

Amalgamation: The result from embedding, fusing, or combining.

LC Model: A generic frame of reference used to describe a learning space such as a Learning Commons. Beagle (1999) describes his version of a LC Model as creating an amalgamation between the user support skills of computer staff, the information skills of reference staff, and production skills of media staff (p. 88).

Learning Commons: A space, usually located in or near a school's library and conducive to student scholarship and collaborative work with educational technology and support. (Also known as = Information Commons, Digital Commons, Physical Commons, Teaching Commons, Information Arcade, Information Hub, Virtual Village, Media Union) (OSLA, 2014).

Learning Space: Any available space within a school conducive to learning (Moehring, 2012; Santos et al., 2015).

LCTM: The Learning Commons Transformative Model was developed by the author of this research and is considered a hybrid LC Model, a model that is scalable, adaptable, and most notably, transformational with regards to physical space, organization, workflow, and behavioral perceptions specific to teaching and learning technologies.

Secondary School: Students are ages 11-19.

Ubiquitous Technology: Technology which exists everywhere simultaneously, such as mobile devices, tablets, computers, cell phones and is most often referred to as Ubiquitous Computing (Chung, 2014).

Vertical School: Conversion of a high-rise building into a vertical learning environment (Moehring, 2012; Roseman, 2014).

Significance of this Research

The significance of this research can be found in its application and implications related to a unique learning commons model within the field of education, particularly enhancing the urban school experience for both teachers and students now and moving into the future. More specifically, it is significant to the future of schools, particularly the ways in which learning is facilitated and curriculum is enacted. While use of the LCTM may transform how traditional library space will be used, implications of these findings may contribute to the field of education more broadly, in so far as how students are taught and the means by which all students can truly receive an equal education, regardless of learning style (OSLA, 2014; Yamada, 2015). Further implications of these findings can be seen supplemented by the significance of the students' academic and other outcomes as a function of the LCTM, which is intended to promote improved educational outcomes, as well as leverage the mastery of skills that can promote an enhanced quality of life in social and occupational realms (Bradley, 2013; Montroy et al., 2014).

The findings of this research have implications for teachers, who may benefit from the findings about more effective teaching within the LCTM and the student learning that results from it (Todd, 2013). This includes the ability of teachers to integrate technology in instruction, which bridges the gap between traditional teaching and the level of teaching that is mandated to sufficiently prepare students for their futures (Bradley, 2013; Todd, 2013). Further, supplementing the contributions to the field of education for teachers and students alike, the findings from this study are relevant to library sciences, the realm of information technology, and the media. These findings can be leveraged to impact instruction and the learning outcomes that

result from it (OSLA, 2014). Finally, this study contributes to the existing body of literature, filling a distinct gap in the current research about the implementation of a learning commons model and furthering a best practices or evidence-based practice approach to optimally promote it.

Conclusion

One of the fundamental goals for any private preparatory school is to prepare students for college. Technology is ubiquitous and its use is growing exponentially in education, gaining in sophistication and requiring staff to learn many new skills and approaches to teaching. Valuable technical support from a teacher's faculty and staff may help ease the worries and hesitations some may have with new technologies. Creating an LC in a vertical school has led to the development and implementation of the LCTM, which may prove to improve the effectiveness of teachers and address challenges, which exist in this and other transformational learning spaces.

This study examines the various elements of the LCTM, which guide a best practices approach and are derived from empirical evidence. In brief, these elements include Knowledge Building (Hushman & Marley, 2015; Huang et al., 2012), Collaborative Engagement (OSLA, 2014), Integrated Learning (Alizadeh & Heidari, 2015; Vasileva-Stojanovska et al., 2015), Fostering Literacy (Bradley, 2013; Todd, 2013) and Creativity (OSLA, 2014). These serve as both the intended functions of the LCTM, and the criteria by which it is evaluated. These components are intended to produce student benefits through enhanced instruction, including improved academic performance (Deakin et al., 2014; OSLA, 2014; Yamada, 2015), and skills necessary for later success in life, including tech-related skills (Bradley, 2013; Kramer, 2011) and social maturation (Stepney et al., 2014). These outcomes were also evident within the

literature and can be expected from an effective model. Therefore, these outcomes will be examined as a means of exploring the effectiveness of the LCTM within the context of its impact on teaching, as a whole.

Ultimately, the LCTM will not only support improved methods of teaching, but promote the student outcomes that are at the very core of teaching, as well as increase the ease by which these results can be achieved. This goal, as well as all other facets of the LCTM, is discussed in greater detail, pertaining to the current body of evidence presented in the Literature Review that follows.

Chapter 2

Literature Review

The literature review addresses concepts and evidence within the existing research that is relevant to the LCTM and the components that comprise it. The review begins with Underlying Concepts that are Relevant to the LCTM, followed by what is necessary for the Effectiveness & Overall Success of a Learning Commons (strengths & weaknesses), and finally addresses the specific Components that Comprise the LCTM. More specifically, the first topic, involving the underlying concepts, elaborates on the concept of commons, informal learning environments, the role of the library and information technology, as well as digital commons, academic commons and relationship orientation within a learning commons model. Supplementing this section is the topic of strengths and weaknesses in application and what elements entail a successful learning commons. The literature presented examines this topic from both a teacher's and student's perspective. Last but not least, the components of the LCTM including Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, and Positive Social Maturation, will be defined and their relevance to this model explained.

Underlying Concepts that are Relevant to the LCTM

There are several concepts that have relevance for sufficiently explaining the Learning Commons Transformation Model that is at the core of this study and the philosophy from which it was derived. These concepts are presented in the first section of this review, elaborating on the meaning of commons, informal learning environments, the role of the library and information technology, as well as digital commons, academic commons and relationship orientation within a learning commons model. This section begins with an explanation of the concept of commons, itself, as indicated below.

The Concept of Commons

There has been an emergence of new types of learning spaces, particularly in the United States, since the beginning of 1990s (Schader, 2014). Many of these are referred to as learning commons or information commons. They each present as one location in which various services and materials are offered, ultimately serving the role of various facilities within one site (Donkai et al., 2011). Most frequently, it is a library location that is transformed with the integration of technology and media tools, as well as other means of promoting learning and creativity within those who utilize it (Donkai et al., 2011; Schader, 2014).

The focus and purpose of the academic library around the world is to promote learning in all its manifestations (Paton & Moore, 2014; Schader, 2014). This includes informal, as well as formal ways of learning. Thus, the word ‘commons’ is appropriate, in this sense, in that it highlights the transformation from the conventional top down structure to the new-networked 21st century world. It is within this networked world that faculty and students are clients in the context of the library and are afforded control over the process of knowledge building (Paton & Moore, 2014). However, the creation of a learning environment for contemporary students and faculty is dependent on how the world is interpreted with regard to the technological revolution (Loertscher & Koechlin, 2014). Nevertheless, learning commons create a bridge between the academic environment and educational curriculum, as well as its utility in the real world (Loertscher & Koechlin, 2014; Paton & Moore, 2014). As a result, the LC is regarded as a place for doing, making, playing, experimenting, collaborating, thinking, and growing in various ways, ultimately acknowledging the non-linear manner in which knowledge is acquired and learning occurs (Bury, Sheese & Katz, 2013).

Library Services and Information Technology

At the core of the learning commons model is the merging of conventional library services with the innovations resulting from information technology (Accardi, Cordova, & Leeder, 2010; Paton & Moore, 2014). The advances in the realm of digital technology have transformed the ways in which people select, access, and produce their research. In response, librarians across the world are reinventing their facilities, roles, and organizational structures, recognizing the benefit to be gained from IT integration to such an extent that even librarians within developing countries are focusing on merging the two (Uddin, 2008). Academic libraries are leveraging the potential to grow in both a larger spatial context, as well as within a social context (Accardi et al., 2010; Ekdahl & Zubke, 2014). And, as a result, these libraries are increasingly reinvented as information commons, learning commons, and knowledge commons, as the trend towards the creation of spaces that facilitate integrated services continues to grow, responding to new needs within an age of digital revolution (Accardi et al., 2010; Ekdahl & Zubke, 2014; Paton & Moore, 2014).

In light of this revolution, there has been a growing interest in the learning commons model and its role as a dynamic place, promoting the process of learning through teacher and peer collaboration, inquiry, consultation, and discussion. The LC provides a synthesis of information technology, library services and other forms of academic support (Ekdahl & Zubke, 2014; McMullen, 2008). Yet, while this growing interest has emerged in accordance with advances in technology, another factor has influenced a shift in perception concerning the creation of knowledge (Ekdahl & Zubke, 2014; Lee Roberts, 2007; Long & Holeton, 2009). More specifically, society, as a whole, has realized that technology has transformed the ways of learning and teaching, thereby creating a dire need for learner-centered activities (Lee Roberts,

2007; Long & Holeton, 2009). Thus, it is imperative for libraries to adapt to the ever-changing patterns of users, as well as the changing concept of physical space, and the ongoing emergence of new tools (Paton & Moore, 2014). Therefore, in recognition of the reality that learning occurs in dynamic ways, academic institutions are now demonstrating an increasing focus on learning commons (Ekdahl & Zubke, 2014; Paton & Moore, 2014).

Informal Learning Environment

The academic library is an ideal platform in a university setting for learners to engage with its resources and collaborate with others. There is an increased focus among academic librarians to create flexible environments in the institutions of higher education (Mitchell & Potvin-Schafer, 2012; Moehring, 2012; Thomas et al., 2015). These environments are capable of accommodating a range of activities. Thomas et al. (2015) mention a case study in which the University of Iowa built the learning commons within the main library, containing different open study areas, group study rooms, and the resources for computing. The findings of the study suggested that, in the first year of implementation, approximately 75% of students used the learning commons. The learning commons was used more by students of liberal arts than the students of business and engineering, ultimately concluding that the informal learning environment provided by the learning commons presented with greater utility within the discipline of liberal arts (Thomas et al., 2015).

The positive use of the learning commons may reflect the inability of a conventional lecture hall or auditorium layout to facilitate social engagement among students. The traditional layout is not conducive to creative encounters among students. Instead, the design of conventional infrastructure may not be responsive to the unique style and learning needs of the students (Hyman, 2014). However, informal learning spaces, such as learning commons, can

address these shortcomings. Informal spaces are particularly useful for working in medium or small-sized groups and are defined by their capacity to coordinate technology and architecture. Hence, they are highly effective for the creation of enriching learning environments, established by the furniture, floor plans, and technology (Hyman, 2014). This shift in thought toward embracing and creating informal learning spaces includes the services offered and the products and materials that facilitate students' activities within this context, such as wall mounted LED screens and wireless networks (Hyman, 2014). As a result, these initiatives support a strong and active partnership between the library unit and the information technology unit.

Virtual Aspects in a Learning Commons

The synthesis of traditional library components and the technological advances of today have created the learning commons, and the very concept of physical learning space has evolved over time with the inclusion of wireless networks and mobile technologies (Moehring, 2012; Santos et al., 2015). These spaces need to incorporate the aspects of “anywhere and anytime” access. Santos et al. (2015) affirm that virtual spaces have entered into the paradigm of physical spaces as the environments of learning. In response, there is a significant need for library learning commons to accommodate the necessary aspects of technology, expanding the virtual aspect of the commons, accordingly (Santos et al., 2015).

Therefore, today's student environment is not only characterized by physical space, but also by the efficient inclusion of virtual space (Paton & Moore, 2014; Santos et al., 2015). Contemporary students share and access information, collaborate with others, and explore current themes and topics, resulting in a process of learning that is collaborative and social, and revolves around the ability to multi-task (Santos et al., 2015; Thomson, 2015). These students no longer merely gather information and summarize the findings from a single source. Instead, they

engage in a more enriched learning process that is comprised of searching the content, synthesizing the findings, and filtering extraneous information (Santos et al., 2015; Thomson, 2015). Hence, it is necessary for learning commons to continually evolve, adapting to the technological needs and expectations of not only the students in an organization, but to the organization as a whole.

Digital Commons

The digital revolution has made it a standard practice to obtain and disseminate information online. There have been substantial investments made by universities for the provision of electronic resources (Beagle, 2012; Loertscher et al., 2012; Mihailidis, 2012). Universities have strived to make information available through electronic gateways that include typical library services, topic searches, and digital content (Mihailidis, 2012; Moehring, 2012). These information gateways have also been referred to as *library web portals*. However, Chen et al. (2015) assert that the portals may have complex interfaces, thereby prompting students to intermittently use more familiar search engines, such as Google. As a result, there may be underutilization of the electronic resources within the library. Current models of information access and technology usage are often not conducive to identifying factors that affect the student's use of information technology in the library, leading to some ambiguity in this area (Chen et al., 2015). Nevertheless, academic libraries in digital form serve to integrate the various sources for research, providing a broad spectrum of useful resources in electronic form, including online databases, bulletin boards, and optical databases (Cabrerizo et al., 2015). They also assist students in a wide range of academic endeavors, not only for purposes of information-seeking, but also as a means of exploring, researching, and enhancing the knowledge base (Cabrerizo et al., 2015).

Academic Commons

In the traditional context, library staff have focused their energies on having clear boundaries between physical spaces that are constructed for different objective (Accardi et al., 2010; Moehring, 2012). However, the contemporary concept of a library has come to promote seamless learning, thereby dissolving many of the boundaries that formerly existed (Hyman, 2014; Loertscher et al., 2012). This approach has led to the creation of more holistic spaces, integrating the various realms of technology, research, and other services aimed towards student and faculty (Hyman, 2014; Loertscher et al., 2012). As a result, this approach has translated into the more frequent use of innovative and collaborative designs, aimed at increasing the overall success of students, while becoming a predominant focus of many academic libraries and departments of student affairs (Accardi et al., 2010; Hyman, 2014).

Campus Library 2.0

In 1994, the University of Southern California took an avant garde approach and opened an information commons, long before this concept was standard practice. Since then, many collegiate libraries have adopted the term “commons” and applied it within their own context, referring to an enhanced information model that is focused on the provision of integrated services (Beagle, 2012; OSLA, 2014; Paton & Moore, 2014). Over time, the concept of information commons underwent further evolution, eventually expanding to describe a continuum of services (Paton & Moore, 2014; Schader, 2014). The innovative nature of this term inspired universities to continually expand on the concept of learning commons, leading to its inclusion of synergistic partnerships among students for collaborative purposes, as well as the collaborative input of many campus units in creating its design (Beagle, 2012; Paton & Moore, 2014; Schader, 2014).

The learning commons requires contributions from instructional designers, information technologists, peer mentors, pedagogy experts, and writing specialists (Beagle, 2012; Schader, 2014). The concept responded to the academic needs of students, and was a means by which other campus priorities could be facilitated, including the creation of e-portfolios and the implementation of course management systems (Schader, 2014). Simultaneously, a shift from a teaching-based approach to a learning-based paradigm occurred, which would later be referred to as the “Campus Library 2.0” (Schader, 2014).

The emerging concept of the 2.0 version of a university library increased emphasis on collaboration, which involved the active engagement of staff, faculty, and students as partners in learning (Ekdahl & Zubke, 2014; Mihailidis, 2014). In addition, this new, holistic approach to library services and design has fostered a growing interest in the concept of information commons, leading to a broad inventory of literature that extends beyond the topic of library science and extends into the realms of student success, academic innovation, and the role of learning commons as social centers and the outcomes derived from it (Beagle, 2012; Ekdahl & Zubke, 2014). Therefore, as an illustration of “one-stop shopping” within the academic environment, one may envision the contemporary campus learning common as a place in which the seamless integration of technology can provide a means of accomplishing a myriad of tasks in one location (Beagle, 2012). This can occur while also promoting opportunities for collaboration, socialization, and the exchange of ideas that creates better students, institutes the skills that make better team players beyond the classroom, and is conducive to the uninhibited exchange of new ideas through stakeholder partnerships (Beagle, 2012; OSLA, 2014).

Relationship Orientation

Another important component that defines learning commons is that of relationships and relationship orientation (Educause, 2011; Hyman, 2014). The concept of modern commons resembles a meeting place. In the learning commons area, students can secure a quiet place or engage in impromptu planning sessions. In addition, there are areas that are conducive to creative endeavors and group meetings, while the presence of staff specialists is a constant, extending assistance and support as needed (Hyman, 2014; Paton & Moore, 2014). The space also provides a presence for staff specialists so they may extend help and support when needed. However, successful learning commons do not rely solely on the latest technology and adaptable space, but also focus on strengthening relationships (Educause, 2011; Hyman, 2014). More specifically, the relationships that are relevant within these spaces include student-student, student-faculty, student-staff, student-equipment, and student-information interactions (Educause, 2011).

Physical Design of the Learning Commons

With the foundational concepts associated with learning commons established, another area of relevance is the actual physical design and inclusion of elements that are fundamental to the creation of a learning commons space. However, because the learning commons model at the core of this study is within the context of a metropolitan school, certain elements of the physical design are also relevant.

Moehring (2012) explains that the traditional classroom will continue to have its place within the school structure, but the key word for future learning spaces is *flexibility*. Flexibility will be an inherent element in the design of a learning commons and even traditional classrooms will begin to take on more adaptable layouts, particularly within the space efficiency required in the case of many urban schools. One of the factors influencing the need for physical space

adaptability is the changing expectations of learners, where instruction must be more engaging to address various learning styles and be more collaborative, allowing students to benefit from discussion and explore each other's points of view. The learning space must change in a way that is conducive to the nature of learning. As Moehring (2012) explains when addressing this topic, "The need to be active instead of passive throughout the day will shape these different spaces (while)... spaces should also be designed for small collaborative groups" (p. 34).

More specifically, Loertscher and Koechlin (2014) explain that the space should be considered a dynamic one that functions to promote the betterment of the whole school. In addition, it should implement the tenets of evidence-based practice inherent in today's context of learning (Loertscher & Koechlin, 2014). Finally, when the learning commons is described as dynamic or adaptable, and this accurate depiction suggests the design is never completed and left to become stagnant. Instead, the design of the learning commons is subject to a perpetual cycle of designing, modifying as necessary, rethinking the necessary components, redesigning in response to the ongoing change in learning needs and, optimally, reworking the space as the concept of the learning commons evolves, in accordance with the evolving styles of learning that underlie it (Loertscher & Koechlin, 2014).

The physical elements of the learning commons space necessitate several items for efficient design, including a rug area, floor mats, portable chairs, computer units and, of course, sufficient open space. White boards should be placed in areas for teaching or group discussion and, in addition to individual computer units, there should also be computers against a wall area that is conducive to group activity. This layout should include many movable dividers for creating semi-private group spaces, as well as lightweight round tables that can facilitate a group dynamic and be arranged, as needed. Often there is also a casual area for individual laptop use,

which is comprised of ottomans on wheels and recliners that are sectioned together in an area, but facilitate individual activity while sitting comfortably among others (Milhailidis, 2012).

Supplementing these approaches to organizing space, Harland (2011) is yet another source that addresses the physical setting in the learning commons environment. Reaffirming the sources presented above, Harland (2011) asserts that the space should be one that is “flexible, scalable, sustainable, and easily adaptable” (p. 15). Furthermore, the space allows the creation of a comfortable, casual area where students can sit in recliners and work independently or relax and engage with others, while adding former storage spaces (no longer needed after the outdated book collection is weeded out and replaced by a virtual library), to transform that space into places for interactive learning. This space should be supplemented by areas to display projects, presentations, a space designated for making movies, as well as a section allocated to reading and writing. Harland also suggests that bulletin boards or other mechanisms for display should be a prominent element, allowing students and others to display projects, achievements, and other work, ultimately instilling a sense of community that reflects the culture and climate of the learning commons, itself (Harland, 2011).

Although much of the literature addresses learning commons within the context of higher education, there is a gap in research about the concept as it applies to a secondary school population or within the K-12 environment. However, Santos, Ali and Hill (2015) not only present ideas for an elementary school learning commons, but take a unique approach with the tone of a guided tour as the authors move around the commons and describe what they see on a given day. As a result, the authors provide an intriguing illustration of what a learning commons in the elementary school may look like, from which many ideas for application and implementation of one’s own learning commons can be derived.

As the authors describe their vision of what an elementary learning commons should be, they first describe an array of students on computers, playing Minecraft and doing so with students from other schools, thereby virtually engaging with others (Santos et al., 2015). This use is complemented with another networking opportunity, which involves a virtual learning activity in which the students are learning alongside students from other schools, but this time the students are not local, but attending school in Africa, Australia and even Asia. Yet, while these students are engaging with peers in other schools and other countries, some are collaborating in a more local capacity, sitting in a group and writing their ideas to stop bullying on a whiteboard (Santos et al., 2015).

As for casual, social and collaborative areas, Santos et al. (2015) recount their vision of more than 75 students, relaxing along the steps of a giant staircase within the commons, some eating lunch, while others are working on projects or socializing in small groups. Meanwhile, there appears to be an even greater number of students, lounging across an area of open rug space, in which students may perform or practice for later activities. The activities on this day included a poetry slam, and music arrangements and demonstrations from drama club as the other students watched and enjoyed themselves (Santos et al., 2015).

In contrast, there is also a more formal area where a senior seminar is taking place, allowing students to work on final projects in the conference space and receive assistance from the librarian and teachers. Just adjacent is an assigned learning commons activity in which elementary students are also working on projects, receiving guidance from mentors. Finally, amidst the organized chaos is one student, working creatively in the alcove used for creating graphic novels, which is just beside a congregation of individuals, known as the school's "iTeam." This team is the school's 'tech mentors,' who can assist students and staff in the

learning commons for any tech inquiries or facilitate consultation throughout the school (Santos et al., 2015).

Finally, Loertscher, Koechlin, and Zwaan (2011) provide recommendations that abandon the “guided tour” approach of Santos et al. (2015) and simply provide a clear, succinct checklist of essentials for creating a learning commons space. Much of Loertscher et al.’s (2011) “necessities” reiterate the foundational components previously described, including open areas, leadership or iTeams, comfortable space, and designated areas for collaborating, learning literacies, knowledge building and tech learning. However, these researchers also contend that the learning commons should include a Virtual Commons, which can take the form of an accompanying webpage for the commons, as well as a digital resource for information and assistance (Loertscher et al., 2011).

This virtual commons should be complemented by what is referred to as an Experimental Learning Center, which is an area designated for innovative learning tools and various pedagogies (Loertscher et al., 2011). Within the experimental center, professional learning communities (PLCs) can take place, which allows teachers or other professional groups the ability to convene and discuss learning strategies, achievement data, and new teaching methodologies (Loertscher et al., 2011). Last but not least, Linton (2012) reasserts the importance of the components set by Loertscher et al. (2011) with one added recommendation—alongside the displays of student work around the learning commons, various intriguing or renowned works of art and literature should be prominently displayed to foster a sense of inspiration and creativity among those who enter the commons (Linton, 2012).

Effectiveness & Overall Success of a Learning Commons: An Inquiry into Strengths & Weaknesses in Application

While the prior segments of this literature review provided information about what a learning commons is, what it should look like, and even what it should facilitate, little has been said about whether they actually improve instruction. An evaluation of learning commons' functions, in general, as well as the learning commons developed at the site of this study, is essential. A learning commons should be designed with an emphasis on evidence-based practice for inclusion of effective elements and the exclusion weak or ineffective components of the model. Therefore, to facilitate development of a model based on empirical evidence or evidentiary information within the current inventory of literature, it was necessary to identify relevant sources that provide insight about the design of the basic learning commons model.

Successful Learning Commons: the Perspective of Teachers, Administrators, & Librarians

The literature of peer-reviewed articles or studies on the success of a learning commons within the secondary educational environment focuses on higher education. There is a gap regarding learning commons in general, and how the concept applies to an elementary or high school population more specifically. Nevertheless, there is some research that informs this study. Gavigan and Lance (2015) studied the role of the learning commons from the perspective of teachers and administrators, in terms of effectiveness and success. They surveyed 273 administrators and 917 teachers in South Carolina about the role of the school's library, the transformed learning commons, and the librarians who were in charge of those operations. Of those who responded, more than 430 offered stories of success within an open-ended portion of the survey, particularly in instances of libraries transformed into learning commons (Gavigan & Lance, 2015). When administrators were asked about the importance of several key library

functions, their responses revealed that 4 specific components were most important, including librarian/teacher collaboration on the creation of curriculum, librarian provision of instruction to faculty (professional development), regular consultation between librarians and principals, and library access scheduled in accordance with instructional needs in a flexible capacity, as opposed to fixed schedules (Gavigan & Lance, 2015).

The findings of this study indicate that the transformed library within the school supported librarian/ principal collaboration and facilitation of the curriculum. In addition, the respondents emphasized the librarian's role in teaching faculty how to utilize the various tools within the library. The transformed library fostered more positive student outcomes through facilitating improved teaching that incorporated the various library resources. Finally, a vast majority of respondents emphasized the importance of teachers and librarians co-creating curriculum as they have experienced success in implementing curriculum in their own schools. Their collaboration led to creating various means of learning for a variety of student styles, which was continually reported as a "best practices" approach from the administrators responding (Gavigan & Lance, 2015).

The role of the learning commons in promoting a best practices approach, as well as the integral role of the librarian is expressed, once again, in the case illustration of one elementary school librarian, Zoe Midler (2012). In reporting her experiences, Midler (2012) discusses the success realized by students in using the virtual learning commons as a means by which to learn the kinds of research skills imbued within the content of classes. In doing so, the librarian often uses GoogleDocs, providing directions at each computer on how to locate information within the various available databases (Midler, 2012). These units can be updated as needed, based upon current projects or assignments, in collaboration with the teachers that consult with her regularly.

This approach is supplemented by an instructional guide given to parents, which assists them in helping their children conduct searches at home (Midler, 2012).

In order to ensure sufficient skills acquisition, students are assigned a homework task on a weekly basis that requires researching a particular topic in which the topics are assigned based on a particular letter of the alphabet (i.e. “This week’s topic is a subject beginning with “A”) (Midler, 2012). Students are instructed to use LMCTips- Library Media Centers Tips created by Midler (2012) to serve as guidelines for facilitating research in the school or home environment, earning students a badge in the conventional demonstration of positive reinforcement for proper use of LMCTips. Overall, this process has proven successful in providing students the research skills necessary for effectively completing assignments in K-12 and in higher education, as well as beyond the school environment (Midler, 2012). The added guidance keeps students on track when executing a search, while deterring the all-too familiar frustration when searches do not reveal what one intended to find in the process (Midler, 2012).

Ultimately, Midler (2012) concludes that this student-centered focus, which considers the specific curriculum, student learning styles, and the technology necessary to complete tasks (as opposed to a predominant focus on the technology only) allows students to master significant skills in a meaningful way. These findings were reconfirmed in the work of Jones (2011) that found media programs facilitated within the library or learning commons were associated with improved student performance on standardized tests, which was influenced by the collaborative efforts of teachers and librarians in teaching relevant skills and media literacy. This was identified as one of the strengths within the context of the learning commons (Jones, 2011).

Complementing the aforementioned sources, yet another article presents a story of success resulting from the transformation to a learning commons model in which several

strengths were emphasized (OSLA, 2014). Among these were the learning partnerships that resulted from the ongoing collaboration between teachers, librarians, students, technical staff, and administrators. This study included a focus on learning that was the culture of the commons, regardless of whether one was a teacher, a student or administrator. Learning becomes a dynamic process that was engaging, intriguing, and participatory, inciting a sense of excitement and inspiration among students (OSLA, 2014). And, somewhat predictably, another strength was the technology, itself, but applied in a way that was often new to students, who were adept at technological skills, but were not always familiar with how to leverage these skills for research or in an academic context (OSLA, 2014). Learning how to apply these computer skills within the context of critical thought, through learning partnerships in the commons, produced creativity and a sense of innovation. New learning emerged from the reciprocal examination and exploration of new ideas, as well as new ways of achieving or perceiving a means to achieve a task (OSLA, 2014). This integrated method of learning is a strength that was also emphasized in a study by Dow (2013).

Success of a Learning Commons: from a Student Perspective

While the research presented above explores the effectiveness and success of learning commons from a teacher, administrator or librarian viewpoint, Paton and Moore (2014) offer insights from the perspective of the students, themselves. In doing so, students were asked to use an ascending rating system from “1” to “5” (indicating the highest importance), responding to what they viewed as the most important qualities of learning commons. Among the top 3 most important items were the ability to “quickly access information (88.37%), a place to study on my own but near other students (78.82%), and availability of support services (76.19%)” (Paton & Moore, 2014, p. 13).

The use of the Learning Commons as a comfortable space to engage in individual activity, while casually relaxing among others, seemed to be one of its most effective and utilized aspects in this case, as indicated by the majority of students (55.68%), who indicated that they frequent the commons daily and 21.59% indicating weekly usage (Paton & Moore, 2014). Finally, this same study explored potential weaknesses or shortcomings of the learning commons. Most prominently, weaknesses included not enough computers to accommodate all students, poor quality wi-fi service, as well as the need for additional pieces of casual furniture (i.e. comfortable chairs and sofas) (Paton & Moore, 2014). On a final note, the students reported one more shortcoming, which was their desire to have more “nooks” for casual study or quiet groups available (Paton & Moore, 2014).

Ultimately, the findings within the literature reviewed here indicate that learning commons are highly successful and are effective at promoting learning and improved student outcomes. Although there are some weaknesses reported, these are predominantly related to the popularity of the learning commons and the need to accommodate this added student use. Lack of sufficient space and resources may actually be perceived as a strength in that it is indicative of its popularity among students. Nevertheless, it should be acknowledged that the literature on effectiveness is limited, with few studies genuinely examining this topic in an empirical manner and almost none that explore learning commons within the context of the elementary school environment.

Formal Evaluation Methods

While the aforementioned sources provide information on student and teacher perspectives of success, formal evaluation is a critical component of identifying whether and to what degree basic elements of learning commons are in place. During implementation of any

program, effectiveness can only be measured with consistent evaluation and reevaluation of those components that could be improved. The LCTM, in and of itself, is such a program and this case study serves as one means to evaluate it. However, according to the literature, there are necessary steps for sufficient evaluation, including a careful decision about the type of evaluation needed. When examining program evaluation, Stake (1967) explores both the formal and informal methods of program assessment for education-related models, specifically. Stake suggests benefits of each approach, which include the casual observation style of informal methods, as well as the use of implicit goals to guide more formal observations. However, when evaluating the outcomes and subsequent insights gained from an informal evaluation, Stake (1967) warns that the literature describes this method as producing a “variable quality-- sometimes penetrating and insightful, sometimes superficial and distorted” (p. 4). This variation is inevitably a function of the subjectivity inherent in the evaluative process.

In contrast, formal evaluations often include standardized testing outcomes, peer observations, and structured checklists that detail objective criteria for defining effectiveness (Stake, 1967). Yet, in spite of the historical success of this method, it is not as frequently used as one would think in an era of evidence-based practice (Nieveen & Folmer, 2013). Less dependence on these criteria may be directly related to the literature in which it is a challenge to identify relevant and recent evaluation articles, partially due to a lack of interest and partially a function of the cost required for assessing objective, student data, as well as a lack of specific evaluation training among those who facilitate “accreditation type visits” (Stake, 1967).

In other instances of formal program evaluation tools, psychometric tests provide more insight into how a particular student may be progressing in relation to others, as opposed to the effectiveness of a specific instruction methodology or program. Finally, checklists often

erroneously focus on the structural aspects of a school or its physical qualities, as opposed to actual program content, ultimately rendering them useless in terms of defining whether or not a program is actually working. In the end, Stake (1967) asserts that contemporary teachers are rarely reliant on outcomes resulting from formal evaluation methods simply because “its answers have seldom been answers to questions he (or she) is asking” (p. 5).

Nevertheless, in spite of these critiques, Stake (1967) does offer some recommendations for evaluative models that may work. Among these, data matrices are often a useful tool in which information from various contexts should be included: antecedent data, transaction information, and outcomes. Specifically, the antecedent is a prior condition that may change as a product of the model, such as a student’s aptitude before an intervention is implemented. The transactions are then the components of a program or intervention that comprise the educational process, such as a homework assignment, a discussion in class, or even viewing a film (Stake, 1967). Last but not least, outcomes are the changes that occur in the antecedents as a result of the transactions that occur, such as student achievements or abilities (Stake, 1967, p. 6).

Overall, Stake (1967) advocates for more formal evaluations that are specifically designed by educators, as well as created with regards to the context, in which they are facilitated. In doing so, it is imperative to ask several questions, prior to formulation or implementation of an evaluation, including determining whether the predominant focus is on outcomes, antecedents, or the transactions, themselves. Another question that should be asked is whether the evaluation is intended to “indicate the congruence between what is intended and what occurs... (as well as whether the evaluation is) to be undertaken within a single program or as a comparison... (and finally, whether the evaluation is intended to) further the development of curricula or to help choose among available curricula?” (Stake, 1967, p. 16). It is only with

sufficient assessment of the proposed evaluation in the beginning that the actual evaluation will adequately and accurately measure what it is intended.

Building on Stake's research, Frye and Hemmer (2012) suggest exploring the underlying theoretical base for an evaluation model to select an appropriate means of program assessment. This is one means of addressing the complexity of educational program evaluations that often serve as a barrier to the accurate assessment of their effectiveness (Frye & Hemmer, 2012). As such, evaluation models derived from Reductionist Theory are frequently found within quasi-experimental models of evaluation, but may be too restrictive, in terms of their linear nature. As a result, evaluation models built upon reductionism may not be optimal for the evaluation of an educational program and its inherent complexity. In a similar regard, the Four-Level Model of learner outcomes shares this restriction within this context (Frye & Hemmer, 2012).

A more appropriate fit, but still somewhat insufficient, is the Logic Model, which is established upon Systems Theory, according to Frye and Hemmer (2012). Its more inclusive nature allows for the context of a program to be considered within the program evaluation, which is not a factor consistently identified in other program evaluation models (Frye & Hemmer, 2012). Its advantages during the process of planning a program are evident, allowing the evaluator the ability to define component relationships, but warranting ongoing upkeep as the program proceeds (Frye & Hemmer, 2012).

Last but not least, Frye and Hemmer (2012) suggest that the CIPP model (formulated by Stufflebeam) is also a product of Systems Theory, while also having roots in complexity theory. Its liberal nature is conducive to summative studies of a program's outcomes, as well as allowing assessments that promote ongoing improvements in the program over time (Frye & Hemmer, 2012). Yet, regardless of the model chosen for evaluation, a sufficient prior understanding of the

intended goals and the theories that are relevant to these objectives is an essential first step in determining an appropriate program evaluation model, thereby rendering accurate and, most importantly, meaningful outcomes (Frye & Hemmer, 2012).

According to Nieveen and Folmer (2013), the initial decision is whether or not to execute a summative evaluation. While this may be preferable in larger scale studies, it may be too cumbersome an endeavor for a smaller study that is facilitated within one location or geographic region (Nieveen & Folmer, 2013). In contrast, a formative assessment can provide valuable information in an educational intervention, and is a fit for the educational environment (Nieveen & Folmer, 2013). Among the most common are those studies which seek to determine if a particular intervention caused improved student learning outcomes, whether directly or indirectly, such as through improved instruction (Nieveen & Folmer, 2013).

One of the downfalls, however, is that those stakeholders responsible for executing the intervention will be the students and teachers who take part in it. As such, they may not optimally leverage all components available or facilitate them selectively, according to their own needs or even comfort level (Nieveen & Folmer, 2013). This can deter accurate results in an evaluation, pertaining to the genuine effect of the program, itself (Nieveen & Folmer, 2013). Yet, one means of partially controlling for this type of bias is through the application of a “large-scale survey (for instance on the implementation of new examination programs and corresponding results of pupils... focusing on the teaching practice linked to these new programs...)” (Nieveen & Folmer, 2013, p. 160).

Further, according to Nieveen and Folmer (2013), certain criteria are necessary for successful implementation and evaluation of an education-related program. First and foremost, there must be relevancy where the need for the intervention is obvious and it is based upon

evidence-based practice. The evaluation must also present with consistency, meaning that it is designed according to an underlying rationale (Nieveen & Folmer, 2013). The criteria must be practical, in that the program is clearly feasible for the setting in which it will be applied and the expected outcomes are desirable and a benefit to the current state of the program or academic environment (Nieveen & Folmer, 2013). In this instance, the authors suggest that one way of ensuring that these elements are present within the application of any program or intervention is to evaluate through use of focus groups (Nieveen & Folmer, 2013).

Bannan (2013) suggests that formative assessment is but one component of a much larger evaluation cycle that must take place for a comprehensive assessment. In particular, when examining an intervention or program that involves the element of technology, “formative evaluation... does not generate knowledge about cognition, context and culture of use, but provides a limited focus on a particular technology system of instruction and judges its effectiveness” (Bannan, 2013, p. 114). Therefore, this author suggests a dedicated focus on the research design cycles and the actual processes involved in development of a program or intervention, in and of itself, is crucial. Similar to the philosophy that the value is in the journey, not the destination, Bannan (2013) purports that active evaluation of the process of implementation and formulation, achieved through interviews, surveys, and observations throughout the implementation is just as valuable as the end result. The information and insights that can be gained through the development phase can provide information that is not always easily produced in the formative evaluation process and can complement the findings with formative assessment of one component of a much larger evaluative process (Bannan, 2013). Finally, in *Ten steps to making evaluation matter*, Sridharan and Nakaima (2011), provide ten necessary steps for not only ensuring that a program is effective, but ensuring that the evaluation

of the program is effective. Within their essential “checklist”, Step 1 reads: “demonstrate understanding of the program and the stability of its components” (Sridharan & Nakaima, 2011, p. 135). The underlying purpose for this initial step is attributed to the frequently recognized haste to create and execute an evaluation design, devoid of the careful planning that is required prior to doing so. As such, Sridharan and Nakaima (2011) reiterate some of the sources above, confirming the complexity of educational programs and their consideration as complex systems. Among the most basic questions to be answered at this point, the identification of the program elements is at the forefront, followed by a necessary understanding of the relationship between them and whether or not they remain constant over time (Sridharan & Nakaima, 2011).

Meanwhile, Step 2 entails gaining an “explicit understanding of the program theory” (Sridharan & Nakaima, 2011, p. 135). This involves sufficient knowledge of the intended change that a program may produce, as well as the processes involved in this transformation (Sridharan & Nakaima, 2011). This investigation should begin with the program facilitator and continue with staff throughout program development, leading to updates as needed (Sridharan & Nakaima, 2011). Gaining knowledge of the theory that underlies the program is reiterated in the assumptions set forth by Frye and Hemmer (2012), which were detailed above. Then, supporting evidence should be researched to strengthen the program theory, thereby comprising the third step (Sridharan & Nakaima, 2011). One way of achieving this outcome is by taking a realist approach in which the specific components of the program are individually supported by evidence (Sridharan & Nakaima, 2011).

Continuing down the sequence, the fourth step entails the formulation of a timeline, while step 5 involves the development of a learning framework that clearly articulates what can be learned from the proposed process of evaluation (Sridharan & Nakaima, 2011). The potential for

learning extends far beyond the individual-level outcomes, according to Sridharan and Nakaima (2011). In fact, examples of the ways in which insights can be gained throughout the process includes policy learning (“Every program is an act of translation from an idea of a policymaker to the planning and implementation of the program”), organizational learning (the evaluation process affords the ability to learn about organizational structures warranted for program implementation), and process learning, which involves simply gaining insights into the actual process of planning and program execution (Sridharan & Nakaima, 2011, p. 140). Last but certainly not least, learning can also occur as a product of the barriers encountered, allowing for insights related to navigating the process of formulation and implementation, as a whole (Sridharan & Nakaima, 2011).

Step 6 entails exploring the influence of the evaluation on the program, itself, as well as related policies, while the seventh step recommends developing “a comprehensive evaluation design” (Sridharan & Nakaima, 2011, p. 141). The latter should include some critical points, such as a sufficient description of the mechanism by which changes occur within the program context, a working knowledge of the intended impact of the program, and consideration within the program design about ongoing improvement, as opposed to the limited concept of effectiveness within one context at one particular point in time (Sridharan & Nakaima, 2011). This step works in a complementary fashion with Step 8, which communicates the importance of “emergent, dynamic learning about the program...” (Sridharan & Nakaima, 2011, p. 142). This reflects the relationship between program methods and the underlying program theory, thereby articulating components within the program that present with less certainty, according to the evidence within the literature, fostering “greater clarity and honesty” surrounding the planning

process and eventual implementation from the very beginning of program discussions and formulation (Sridharan & Nakaima, 2011, p. 142).

Finally, Sridharan and Nakaima (2011) purport that the ninth step is “the relationship between evaluation and a ‘framework of spread’” (p. 142). More specifically, the authors explain that this step provides clarity about what is intended to be “spread” as a product of the evaluation (Sridharan & Nakaima, 2011). This clarity may lead to suggestions related to replication, the provision of recommendations for expanding the program out, or any other objective that serves as an intended product of the evaluation, necessitating its clear articulation at the beginning of the program and prior to the start of the evaluation (Sridharan & Nakaima, 2011). Finally, Step 10, entails demonstrating “consideration of the relationship between performance and sustainability” (Sridharan & Nakaima, 2011, p. 144). Distinguishing between these two concepts is imperative in that whether or not a program is sustained may be completely reliant upon or have no relation with performance (Sridharan & Nakaima, 2011). Therefore, it must be determined early in the process what the realization of program effectiveness means, in terms of whether the program will be sustained or not (Sridharan & Nakaima, 2011).

The authors emphasize the crucial importance of the drivers that underlie performance, necessitating genuinely and sufficiently understanding them to ultimately determine if a program should be expanded or downsized, accordingly (Sridharan & Nakaima, 2011). Thus, as a result of this ten-step approach it is evident that, regardless of the preparation prior to program implementation, changes will be mandated as the process ensues. Appropriate evaluations will then be implemented for exploring effectiveness, which requires the collaborative input of both program entities and members of the assessment team (Sridharan & Nakaima, 2011).

Teachers' and staff members' perceptions of the role of the LCTM on teaching and learning

This review of existing literature included a search of articles or studies about the learning commons model on instruction and teaching, specifically. This search revealed a gap in the current body of literature as studies pertaining to this topic were not easily identified. There were a limited inventory of articles which presented as predominantly small case studies. Those studies that were relevant to this topic primarily examined the impact of the learning commons at the university level. As a result, this absence of research examining the impact of a learning commons model on teaching and instruction, particularly at the elementary or high school level, lends validity and credibility to the study conducted. Nevertheless, the most relevant articles or studies identified are described below, providing some insight into findings about the influence the learning commons model on outcomes of teaching and instruction, in spite of the variation in educational level.

The first study demonstrates the mixed results that were found among the limited studies. Presented as a case study, the researchers used a survey for collecting data from participants which related to their perception of the university learning commons (McCarthy & Nitecki, 2010). McCarthy and Nitecki (2010) recruited 42 faculty participants who had conducted a class in the learning commons or brought a class to the learning commons. Although only 7 of the participants reported holding class in the learning commons so that students could engage in a research session, all of them reported that they would recommend use of the commons to a colleague, while a substantial percentage expressed that they were highly satisfied with the space (71%) and experienced greater satisfaction with the quality of student papers (83%) (McCarthy & Nitecki, 2010).

The group as a whole, however, reported mixed results with some responding that they did not feel it impacted their pedagogy, but allowed them to delegate the “how to’s” of research to the learning commons staff. Another theme among respondents was a lack of confidence and lack of experience implementing the media tools, as one participant replied: “It can be exciting to see this material in action, but imagining how it could work in your classroom and... implementing a new approach to teaching with technology can be daunting” (McCarthy & Nitecki, 2010, p. 4). The majority of participants reported that there was little (if any) impact on their pedagogy, suggesting there should be additional training that assists teachers in learning how to create lesson plans with technology and integrate it in different forms into their classroom. Yet, while participants were not cognizant of any pedagogical changes as a function of using the learning commons, as a group they did report that students participated more frequently in class and their overall level of work had improved (McCarthy & Nitecki, 2010).

Meanwhile, other studies in the literature, such as that of Young (2014), suggest that the learning commons model does not have an impact on teaching and instruction, but instead is a natural transition that has emerged in response to preexisting changes in teaching and instruction style. More specifically, Young (2014) explains that what was formerly the predominant mode of teaching, referred to as the “Instruction Paradigm” has become outdated. Instead, a new focus places an emphasis on the intended product of the academic environment, which is learning, thereby denoting the trend towards a “Learning Paradigm” (Young, 2014).

Examining this paradigm more closely, the researcher elaborates on these concepts as they apply to the university level, but these changes are indicative of a national trend or a shift in the perception of the academic environment, thereby posing relevance to the high school classroom. As such, the commonplace instructional approach described as “a teacher-centered,

passive environment” (Young, 2014) is gradually shifting toward a more interactive model. The earlier goal was simply the production of courses that would satisfy the requirements set forth by the university for students to reach degree attainment. In contrast, when the academic environment operates with an emphasis on learning, student engagement is one of the primary objectives (Young, 2014). The traditional classroom space, wherein the teacher is centered at the front of the room and students take notes while he/she lectures, is wholly inadequate for optimal learning (Young, 2014). This lecture model is often absent of student engagement, which is so important to the process of learning that it has been equated with student success (Young, 2014).

In response, the learning commons is superior to the traditional library model in that it promotes student engagement, as well as inquiry-based learning (Young, 2014). Further, the variety of technological tools and forms of media is conducive to fostering the engagement of each student with their distinct learning style, as opposed to the traditional “listen to a lecture and take notes” format. According to Young (2014), it stands to reason that the library space would naturally evolve with the shifting trends in pedagogy.

However, a more in-depth search of the literature revealed the study of Yates and Cotton (2015), in which the researchers set out to examine the impact of the learning commons on instruction, as well as the learning outcomes that emerge from it. Facilitating a survey of teaching librarians, 52 participants responded from various colleges in and around Ontario (Yates & Cotton, 2015). When these respondents were questioned as to whether they agreed that the classroom environment or learning space impacts the way curriculum is delivered through the instructional design, a majority of 76% agreed with this statement (Yates & Cotton, 2015). The learning commons space would therefore render its own impact on instruction as a unique

learning space, whether instruction was taught within the commons or learning commons technology integrated into the classroom.

When respondents' feedback was analyzed for consistent themes, there was a common consensus that a conventional classroom or a lecture hall was conducive to a demonstration, discussion, or lecturing. In contrast, the learning commons classroom was described as a place that promoted "hands-on, active learning." Therefore, the learning commons allows and encourages instruction that fosters student engagement, which then translates into student success. Thus, it not only impacts teaching and instruction, but does so in a way that is beneficial, consistent with today's trend towards a focus on learning, and appeals to a broader inventory of learning styles, thereby promoting improved learning outcomes (Yates & Cotton, 2015).

Yet another source within the literature that addressed the impact of the learning commons on instruction was that of Ekdahl and Zubke (2014). In this study, the researchers provided several narratives from teaching staff, who had already experienced the learning commons model within their respective schools. Among the narratives, one teacher reported that collaborative units were planned between teachers and library staff, which consistently integrated new technology in the lessons (Ekdahl & Zubke, 2014). In addition, this contributor also noted that it was particularly advantageous for students with special needs as it provided a variety of ways in which they could experience the story or the lesson in spite of their deficits (Ekdahl & Zubke, 2014).

Meanwhile, another narrative reaffirmed the learning-focused shift in pedagogy and the emergence of the learning commons in response to it, indicating that there is a reciprocal influence between this model and instruction (Ekdahl & Zubke, 2014). More specifically, this

narrative reads: “We can't pretend that we're only changing the how of teaching. The shift to a Library Learning Commons (LLC) model, especially within a school community, falls within a larger paradigm shift pedagogically . . . ” she continues, “participating in an LLC is a different way of being in a learning community. This is why ... there must be a collective will among teachers and administration to reflect on and guide collective changes in practice” (Ek Dahl & Zubke, 2014, p. 22).

Finally, one narrative indicated that the learning commons had a significant impact on instruction within their school as all teachers collaborated with a teacher librarian or learning commons tech expert (Ek Dahl & Zubke, 2014). They worked together to create the curriculum and new learning opportunities by “working with classes to integrate multiple resources and technologies in inquiry-based learning” (Ek Dahl & Zubke, 2014, p. 16). However, in order for optimal impact, this element of collaboration between teaching staff and the learning commons staff is an essential component (Ek Dahl & Zubke, 2014). The importance of these partnerships for achieving integration and realizing the beneficial impact on instruction is reaffirmed in the study of Sullivan (2010), which also emphasized the social dimension of learning and the capacity of the learning commons to promote it.

There are a few factors that are evident in the literature. First and foremost, the learning commons can have a beneficial impact on teaching and instruction, but this requires an effort by staff, as well as collaboration from learning commons staff. Without a persistent investment by teachers to learn how to integrate the technology into the instruction and the many ways to achieve it, a positive impact will not be realized. However, if sufficient effort is put forth towards this goal, the learning commons provides a broad spectrum of tools that can be used to deliver instruction and foster learning, while it is also conducive to a best practices approach

Nevertheless, the conclusions drawn from this literature are confined by the extremely limited availability of resources that address this topic, thereby mandating further research. Compounding this shortcoming, while some of the research indicates that a positive outcome on instruction can be realized, studies are somewhat ambiguous and do not provide specifics. For example, indicating exactly how to implement approaches for achieving a positive impact or what the process should look like. Thus, studies are needed that present greater detail. The Learning Commons Transformational Model presented in this study, is distinct in that it sets clear goals to work towards, which doubles as a framework for evaluation. The program design can provide detail about the various capacities of the LCTM and their role in influencing instruction and student outcomes. These elements comprise the next segment of this literature review.

Examination of Components that Comprise the LCTM

While the concept of a Learning Commons model, and the benefits that arise from it, have been explored above, the next segment of this literature review examines the components of the LCTM within the current body of evidence. Although the combination of these elements is unique to the original model created before this study was conducted, some are derived from the general concept of the learning commons model, while others are uniquely added to enhance the use of the LCTM, which is aimed at an elementary school population. The literature that follows describe these components, the theory that supports them, and elaborates on the intended outcomes associated with them. These components are not only the elements that comprise this approach to a LCTM, but also serve as the criteria for evaluation of the model. The first of the elements explored is Knowledge Building, followed by Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, as well as the Development of Positive

Social Maturation, Efficient Use of Space and, finally, the promotion of Enhanced Teaching, as discussed below.

LCTM Element #1: Knowledge Building

Within the LCTM, Knowledge Building involves the use of guided inquiry, interactive learning and problem-solving to build on prior knowledge and gain added insights. In demonstrating the importance and impact of these knowledge building components, Hushman and Marley (2015) examined guided inquiry to identify its benefits in terms of learning, as well as supporting students' development of self-efficacy. The study used 60 nine- and ten-year old students and randomly assigned them to one of three groups for participation in a science curriculum experiment. The first group involved only direct instruction, which entailed a teacher's lecture followed by examples. The second group entailed minimal instructions, thereby leading to students generating their own exploration and discovery. Finally, the third group involved guided instruction, which included examples for illustration and explanations generated by the students themselves (Hushman & Marley, 2015). At the conclusion of the experiment, those students assigned to the guided instruction group not only created a greater number of experiments in the correct manner, but also reported a greater sense of self-efficacy after the activity, which far exceeded the outcomes in either of the other groups (Hushman & Marley, 2015). Hushman and Marley (2015) demonstrated the benefit of guided inquiry, as well as the impact on knowledge building and the improved student outcomes that emerged from it. Similar benefits were realized in a group of middle school students in the study of Maniotes et al. (2015), while Martin (2015) demonstrated the similar improvements in achievement among a group of at-risk students, illustrating the broad advantage of this element across various groups in the academic environment.

Yet another aspect of knowledge building within the LCTM is the realization of improved student outcomes through interactive learning. Within the learning commons, the integration of technology is an important aspect to learning. The study of Huang, Liang, Su and Chen (2012) explored how the use of technology for interactive learning may foster greater knowledge building. Although many studies have examined the use of mobile tablets and other e-book readers as an important learning tool for older students, this study evaluated the use of e-readers within 166 elementary school students. Within this sample, the students' reading accuracy did not show any significant variations, but the e-readers were well-received and increased students' interest (Huang et al., 2012). In addition, the mobile personalized learning experience that the e-book readers produced for students created a more tailored experience for each student that was more conducive to each student's unique reading level, rate of progress, and needs (Huang et al., 2012).

Reaffirming each of the prior studies, the OSLA (2014) explored guided inquiry and interactive learning within the learning commons model in an effort to examine if it enhanced students' learning. It was found that guided inquiry coupled with interactive learning did, indeed, enhance students' knowledge base, while teaching them a new strategy for processing information that furthered problem-solving skills, as well as contributed to the mastery of recurring skills (OSLA, 2014). Meanwhile, the students' involvement in "real-world" simulated tasks, combined with the sharing of ideas, fostered a greater student interest in learning and the curriculum presented, replicating the findings above (OSLA, 2014). Finally, a personalized experience did, indeed, result from the balance of differentiated instruction, holistic learning and sequential learning, as well as from the broad range of accessible resources, materials and strategies (OSLA, 2014). This approach personalized the rate of new knowledge acquisition,

scaffolded the learning process, and allowed a personalized learning experience for each student that fostered greater success. These outcomes were obtained in conjunction with the kind of open-ended thinking that facilitated improved problem-solving skills (OSLA, 2014).

Elements # 2 & #3: Collaborative Engagement & Integrative Learning

Collaborative engagement is achieved through the sharing of ideas, collaborating with teachers, peers, in small groups and, as a result, participating in the learning process. As a benefit to be pursued (and for brevity within the confines of this study), participating and being engaged is required for desirable student outcomes. However the traditional classroom teacher who is more comfortable lecturing to students may not be skilled at providing instruction that integrates technology and constructive approaches. It is therefore necessary to provide compelling evidence for the inclusion and promotion of this element.

First, what is referred to as Integrative Learning in this context, can come in a variety of forms. As mentioned above, it may involve the integration of technology, which is a prominent feature of the learning commons. However, it may also involve the integration of curriculum from various courses in a collaborative approach, such as in the case of cross-disciplinary projects. Finally, it may include the integration of various modes of teaching and a variety of tools, in an effort to reach the majority of (if not all) learners. In this context, it refers to all of the above in that integrated learning entails students being exposed to technology, a variety of other tools for learning, an array of teaching modes, and assignments that draw lessons from two or more courses in an overall effort to appeal to the diverse and varied learning styles of all students. Since the elementary classroom is an integration of contrasting learning styles among each of the students, it is necessary to integrate learning to genuinely teach each student optimally and provide, in essence, an equal education to all.

Within the literature, differentiated modes of instruction not only address varied learning styles, but also different learning levels or the varying paces at which students learn (OSLA, 2014). This concept is inherent in the learning commons model in that the teachers and librarians work collaboratively to create curriculum and formulate student project ideas, using a variety of tools and resources, optimally modifying these resources, tools, and even the environment, so it is conducive to the needs of each project and student group (OSLA, 2014). According to the OSLA (2014), the end result will not only be enhanced learning, but empowered students. This sentiment is reiterated by Deakin, Crick and Goldspink (2014) who purport that this enhanced learning and the feeling of empowerment is accompanied by increased student engagement. Confirmed by Yamada's research (2015), attention to the various learning styles and "the development of learning dispositions... (is mandated) in order to foster deep engagement in learning" (p. 77).

Finally, various studies have examined the relationship between learning styles and educational achievement. Subsequently, many studies have found that in the conventional classroom, where curriculum is taught in a consistent and homogenous manner, this form of teaching appeals to the learning styles of some learners while not others (Alizadeh & Heidari, 2015). As a result, the student's learning style may potentially predict their achievement in this context, indicating what learning styles (and respective students) will experience sufficient learning, in this regard, and which will not (Alizadeh & Heidari, 2015). Alizadeh & Heidari (2015) utilized regression analysis for evaluating the potential relationship between learning style and learning outcomes, indicating that learning styles of students in a conventional classroom could accurately predict the variation in educational achievement in some cases to a statistically significant extent. This is a conclusion that was similarly realized in the work of

Vasileva-Stojanovska et al. (2015), while Ko et al. (2012) add the emergence of creativity that results as a benefit of reaching all learners through the implementation of integrated teaching and convergent curriculum.

Element #4: Fostering Literacy

Literacy, in the contemporary environment, is defined by variables that extend far beyond the ability to read. In fact, for one to sufficiently express themselves and communicate with or to others, it is necessary to be literate in a variety of mediums, including technology (Bradley, 2013). These literacy skills are used in the classroom environment, in the pursuit of higher education, as well as in occupational endeavors and are essentially necessary for functioning in a social, work-related, and societal capacity, as indicated by several sources within the literature, including Bradley (2013), Kramer (2011) and Todd (2013), to name a few. Within the literature, perhaps Kramer (2011) sums it up most succinctly when the author writes that students who intend to succeed in college and career fields will be required to “use technology and digital media strategically (p. 10).

However, as explained by Todd (2013), fostering literacy not only benefits students, but it is also a necessity for teachers, who must adhere to the common core standards (CCS). As explained by Bradley (2013), simply including computers for accessibility within the educational environment is not sufficient to meet these standards. Teachers must not only possess skills in technology, but must also demonstrate the ability to integrate this technology into the curriculum, allowing students the ability to master these necessary skills (Bradley, 2013). Ultimately, the librarian and other support personnel within the learning commons are the “go to” experts for collaborating with teachers and consulting to ensure that students acquire the

necessary skills, whether in the classroom or within the context of the learning commons (Bradley, 2013).

LCTM Elements #s 5 – 8: A Focus on Creativity and Expression & Positive Social Maturation

Finally, when addressing the last four components of the LCTM, the Efficient Use of Space is a factor related to the contemporary urban school environment and will be used for evaluative purposes, but does not require an examination of the evidence, as presented here. Similarly, element #8, Enhanced Teaching, similarly involves teachers' perceptions of the model and student outcomes, which will be discussed in the Methods, Results and Discussion chapters of this study. However, elements #5 and #6 address the goal of fostering creativity and expression, as well as promoting positive social maturation, respectively, and are addressed within the literature review, in an effort to lend supporting evidence for the rationale of their selection and inclusion in the LCTM within this study.

Creativity & Expression

The benefits of fostering creativity and expression are well established within the literature, as well as within the educational environment. In fact, curriculum that promotes student creativity has long been an inherent aspect of the educational process. However, it is worthy to note that a recent study by the OSLA (2014) reported that 98% of all four year olds present as divergent learners--a percentage that decreases to only 10% by the age of 12, demonstrating the potential for an individual's sense of creativity to atrophy as they mature, if not used. Therefore, flexing one's expressive muscles is a necessary activity for maintaining creativity, while doing so also produces more intriguing learning events and even enhances self-directed learning (OSLA, 2014). Ultimately, the promotion of divergent thinking, as well as the

expression and sharing of new ideas is a fundamental aspect of the learning commons model, which is evident right down to the layout of the physical space (OSLA, 2014).

Development of Positive Social Maturation

Promoting positive social development is achieved through the provision of positive role models, a safe and productive means of congregation, as well as the opportunity to use and develop social skills in a positive way through social interactions. These elements are a part of the LCTM and are particularly important for urban students, who are impressionable, vulnerable, and potentially at-risk in a metropolitan school with the absence of appropriate or safe places to congregate outdoors during or after school. Therefore, this is a critical element of the LCTM in that it affords students a safe place that they may not have access to otherwise, while also allowing positive interactions from which they can grow and develop socially.

Providing support for this element of the model, the study of Stepney et al. (2014) examined the impact of a program that was geared towards urban, minority, low income girls in a proactive approach to foster positive outcomes prior to reaching high school graduation. By providing a safe place to congregate and an opportunity to engage in positive peer interactions, the participating girls made a dynamic shift from being labeled “at risk” to becoming student leaders (Stepney et al., 2014). This study provides insight into how a program and place that allows an opportunity for positive relationships can transform the individual, much the same as the LCTM discussed here. In addition, Stepney et al. (2014) mentioned that the program not only benefitted the girls, but positively contributed to the climate of the school.

Complementing the study above, another resource in the literature views the benefit of fostering positive social maturation in another regard. More specifically, Montroy et al. (2014) examined the behavioral and academic outcomes that result when social skills develop. The

researchers examined 118 children, measuring their level of literacy, math proficiency, and ability to self-regulate, in conjunction with teachers' observations of their behaviors and demonstration of social skills (Montroy et al., 2014). Ultimately, the findings revealed a common mechanism shared between the application of one's social skills, behavior, and self-regulation, which, in turn, influence literacy. While self-regulation can certainly impact academic performance based upon the ability (or lack thereof) to focus on the curriculum, the ability to self-regulate is also a modifying factor in how the individual socially behaves, in terms of the capacity to set forth or inhibit particular interactions, based on the given context (Montroy et al., 2014). Therefore, programs that foster social skills development will likely improve students' self-regulation and vice versa, as well as strengthen academic outcomes as a function of it.

Last but not least, varying sources within the literature tout the importance of social skills to successful life functioning. For example, Ikesako and Miyamoto (2015) purport that improved learning environments can produce social skills development. In turn, acquiring relevant social skills, such as emotional intelligence, the ability to persevere, and even sociability, overall, contribute to self-esteem, which is accompanied by its own obvious benefits (Ikesako & Miyamoto, 2015). However, these factors are also important elements in dealing with the opportunities of the 21st century, as well as many of the challenges that may accompany them, thereby potentially translating into the difference between failure or success and the quality of life that emerges from it (Ikesako & Miyamoto, 2015). These assertions are reconfirmed in the literature by the OSLA (2014), in which it states that the experiences provided within a learning commons environment foster confidence, esteem, and positive maturation in a multitude of

ways, allowing students to apply these skills outside the commons environment for later life success.

Synthesis of the Literature

As a result of the literature presented, several things are readily apparent. These include the underlying concepts that are relevant to the learning commons model, as well as the LCTM, serving as the focus within this study. Synthesizing the key concepts above, there is a clear benefit to be gained from the implementation of a learning commons model, as indicated through the evaluation of effectiveness within the current body of evidence. Further, the various components of the learning commons have been presented, including details of the physical environment. Finally, the rationale for the components of the LCTM, which are evaluated as part of the study, were discussed with supporting resources that indicate the advantage to including each. The review of the literature explored the foundation of the learning commons model and the elements at the core of the LCTM, providing a rationale for the unique model presented in this study and the elements that comprise it.

However, also worthy of mention is a notable gap in the existing body of literature, pertaining to the application of a learning commons model within the secondary school context. Yet another weakness within the current research is the absence of sufficient empirical data that address the efficacy and overall benefit of learning commons, in terms of their intended functions, teachers' perceptions, or student outcomes. Therefore, this research is significant in that it addresses these existing deficits through an examination of a learning commons model in a secondary context, while also instituting a quantitative analysis based upon the prior elements described. As such, it will contribute to the existing inventory of literature by filling the void that exists in empirical analysis of a learning commons model outcomes and the benefit of various

elements within it, as applied in the secondary school environment. The methods associated with these objectives are addressed in detail in the chapter that follows.

Chapter 3

Methodology

This research endeavor is a case study of the Learning Commons Transformative Model (LCTM) that was created and implemented in a New York City independent secondary school by this researcher. This case study addresses the following questions:

- 1) How does the LCTM model align with the school's mission, vision, and goals?
- 2) Interview data from faculty and staff.

Specifically, this case study includes a review of staff perceptions of their experiences using the LCTM as documented through interviews with teachers and staff. The responses lead to an analysis of the program goals and described the degree to which teachers' perceptions of the LCTM align with these program goals. This study serves as a formative assessment of the implementation of the LCTM. The overall goal of the study was to examine the effectiveness of the LCTM from the viewpoint of both faculty and staff. The case study was structured within the guidelines of the ten steps set forth by Sridharan and Nakaima (2011).

This research was guided by the following 3 questions: (1) Does the model align with the school's mission, vision, and goals? (2) How do users experience the LCTM in relation to reaching instructional goals with regards to the criteria of importance? (3) How are teachers' perceptions of the criteria of importance represented in the data?

Setting

The school that serves as the setting for this study is an independent, private, K-12 college preparatory school in New York City, which is noted for its rigorous program of academics and its simultaneous focus on fostering the growth of each student within the larger community (ABC, 2017). These objectives are promoted by a culture of high expectations,

complemented by a climate that reflects the values of loyalty, civility and, perhaps most importantly, integrity (ABC, 2017). One of the predominant goals of the school is for students to realize their unique potential, which is achieved through the promotion of excellence in not only the realm of academics, but also within the domains of aesthetic and ethical perfection (ABC, 2017). This is evident by the number of programs that promote civic engagement, such as the required Community Service Program and Peer Relations Program, and within the ubiquitous emphasis on values of ethics that pervade the ambience of the school throughout the daily routine. Ultimately, the purpose and function of the school is defined by an underlying mission to develop character among students, “instilling an abiding regard for educational inquiry, mutual respect, and personal renewal” (ABC, 2017).

When further exploring the culture and character of the school, the recognition and appreciation of diversity is another defining element by which the varied student and staff population offers students exposure to a broad spectrum of belief systems and behaviors in preparation for the larger demonstration of diverse peoples and ideologies that define the world that is waiting outside the classroom doors. As a whole, the tenets of personal diligence and determination are an inherent aspect of the educational environment for all students, empowering each student with a unique sense of individual ownership within their own community (ABC, 2017).

The school where the study was conducted enrolls more than 500 students each academic year and employs over 90 faculty and staff members. The Technology Department is a crucial factor in maintaining the daily functions of the school through its support of the organizational environment and its many objectives, doing so in a way that promotes and preserves the values that underlie the school’s mission and purpose. The LCTM is a product of the Technology

Department and serves as an illustration of its central role within the school and the educational experience provided to its students.

In terms of setting, the LCTM is an enhanced version of the learning commons concept and, therefore, as formerly mentioned, can be described as a place that caters to “user services, not just information services” (Lippincott, 2014). In essence, it is a synthesis of elements found within a traditional library combined with the technology that would be located in the school’s computer lab, as well as the small group study format and writing support that would be accomplished separately in the writing center (Lippincott, 2014). The vision led to the development of one location that offers a full range of tools that address the scope of students’ needs, while serving as a resource of support for student assistance.

Simultaneously, this setting also serves as a resource for teachers through the provision of assistance with technology integration, a source of new tools and modes of lesson presentation combined with an environment that allows teachers to capitalize on these advantages. Thus, it is the combined product of fusing the elements of the traditional library with IT services, the creative use of space and a large inventory of media tools. Finally, specific to the LCTM is the added emphasis on a tailored inventory of elements that the commons is intended to promote, including Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space and Enhanced Teaching. To achieve these functions, the LCTM is staffed with a Lead Technologist and LCTM Model Developer, supplemented with a traditional head librarian, a technology and media leader, as well as several media experts, who offer assistance to teachers and students.

The program evaluation framework is an integral aspect of the study, and is at the core of this research. Sridharan and Nakaima's (2011) framework involves understanding the program and its components, understanding the underlying program theory, and identifying evidence that supports the program theory, using the first three steps of the evaluation process, respectively. One means of achieving the latter, according to Sridharan and Nakaima (2011), is by taking a realist approach and examining evidence that supports each individual program component. These steps, including the application of a realist approach, were set forth during the process of creating the Literature Review detailed in Chapter 2 of this proposal.

Further, steps 5 and 6 entail determining what can be learned about the LCTM, allowing for the development of a learning framework, and learning from the process of implementation and application (Sridharan & Nakaima, 2011). These steps were achieved through the evaluation methods set forth in this chapter. Finally, step 7 entails developing a comprehensive evaluation plan (Sridharan & Nakaima, 2011). This study contributes information pertaining to the evaluation design and will provide insights into how this evaluation could be improved. As a work in progress, the final steps, 4, 8, 9 and 10 involve the formulation of a timeline, exploring the relationship between the program and its underlying theory, addressing the relationship between the evaluation and the framework and defining the relationship between performance and sustainability (Sridharan & Nakaima, 2011). These factors are discussed in the conclusion, posed as recommendations for future study and, as such, will continue to evolve and be defined over time.

Participants/Sample

Serving as one aspect of the program evaluation, a purposeful sample of participants completed an interview about their perceptions of the key elements of the model, including

Integrative Learning, Fostering Literacy, Collaborative Engagement, Creativity, Social Development and Knowledge Building. Interview data contains teachers' perceptions of the LCTM and its utility.

The interview questions focused on elements of the LCTM as described for purposes of this study and were derived from sources within the literature. Their responses serve as one evaluation of the components of the LCTM, regarding their overall effectiveness, as well as their impact on instruction and teaching. In addition, this research measures the perception of the LCTM, as a whole, and its intended functions, pertaining to its strengths and weaknesses. Findings will inform the formulation of future improvements.

The participants include library staff, lower, middle and upper school teachers, and other staff members within the school, who use the learning commons and participate in this study. Ideally, this group should be comprised of one participant per grade and at least one participant per discipline, ultimately creating a minimum sample of 8 to 12 interviewees. This researcher obtained a total of 9 participants, representing librarians, kindergarten teachers, technology staff, middle and upper school teachers.

Data & Analysis

Data Collection from staff interviews

All staff received an informational letter that explained the purpose and intentions of this study, inviting them to participate. Interested staff completed a consent form and chose a feasible time for their interview. These interviews functioned as the primary means for measuring program outcomes in accordance with the ten steps framework authored by Sridharan and Nakaima (2011). The responses to the open-ended interview questions were thematically analyzed and recurring themes were coded and evaluated. Tables were utilized where applicable

to illustrate significant results. Responses to interview questions and themes from those responses are presented. The interview transcripts comprised part of the data. The LCTM was also evaluated against the school's mission, vision, and values. After implementation of these methods, the subsequent findings are presented in the Results chapter of this research.

Interview Questions

The primary instrument used within this study was the LCTM Evaluative Interview. A copy of the interview questions is in Appendix A. The inventory includes open-ended questions that were formulated in order to assess teachers' and staffs' perceptions about the intended functions of the LCTM. Each interview was recorded with an audio recorder and a code letter was assigned to each participant prior to collecting data. The interviews span about 30 minutes each and were all conducted onsite in various rooms throughout the school.

The inventory of interview questions is comprised of 15 items in total. The majority of the questions correspond with the 6 measurable components of the LCTM, which include Integrative Learning (Section A- 2 items), Fostering Literacy (Section B- 2 items), Collaborative Engagement (Section C- 1 items), Creativity & Expression (Section D- 1 item), Social Development (Section E- 1 items), and Knowledge Building (Section F- 1 items), followed by Section G (Efficiency- 1 item) and Enhanced Teaching (Section H- 2 items). Last but not least, supplementing the aforementioned items are an additional 7 questions embedded within the interview prompts that are included for the purpose of measuring the alignment of the LCTM with the school mission, as well as pertaining to the overall use of the commons, as a whole. As such, the majority of items are edited and derived from Bailey & Tierney (2008), Sridharan & Nakaima, (2011) and Yates & Cotton (2015).

As an example of some of the items included, the component of Integrative Learning focuses on multiple methods of teaching to reach students with varying learning styles, thereby integrating the various tools and modalities of instruction. In addition, this type of instruction integrates different courses for projects (interdisciplinary) and the integration of curriculum with technology. Accordingly, Item #2 within the inventory of questions states the following:

#2. Have you facilitated inter-disciplinary projects in your classes? If so, can you characterize the role of the LC in supporting your efforts?

The purpose of this item was to evaluate if the LCTM is a benefit to the students with regard to its various tools and means of teaching. The remaining questions proceed in the same manner with some inquiring about functional and practical aspects, such as the following:

#6. Are students expected to use these skills (addressed in Item #5) in the course of completing assignments?

14. Do you feel that using the learning commons enhanced your teaching with regards to technology and space? And, if so, how?

Meanwhile, other items were intended to solicit response information that is consistent with the framework employed, such as:

#18. What kinds of insights have you gained from using the LCTM (i.e. Policy learning, Organizational learning, Process learning, Experiential or Individual learning)? (Framework step #5)

Conducting Interviews

A purposeful sample of participants consisted of one participant per grade and at least one participant per discipline (Robinson, 2014). This selection created an interview group that represented a cross-section of survey participants and reflected the larger staff participant

population. Participants were asked to volunteer and among those who opted to participate, this researcher confirmed that most grades (9 to 12) were represented within this subgroup. There were no participants from grades 3 to 5, and among the participants, teachers taught multiple grades. If there were no volunteers within a specific grade, then all staff within that grade were approached by this researcher and personally asked to participate.

Once a sufficient sample of participants was achieved, each participant was individually approached for the purpose of scheduling an interview time, preferably during a lunch hour or immediately after school hours. All interviews were completed over the course of two weeks. This researcher met with each participant during his or her pre-selected interview time and administered the interviews one on one. As formerly indicated, the selection of interview questions was derived from Bailey and Tierney (2008), Beagle (2011), and Yates and Cotton (2015) and focus on the LCTM criteria of importance. The questions allowed participants to explore the many factors that influence their instructional approaches with the LCTM. More precisely, the interviews focused on teachers' perceptions about how the learning commons accommodates instruction. The findings provide knowledge of areas in need of improvement.

Analysis of Data

During each participant interview, the dialogue was recorded, and the participant was assigned a unique anonymous study code. All recordings were transcribed into two analysis computer applications, MAXQDA12 and SPSS Text Analysis. Once all responses were entered into the database, they were coded and reviewed for the identification of common themes and responses of interest. These findings are reported in the Results chapter.

Participant rights

All participants were presented with an Informed Consent form and provided detailed information regarding the study to decide whether or not they wished to participate. Once all the interviews were completed, transcripts were entered into an electronic database and the file was password protected to maintain confidentiality. The password was maintained by this researcher only. Any hard copies associated with this study are stored in a locked cabinet in the researcher's home office, and will be shredded no later than one year after the completion of the study.

Potential limitations

The case study design posed some limitations while also presenting unique advantages. Certainly a case study can provide in-depth insights within the context of a real-world scenario, which can establish a foundation for future research and guide future studies that can inform the policies and practices relevant to a particular field (Merriam, 2009). According to Merriam (2009), this method has proven particularly beneficial within the field of education and crucial to the process of evaluating new innovations related to education. Ultimately, the case study plays an important role in that the process of "...analyzing and representing practice through case study research, along with the connections that the reader makes between the case and their experiences, is powerful in working to inform everyday educational practice" (Miles, 2015, p. 309).

One limitation of the case study method was the inability to extrapolate findings to a more general number of cases, because of its reliance on one environment and situation, as well as all of the unique variables that are inherent within this one context (Flyvbjerg, 2006, 2011). Another limitation that is reflected in this type of study is that the researcher collected, coded, and analyzed data independently (Flyvbjerg, 2006, 2011). The researcher generated the themes

after interviewing participants and determined elements for inclusion in the findings, and had the final determination of what was important and relevant (Merriam, 2009). The researcher ultimately depicted and emphasized those elements or outcomes that were presented in the data (Merriam, 2009). The presentation of any data is subjective, and qualitative data requires care on by the researcher to substantiate the interpretation and presentation (Flyvberg, 2011; Merriam, 2009). This researcher is a technology administrator at the research site and had already set-in-motion the design and implementation of a type of Learning Commons. It was the researcher's professional goal to present technical support to the entirety of the research site. This researcher was never a teacher among the target audience, or a figure of authority, which limits bias to some degree. To remain objective with the explicit intent to minimize any biases, the researcher consulted their advisor to discuss any and all appropriate procedures prior to initiating on-site research. As such, the findings from the case study reflect a single program and a group of participants from the same academic institution. Their perceptions represent one staff's experience and may not be generalizable to other sites.

Chapter 4

Results

The primary purpose of this study was to evaluate the design and implementation of an LCTM within a private, urban, Northeastern secondary school. The first part of the study was a review of the alignment of the school's mission, vision, and goals with the LCTM, while the second part of the study was an assessment of staff members' experiences using the LCTM. The LCTM was evaluated in regard to several criteria of importance from the perception of its users. These criteria included Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space, and Enhanced Teaching. As a result, an open-ended format was used to pose questions to the participating respondents. The outcomes produced from the analysis of responses and the relevant themes that emerged are detailed in the second data section below.

Alignment of the LCTM with School Mission, Vision & Goals

The mission and vision of the school is to develop character among students, "instilling an abiding regard for educational inquiry, mutual respect, and personal renewal" (ABC, 2017). The vision of the school is to promote a culture of high expectations, complemented by a climate that reflects the value in loyalty, civility and, integrity (ABC, 2017). One of the predominant goals of the school is to realize each student's unique potential, which is achieved through the promotion of excellence in not only the realm of academics, but also within the domains of aesthetic and ethical perfection (ABC, 2017). Extrapolating from the documentation pertaining to these elements, the following Table presents how the LCTM aligned with the school's mission, vision, and goals.

Table 1. Alignment of School Vision, Mission & Goals with the LCTM

School Mission, Vision & Goals	LCTM								
	Foster Literacy	Creativity	Social Development	Enhanced Teaching	Knowledge Building	Integrative Learning	Efficient Use of Space	Collaborative Engagement	
College Preparation	•	•	•	•	•	•	•	•	•
Traditional Academics	•	•	•	•	•	•	•	•	•
Maintain Certification Standards (NYS AIS)	•	•	•	•	•	•	•	•	•
Promote Advanced Educational Technology	•	•		•	•	•			•
Promotion of Extracurricular Activities		•	•						
Foster Individual Student Potential	•	•	•	•	•	•	•	•	•
Foster Diversity		•	•					•	•
Instill Life-Long Skills	•	•	•	•	•	•	•	•	•
Community & Leadership Building	•	•	•						•
Promote Interdisciplinary Studies	•	•		•	•	•			•
Excellence in STEM	•			•	•	•			•
Testing Excellence Class/Standardized	•			•	•	•			
Instill Knowledge & Discipline	•		•	•	•	•			•
Foster Integrity, Loyalty, Civility			•	•					•
Promote Peer Relations			•		•			•	•

Interview Participants

The participants in this study included a total of 9 faculty and staff members within the school. Some of these participants included teachers, librarians, educational technologists, curriculum coordinators, and college counselors. All participants have been employed at the school for more than two years, and have directly worked in their professional field for no less than 5 years. This study refers to these participants by use of a numeric coding to maintain confidentiality and anonymity.

Descriptive Interview Results

Prior to a presentation of relevant, emerging themes derived from the participants' responses, the overall results of the interview questions were analyzed in a descriptive manner, allowing for a general assessment of the answers and opinions associated with each question. It was possible to explore specific viewpoints and formulate an overall consensus, pertaining to each question and topic of interest, as detailed in this segment.

Use of the Learning Commons (LC) was the topic addressed in the first interview question. When asked, some participants reported using the LCTM up to 4 times per week, while others reported using it for several class times, ranging from 20 to 30 times per week. Integrative Learning was the subject of questions #2 and #3, which asked participants if they facilitated inter-disciplinary projects in their classes, as well as the role of the LCTM in doing so and how they strive to achieve this goal within their lesson plans. Many participants answered these questions together or refer to one in answering the other. While integrative learning can translate into a combination of curricula from different disciplines or the integration of technology into curriculum, almost all of respondents made reference to the Whiteboard, assuming that this qualified as an example of utilizing technology within their curriculum. However, half of respondents reported facilitating inter-disciplinary projects between different class subjects. Of those responding, examples of typical interdisciplinary projects are presented in the table below, illustrating the use of varying subject topics and the infusion of technology into the process.

Table 2. *Illustration of Responses: Integrative Learning and the LCTM*

Questions	Responses
<p>#2. Have you facilitated inter-disciplinary projects in your classes? If so, can you characterize the role of the LC in supporting your efforts?</p> <p>#3. Can you give me examples of ways you strive to integrate content within your lesson plans?</p>	<p>Participant #5: <i>“... I like to integrate content in terms of sort of topical things that are going on, you know, could be like black history month, poetry monthsometimes we will work with other subject teachers and I will do a project in the library class that is tied to their curriculum, so I will use our library resources in terms of the books, the computers, the databases, the online resources, and web resources as well”</i></p> <p>Participant #7: <i>“this is one of my immediate goals ... the fourth graders, they’re creating slave stories, their own made up slave stories, and ... it would be a great project to use the technology teachers to help us create movie maker type documentaries, so where the students would read their story and they would have chosen pictures to go with their documentary...”</i></p>

Next, questions #4 through #7 dealt with the component of Fostering Literacy. Question #4 asked what respondents witnessed students doing in the learning commons as far as using software, seeking research assistance, class-related activities, personal computer use, studying or other activities. In response, all participants reported observing students engaging in a variety of activities of which they were both individual and collaborative (with others) in nature. Within these responses, it is evident that the use of technology is a motivating force behind the students’ use of the LCTM, as indicated by the typical replies illustrated in table 3.

Interview questions #5 through #7 also dealt with Fostering Literacy. However, due to the interrelated nature of these items, these were sometimes answered in an overlapping manner and, therefore, are combined in this explanation of responses. These items collectively asked if

participants taught computer skills that could be applied in database searches or in an occupational capacity, whether or not students were expected to use these skills in assignments and how teachers supported the development of these skills among students. Overall, only half of participants reported teaching these skills, but the majority reported that students were expected to apply any skills they do learn within the context of assignments.

When asked how the faculty supports students in developing these skills, the answers were mixed. Some participants reported they offer support when asked, while another suggested that he/she looks for ways to foster these skills “any chance I can”, demonstrating the broad spectrum of limited, solicited support and pervasive efforts. Meanwhile, at least half of participants reported supporting students to develop these skills by emphasizing research skills, how to evaluate sources and how to cite properly or avoid plagiarism, which is an ongoing process that is addressed with the progression of the grades. Finally, one participant reported that they focused on applying these skills to useful future pursuits, such as completing college applications.

Table 3. *Illustration of Responses: Fostering Literacy and the LCTM*

Questions	Responses
<p>#4. What do you observe your students doing in the learning commons (i.e. using software, seeking research assistance, class-related activities, personal computer use, studying...)?</p> <p>#5. Do you directly address/instruct the types of skills necessary for conducting database searches? Software (i.e. Excel) that could be used on the job? Presentation tools, such as creating slides or movies?</p> <p>#6. Are students expected to use these skills (addressed in Item #5) in the course of completing assignments?</p> <p>#7. Where and how do you support students' development of these skills?</p>	<p>Participant #4: <i>“(some students use)...this as their dedicated quiet place to work ... other kids seem to work here cause they know their always going to have a computer and they can print a lot easier... so I think what it really comes down to is a dedicated printer that’s no hassle...”</i></p> <p>Participant #5: <i>“(the students I witnessed come for)...definitely computer use, definitely reading, definitely looking for new books, doing research on the computers. Sometimes just coming to sit and talk with peers...”</i></p> <p>Participant #8: <i>“Kids are using the space for a lot of discussion and also the reason we are in there is because (we) have access to technology, so they are taking in the content of technology”</i></p> <p>Participant #5: <i>“We do PowerPoint, we do database searching, and we don’t do much with Excel. We do teach research skills, library skills, and organizing information”</i></p> <p>Participant #3: <i>“Depends on the teacher and the assignment”</i></p> <p>Participant #2: <i>“(IF) they need suggestions in terms of ‘oh what program would be great for this particular project...’”</i></p> <p>Participant #4: <i>“Any chance I can... if I see your eyes really light up when going through some procedural instruction, I know that you’re probably going to like that level a lot more than the design aspect or something so I spend a lot of time trying to figure out ..how can I present things within the context of technology that will feed them. ...”</i></p>

Participant #8: “... *how to properly research a college website. It’s also helping them to navigate, it’s called Naviance, it’s a program that they will absolutely need to apply to college... don’t do really anything with spreadsheets, or PowerPoint, it’s almost all web-based*”

The topic of interview questions #8 and #9 was Collaborative Engagement. These prompts asked participants if they witnessed students working alone in the learning commons, as part of a group or both, as well as whether they structure learning activities that involved small groups with peers or adults. The majority of participants reported observing students in both individual and group activities, while almost half reported structuring learning experiences with peer groups. One respondent even reported using one-on-one adult-student interactions.

Next, the tenth interview question addressed student creativity, asking respondents what it looked like in their classroom and how they foster it, while also inquiring about whether such instruction occurred in the learning commons. While two respondents reported that they did not know, others suggested creativity was fostered by a substantial choice of literature and other media sources, providing the tools for achieving a skill and then the flexibility to experiment with it, by problem-solving on one’s own terms and the autonomy that results from it, by engaging in creative writing and, finally, through engaging with educational games and software. In the end, the ways in which creativity was fostered or what it looks like was essentially reliant on the class subjects taught by the respondents, the required curriculum that must be addressed within that class, as well as the respondent’s perception of what creativity looks like. This was the one interview question where responses varied substantially, with different respondents reporting varying perceptions of creativity and how it is emphasized within their learning

activities. Table 4 depicts the various quotes derived from the participant responses.

Table 4. *Illustration of Responses: Fostering Creativity and the LCTM*

Questions	Responses
<p>#10 What does student creativity look like in your classroom? How do you support development/enactment of creativity outside the walls of your classroom? Is “your classroom” the LC?</p>	<p>Participant #1: <i>“...with the classes that I’ve worked with regards to programming, it’s a matter of giving them the tools to do the programming, but giving them the ability to be creative ... and go where they want to with the tools ...there is a certain point at which you have to give them the tools and then give them the structure or scaffolding and once they have mastered a certain level, then you can actually let them be creative...”</i></p> <p>Participant #4: <i>“... creativity I think is so incredibly important because it allows for autonomy, it allows for a sense that the kids can go “WOW” I can do this, I can do something that doesn’t have a predetermined answer and I can still do it on my own terms and that’s hugely important.”</i></p> <p>Participant #7: <i>“Creativity, ideally, looks like ...navigating through the databases... playing the educational games that we have taught them”</i></p>

Social development was the topic behind question #11 in which respondents were asked to provide examples of the inter-activity they have observed. About half of respondents reported witnessing student-to-student, as well as student to teacher interactions taking place. Meanwhile, interview question #12 dealt with Knowledge Building by asking respondents their perceptions

of how students articulated the benefits or challenges of working on a project, as well as any role played by technology in the form of internet-based learning or the computer.

It was this latter survey question that identified a gap in that few respondents reported actually being cognizant of what students thought or having heard them express their perceptions. Overall, half of the participants reported that they simply did not witness any students articulating any benefits or challenges. Of the half of respondents who reported they had received feedback from students, they indicated the feedback generally involved likes and dislikes. Table 5 lists typical responses.

Table 5. *Illustration of Responses: Social Development, Knowledge Building and the LCTM*

Questions	Responses
<p>#11. The physical space of the LC is designed to support student-student and student-teacher interaction and mentoring. Can you give me examples of learning experiences you have observed that demonstrate this level of inter-activity?</p>	<p>Participant #2: <i>“One thing I see here a lot is the student teacher component, whether before school or after school there is a lot of tutoring that goes on here”</i></p> <p>Participant #5: <i>“I’ve seen students working with teachers. I’ve seen study groups going on. I’ve seen kids coming in to do their own work independently”</i></p>
<p>#12. How do students describe (to their teacher or staff person) the benefits or challenges of working independently on a project? Do they articulate the role of the computer or internet-based learning in those descriptions?</p>	<p>Participant #3: <i>“(They like the)... resource list. They’re happy that it’s there”</i></p> <p>Participant #4: <i>“... I don’t know if I’ve actually really heard that articulated on that level”</i></p> <p>Participant #6: <i>“... we’ve used certain databases. They have told us whether they like them...”</i></p>

Next, items #13 and #14 addressed the Efficient Use of Space and Enhanced Teaching, respectively. The first of these asked respondents if they would make any changes to the physical set-up of the LCTM. Of the participants who suggested potential improvements, almost half recommended increasing or adding areas for individual study or quiet space, while others suggested the creation of small group areas. Interestingly, one participant suggested a very specific area be set aside for test-taking.

Meanwhile, when it came to the latter question, involving enhanced teaching, all except one respondent reported that the LCTM had, indeed, enhanced their ability to teach, which translated into the majority of the responses. Exploring this topic further, half of respondents attributed their enhancements at least partially to the technology component, whether it was accessible and, therefore, easy to implement within the context of the curriculum or whether the benefit of technology was derived from the immediate access to assistance, when needed. Another contributing factor in the respondents' perception of enhanced teaching associated with the LCTM was the availability of varying resources for learning, multiple forms of media and the collaboration of materials that could then be used within the context of teaching or applied by the students for the completion of assignments. Table 6 illustrates a sampling of the responses for each of the interview questions posed above.

Table 6. *Illustration of Responses: Efficient Use of Space, Enhanced Teaching and the LCTM*

Questions	Responses
<p>#13. Would you suggest any changes to the learning commons, in terms of physical space (i.e. more open group spaces, more study rooms, more individual workstations, social space, etc.)?</p>	<p>Participant #1: “... a little more friendly for folks who want to do solo work...put in desks in the stacks, sort of in an isolated area...”</p> <p>Participant #3: “... section off parts of the library and make either sections for group use or for quiet study... it’s just difficult to have everybody in the same spot... make partitions ... and maybe put in a collaborative interactive whiteboard table ... a room saying ‘silent study only’ ... a room with a screen and projector, and have the ability to do some media work”</p>
<p># 14. Do you feel that using the learning commons enhanced your teaching with regards to technology and space? And, if so, how?</p>	<p>Participant #1: “All those technical issues can easily get resolved ... That’s been really crucial to the learning commons because we’ve just found there are so many instances where our teachers don’t know how to figure something out...”</p> <p>Participant #5: “... I have all the resources that I need right here... , I have the computers, I have the screen, I have the books, I have the databases... that really helps me and I feel like I have everything at my fingertips to incorporate into lessons”</p>

Last but not least, interview question #15 asked participants what kind of insights they may have gained from their experiences in utilizing the LCTM. The purpose of the question was to identify the types of learning that may have occurred, such as process learning or organizational learning, in accordance with the framework used. Interestingly, several

participants interpreted this item quite differently and offered unique insights from their own perspectives.

There were several interpretations of what “utilizing the LCTM,” meant. Some responses referred to the benefits bestowed upon teachers, in terms of learning, while others addressed the impact on students or how the teachers gained insights, pertaining to the students. However, almost half of participants mentioned that collaboration was something that they learned to do better and utilize more effectively within the context of the LCTM. Similarly, at least half suggested that technological learning was the most valuable experience derived from the use of the commons. Finally, one respondent reported that they gained insights into better organization and learning how to facilitate that skill as a teacher.

Thematic Analysis

The previous pages provided descriptive data pertaining to the responses to each interview question, and these responses translated into themes that address the effectiveness and utility of the LCTM in achieving the criteria of importance. In particular, the interviews were necessary for understanding the efficacy of the LCTM as an instructional site, as well as crucial to evaluating the LCTM itself. As formerly stated, the criteria of importance included Knowledge Building, Collaborative Engagement, Integrative Learning, Fostering Literacy, Creativity and Expression, the Development of Positive Social Maturation, Efficient use of Space and Enhanced Teaching. The table below provides the key criteria of importance, as well as the themes and elements that comprise each when implemented sufficiently. This is supplemented by the relevant emergent themes associated with each criterion, which was derived from the inventory of participant responses.

In addition to the information above, emerging themes that indicated a need for improvement were also reported. Relevant themes that were neglected or totally absent within the responses were noted. This data was organized through a process of coding using primary theme categories of the *criteria of importance*. All responses that expressed a particular primary theme or its components were identified and coded with a pre-assigned color. Responses identified by a relevant color theme were then further broken down and categorized, according to the component criteria they fit or coded as a unique theme within that context. Results were achieved using two different qualitative analysis computer applications. The first application used was MAXQDA12, which was an efficient means for open coding. The second application used was the SPSS Program for Textual Survey Analysis. The researcher checked for consistency and accuracy, using a manual process that was implemented by two different reviewers for accuracy. These findings are illustrated below.

Table 7. *Criteria of Importance & Emergent Themes*

Key Evaluative Components	Related Emergent Themes: Positive (Strengths)	Related Emergent Themes: Improvements
Fostering Literacy • In various capacities • Skills used beyond class (i.e. job skills)	Student Use of LCTM for: Quiet Study Collaboration & Discussion Reading Research Access to Technology Staff Use: Access to Technology for Promotion of Occupational & Academic Skills:	Limited Skill Promotion beyond Web Use Excel not addressed Presentation skills (i.e. slides) limited Inconsistent efforts at instructing/ promoting technology skills

	<p>PowerPoint Databases/ Research Skills Citation Skills Use of Software in Promoting Skills</p>	
<p>Collaborative Engagement • shared ideas • collaboration • participation</p>	<p>Students use LCTM for: Group Discussion Collaboration Individual Study</p> <p>Staff Structure Learning Experiences using: Collaborative, Group Formats</p>	
<p>Creativity & Expression</p>	<p>Creativity = Structure to Master Skills then Flexibility Learning on One's Own Terms Exploring Games/ Expression through Software Creative Writing Expressed through Individual Choice of Topics for Essays, Search Info or Personal Use of Various forms of LCTM media & resources</p>	<p>Ambiguity around what Creativity looks like in class</p> <p>Definite Absence of genuinely promoting Creativity to Optimal Potential</p>
<p>Social Development • Social Skills • Safe Congregation • Allows Positive Sublimation</p>	<p>LCTM used for: Teacher-Student Interactions Student-Student Interactions Table Set-Up promotes Peer Collaboration/ Discussion</p>	<p>Sublimation not Addressed Limited mention of after-school clubs/ activities to foster social skills or positive sublimation</p>
<p>Knowledge Building • Guided inquiry</p>	<p>Students articulate if like databases used</p>	<p>Blatant Gap in Insights for Knowledge Building</p>

<ul style="list-style-type: none"> • Interactive learning • Problem-solving 	<p>Appreciate Resource List</p> <p>Enjoy Technology & Interactive Activities</p>	<p>Staff were not cognizant of students' perceptions</p>
<p>Efficient Use of Space</p>	<p>LCTM is sufficient considering limited space</p> <p>Space is improvement from prior structure</p>	<p>Undeniable Acknowledgment of Limited Space</p> <p>Suggested Improvements:</p> <p>Consistent Mention of More Quiet, Individual Areas</p> <p>Need for Dedicated Group Areas</p> <p>Dedicated Test-Taking Area Needed</p> <p>More Separation of Space for Different Purposes</p>
<p>Enhanced Teaching</p> <ul style="list-style-type: none"> • Ease of Use • Improved Student Outcomes 	<p>Overwhelming agreement LCTM enhanced teaching</p> <p>Achieved this through:</p> <p>Access to Technology</p> <p>Access to Technology Assistance</p> <p>Availability of Multiple Resources/Forms of Media</p>	

A review of the criteria and areas of strength and weakness associated with each criteria of importance, how they are facilitated by the LCTM and, therefore, the effective utility of the learning commons, allows for an overall evaluation of whether the LCTM has been successful in supporting its intended objectives as represented by the criteria of importance.

This study provides insight into how all facets of these components were served by the LCTM, as well as what improvements are needed or what objectives were not yet adequately

met. Based upon the interpretation of questions, how they were answered and whether they were answered adequately and accurately by participants, the effectiveness of the evaluation, itself, can be simultaneously explored. These findings will be discussed in Chapter 5.

Finally, in completing the identification of themes and the analysis of the LCTM, the process of coding was applied to the complete inventory of participant responses, to identify the presence of any broad, pervasive themes within the complete inventory of interview data as a whole. There were four predominant themes that emerged within a variety of responses, including:

Theme 1: The benefit of the LCTM derived from the use of technology.

Theme 2: Access to technological assistance.

Theme 3: The synthesis of resources available in many media formats, such as whiteboards.

Theme 4: Space limitations with a need for dedicated individual small group space.

Summary

When exploring subthemes that emerged within these primary thematic categorizations, whiteboards were mentioned as a specific advantageous component in promoting the successful implementation of many criteria objectives. Teachers' perceptions about the impact and implications of these themes are discussed in the next chapter, answering the research questions presented earlier of how users experience the LCTM in relation to reaching instructional goals, as well as how the criteria of importance were represented in the data, in terms of teachers' perceptions.

The final chapter of this study addresses these questions, provides insights related to the findings and limitations of the study, and presents overall conclusions and recommendations for future study.

Chapter 5

Conclusion

The overall goal of this study was to establish a program evaluation process and conduct initial research on users' perceptions of the usefulness of the LCTM for integrating technology into instruction, a central school goal. The alignment of the LCTM elements with the school goals are presented in the previous chapter. This alignment provides a snapshot of the degree to which the current LCTM implementation aligns with the school's mission, vision, and goals. Second, the outcomes of the participant responses derived from user interviews presented in the previous chapter are summarized. Interviews allowed the researcher to explore and identify the users' perceptions of the LCTM, specifically pertaining to its influence on teachers' instruction and the experiences and outcomes of their students. This study provided insight into the evaluation process used to assess the LCTM and evaluated users' perceptions of it. The themes that emerged from their responses are also summarized and linked to existing literature. Finally, the implications of these findings are described, followed by conclusions and recommendations of users. The chapter closes with suggestions for future areas of study.

Findings

RQ 1: How does the model align with the school's mission, vision, and goals?

The central goal of this research was to establish the actual process of evaluation. The framework of Sridharan and Nakaima (2011) was the framework. The program evaluation design uses elements from these 10 steps, specifically Step 5, which involved the development of a learning framework that clearly articulated what could be learned from the evaluation process. This step required exploring ways in which insights were gained throughout the process as was reflected in interview question 15. Overall, the inventory of responses indicated that the LCTM

has aligned well with the school's mission, vision and goals, thereby responding to Research Question #1. Meanwhile, Research Question 2 has been extensively evaluated and answered, involving how users and staff experience the LCTM in relation to reaching instruction goals, regarding the criteria of importance, which was presented in the results and the conclusions derived from them.

RQ 2: How do users (specifically teachers and staff) experience the LCTM in relation to reaching instructional goals with regards to the criteria of importance?

This study examined teachers' perceptions of the various elements of the LCTM, which was implemented to support best practices in teaching and learning within a technology rich environment. These elements reflect the overall goals of the learning commons, as well as the criteria by which it was to be assessed. These elements of importance were represented in the interview questions and then utilized as thematic categories for arriving at conclusions. Elements include: Knowledge Building (Hushman & Marley, 2015; Huang et al., 2012), Collaborative Engagement (OSLA, 2014), Integrated Learning (Alizadeh & Heidari, 2015; Vasileva-Stojanovska et al., 2015), Fostering Literacy (Bradley, 2013; Todd, 2013) and Creativity (OSLA, 2014) with an added emphasis on the use and integration of Information Technology by faculty.

Staff experiences with the LCTM

These elements were selected after an extensive review of the literature. The elements serve as a framework that support student learning through enhanced instruction, including improved academic performance (Deakin et al., 2014; OSLA, 2014; Yamada, 2015), and the skills necessary for later success in life, which particularly include tech-related skills (Bradley, 2013; Kramer, 2011). The thematic analysis of interview responses is organized by the elements.

Knowledge Building involves guided inquiry, interactive learning and problem-solving to build on prior knowledge and gain added insights (Hushman & Marley, 2015 OSLA, 2014). Overall, there appeared to be a void in responses when teachers were asked to describe students' perceptions. While it was evident that students appreciated certain specific elements of the LCTM, such as the technology itself, the faculty genuinely could not offer specific information on the experiences of students and their perceptions as knowledge builders.

Collaborative Engagement provided more promising results, finding that students shared ideas, participated and collaborated with each other by engaging in group discussion and group formats, as well as individual study. Teachers also report structuring collaborative group formats for activities within the context of the LCTM, which is conducive to this goal, thereby concluding that it is optimally performing in this regard and being leveraged by staff and students to do so.

Integrative Learning involves the integration of technology and curriculum from various courses in a collaborative approach, such as in the case of cross-disciplinary projects (OSLA, 2014). This element may also include the integration of various modes of teaching and a variety of tools to reach the majority of (if not all) learners (OSLA, 2014; Yamada, 2015). Participants concluded that the various forms of media in the LCTM were conducive to the varying learning styles of students and technology resources were a strong part of this goal. Faculty facilitated projects that involved the use of different LCTM technology resources and other LCTM resources for implementing multidisciplinary projects or for promoting curriculum themes. Black History Month was one example, leading to projects on slavery and other theme-related ideas that leveraged the use of all LCTM media forms.

Fostering Literacy promotes skills that could be used for future academic or occupational success. While it was evident that students used the learning commons for quiet study and collaboration and discussion, it was also used for research purposes and access to technology. These latter uses could easily be applied within the context of later occupational pursuits, as well as post-secondary educational endeavors. Participants also report teaching PowerPoint skills, research and citation skills, and the use of various software programs.

Areas where improvement could occur includes providing instruction about tools that extend beyond the web, such as Excel. Presentation skills are used to a limited extent, therefore indicating another area to strengthen. Overall, there appeared to be inconsistent efforts at instructing or promoting literacy through technology.

Efficient Use of Space was a critical issue as most participants concluded that the space was undeniably an improvement from the prior structure and that it was sufficient when considering the overall limitations of space. The most common recommendation regarding improving use of space was to create more quiet, individual study areas. It was recommended that space be designated for different purposes, delineating different areas for specific tasks. Participants suggested including more dedicated group areas and even a test-taking room.

Enhanced Teaching included teachers' perceptions of the model and improved student outcomes, as well as other benefits to teaching and learning in the LCTM. There was strong agreement that the LCTM enhanced teaching, achieved primarily through 3 factors: access to technology, access to technology assistance and the availability of multiple resources and forms of media within the LCTM.

Creativity and Expression was a different story within the interview responses as there was no clear consensus about what creativity entailed. Common themes that emerged included

teaching students the structure to master skills and then allowing them flexibility beyond that initial instruction, learning on one's own terms, learning through their choice of software games and creative writing. There was ambiguity around what creativity looks like in a class and an absence of faculty promoting creativity to an optimal level. This is certainly an area that could be explored further.

Promotion of Positive Social Development includes the provision of positive role models, a safe and productive means of congregation, as well as the opportunity to use and develop social skills in a positive way through social interactions (Stepney et al., 2014). Respondents reported that the LCTM was frequently utilized for teacher-student interactions, as well as student-student interactions with tables set up in a way that promoted peer collaboration and discussion. As such, it seems to have fulfilled this objective with room for improvement only found in the limited mention of the space for after-school clubs or activities.

RQ3: How are teachers' perceptions of the criteria of importance represented in the data?

Broadening the scope of conclusions, themes were identified that were not only present within the context of any specific interview question, but that were somewhat present across many of the responses. As indicated, the collaborative resources in many forms of media were often mentioned as a benefit in promoting many of the LCTM goals. However, most frequently mentioned was the role of technology, which was another area of inquiry, regarding the effectiveness of the LCTM as a whole.

Technology was the central theme of the study and further emphasized how the learning commons was extremely successful in that access to technology promoted many benefits., In addition, the availability of technology assistance leveraged the use of technology within the curriculum and throughout the school. This reaffirmed the findings in the literature, such as those

in the OSLA (2014) and Dow (2013) studies. Emergent subthemes included the preference for whiteboards and clearly delineated areas for different purposes. Listed below are the four themes from interview data presented in chapter 4 which show how ‘technology’ transpired throughout instruction within the LCTM. However, it should be noted that Theme 4, though not directly related to technology, does present affiliation, for example, adding dedicated individual small group space could be beneficial for use with a personal device such as a laptop or handheld device.

Theme 1: The benefit of the LCTM derived from the use of technology.

Theme 2: Access to technological assistance from specialized staff.

Theme 3: The synthesis of resources available in many media formats, such as whiteboards.

Theme 4: Space limitations with a need for dedicated individual small group space.

These themes further emphasize how the LCTM succeeded in the transformation of the LC.

Much of the respondents noted these themes, while exemplifying how they felt the LCTM dramatically changed their perception of the space, and further facilitated best teaching practices.

Implications

The most profound implications of these findings may be those that pertain to the community of teachers. Specifically, the presence of the LCTM improved instruction through the teachers’ access to technology and their subsequent ability to integrate it into curricula. As formerly stated by Bradley (2013) and Todd (2013), this integration bridges the gap between traditional teaching and the level of teaching that is mandated by today’s society for sufficiently preparing students for their futures. Further, integration of technology has occurred through the on-site assistance that is available to teachers, thereby empowering the faculty to integrate technology into the curriculum in cases where they otherwise may not.

In addition, the combination of technology and varying forms of media enable teachers to reach a larger population of students with their diverse perspectives and respective learning styles. Overall, the combination of these resources, as well as the successful implementation and attainment of the criteria of importance as goals to be met, will result in enhanced student engagement which, in turn, will make teaching more effective (Alizadeh & Heidari, 2015; Gavigan & Lance, 2015; Yamada, 2015). Ultimately, this combination may profoundly impact the concept of teaching and how it is executed.

The implications apply directly to one academic institution and the staff within it. However, future implementations of the LCTM can lead to a broader impact that can change teaching in other communities or even the field as a whole. When it comes to the practical application of the Learning Commons Transformative Model, it was the physical space of a library that was transformed into a more dynamic hub of learning. However, the end result may just as accurately be described as a transformation of how learning is facilitated, in and of itself.

In addition, the changes in how teaching is conducted and the resources available to facilitate instruction will translate into a benefit to students. Although student reports of their learning was not the focus of the study, the teaching and application of technological skills and other skills learned within the LCTM context will be useful to students in future academic and occupational endeavors. This outcome is consistent with sources previously presented within the literature (Bradley, 2013; Kramer, 2011). Meanwhile, with the criteria of importance achieved or successfully implemented, there is an inevitable benefit to the students, in terms of improved academic performance. This implication is found the literature and, therefore, this study reaffirms the prior findings of researchers, such as Deakin et al. (2014) and Yamada (2015).

This study contributes to the existing body of literature pertaining to effective teaching

and the field, in general, while also posing relevance in topics related to the implementation of technology, library sciences, and the creation and implementation of a learning commons, particularly. As such, this case study serves as an example to follow or build on in promoting a best practices approach.

Recommendations for Action

Consistent with step 9 of the Sridharan and Nakaima (2011) framework, it is imperative to determine the “spread” as a product of the evaluation, whether this takes the form of suggestions related to replication or the provision of recommendations for expanding or improving the program. It is, therefore, consistent with this step that the following recommendations have been formulated for going forward. These were derived from the interview responses and the data collected within those answers. These are as follows:

Evaluation Improvements

The void in responses from participants when asked to identify students’ perceptions suggests that future inquiry should solicit students’ perceptions, allowing for changes, if necessary, that reflect the student perspective.

Expand on Fostering Literacy: Provide information to teachers on meaningful ways in which they can better foster literacy with tools that are only currently in limited use. Specifically, this means the use of Excel for projects, as well as more emphasis on tools, such as PowerPoint and movie presentations. This will also dually serve to promote creativity.

Designate Space for Efficient Use: Although the space is limited, the available space within the LCTM may be better leveraged with some innovative thinking and creativity. This would promote improvements in the efficient use of space, which would first and foremost entail

the creation of more quiet, individual study areas. This could be supplemented by assigning space for different purposes, including collaborative study areas and test-taking areas.

Promote Creativity: As formerly indicated, there was inevitably significant ambiguity around what creativity looks like in the class and a definite absence of faculty genuinely promoting creativity to an optimal level. In this regard, the LCTM support staff may facilitate a teacher seminar that discusses various ways of promoting creativity, utilizing the many learning commons resources as tools for expression, while offering teachers illustrations of potential curriculum ideas and ideas for projects. This will allow improved and more optimal use of the resources for fostering creativity.

Foster Social Development & Safe Space: Finally, future objectives should emphasize the use of the LCTM space for after-school activities, as well as possibly opening the space for students to enjoy after school hours, particularly for those who would otherwise be home alone.

Recommendations for Future Study

The evaluation of the LCTM thus far provided useful information that will be considered for program improvement planning. The areas for further study are the following:

First and foremost, a regular process for collecting data from students will add their perspectives about the LCTM, its benefits and areas in which it can be improved. Additional studies could look specifically at how effective the LCTM resources were at addressing the needs of students with different learning styles. For example, how do resources impact teaching, curriculum design, and the student academic outcomes? Within the context of this study, integrative learning was an effective aspect of the LCTM. However, this approach frequently took the form of multidisciplinary projects and technology integration into the curriculum. There was less information about the benefit to different learning styles or if certain learning styles

need to be represented more adequately within the resources available. Finally, evaluation is an ongoing process and should take place after changes have been implemented to gain future insights and explore improvements.

School leaders can explore LCTM implementation in other schools and exploring if the benefits realized within the confines of this case study are applicable in other environments.

Significance of the Work

Although the significance of this work can be seen in an immediate capacity within one particular school and the student/teacher population that comprises it, ultimately it is the creation, application and ongoing evaluation of innovative models, such as this one, that lead to transformation in the field of education and the ongoing generational benefit that comes from future classes of students, who are transformed because of it.

Conclusions

Prior to the completion of this study, it was proposed that the significance of this research would be found in its application and the subsequent implications related to a unique learning commons model within the field of education. It is evident in this setting, after careful examination and analysis, that this is the case. While the benefits realized are localized to one academic institution, there is potential for the same positive outcomes to be experienced by other schools. This work is significant in that it illustrates how teaching can change and transform instruction to reach more students, while also demonstrating how the ways in which learning is facilitated and curriculum is executed can evolve with the changing climate of today's society.

In addition, the findings of this study illuminate the many benefits of an LCTM for students. Although students were not sampled within this study, it is a logical assumption that enhanced teaching gives rise to improved learning and student outcomes would emerge as a

result of it. Therefore, the significance of this work is equally relevant to students, as it is to teachers, as students can improve academically as a function of the LCTM and its impact on teaching and learning. This expands their possibilities with future endeavors, while also allowing students to capitalize on the mastery of skills that can produce an improved quality of life from the realization of better occupational outcomes and opportunities (Bradley, 2013; Montroy et al., 2014).

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Appendix A. Interview Questions

#1. How often do you teach in the Learning Commons classroom?

#2. Have you facilitated inter-disciplinary projects in your classes? If so, can you characterize the role of the LC in supporting your efforts? (Integrative learning)

#3. Can you give me examples of ways you strive to integrate content within your lesson plans? (Integrative learning)

#4. What do you observe your students doing in the learning commons (i.e. using software, seeking research assistance, class-related activities, personal computer use, studying...)? (Fostering literacy)

#5. Do you directly address/instruct the types of skills necessary for conducting database searches? Software (i.e. Excel) that could be used on the job? Presentation tools, such as creating slides or movies? (Fostering literacy)

#6. Are students expected to use these skills (addressed in Item #5) in the course of completing assignments?

#7. Where and how do you support students' development of these skills?

#8. When you bring students to the learning commons, do they usually work alone, as part of a group or both? (Collaborative engagement)

#9. Do you structure learning experiences for your students that place them in small groups with peers or with adults? Where do those interactions take place?

#10 What does student creativity look like in your classroom? How do you support development/enactment of creativity outside the walls of your classroom? (Creativity & expression) Is "your classroom" the LC?

#11. The physical space of the LC is designed to support student-student and student-teacher interaction and mentoring. Can you give me examples of learning experiences you have observed that demonstrate this level of inter-activity? (Social development)

#12. How do students describe (to their teacher or staff person) the benefits or challenges of working independently on a project? Do they articulate the role of the computer or internet-based learning in those descriptions? (Knowledge building)

#13. Would you suggest any changes to the learning commons, in terms of physical space (i.e. more open group spaces, more study rooms, more individual workstations, social space, etc.)? (Efficient use of space)

14. Do you feel that using the learning commons enhanced your teaching with regards to technology and space? And, if so, how? (Enhanced teaching)

#15. What kinds of insights have you gained from using the LCTM (i.e. Policy learning, Organizational learning, Process learning, Experiential or Individual learning)?

Adapted from Yates & Cotton (2015); Bailey & Tierney (2008), Sridharan & Nakaima, (2011, p. 140).

*Adapted from Bailey & Tierney, 2008, p.153-155.