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Collaborative inquiry and the shared workspace of professional learning communities

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Title: Collaborative Inquiry and the Shared Workspace of Professional Learning Communities

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Abstract: Educators meet in collaborative groups to problem solve with the goal of improving teaching and learning. Professional learning communities provide a venue for problem solving through the collaborative inquiry process. In this process educators self-direct learning and transform pedagogical practices in the shared workspace. The shared workspace includes physical and intellectual interactions that shape educator learning. Findings from this ongoing case study point to positive collaborative physical interactions and intellectual discourse that lead to educator job-embedded professional learning through the collaborative inquiry process.

Purpose - The purpose of this article was to explore educator collaborative inquiry in the shared workspace and transformative adult educator learning in professional learning communities. Specifically, this investigation was part of an ongoing case study of well-established professional learning community collaborative interactions and self-directed learning of educators as part of the shared workspace as a component of school culture and school improvement.

Methods - A qualitative case-study design was used for this investigation. Participants were purposefully selected to provide qualitative data on existent, well-established PLCs and their practice as educators in the shared workspace. Qualitative data were collected about participant perception. Data were collected from each participant by conducting semi-structured interviews, observations, and the collection of document and artifacts.

Originality - Theories on school culture, professional learning communities and adult learning are unique in this article. The concept of adult self-directed and transformative learning theory have been well developed but not in the context of the shared workspace. Recent literature on effective collaborative inquiry teachers undergo in PLCs as a continuing professional development model provides a foundation for the work done in this on going case study. Sustained collaboration and continued professional development on teaching innovations as a product of the collaborative inquiry process in the shared workspace are underdeveloped as yet but further developed in this article.

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Introduction

General Introduction – Professional learning communities are part of a school's culture and part of an effort to improve teaching and learning in schools. Educators collaborate on their practice, leveraging a set of norms to solve teaching and learning problems in the workplace. The process of solving problems in PLCs is called the collaborative inquiry process.

There is much consensus on the characteristics of a professional learning community (PLC), but little consensus on what educators actually do in a PLC, in particular what educators do as part of the collaborative inquiry process to improve teaching and learning systems. A professional learning community is a group of educators gathered in the physical and intellectual workspace to critically reflect on their practice while collaborating on teaching and learning (Bolam, 2006; Carpenter, 2015a&b; DuFour, 2004; DuFour DuFour, DuFour & Eaker, 2008; Hofman & Dijkstra, 2009; Westheimer, 2009). Professional learning communities contribute to a school's collaborative culture (Deal & Peterson, 2009). In a collaborative culture, educators work together to solve problems while exchanging ideas on how to improve their practice through physical and intellectual interactions (Carpenter, 2015; Deal & Peterson, 2009).

The collaborative culture of a school is established by a set of norms of practice (Deal and Peterson, 2009). The collaborative inquiry process is part of the collaborative culture. Collaborative inquiry is when educators share common teaching and learning outcomes based on instructional practices and student performance (Leonard & Leonard, 2001; McLaughlin & Talbert, 1991; Reichstetter, 2006). Problems arise in schools when teaching does not necessarily lead to learning. When student performance does not match expectations for achievement, teachers must problem solve to determine what is needed to help students master learning objectives.

Data teaming and the collaborative inquiry process provide a platform for educators to evaluate teaching and learning. The process begins with educator goal setting. Goal setting leads to educator emergence with lesson plans, assessment of and for learning, teaching and learning experiences. Experiences further lead to assessment of teaching and learning effectiveness. Data gained from the assessment of teaching and learning effectiveness leads to remediated teaching and learning innovations. Educators meet physically and share intellectual discourse in a collaborative environment that emerges with remediated teaching and learning innovations. The sharing of intellectual discourse in the physical workspace is critical for the collaborative inquiry process to be effective (Carpenter, 2015). Few studies identify what teaching and learning activities emerge from data teaming and the collaborative inquiry process from PLCs.

In order for educators to share intellectual and physical experiences, educators must establish norms for discourse. In other words, for collaborative inquiry to be effective, teaching and learning innovations must be discussed openly and honestly (DuFour et al., 2008). Each member of the collaborative group must have equal voice in the outcomes of group collaborative interactions (Carpenter, 2015; Mezirow, 2000; Tam, 2015).

The purpose of this article is to explore educator emergence of teaching and learning innovations from collaborative inquiry process and therefore educator transformative learning in professional learning communities. This explorative investigation is part of an ongoing case study in schools. This exploration was completed as part of a long-term investigation of professional learning community collaborative interactions and educator self-directed learning as part of the collaborative culture in schools.

In this article, the author will continue to develop the connections between, 1) professional learning communities and 2) educator collaboration as a function of the shared workspace model, and 3) the collaborative inquiry as process.

The concepts, topics and processes built around educator job-embedded, contextually based professional learning and collaborative inquiry are unique in this article. The concept of the shared workspace and emergent teaching and learning innovations have been extensively explored by this author and it my hope that the exploration of the collaborative inquiry process will provide further data to help supplement the need for this model. Recent literature on what effective collaborative inquiry in PLC looks likes as a continuing professional development model provides a foundation for the work done in this on going investigation. Sustained collaboration and continuing professional development has a positive influence on teacher pedagogical innovation development and commitment to professional learning (Cordingley, Bell, Thomason, & Firth, 2005; Vangrieken, Dochy, Raes, & Kyndt, 2015) and therefore is in need for further development in the literature, as this article will provide.

Professional Learning Communities – School are defined by a set of collective norms and rules that control how a school functions (Deal & Peterson, 2009).

A professional learning community functions by way of a subset of those norms and has been defined as a group of educators gathered in physical and intellectual workspace to critically reflect on their practice while collaborating on teaching and learning (Bolam et al., 2006; Carpenter, 2015; DuFour, 2004; DuFour et al., 2008; Hofman & Dijkstra, 2009; Westheimer, 2009).

The workspace is the space educators interact to solve problems (Carpenter, 2015). The physical workspace are classrooms, boardrooms, meeting locations and other such meeting venue where adult educators physically meet to emerge with something neither could had achieved alone (Carpenter, 2015; DuFour, 2004). The physical workspace may also take on the form of a technology application such as Lync, Skype, Zoom or other similar Web 2.0 meeting platforms, where educators can meet physically through digital media to collaborate on their practice.

The intellectual workspace is the interaction between educators by way of intellectual discourse, discussions, collaboration of practice, and the ideas educators share through reflection, discussion and dialogue when meeting in the physical workspace to produce something neither could had achieved alone (Carpenter, 2015; DuFour, 2004).

For the purposes of this article, collaboration will be defined as the condition that occurs when two or more educators interact to solve a problem in a formal and or informal school environment (Freeman, 1993).

The collaborative culture in schools are systematic norms and processes of practice educators participate in while working together, interdependently, to analyze and impact professional practice to improve results for their students, their team, and their school (DuFour et al., 2008; Freeman, 1993; Lawson, 2004; Rone, 2009).

The primary outcome of collaboration is the act or process of “shared creation” through discovery learning, and involves the creation of something new by doing something different (Thomson & Perry, 2006; Vangrieken, Duchy, Raes & Kyndt, 2015). Thomson & Perry (2006) state that collaboration occurs over time as educators interact formally and informally through interactive sequences of negotiation, development of commitment, and execution of that commitment to learn about their practice.

For collaboration to be successful, educators must perceive their skills, knowledge and experiences will be respected and their contributions will be valued (Gosselin, Levy & Bonnstetter, 2003). Gosselin et al. (2003) suggested collaboration satisfy several key characteristics in order to be effective. Collaboration must be voluntary, based on parity of equal value, require shared goals, shared responsibility for decision making, shared accountability for outcomes, require shared resources and to be emergent.

Educators involved in job embedded collaboration can transform their practice by adapting more innovative pedagogies (Beetham & Sharpe, 2013) in professional learning communities where physical interactions can happen and intellectual discourse may become possible. Kelchtermans (2006) conceptualized teacher collaboration as a working condition embedded in the culture of a school. Individual differences, diversity of goals, conflict, the use of informal power and the infusion of individual interests influence the adaptation of innovative pedagogies in the workspace (Fulton & Britton, 2011; Kelchtermans, 2006; Vangrieken et al., 2015).

For educators to be effective collaborators, they should be formed into disciplinary and/or interdisciplinary teams, horizontally and fixed by subject and or grade (Katzenback & Smith, 2005; Supovitz, 2002; Vangrieken et al., 2015). Fixed teams should work together to investigate student achievement results and based on results intellectually and physically share teaching and learning activities to improve their teaching and learning practices. The concept described is called the collaborative inquiry process and is how problem-solving are solved by educators in professional learning community groups.

Job embedded collaborative inquiry and the shared workspace are how and where educators interact and direct their learning. Educators may then transform current teaching and learning practice to new and emergent innovative practices that improve student achievement. The job embedded improvement process is the cornerstone of a functional professional learning community and connects school improvement with the collaborative culture. Moreover, the collaborative inquiry process is what teachers should do in professional learning communities. In other words, job embedded

collaborative inquiry in the shared workspace is what, how *and* where educators exchange teaching and learning innovations, adapt their instruction through collaborative interactions, should be emergent of shared ideas and work to improve student achievement (Friend and Cook, 1997; Gosselin & Bonstetter, 2003; Martin, 2014; Muijs, Ainscow, Chapman & West, 2011; Tam, 2015).

The shared workspace and collaborative inquiry process are an organic part of a professional learning community and the collaborative culture of a school. Collaborative inquiry practices are when and where educators work together effectively and emerge from the workspace with innovative teaching and learning products each can use in their classroom. Shared intellectual workspace requires effective collaboration between all participants of a professional learning community. Intellectual interactions provide opportunity for educator discourse, where discussion and therefore for effective collaboration become possible. The shared intellectual workspace and effective collaboration should meet criteria to be effective: 1) share goals and responsibilities for a task, 2) share commitment to task completion, 3) inclusive membership to the team (a PLC group), 4) need one another for task completion, and 5) emerge with task interdependence (Vangrieken et al., 2015). The intellectual workspace discourse may then spill over to the physical workspace as educators interact as a team to complete tasks interdependently and produce innovations as learners of their practice, transforming pedagogy as an emergent task in the collaborative inquiry process.

A functional collaborative group establishes the intellectual rights of individuals to be heard and should also provide a platform for diverse views to be shared (Carpenter, 2015b). The voice of each participant in a collaborative group must satisfy several key attributes in order for the common workspace to be effective. A functional professional learning community will have the voice and intellectual attributes of each member.

The physical and intellectual workspace of the collaborative culture must meet several key characteristics to ensure a functional professional learning community (Carpenter 2012; Carpenter, 2015; DuFour et al., 2005; Leonard and Leonard, 2001; Martin, 2014; Nelson et al, 2010; Stoll et al., 2006; Smith, 2014; Tam, 2015; Talbert, 1991). The five characteristics of PLCs proposed by the summative literature are as follows:

1. Shared-leadership and decision-making – The shared workspace must include a shared leadership structure. Shared leadership and decision-making are critical to the shared workspace dynamics, where educators are collectively empowered as co-leaders in setting the direction for teaching and learning. Without shared leadership there can be little to no self-directed and or transformative learning by adult educators.
2. Collaborative inquiry – The shared workspace includes problem solving by educators to determine effectiveness of teaching and learning given student achievement. The shared workspace is the collaborative space educators leverage to collectively consider data, plan teaching and learning, share ideas and set direction for teaching and learning experiences. The collaborative inquiry process is how educators solve problems in a PLC with the intent on collective transformative learning about teaching and learning.

3. Shared practice – The shared workspace provides opportunities for educators to share teaching and learning practices based on student achievement, goals, and the direction of the collaborative inquiry process. Shared practice is key in the transformative learning process as educators share pedagogical practices, providing opportunity for transformative learning by each PLC member and emerge with teaching and learning innovations.
4. Accountability for outcomes – Educators in the shared workspace have an acceptance of the need to be accountable for outcomes of the collaborative inquiry process where student achievement and the direction for teaching and learning are shared. With accountability, educators collectively decide what will be measured from transformative learning about their practice in PLC interactions that lead to the emergence of teaching and learning innovations.
5. Evolving relationships - Evolving personal and professional relationships between educators impacts practice in the shared workspace. Trust, shared beliefs of practice and shared values for outcomes evolve as the depth of relationships increase over time. Moreover, the shared workspace provides opportunities for rich, deep professional relationships where educators interact through discourse and conflicting values and beliefs are shared in a respectful, mutually caring way.

In this investigation, the shared workspace and collaborative inquiry process was explored in context to well formed PLCs in schools as part of the school culture. The overlap between the collaborative inquiry process, the physical and intellectual interactions are finely engrained in the collaborative culture and the professional learning community in schools. The concept of the shared workspace is provided by an overlap between the collaborative culture and the work done by teachers in a PLC, thus providing a framework for the investigation of exactly what educators collaborate on, what teaching and learning innovations emerge, and therefore what is taken from the PLC and leveraged in teaching and learning given educator interactions (Leonard & Leonard, 2001; Shank, 2005; Smith, 2014), and therefore the need for this investigation as we focus on collaborative inquiry.

This article explored the collaborative inquiry process at five schools, asking:

1. What did collaboration look like in the PLCs at each school?
2. To what extent did educators do the collaborative inquiry process in the PLCs at each school?
3. What were the implications for educator collaborative inquiry on the effectiveness of the PLC at each school?

At each school, the collaborative culture, the professional learning community and the collaborative inquiry process were parts of the school culture. This investigation was conducted to explore the experiences of educators and as a product to that the structure and function of educator shared workspace, collaborative inquiry processes and the collaborative culture in professional learning communities of participating schools. The investigation was conducted using qualitative methodology. It was the intent of the investigation, as part of an ongoing investigation, to identify what educators

do in schools as part of the collaborative inquiry process in PLCs. It was not the intent of this study to provide a treatment and therefore change what educators did in PLC. The intent of the investigation was to explore educators working together in well-established PLCs (Bolam et al., 2006) and determine what practices emerged as teaching and learning innovations from educator collaborative inquiry process interactions and what educators do in PLCs that may lead to transformative teaching and learning practices. Given the current state of the literature on defining job embedded professional learning communities and the collaborative culture, this investigation provides a much needed source of information and exploration on what educators emerge from PLCs with in terms of teaching and learning innovations based on their interactions in the shared workspace.

Method

Qualitative data were collected from and about each participant to investigate perceptions and practices of the lived experiences of educators working in schools as part of the collaborative inquiry process. Educators work in PLCs in schools as part of their school culture procedures needed for the improvement of their practice.

As an educator and researcher working with schools for greater than twenty years, PLC practice at schools have provided opportunities for interactions with educators in and beyond the context of this research. The work done in schools was epistemological, and therefore was a reflection of my subjectivity as an educator and researcher in participating schools (Rebold, Lammert, & Stribling, 2013). The relationship negotiated at each school and with each educator was complex, but rich with information regardless of my personal foundation as a community member and educator.

Specific qualitative exploration of the collaborative inquiry process undergone by educators, the shared workspace, and the impact of PLCs on educator collaborative culture have yet to reveal what teachers collaborate on and how the physical and intellectual collaborative interactions impact teacher practice. The overall importance of this investigation is in the establishment of what teachers do in PLC, specifically in the collaborative inquiry process as a function of the shared workspace. The ongoing investigation of the shared workspace continues to reveal both physical and intellectual interactions between educators working together in PLCs and the emergence of teaching and learning innovations. This research study was developed to investigate the collaborative culture and detail what practices educators develop and further implement as pedagogical innovations through the shared workspace and the collaborative inquiry process.

Participant Selection – Sixty educators were purposefully selected to provide qualitative data on existent, well-established PLCs and their practice as educators in the shared workspace. Teachers worked in one of five different schools in three different communities. Educators and as a product of that, their schools, were selected to participate in this study because each had well established PLCs (Bolam et al., 2006). Educators were purposefully selected because each provided a unique and rich source of information (Creswell, 2013; Stake, 2010) about the collaborative inquiry process. Qualitative data were collected from each participant to investigate perception and

practice about the collaborative inquiry process as part of their PLC and collaborative culture at their school. The total sample size provided data saturation and therefore trustworthiness of data (Lincoln & Guba, 1985).

Sampling and Data Collection – Data were collected from each participant by conducting an initial semi-structured interview. PLCs were observed initially to collect data on the collaborative inquiry process as a function of the PLC and shared workspace. Data was collected in the form of observations, document and artifacts from educators work in PLCs and then from classroom teaching and learning experiences. A short follow up semi-structured interview was completed with each participant to ensure trustworthiness of the initial interview, observation of the PLC, observation of the classroom and the collection of documents and artifacts. The process of interviewing, observing PLC, observing teacher classroom practice, collection of documents and artifacts and follow up interviews were repeated three more times for each participant over the duration of a school year. The researcher assumed the role of interviewer and observer role by conducting all interviews and attending PLC meetings, discussions and collaborative interactions in and out PLC meetings.

Semi-structured interview protocols were designed based on the literature about PLCs, and the collaborative inquiry process in the shared workspace. The interview protocol was developed to obtain information about PLC collaborative inquiry process and practice, school culture and the key characteristics and attributes described herein. Observation and follow up interview protocols were developed using the same thematic literature review.

Data Analysis – Data analysis and data collection were simultaneous activities in this study (Merriam, 2009). Interviews were audio recorded and transcribed verbatim using qualitative techniques (Creswell, 2013; Creswell & Miller, 2000; McMillan & Schumacher, 2009; Stake, 2010). Content analysis methodology was leveraged to code the data. Content analysis is a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh and Shannon, 2005). The process of coding through qualitative data reduction and sense-making takes volumes of qualitative material and attempts to identify consistencies and meanings (Patton, 2002) through reduction.

Interviews were transcribed, coded, and then developed into themes. Interview transcripts, codes and themes were checked for trustworthiness through member checks (Creswell & Miller, 2000; Miles & Huberman, 1994). Initially, themes were found based on the literature and reading: collaborative inquiry, professional learning communities, and shared workspace. Follow up reading from member checks provided sub-themes within themes. Themes and sub-themes were then provided in follow up member checks based on transcripts, codes and themes.

Persistent observations and field notes from PLCs provided documents and physical artifacts for data, categories within each theme using elements of shared activities, collaboration, collective inquiry, school culture, professional learning communities, and

shared workspace for trustworthiness measures of sub-themes. Persistent observations further provided credibility (Lincoln & Guba, 1985).

Follow up interviews went through the same set of verbatim transcription, coding, theme, member checking, and sub-theme development. Transcripts, codes, themes, and sub-themes were provided to participants for follow up member checking to ensure authenticity and trustworthiness of data.

To ensure qualitative data validity and trustworthiness of the data, several methods were used. The credibility of the data was established through a prolonged engagement with participants in the field and by the use of data triangulation by collecting multiple methods of data collection, such as observations and interviews (Merriam, 2009). Peer debriefing was applied. Peer debriefing was performed in the interview process as the researcher paraphrased the interviewees' idea to refine and interpret meaning. This process was used to confirm interpretations and coding decisions including the development of themes, sub-themes and codes.

To ensure transferability the researcher employed thick rich descriptions of the context of the study as well as the activities of the participants seen through direct observation (Lincoln & Guba, 1985). Dependability was established through triangulation of data from multiple sources as well as the use of an audit trail (Erlandson, Harris, Skipper & Allen, 1993). Conformability was established through two measures: an audit trail and the researcher reflexive journal (Lincoln & Guba, 1985).

Findings – Themes are found in **bold** and sub-themes in ***bold italics***.

1. The first research question addressed what collaboration looked like in a PLC at each school. Several themes emerged from the interviews, observations and artifacts. Sub-themes are noted in paragraphs by bold and italicized words.

PLC structure theme – Each school and all educators described their PLC as a whole school effort. Each educator belonged to a school PLC, a departmental PLC (science, social studies, language) and a subject PLC (sub-PLC such as biology, physics, chemistry, history, English literature, etc.) based on their assigned teaching schedule. Educators at each school met in their sub-PLC once per week on average. Three of the five schools offered some sort of training on PLC structure and function. Two of the five schools offered training on collaborative inquiry. One school called the collaborative inquiry process "data-teaming" to promote the idea of teachers working from data to plan instruction within the collaborative inquiry process. The schools that provided training used PLC and data teaming books to support their practices in PLC meetings.

Sub-PLCs at schools lasted about an hour and had an agenda to follow. The agenda was either created by the educators in the sub-PLC or provided for them by the school administrative team. The PLC structure was established each meeting by the ***PLC meeting agenda***. The agenda at each school began with a general opening to cover what was on the agenda (reviewing previous meeting, new business, assessment results, pedagogical discussions, next steps).

Discussion, interaction and progress toward agenda outcomes in PLCs varied greatly.

- *Positive Interactions* - Schools that had educators in sub-PLCs construct and execute their own agenda addressed each part of the agenda. Participation by each sub-PLC group member had great parity in these schools. The ***sharing of ideas***, ***a sense of team*** and ***equal participation*** were sub-themes that emerged. One participant stated:

> *We make the agenda based on what needs to get done. There is no sense on us meeting if we can't share ideas and learn something from each other.*

The structure of the PLC was provided by the meeting agenda. Educators that developed their own agenda collaborated (physically and intellectually interacted with achievement data and pedagogy) more so than educators that had the agenda provided to them by administrators. Educator created agenda grouped participated with much greater parity in that each participant was on time and spoke equally during meetings. Three of the schools participated in this structural system and thirty-five educators were active participants in the collaborative inquiry process at some point. Interestingly, the schools that participated in educator constructed PLC structure also had educator initiated inquiry structure.

> *I get so much out of discussing things with my peers. We have so many smart teachers in this school. It seems like it would be a wasted opportunity if I didn't speak up.*
>
> *We all collect data from assessments we give, common assessments. The data helps shape our conversation so we can decide what we want to do next.*
>
> *Our structure is quite simple. Construct a common assessment, administer it, look at the data and figure out what to do next.*
>
> *Sometimes the "what to do next" is something new and sometimes its something someone has tried before. Either way I think what we are doing is innovative because we remediate our students to get them to mastery, whatever that might be.*

Two of the schools required teachers to ***document*** their collaborative inquiry process within the common workspace. The sub-PLC documentation structure for all three schools consisted of an assessment construction, an administration of the assessment, a review of the data from the administration, documentation of the data, discussion and dialogue of the implications toward pedagogy and a review of next steps. This is not to say that all PLC groups did each one of these steps, but on average PLCs did most of these steps.

> *I think the documentation is good. We have to know where our students are and where we want them to be. Documentation just keeps track of things so we are moving along and not spinning our wheels.*

- *Negative Interactions* - Schools that had the agenda provided by administrative leadership teams deviated greatly from the agenda. Educators either worked on the agenda or did their own personal work, ignoring PLC participation in light of needing to ***complete their own work***. When questioned about participation one participant said:

I don't participate in these meetings because none of what we are doing is relevant to me. These meetings produce nothing of value for my students or me.

Educators that had the agenda provided to them collaborated much less. The agenda structure decreased collaborative efforts and diminished self-directed learning. Since fewer educators participated in the PLC collaborative efforts, the PLC was non-transformative to their practice.

I don't want to say that I can't learn something new, because that's not it at all, but telling a bunch of educated people what to do when you aren't in the classroom with us isn't right.

Why do I need to talk to people that just want us to report stuff? Whatever we are talking about has no bearing on my teaching or my student's learning. It's quite frustrating.

I do what I do with my students. I think I am pretty good at what I do. I have been doing it a while now and I don't see a need to change something that isn't broken. These meetings, the agenda and contrived conversations are a waste of time that could be spent working with students one-on-one.

Schools that participated in this practice also had a greater ***top-down leadership*** structure. The schools also required educators document their progress on the agenda. Educators that participated in this process were ***resentful*** of educators that did not participate (***un-equal participation***) and treated the agenda and associated documentation as a chore and check off list of a task needed for completion of the PLC meeting. Once educators finished with the provided agenda, they quickly left the room or attended to their own needs instead of focusing on the structure and problem solving nature of the PLC. There was little accountability to the shared workspace by all educators in the meeting.

Its OK if leadership wants to tell us what to do, everyone has a boss to report to. I just don't see the value in it.

I do the reporting because no one else will. Meetings are just about getting that reporting done. Other than that I don't care about our meetings.

I feel like two of us do all the work. Some people just come in and work on their own and we don't ever talk OR share ideas.

There was no sub-PLC structure for these schools. Educators had a ***common assessment***, gave their data to one person who recorded the data as a matter of fact. There was no collaboration and little discussion on pedagogical innovations.

I give a five item common assessment we all came up with, but I don't really use it for anything. One of us records it in the spreadsheet and turns it in to the administration for their review. Not sure what anyone uses it for. Other than that, that's all we do in PLC.

We don't have a process so-to-speak. We just meet and go over what we will be teaching for the next week.

2. The second research question addressed how educators do the collaborative inquiry (problem solving of a task) in PLC at each school. Several themes emerged from the interviews, observations and artifacts. Themes are noted in **bold** and sub-themes are noted ***bold italicized*** words.

Collaborative inquiry theme – The most common sub-theme to emerge from interviews, observations and review of artifacts was the ***use of data***. Data was used in some way in each PLC at each school. How the data was used differed by the positive and negative interactions discussed in the previous theme.

Teachers associated inquiry with ***problem solving*** and the first step in the problem solving or collaborative inquiry process was to look at student data. Therefore problem solving at each school began with an observation of student data from achievement scores. The problem solving nature overlapped data so much so that they were synonymous with the first step of what teachers saw as problem solving.

If we are to solve any problem in our PLC it had better start with what our students know. The only way to express that is with their data.

The next step in the inquiry process varied based on positive and negative interactions. Schools and PLCs that had positive interactions because of ***equal participation*** in the collaborative process asked questions about their data within the PLC (what does the data tell us, what should we do next because of the data, etc.). The PLCs then had in-depth discussions about what to do next with teaching and learning and thus the emergence of innovations from the shared workspace.

The process of educator PLC mutual assessment construction, mutual data collection, mutual reporting of data, equal participation in discussion about next steps were what most educators viewed as the problem solving, collaborative inquiry process. The implementation of this process varied greatly based on shared leadership and teacher perception of equal participation in and out of PLC meetings.

We look at our student's data and let it attack our instruction.

Our students perform where they perform. It's hard to look at that and compare with my colleagues because sometimes its humbling seeing how much better someone did than me. But looking at the data then comparing to my colleagues is what leads to a good discussion of what to do next.

I love the discussions about what we are going to do with the data after it has been collected. I am in my fifth year teaching and I learn so much from these people. I like coming up with creative ways to reteach so we can keep going forward in the curriculum. I also love learning how to capture their remediation because that too is creative teaching.

The sub-theme ***what to do next*** appears repetitively in both positive and negative interacting PLCs. The collaborative inquiry process itself was missing the data rich conversations in negatively interacting PLCs. The more individualism in these groups decreased collaboration and as a result decreased collective emergence of what to do next.

> *I know other teachers in the community and talk to them about their PLC experience. I want my PLC to be like theirs, but no matter how hard I try to work with people, there is just too much resistance.*
>
> *I guess more important than anything is after I record these data, I look at my own stuff and figure out what to do next. Since we are required to have common assessment, we have to make sure that we are all on the same page there.*

The sub-theme ***collaboration*** appeared in each PLC. Educators associated collaboration with discussion, interaction, equal participation and emergence. The sub-theme ***equal participation*** appears relatively and is directly linked to ***emergence***.

> *When we collaborate effectively, we work together and as a result take ideas back to our classroom from our meeting. From there we have to try it out, collect more data and report back.*
>
> *Sometimes I share an idea in our PLC meeting and others will take it, we will adapt it to what others have tried and it turns into something completely different. I love that because it forces me to try something that I have never done before. It's a little nerve racking because I never know if I can pull it off with my students.*
>
> *I guess no matter the PLC meeting and who participates, I come out of it with something. Sometimes it's only a document for reporting and sometimes I have an epiphany that I should be trying something different.*

A sub-theme that emerged from observations was collective ***deliberation*** in the collaborative inquiry process. PLCs that were emergent constructed common assessment, common data on their students, reported the data back to the PLC group and then deliberated with their PLC on ***what to do next***. Interestingly enough the deliberation process always began with one participant in the PLC questioning the data or questioning the validity or reliability of questions and practices. The deliberation process was important because it forced dialogue in the collaborative inquiry process, thereby making it MORE collaborative.

The ***what to do next*** subtheme was directly linked to the ***emergence*** subtheme. As educators entered into the collaborative inquiry process, each had expectations. When their expectations were met, the collaboration led to what to do next and the collaborative inquiry process was then emergent with shared activities. The shared emergent activities included common assessments, common teaching innovations, common PLC expectations that required further inquiry at future meeting times. The emergence subtheme, and the what to do next subtheme aligned with shared practice. The most common emergence described by educators was shared practice

(assessment, teaching innovation, learning activity, etc.) each educator would attempt in future class sessions with students.

> *I can tell when we are all on the same page because we share data from an assessment and decide what to do next. From that we make something the students will use, or better yet, one of us says "I have done this in the past…" and we adapt it for what will work for each of us.*

> *Taking a teaching or learning strategy from the PLC is the best part. I love teaching so much that when I can get something from my colleagues and make it my own for my students, that is when I really feel I have learned for the day.*

Educators discussed shared goals as an emergent activity from the PLC collaborative inquiry process. Shared goals were described as something the PLC collaborators mutually agreed was needed. Shared goals were something every teacher in the PLC stated was important to be accomplished in order for the PLC meeting to be effective. Shared goals were recorded in the meeting minutes and the following meeting revisited.

> *The goals we make together give us focus in what we are supposed to be doing when we meet for the PLC meeting.*

3. The third research question addressed what the implications for educator collaborative inquiry on the effectiveness of the PLC were. Several themes emerged from the interviews, observations and artifacts. Sub-themes are noted in paragraphs by bold and italicized words.

Shared Workspace Theme – The most common subtheme in the shared workspace was the ***intellectual contribution*** of each participant. The intellectual contribution of each educator in the PLC was viewed as important but how much intellectual contribution in the PLC work varied based on positive or negative interactions between educators in the shared workspace. The intellectual contribution was viewed as a must in positive interacting PLCs. Each PLC member expressed the need to contribute to the work of the PLC collective and thus the intellectual contribution was viewed as equal from each participant.

> *I really like to hear what my peers think. I want to know what others are doing. It makes me think about how I do things.*

> *When we work together, one person talks and we all listen. It's a rich environment for everyone to think about what they do given what one of us says.*

> *We each get to think about what we do. It's a great opportunity to really think about things as a group and as an individual.*

> *I think we each contribute intellectually to the group. Each of us has our strengths and sharing those during our collaborative PLC meetings helps us come out with something we can all use and then report back.*

Our discussions make us think. For me personally, the dialogue we have really makes me think about what I do and what I might need to try with my students so they reach mastery.

The negative interacting educators in PLCs viewed intellectual contribution as important, but since the agenda and inquiry process were dictated to them from a top-down management structure, there was less intellectual contribution by each member. Interestingly, the greater intellectual contribution in these groups equated to a greater work and a greater level of frustration at the lack of participation intellectually for the PLC by members that chose to not participate.

We don't really have time to discuss our teaching or student learning.

I am not sure my colleagues want to think about what I do or reflect, discuss or share ideas on what we can do to figure out why students aren't achieving.

Educators stated that the physical and the intellectual contribution of each member as equally important to the emergence of work from the PLC. The greater equality in contribution, the greater educator perception was for effective collaboration. The greater perception for effective collaboration, the more ***shared accountability*** each member had to the collaborative inquiry process and the emergence of a pedagogical innovation each educator took from the PLC and tried with their students.

We all have to be accountable for our student's learning. When we have a common assessment it allows us to share that information in a meaningful way with respect to our teaching and our student's learning.

Our school is part of the community. We all share accountability for student learning. Sharing ideas with my peers is one way I can be better for my students.

Problem solving is hard as a group, but collaborating on how to go about it makes it easier. The end goal should be to help our students be successful and so figuring that out together is what makes this difficult.

Shared decision making was a common sub-theme that emerged from this theme. PLCs that shared intellectual and physical contribution also shared decision making on ***what to do next*** from the collective data each contributed. Physical contributions varied according to educator skills and abilities and relative comfort level with task completion. Some educators felt more comfortable in their ability to type out what others were saying in the meeting (ie, keeping meeting minutes), while other educators collected data from group members for reporting purposes. Some educators took leadership roles by facilitated discussion that ensured shared goals, accountability and equal contribution to the collaborative inquiry process in the shared workspace.

I think that what has changed for the better in PLC is that the PLC is the unit of leadership for the school. We are accountable to each other instead of being accountable to our administration.

Making decisions for each other's teaching and student learning is important, but what has really grown from all this is how every teacher shares in how the school gets better because every student gets better. Teachers have a voice in the leadership of the school and that has really made the school a better place to be.

The intellectual contribution was the greatest obstacle for the negative interacting PLCs. The isolation created by top-down management stipulation on how the PLC were done created resentment between and within groups of educators. Limitations placed on physical contribution and therefore the lack of participation decreased the overall intellectual contribution. Limitations therefore decreasing collaboration in negative interacting educators in these PLC groups. Since there was no parity in physical or intellectual contribution, there was no shared goals, shared practice or shared accountability to the emergence of something PLC group members could use. These observations emerged from educator PLC meetings as well as from interviews.

I love my colleagues, but just because we meet together in the same room doesn't mean we are going to collaborate. There has to be buy-in from teachers about how to collaborate, share ideas and leverage on another's expertise.

The sub-theme ***voluntary contribution*** appeared quite a bit with educators in this theme. Several educators described the need to learn about their practice from student scores, but also said that collaboration seemed forced. When questioned further, they described forced interaction as a top-down stipulation on interacting and therefore the physical contribution was superficial to serve those ends and not the ends of the participating educators. Forced interaction resulted in less collaboration and therefore a decrease in intellectual contribution.

Sometimes PLC sharing seems forced and that is when people resist the most.

If my colleagues want to collaborate, share ideas, and think about their teaching, it has to be voluntary. Sure structure to how PLCs are done is important, but in order for my PLC to be productive, everyone has to respect each other.

I really do want to learn about what I can do to get better as a teacher but I can't have someone tell me exactly how to do that. I am a scientist and part of being a scientist is making observations, exploring that data and figuring out what it all means.

We are all adults and we need to have our conversations and contributions to be valued, heard and appreciated by everyone, including administrators who aren't even in our meetings.

Shared workspace was described by educators to have both intellectual and physical components. Educators described meeting locations, usually an office, classroom, meeting room or some form of mutually agreed upon location. Sharing a physical space to work guaranteed the meeting but not the intellectual discourse required to emerge with common goals or practice. In some situations, the physical workspace was a digital environment. Several educators described the use of internet-based applications as the physical workspace for some PLC members.

I teach a human anatomy class. In this school I am the only person that teaches it. Our school district has teachers at other high schools that also teach it so we just Skype in and share our data that way.

Instead of wasting time getting to another school to meet with other teachers in my PLC, we Skype in together and use that to collaborate.

The physical workspace was described by all educators as the physical meeting, where each member brought materials to share. The intellectual workspace was also described by all educators as a sharing of ideas through discourse. Both the physical and intellectual pieces were described as equally important to the function of the PLC.

The function of the PLC was defined as a collaborative group of educators working together to share practice and improve the teaching and learning of students, teachers and the school as a workplace. The function of the PLC and each educator was to emerge from the PLC with products they could use in their classrooms, with students. Products were described as teaching innovations (hybrid practices), common assessments (selected response assessments, rubrics), and mutually agreed upon goals to focus on for the timeframe between PLC meetings.

Discussion –

The purpose of this article was to explore educator collaborative inquiry in the shared workspace in professional learning communities. Specifically, this investigation was part of an ongoing investigation and exploration of well-established professional learning community collaborative interactions and self-directed, job-embedded professional learning of educators as part of the shared workspace and the improvement of schools.

The concepts of professional learning communities (Bolam, 2006; DuFour et al., 2008) and the collaborative culture (Cordingley et al. 2005; Vangrieken et al., 2015) are part of the way educators interact in schools. While the literature has been well developed in these concepts, what has been missing is a model that blends them with educator learning (Carpenter, 2015).

In this article and the study presented herein, the author investigated teacher interaction and the collaborative inquiry process educators undergo as a part of their professional learning community and shared workspace. The fact that professional learning communities and school culture intersect has provided opportunities for investigation of what PLCs are and how they fit within the culture of a school (Jackson & Temperley, 2006; Lam, 2005; Phillips, 2003; Strahan, 2003; Vescio, V., Ross, D., & Adams, A., 2008). The characteristics of a professional learning community, the perceptions of educators that work in PLCs and the fit a PLC has schools have been investigated extensively over the last decade (Kiburz, 2011; Lomos et al., 2011; Oliver et al., 2009; Roberts, 2010; Wendell, 2010). What has been missing in the literature is a model that outlines and describes how educators interact, how educators solve problems and how the collaborative inquiry process provides successful emergence of teaching and learning innovations (Carpenter, 2015).

Educators are also learners of their practice (Brookfield, 1995; Knowles et al., 1998). Schools are learning organizations that provide learning for students, but also provide opportunities for educators to learn about their practice in order for the school to improve as an organization (Fullan, 2006 & 2015). In order for the school to improve, educators must work together in the workplace to improve their practice. Educators learn about what works in teaching and learning while also learning about what does not work. Educators learn through self directed, reflective learning processes. From self-directed learning, educators find ways to improve teaching and learning for their students. Improved teaching and learning transforms through the emergence of educator findings in the collaborative inquiry process that takes place in PLC and therefore develop and implement innovative teaching and learning strategies for their students respectively.

Since educators are learners in the workplace, they must be able to self-direct their learning in professional learning communities, reflect critically about their experiences and learning from student achievement results, experience learning as part of the teaching and reflection in PLC, as a result of their collaborative inquiry together, appreciate learning to learn (Knowles et al., 1998; Knowles et al., 1998; David, 2008; DuFour et al., 2009). This transformative process of learning has physical, intellectual and constructivist components that summate into learning through the collaborative inquiry process (Petraglia, 1998; Rahman, 2012).

In order to determine how learning takes place in PLCs as part of the collaborative inquiry process in schools, this researcher has been conducting an on going investigation in and with educators in PLCs. As an educator and researcher, submersion in PLCs with educators has not been difficult. What has been incredibly challenging has been remaining objective as an observing researcher. Primarily because when observing educators working collaboratively in PLCs, schools and educators vary greatly in the implementation of the PLC model. These fluctuations in the implementation of the PLC model greatly affect how teachers collaborate, buy in for collaboration and therefore affect the collaborative inquiry process. Inconsistencies in the application of the PLC model to fidelity has further resulted in differential applications of adult learning and transformative learning theory outcomes from the collaborative inquiry processes. The observations and interviews completed over the last several years of investigatory work has lead to school and educator questions about how PLCs should be done and what they should change in order to get the most out of their work. As an educational leader, helping to provide solutions while this study has been ongoing creates potential threats to bias. Therefore, to suggest this research is completely free from bias would not be logical. Rather, stating that this research has been done in the presence of potential bias as this researcher is submersed in schools is critical to the generalizability of the findings from this investigation.

The continued investigation of educator interactions as part of the PLC process has been rewarding and incredibly frustrating. The collaboration inquiry process is not an exact science. As educators interact in schools about their practice in the physical locations of schools, usually once per week, intellectual conflict arises. Collaboration in itself is a process of sharing intellectual discourse and weighing merit of practice based

on experience. Since no two educators have the same experience, differences arise. Sharing differences reveals personal vulnerabilities most adults have reservations revealing. As such, permitting educators to interact as learners, building the PLC team and freely discuss their practice has been critical to this process.

The first research question was intended to help better visualize and potentially understand how educators as learners perceive their collaboration in PLCs and therefore reveal some commonalities within and beyond the literature to best support the workspace model proposed here. Throughout data collection, the researcher attempted to capture what PLC collaboration *looked like* and therefore how it may contribute to the collaborative inquiry process that was a function of educator deliberation in PLCs. Literature on PLCs in schools around the world has provided a foundation for what PLCs should look like, but little work has been done in schools to reveal what educators actually do in PLCs and its implications to their practice. Moreover, collaboration in PLCs has been established as the cornerstone to improvement both instructionally and at a school improvement level.

Educators commonly referred to collaboration as being *controlled* or even *dictated by* the structure of their PLC. Educators participating in this ongoing investigation and exploration stated several times that the PLC structure was dictated by the agenda and therefore what they shared intellectually in the physical workspace. As a product of the agenda for the physical meeting, educators worked toward some common goal and expectation for teaching and learning, whether dictated by top down leadership or by PLC team self-direction. Educators shared ideas and as a result of equal sharing each reflected on their practice and then projected potential teaching and learning innovations. Educators documented their assessment outcomes, charted their prior teaching and learning experiences, projected new teaching and learning innovations and did so as a team. Educators that effectively collaborated in the inquiry process transformed their practice because of the positive physical and intellectual interactions in the PLC meeting that served as the workplace for their learning.

In this investigation, positive functioning PLCs had educators directing their learning, documenting their practice and collaborating as teams of educators on ways to improve their practice. Educators in PLCs also described higher degrees of motivation for task completion and teaching innovation emergence as a result of their self-directed learning, therefore making the collaborative inquiry process a transformative learning experience. The concept of shared leadership (Carpenter, 2015) has been well described as a much needed process to ensure the facilitation of professional learning in schools and as such played an important role in the failure of schools that could not get educators to collaborate effectively. With a shared leadership structure, educators controlled their collaboration resulting in more shared physical and intellectual contribution in PLCs and greater productivity of emergent teaching and learning innovations.

Negative functioning PLCs did not provide a shared leadership structure and as a result a low functioning collaborative inquiry process and little adult self-directed and transformative learning. In negatively functioning PLCs, educators in this investigation expressed frustration at top-down management of the PLC process and therefore a

micro-control on teacher collaboration. Administrative control on educator interactions prevented intellectual discourse and as a result there was little to no educator self-directed learning and little to no transformative learning of their practice.

The second research question addressed how educators do (or complete) the collaborative inquiry process. Educators, PLCs and schools commonly interchanged the collaborative inquiry process with the words *problem solving*. Problem solving for educators and PLCs took on an action research approach where educators entered into the problem (the inquiry) with data from student achievement. The data was leveraged in the physical workspace of the PLC to deliberate the effectiveness of the assessment, the effectiveness of teaching and learning, and the potential need for teaching and learning innovations.

Problem solving in PLCs and therefore the collaborative inquiry process was not documented with action research questions, theoretical frameworks and literature review, methodological designs to address the research questions, data collection and organization and or discussions of implications of the findings. Rather, the problem solving and collaborative inquiry process began and ended with data in a cyclical fashion. The lack of literature use and action research process is good and bad given that educator problem solving began and ended with data, but the lack of use of literature resulted in persistent use of non-literature supported teaching and learning practices. Often times in the PLC, the most senior or the loudest PLC team members would speak up and insist their teaching and learning ideas be used by PLC team members and as a result of that, research based best practices were rarely used as an instructional innovation. This is very important to note because almost all innovations used by PLCs were not research based best practices, but rather a hybridized form of something that existed previously by an educator at the school.

Data were collected in the form of student assessment/achievement results and teacher experiences from teaching and learning. Educators deliberated on their experiences through shared participation and from their experiences with students mutually decided what to do next. Generally, the *what to do next* concept resulted in some hybrid teaching and learning experience from educators working together based on their prior teaching and learning experiences. Rarely were teaching and learning experience based on literature in this study. Rather, educator experiences were drawn from prior practice, and through intellectual discourse, educators hybridized ideas from several participants into an innovation each would use with their students as remediation for the student's first assessment outcomes.

As a product of educator innovation, participants designed innovative assessment practices to capture teaching and learning innovations. The emergence of assessment, teaching and learning innovations from these meetings and might be the most profound finding in this study in that educators working together effectively through the collaborative inquiry process found ways to problem solve their current teaching and learning status and therefore find new and innovative ways to ensure student learning mastery from innovative assessment, teaching and learning practices. While often times the teaching and learning innovations and production of assessment innovations were not always based on research based best practices, they were productive innovations

that often times met the needs of students and educators to ensure mastery learning given school goals for improvement.

The third research question addressed what the potential implications of educator collaboration on the effectiveness of the PLC. If a PLC is to shape educator learning first with student achievement data to inform educators on their practice, then help shape their teaching and learning practice, to what ends did the collaboration shape each? The shared workspace was described as both the shared physical and intellectual interactions of educators in a PLC. Schools provided each PLC a shared physical workspace for educators to work collaboratively in an ongoing process of collective inquiry and action research to achieve better results for their students (DuFour et al., 2008). This question was important because there is a tremendous amount of theoretical and case study literature on what a PLC is, what its characteristics are and what contributes to an effective PLC, but little literature on what educators actually do and emerge from PLCs with.

However, there is no universal definition of a PLC (Stoll, Bolam, McMahon, Wallace, Greenwood, & Thomas, 2006) or exactly what educators do in a PLC (Carpenter, 2012). The implication for effective professional learning from the collaborative inquiry process builds from the assumption that the key to improving learning for schools, educators and students is the continuous, job-embedded learning for educators (DuFour et al., 2008; Fuller, 2015).

The job embedded learning DuFour et al. (2008) spoke of is the collaborative inquiry process (collaboration, action research). The job embedded portion of the learning process takes place in the shared workspace through physical and intellectual discourse. The collaborative inquiry process in this investigation brought with it an opportunity for shared participation. Each educator, as part of the PLC team, was provided the opportunity to physically and intellectually contribute to the activities that entered into and emerged from the PLC. In this investigation, educators shared workspace. That is to say, educators worked together physically in some way (electronically or face-to-face). Through educator physical interactions they established mutual goals, set forth work to be accomplished (mutual assessment construction, teaching and learning activities), collected data on the implementation of the work and reported back to the PLC.

In the shared workspace, educators intellectually deliberated on the results of previous PLC meetings. The PLCs that were most effective at finding teaching and learning innovations also shared accountability for what entered into the PLC meeting and what emerged as a product. Activities such as student achievement results, teaching and learning experiences were brought into the PLC meeting by educators but emergent from the PLC were innovations of the same variety. In particular, the goals that were established included shared accountability for student achievement and therefore educator appreciation for improved results.

The collaborative inquiry process became part of the action research educators shared in the physical workspace as part of their intellectual contribution that therefore summated into a resulting need to re-establish goals for subsequent PLC meetings. The

shared accountability for achievement contributed to group deliberation of what was done and therefore what to do next based on goals. There were often times a disparity in how much shared accountability educators actually did share (caring was used as a word by participants), the PLC was tasked with shared accountability as a result of its function. As described herein, the *what to do next* concept often times led to the emergence of teaching and learning innovations that further required deliberation in the collaborative inquiry process of subsequent PLC meetings.

It was clear from interactions within schools and with educators that in order for educator learning to take place, educators must work together in the shared workspace through the collaborative inquiry process to emerge with new and innovative hybrid teaching and learning experiences. The shared workspace provides physical and intellectual opportunities to interact with educators that teach subjects that collectively impact student achievement. In order for the shared workspace to be emergent, educators must view their participation and learning to be voluntary and based on parity of contribution. Educators share goals, prior practice, contribute equally, are equally accountable, share decision-making and function as a team in the collaborative inquiry process.

The concept of the shared workspace has been described in detail. The purpose of this model is to provide a framework to help schools and educators model functional PLC interactions and therefore ensure effectiveness of the PLC. The shared workspace is comprised of physical and intellectual contributions that ensure professional learning emergence of innovative products that serve educators and students in schools. In order for the model to serve educators, PLC participants must enter into PLC meetings as co-leaders of their learning. Educators learn about their practice, through physical and intellectual contributions that are voluntarily and equally surrendered by each participant. Educators meet in PLCs and determine their goals for products through dialogue and intellectual discourse. Goals are the steering mechanism for educators to share their practice and therefore seek teaching and learning innovations. The PLC will then emerge with products each member may leverage in their classrooms with students to promote teaching and learning remediation.

The goal of the PLC and therefore the implementation of an innovation provide opportunities for educator accountability. Shared accountability for the products, including the data collected from implementation is part of this process. As educators report back to the PLC on the data they collect from implementation of an innovation, all members of the PLC mutually agree on what to do next. The *what to do next* concept almost always leads to a repeat in the process (establish goals, develop common assessment, share pedagogy, create innovations, collect more data, report back) that lead to further investigation. This is the nature of the collaborative inquiry process.

There were a couple of concepts that extended beyond this investigation, decision-making, group dynamics and conflict. In order for the shared workspace model to provide functional PLC interactions, members of the PLC must be able to make mutual decisions. The shared workspace interactions result in activities that need decisions for what teaching and learning innovations that may emerge as products. A couple PLC participants usually decide on the innovations that emerge from PLC interactions. That

is to say, several educators in a PLC do not participate in the decision-making process for the emergence of the innovations. The question then is, why? Why does the deliberation process discussed herein result in one or two educators making decisions for four or five educators in one PLC? What is the process for decision-making and how does a PLC group decide who holds the power for decision-making? There is no doubt that decisions must be made to ensure the productivity of educators in a PLC. Who holds the power and why?

The next question comes more from negatively functioning and therefore dysfunctional PLCs as educators attempt to share workspace. Often times when educators interact intellectually, there becomes an imbalance of power and physical contribution. Described in this and other studies, the imbalance brings with it resentment and disregard for educator contribution. Most educators chose to not deal with the resentment and disregard. Conflict between educators in a PLC was usually dealt with by introversion and a general disconnect to the function of the PLC and the collaborative inquiry process. Educators were expected to share workspace but the conflict created from a lack of contribution by some educators led to the intellectual isolation of several educators in a PLC. With intellectual isolation, the shared workspace became somewhat physically isolated as educators came to PLC meetings out of contractual obligation but physically cut themselves off by not interacting and or sharing ideas. The intellectual barrier provided by the conflict in the PLC resulted in a dysfunctional and non-emergent group of educators. This is quite prevalent in schools and in my experience as an educator working with and in PLCs the least investigated area of the shared workspace. This is an area that this author is investigating in greater detail as a result of these findings.

The findings from this study are applicable in theory and practice for shaping a functional professional learning communities and organizational improvement in schools as a workplace. Schools and school leaders should consider the applications of the shared workspace model to ensure an effective collaborative environment. An effective collaborative environment will lead to continuous organizational improvement by empowering educators, most closely linked to student achievement. Student achievement improvement over time is the most critical aspect needed for the school as a workplace to improve. The improvement of educators working together in professional learning of their practice will lead to improved student achievement. These factors are so closely linked that the two cannot be separated into functional pieces, but together will result in an improved school and the PLC as a learning environment.

In summary, this article examined the collaborative inquiry process in the shared workspace of schools. This investigation is important to the ongoing investigation of PLC interactions and their impact on schools, educators and professional learning. In order for PLCs to be effective and meet the purposes described by reform efforts, school leaders and educators must ensure they find ways to interact in a positive way as described in the shared workspace model. It is the hope of this researcher that contributions like this study will help in the ongoing improvement of schools and educator efforts to do real work to impact student achievement. Given the demands on schools to increase student achievement and increase teacher effectiveness, this study

proposes to schools to promote educators as leaders of their learning in schools. By promoting educators to leadership of their learning, they will be able to dictate what a PLC does, what it is and therefore what emerges from it for student and educator learning. Promoting educators as leaders of their learning will help leaders focus on increasing student achievement scores as educators learn what works and what they need to transform their practice to ensure increases in achievement.

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