



International Journal of Educational Methodology

Volume 6, Issue 2, 423 – 433.

ISSN: 2469-9632

<http://www.ijem.com/>

Through the Looking Glass: Lesson Study in a Center School

Khalid Abu-Alghayth*

King Khalid University, SAUDI
ARABIA

Phyllis Jones

University of South Florida,
USA

Daphne Pace-Phillips

University of South Florida,
USA

Robin Meyers

Lake Hills School, USA

Received: February 11, 2020 • Revised: March 17, 2020 • Accepted: May 8, 2020

Abstract: This article examined the role of Lesson Study in a center school located in the southeastern United States through an analysis of a narrative by the school principal. This methodology allowed a level of reflexivity across the research team, who appreciated hearing about the powerful first-hand enactment of the initiative. The paper begins with an analysis of Lesson Study, particularly in special education, and the key tenets of Lesson Study followed by a narrative account of the principal. Subsequent to her story, we explored lessons learned in relation to implementing a system change in a school, namely Lesson Study. We learned that a deeper understanding of school culture, sustaining professional development, and collaborative practice, were significant factors enabling the principal and teachers at the center school to embrace, plan, and implement a successful Lesson Study for learners with significant disabilities. In addition, we learned that Lesson Study plays an important role in teacher and student engagement in teaching and learning at the center school and supports teachers to design lessons that are efficacious in meeting the individual needs and higher expectations of students.

Keywords: *Lesson Study, professional development, collaboration, school culture, significant disabilities, pedagogy, low expectations.*

To cite this article: Abu-Alghayth, K., Jones, P., Pace-Phillips, D., & Meyers, R. (2020). Through the looking glass: lesson study in a center school. *International Journal of Educational Methodology*, 6(2), 423-433. <https://doi.org/10.12973/ijem.6.2.423>

Introduction

The Lesson Study model is originally derived from Japanese education (Saito, 2012). The term 'Lesson Study' or 'lesson research' as Lewis (2009) called it, is translated from 'jugyokenkyu' in Japanese into English as 'kenkyu' meaning 'study' or 'research' and 'jugyo' meaning 'lesson' (Fernandez, 2002; Fernandez & Yoshida, 2004; Lewis, 2009). Lesson Study is defined as a team of teachers who collaboratively plan a lesson, develop it, discuss its' implementation, teach it to their students while the team observes, analyses the lesson (learning process), and revises the lesson (Fernandez, 2002; Kusnick, 2008; Lewis, 2009; National Research Council, 2002; Stepanek et al., 2007; Stigler & Hiebert, 1999).

Lesson Study was begun in the United States in the late 1980s and early 1990s by several American researchers such as Lewis, Stigler, Hiebert, Fernandez, and Yoshida following their observations of Japanese education (National Research Council, 2002). Stigler and Hiebert (1999) comprehensively discuss the idea of Lesson Study in their book, *The Teaching Gap*. Several years after introducing the idea of Lesson Study to the United States, attention to the approach has increased among educators (Lewis et al., 2006).

Lewis et al. (2006) states that there are four phases of Lesson Study:

- (1) In the first phase, the Lesson Study group identifies the topic and sets goals for the students.
- (2) The Lesson Study group then reads about the lesson they want to teach and writes a detailed instructional plan.
- (3) In the third phase, one teacher teaches the lesson and the other members observe and write their notes.
- (4) In the last phase, all members meet to share, discuss, and analyse what they have observed.

Literature Review

Lesson Study in Special Education

Research has shown that Lesson Study helps teachers improve their pedagogical knowledge and encourages them to work collaboratively to enhance their efficacy (Lewis, 2009; Lewis et al., 2009; Puchner & Taylor, 2006). Chia (2013)

* Corresponding author:

Khalid Abu-Alghayth, King Khalid University, Department of Special Education, Abha, Saudi Arabia. ✉ kabualghayth@kku.edu.sa



believes “Lesson Study is probably the most suitable approach to provide SPED teachers an opportunity to deepen their knowledge of subject matter” (p. 342). These improvements among teachers may influence students’ outcomes (Lewis et al., 2009). Also, implementing lesson study could influence students’ understanding of concepts and enhance their engagement (Coenders & Verhoef, 2018). Despite the importance of Lesson Study and its potential effectiveness in enhancing teachers and students performance, Norwich and Ylonen (2013), based in the UK, stated the research on Lesson Study in the field of special education is lacking. This paucity of research is also seen in the USA.

The little research there tends to focus more on students with disabilities in inclusive schooling (Mutch-Jones et al., 2012; Norwich & Ylonen, 2013). Most of the reported implementations of Lesson Study in the field of special education have been in inclusive schools focused on learners who experience mild or moderate disabilities. According to Chia (2013), more than 60% of the mainstream schools in Singapore implement Lesson Study. However, modifications were required to implement Lesson Study in schools that serve students with significant disabilities. To meet the needs of learners with significant disabilities, the original Lesson Study approach has been modified by Kee and Chia (2011, 2013) to be implemented in special education schools. The modification suggested entails five phases instead of four:

Phase 1:

This phase begins with creating the Modified Lesson Study team who examine the case history of students with disabilities that are referred by teachers or parents, and then evaluate them. This evaluation process contains several tasks, (a) setting up meetings between the parents and the school’s teachers or staff; (b) studying the cases by evaluating the reports of the behavioral or psycho-educational assessment; and (c) studying the results of students’ achievement test and self-esteem profile. In this phase, the team completes two major tasks: the first being to study the case, and the second to write the intervention goals.

Phase 2:

The purpose of this phase is to design a lesson plan based on the students’ Individualized Education Plans (IEPs). That includes four major tasks: (a) determining the purpose of the lesson plan; (b) verifying that the lesson objectives and the IEP match the purpose of the lesson plan; (c) setting up pre-lesson meetings for the team members; and (d) the team members collaboratively preparing a lesson plan with the mentors and coaches in the team (Chia & Kee, 2010).

Phase 3:

During the implementation of the lesson by one member of the team, other members observe.

In the debriefing after the lesson, members observing the lesson share their feedback on conducting the lesson.

Phase 4:

In this phase, members of the team meet to discuss how to re-conduct the lesson based on their feedback, find the required changes to the lesson, and then re-teach the lesson.

Phase 5:

In this phase, all members reflect upon the whole process of the lesson. They share what they have learned, their recommendations for improving the lesson, evaluate the lesson and what students have learned, and document the lesson for future use.

After implementing Lesson Study, Kee and Chia (2011, 2013) stated that teachers could learn from this experience. This is an example of a successful implementation of Lesson Study by teachers of students with significant disabilities in center schools. This supports what Stigler and Hiebert (1999) stated that collaborating and implementing Lesson Study in the field of special education helps teachers share their knowledge and learn from each other’s experiences.

There is little research focused on Lesson Study in center schools and students with significant disabilities. However, the need for Lesson Study in schooling for students with significant disabilities is clear. It has been suggested that in comparison to students without disabilities, students with disabilities have shown lower levels of achievement (Bolat, 2019; Grumbine & Alden, 2006; Scruggs & Mastropieri, 2004). The need to pay attention to lesson planning is suggested by Chai (2013) “When the student is a learner with special needs, more care and effort will be required in the lesson planning.” (p. 340). Learners with significant disabilities will need more specialized and continued intervention. Teaching students who experience significant disabilities cannot be approached through a single pedagogy (Silverman et al., 2010). The process of teaching students with significant disabilities is very challenging and requires substantial professional collaboration (Browder & Spooner, 2011). Lesson Study offers a process to plan a lesson collaboratively, and the collaborative support on how to enact planning; a process that may be helpful.

Lesson Study has at its heart, collaboration. Working collaboratively in a school is an important way to meet the needs of students with greater diversity in abilities, needs, and characteristics (Browder & Spooner, 2011; Chia, 2013; Stigler & Hiebert, 1999). Research has shown collaborative working can improve teachers’ knowledge (Mutch-Jones et al., 2012; Penuel et al., 2007). According to Heller et al. (2012) and Roth et al. (2011), in professional development, working collaboratively with other teachers in schools enhances the learning of teachers and students and makes

professional development more effective (Penuel et al., 2007). Moreover, through collaborative working, teachers can be influenced by their expert colleagues and gain greater knowledge (Ball & Cohen, 1996), which may motivate them to engage in further collaborative working (Little, 1993). However, working collaboratively or implementing Lesson Study can be a challenge in some cases. In some center schools for instance, in Singapore where there is no assistant or co-teacher, it is very hard to work collaboratively (Chia, 2013). Another challenge is that there are factors that might impact collaboration among teachers. Teacher harmony (Bouck, 2007; Isherwood et al., 2011), teachers' knowledge of the curriculum (Mastropieri et al., 2005), and finding enough time to plan for lessons that meet students' needs (Brusca-Vega et al., 2011) are examples of factors that have been noted by researchers to complicate collaboration.

Professional Development Models in Center Schools for Students with Disabilities

Professional development is an important aspect of continuing education for teachers around the world serving to provide valuable updates in knowledge, skills, and training. It is particularly necessary for educators of students with significant disabilities to ensure they remain current with evidence-based curricular plans and design practices, diagnosis of students with disabilities, and in the latest advances in technological assistive devices for these students (Cantrell & Hughes, 2008; Sawyer, 2015). Some commonly used, though often not preferred practices of professional development for special education teachers are seminars and certification programs. However, support for these methods has declined because they tend to be less collaborative and more structured towards individualized training (Orland-Barak, 2010).

According to research conducted by Jovanova-Mitskovska (2010), professional development needs to be ongoing and interactive to be effective. In alignment with these features, the researchers coined this method of professional development 'Continuous Professional Development.' Coaching is one form of professional development that can be conducted on a continuous basis and has exhibited significant success through the incorporation of a mentoring process between more and less experienced special education teachers, as well as collaboration that encourages the sharing of classroom experiences and improvement plans (Barkley, 2005; Costa & Garmiston, 2002).

Research has shown a two-fold benefit with the use of coaching for teacher professional development. Teachers' report and display improvements in instructional planning, implementation, self-evaluation, and logical reasoning. Furthermore, studies also reveal that special education students benefit from their teachers receiving professional development coaching with an improvement in reading, writing, and language skills (Barkley, 2005; Onchwari & Keengwe, 2008).

While a significant amount of research exists on professional development for teachers of students with disabilities within the general classroom setting of inclusive schools, there is limited research on professional development for teachers in center schools. Similar to Lesson Study, but with less focus on its key feature of teacher collaboration, the literature discusses another approach for this student population that has been used in non-center schools. Known as the Mentor-Model, it is a family-focused collaborative professional development model designed to prepare teachers and paraprofessionals to work effectively with students with significant disabilities in an effort to challenge them to communicate and receive feedback to maximize skills and social participation. The authors of this study list the following four specific areas of consideration when designing communication assessment and intervention practices:

- (1) Collaborating with family members (Petry et al., 2005).
- (2) Meeting educational reporting requirements pertaining to managing curriculum goals for students' with significant communication deficits (Agran et al., 2002).
- (3) Being able to obtain and use assistive technology to meet the needs of students with significant disabilities and to train all applicable personnel involved with the student communication to assist students in the use of this technology (Lancioni et. al., 2012; Mathisen et al., 2009).
- (4) Identifying instructional methods that adequately incorporate students' current pre-meaningful, meaningful, and figurative abilities to communicate (Sigafos & Lang, 2012).

Effective use of the tenets of Lesson Study in the classroom to directly support teachers can improve the communications of students with significant disabilities. Previous success in the traditional school setting lends support for implementing similar strategies within center schools that are specifically designed for educating students with significant disabilities.

Methodology

This analysis of Lesson Study is centered upon a narrative by the principal of the school where the Lesson Study took place. This narrative is contextualized by three co-researchers. Each co-researcher contributed a specific focus, be it methodological, an analysis of Lesson Study, or professional school development. The whole team was involved with the 'Lessons Learned' section as well as paying attention to cohesion and flow.

Narratives involve inquiry that is both highly personal and scholarly to offer a unique perspective on an issue (Clandinin, 2013). It is linked to personal narrative inquiry, which is inspiring in its accessibility and capability to provide theoretical insights into a particular phenomenon (Bochner, 2016). In this article, the phenomenon is Lesson Study, and it presents one principal's story and her personal perspective on some of her experiences with Lesson Study.

The value of capturing the perspectives of school leaders is evident in the literature (Anast-May et al., 2011; Wasonga, 2010). Principals play a critical role in creating schools that are responsive communities to students' diverse learning pathways. The capacity of schools to be proactive and responsive requires that schools, under the leadership of the principal, develop not only their structures, policies, and practices, but the underlying philosophy of the school and the attitudes and beliefs of staff (Salisbury, 2006). This is a complex process of professional development. In hearing the story of one principal's endeavors to initiate Lesson Study in a school for learners with significant disabilities, a level of transparency of practice emerges. This in turn may help others to appreciate the value of why and how Lesson Study contributes to school development.

Rachel's Story

I would like to begin by describing our school and the students we serve. Bayside Center School is an Exceptional Student Education Center School located in the southeastern United States, which serves students with significant cognitive disabilities (SwSCD) between the ages of three to twenty-two. All of the classrooms at Bayside Center School are self-contained meaning the classes are multi-grade level and multi-ability level. For example, a high-school teacher of a self-contained classroom with students in multiple grade levels is charged with teaching all content area courses at varying levels of ability. Additionally, nearly eight percent of our students are non-verbal, and the remaining have limited and/or impaired abilities to understand and use language. Teachers are responsible for providing instruction in each student's primary mode of communication, which could be eye gazing, gestures, pictures with or without voice output, and assistive technology.

All of the students are taught academics using the State Standards Access Points that are grade level expectations written for SwSCD to access the general education curriculum. Over the past decade, instruction for SwSCD has been changing at a rapid pace to address curricular elements to transition from teaching functional skills to teaching academic skills. It was in 2008 that I realized we were going to have to shift our thinking on how to educate our students and we were about to begin a complete paradigm shift in the way we teach.

Fortunately, we had the foresight to prepare for the changes, and in 2008 we developed a long-term plan to satisfy the State's Access Points directives of implementing language arts, math, science, and social studies into the daily curriculum. Elements of the plan included the development of an intensive school-based training program of best practices for both teachers and teacher assistants. It also included the development of an instructional framework for each of the content areas based on the access points.

We started our journey armed with a plan but uncertain how to execute the plan. We had many struggles the first couple of years because we lacked the necessary skills to deliver instruction to students with the most cognitive challenges. We were experts in teaching functional skills to our students and we found the change to teaching academics very difficult and extremely frustrating. We found ourselves going in different directions and lacking cohesiveness. I had to come up with a way for the teachers to work together with a shared vision before our journey came to a crashing halt.

In desperation, I began to research methods of team building, specifically collaboration and shared vision, when I stumbled upon an article on Lesson Study. I had never heard of Lesson Study, but it captured my interest because the research focused on teacher collaboration on the development of lessons that led to intense observing and listening situations. I also was intrigued how the research suggested Lesson Study would build trust amongst staff through mindful and constructive conversations. Although I had no training in Lesson Study, I was ready to begin. I had no funds to support professional development and knew that I was on my own to bring the Lesson Study initiative to life. All I had was a skeleton format of the process and I just took it and ran with it.

I realized we had to define who we are as teachers and that we had to rethink the level of expectations we had for the students. I knew that such a tremendous change would require the buy-in from staff members and together we would need to create a shared vision of change. I also knew in order to create a consensus, everyone needed to be given the opportunity to share their ideas and opinions. So, to avoid disconnect and resentment everyone had to be a part of the process. I saw that Lesson Study could deliver those things for me; that it could become the foundation of building a safe and trusting environment to redefine ourselves as teachers.

I began with a group of seven teachers and provided them with substitute teachers for three uninterrupted consecutive days so we could take our time with the process. I began the Lesson Study by literally reading the key points from the article. We began by creating a framework and a timeline. Next, we asked for a volunteer from the group to teach the lesson once created. We laughed when no one volunteered, so we decided to draw straws. We based our data questions on how the students responded to the teacher to determine the students' level of engagement and understanding of the content taught. Thus, began the process of our first Lesson Study; it was the first time in our school a teacher would teach in front of her peers.

We decided to videotape the lesson since the Lesson Study process was so new to us and it would give us a better opportunity to disaggregate the data questions with fidelity. Upon review of the disaggregated data, we improved the lesson based on our observations of student engagement. The teacher taught the lesson again the next day while the group observed the lesson and took data. After the reteach, we compared the data to see if there was an improvement in student engagement and to determine what instructional strategies we would continue to carry over into the classroom. That was the process of our Lesson Study and even though it was the first time, we all felt we did a very good job. I feel the best thing about our Lesson Study adventure is that the teachers began to talk to each other about their teaching. I realized then we had begun to tear down the walls of isolation.

With Lesson Study as our foundation and perseverance at the wheel, we eventually created a culture of staff members who have a trust amongst one another and a shared vision of high expectations that supports norms of behavior and guides decisions about instruction. Looking back, it was just maybe a divine intervention that I found Lesson Study because the changes we have made over the years is miraculous.

Reflections

In the beginning of our transition from functional skills to academics, we were not versed in the teaching strategies necessary to effectively instruct our students in reading, writing, math, science, and social studies. Before, the curriculum focused primarily on pre-vocational skills like matching colors, sorting shapes, and wooden puzzles. That was our expectation. After our first Lesson Study, we had the epiphany we needed to train ourselves on how to teach academics to students with the most significant cognitive disabilities. Our student population represents less than one percent of the overall student population in schools, so finding research to meet our needs was limited. Further, there are limited programs available in universities on teaching students with the most cognitive challenges. We felt pretty much on our own. However, we diligently continued researching and found the best strategies for teaching our students are under the umbrella of systematic instruction that includes, but not limited to, task analysis, discrete trial, and errorless teaching. At the same time, we realized we needed to incorporate behavioral strategies during instruction, which later led to incorporating elements of Applied Behavior Analysis.

Lesson Study is the foundation of everything we are today. Lesson Study awakened us to the fact that we did not know the strategies needed to teach our students. So now, years later, we have highly proficient and masterful teachers. The professional development we developed not only helped us to become excellent teachers, it helped the students to become excellent learners. We have maintained our momentum over the years and as a result, our children became astute learners; reaching levels of achievement that we never anticipated in the beginning. As for behaviors, not only did they decrease, for many they diminished and disappeared because they learned the skills to problem solve; this was an unintended consequence of our shift to academics. How wonderful! Our students are happier, more confident, and more self-sufficient today.

Today, in 2019, all the fear is gone of teachers being observed. It has become the culture of our school for teachers to observe each other teaching and not just through structured Lesson Studies. We now have Professional Learning Communities (PLCs) where groups of teachers meet weekly to create instructional materials that align with our scope and sequences in ELA, Math, Science, and Social Studies. Each group will regularly observe their teachers in the classrooms to monitor the effectiveness of the lessons they created and the instructional strategies utilized during the teaching. Another example is a teacher may be having difficulty with a particular lesson or concept and it is common practice to seek out assistance from other teachers through classroom observations. Overall, Lesson Study allowed us to develop a culture of transparency where classroom observations have become a tool for improving teaching and learning.

Results and Discussions

Lessons Learned about Lesson Study

Throughout Rachel's story, the following themes emerged; setting a culture for change, sustaining professional development, collaborative practice, pedagogy, and low expectation as important considerations for a principal who embarks on a systemic change at his/her school.

Setting a Culture for Change

According to Stopl and Smith (1994), school culture refers to the values, rules, and principles that teachers, principals, and students as committee members believe. It can be seen from Rachel's story that setting a school culture for change is challenging. "I realized we were going to have to shift our thinking on how to educate our students, and we were about to begin a complete paradigm shift in the way we teach," Rachel said. It requires a principals' in-depth understanding of the school culture to be able to shape the values, rules, and principles for change (Stolp & Smith 1994). Understanding the current school culture and the members' ability in the school was one of the priorities for change in Bayside Center School. Rachel stated, "We had many struggles the first couple of years because we lacked the necessary skills to deliver instruction to students with the most cognitive challenges. We were experts in teaching functional skills to our students and we found the change to teaching academics very difficult and extremely frustrating."

Additionally, setting a school culture for change requires teacher and principal collaboration as a significant factor for success (Fullan, 1992; Stolp & Smith, 1992). The collaboration between Rachel as a principal, and the teachers is the cornerstone for successful change in Bayside Center School. She firmly believes in collaboration, saying, "I also knew in order to create a consensus everyone needed to be given the opportunity to share their ideas and opinions. So, to avoid disconnect and resentment, everyone had to be a part of the process. I saw that Lesson Study could deliver those things for me; that it could become the foundation of building a safe and trusting environment to redefine ourselves as teachers." Faith in collaboration was evident in the school as Rachel said, "I feel the best thing about our Lesson Study adventure is that the teachers began to talk to each other about their teaching. I realized then we had begun to tear down the walls of isolation." Collaboration through Lesson Study in school has led to substantial improvement, and "Today, in 2019, all the fear is gone of teachers being observed. It has become the culture of our school for teachers to observe each other teaching and not just through structured Lesson Studies. We now have Professional Learning Communities (PLCs) where groups of teachers meet weekly to create instructional materials that align with our scope and sequences in ELA, Math, Science, and Social Studies." Lesson Study could also improve teachers' performance in school as Rachel said, "So now, years later, we have highly proficient and masterful teachers."

Sustaining Professional Development

The introduction and execution of teacher professional development programs, particularly those representing whole school learning initiatives as in this study, can present challenges for school leaders who often must display strong leadership skills to encourage acceptance while also maintaining interest and sustainability. This study explored the use of Lesson Study at a center school through a narrative presented by the school principal, Rachel, where she describes the intricacies involved in making changes to established instructional methodologies in her school when introducing Lesson Study and the positive results that can be attained. Her experiences highlight the potential for the sustainability of this method of professional development when strategically implemented by dedicated and supportive leadership that is merged with teacher willingness. How teacher's feel about workplace learning conditions has been found to be linked to their feelings about school reform (Inmants et al., 2013).

Principals are tasked with training their teachers to ensure they maintain the skills required for professional effectiveness. To accomplish this, Rachel utilized several techniques that increased the likelihood for sustaining Lesson Study within Bayside Center School. These included displaying proficiency in leadership by taking the initiative to research different professional development models and choosing the best option for her school, obtaining educator buy-in and cooperation, providing regularly scheduled sessions for focused teacher training and implementation, and using instructional data to plan lessons. Studies show that using data with professional development can serve to increase teacher buy-in and acceptance (Schildkamp & Kuiper, 2010).

Extensive research over twenty years by Darling-Hammond & Richardson (2009) reveals that presenting professional development to teachers within an intensive training and collaborative environment increases the likelihood for sustainability into the future. Professional development that is offered on a continuous basis can act as a catalyst for promoting positive change in how teachers instruct students (Wan, 2011). This phenomenon was observed among teachers who participated in a Multi-layered Peer Coaching Model (MPC Model) and who were initially unmotivated, but once the professional development progressed and teachers were able to explore and perceive its value, they were willing to continue implementing it in their classrooms (Meng et al., 2013). Vygotsky (1978) describes this acceptance phase as "internalization" which results in professional development becoming a spontaneous part of the teaching process. In sharing her story, Rachel vividly depicts these initiation, implementation, and acceptance phases among the teachers at her school when she discusses them experiencing a paradigm shift in instructional strategies with initial elements of grief and feeling very frustrated. To help avert this, Stepanek et al. (2007) suggest having teachers celebrate successes at the end of each Lesson Study cycle to encourage continued motivation and use.

Shorter variations of the Lesson Study professional development model have been used to increase sustainability. This can be particularly beneficial with school districts where the existence of scheduled activities or school policies prevent the implementation of a full-scale version of Lesson Study. Research reveals that professional development programs such as Lesson Study can be successfully adopted by educators if they are embedded within the school's schedule of activities (Hubers et al., 2017; Spillane, 2012) such as staff meetings or consultations between teachers and parents (Sherer & Spillane, 2011). The principal at Bayside Center School took the necessary steps to integrate Lesson Study into the currently established organizational routine in her school through weekly Personal Learning Communities as well as weekly training in behavioral management helping to ensure its adoption. Three modified versions of Lesson Study include: 1) Lesson Modelling which utilizes an outside specialist who comes to the school and presents a demonstration of a lesson devised to increase student understanding of a particular concept; 2) Teacher-Initiated Lesson Study Group where teachers who teach related subject matter form groups and consistently work to implement the tenants of Lesson Study within their classroom; and 3) Whole-School Lesson Study Model which has been found to be attractive in schools seeking to reform the present educational posture of their school.

Collaborative Practice

One of the most significant components in implementing a successful Lesson Study is collaborative practice among teachers (Lewis et al., 2004; Watanabe, 2003). Research has shown the necessity of collaborative practice in schools, specifically in professional development and Lesson Study (Norwich & Ylonen 2013; Puchner & Taylor, 2006; Sarkar et al., 2010; Sibbald, 2009). In addition, practicing collaboration in professional development enhances teachers' learning (Borko, 2004). At Bayside Center School, collaboration was an essential element from the beginning. The professional development enacted by the principal extensively relied on collaboration, which eventually led to teacher and student improvement. This confirms what has been found regarding collaborative practice in schools. According to Thibodeau (2008), "Teacher collaboration on matters of instruction has been linked to positive changes in teacher practices, higher expectations for students, the willingness to use innovative materials and methods, and improved student achievement" (p. 55-56). In other words, teacher collaboration can influence both teachers' and students' performance in school. Collaborative practice enhances teachers' confidence, efficacy, and teachers' learning (Abdella, 2015; Borko, 2004; Norwich & Ylonen 2013; Rock & Wilson, 2005). Additionally, a strong relationship has been found between collaborative practice in schools and students' achievement (Bature & Atweh, 2019; Goddard et al., 2007).

Pedagogy

The Lesson Study helped the teachers understand the students. It is very clear that this group of students who attend the center school are incredibly complex learners and require an educational program (IEP) that is individualized and includes appropriate services to support success in learning (Jones, 2017). There exists a discourse related to 'specialist knowledge,' for this group of learners, a body of knowledge that is needed to teach children with this level of complex learning profiles (Snell & Brown 2006). These students require something 'additional' and 'different' that is often spelled out in their IEPs. This 'addition' translates for these children to be something that requires 'specialist knowledge' by those who teach them (Imray & Hinchcliffe, 2014). There is a need to increase in teachers the appropriate knowledge and awareness to effectively locate and implement these learning practices (Marder & deBettencourt, 2015). These teaching strategies were packaged as evidence based practices for children on the continuum of Autism Spectrum Disorders (Wong et al., 2015) but are evident in pedagogy texts for students with significant disabilities (Orelove et al., 2004; Snell & Brown, 2006). They are explicit and systematic instruction with an emphasis on applied behavioral analysis, something the group of teachers found was successful in this study thus, affirming the valuable role for explicit and systematic instruction when teaching learners with significant disabilities.

Low expectations

The principal in this study shared her concerns that at the beginning of the Lesson Study process, there was an issue of low expectations for the students' learning. This is echoed in the literature that is inherent to special education (Turnbull, Turnbull, & Cooper, 2018). Peterson, (2010) suggests low expectations emanate from a prescriptive approach to special education. The impact of negative expectations from teachers can have long term implications (Shifrer, 2016). We agree on the negative implications of low expectations and contend that Lesson Study has proven successful in this study to interrupt the practice of special educators in a center school in a way that focused from diagnosis and intervention to accessing the general education curriculum.

Limitations

A small participant size of seven teachers and one principal are limitations with this study. The inclusion of one center school for this study did not allow for the comparison of similarities or variabilities in the use of the tenants of Lesson Study and how this might affect the results. Although the experiences expressed in the narrative of the school principal can be deemed as accurately stated from her leadership and implementation of Lesson Study in her school, the researchers were unable to directly and regularly observe the full spectrum of the Lesson Study process being enacted within the center school over time from its' initialization to its' present state to ascertain its' impact or make independent conclusions about its' effect upon the teachers and the disabled student population to which it was administered. Having this perspective might have been helpful with further discussion. The use of a small study sample inclusive of the narrative of one school principal may contribute to study bias regarding the process and results obtained in the use of Lesson Study by Special Education teachers within their classrooms.

Recommendations for Future Research

The findings of this study revealed a relationship between Lesson Study in Bayside Center School and an improvement in teacher knowledge and student achievement. It proved successful in interrupting patterns of practice that led to the teachers being able to design academic content in meaningful ways. The process also challenged the teachers to hold higher expectations of the students, something pervasive in special education. Moreover, the literature on Lesson Study in schools of students with significant disabilities is lacking; hence, further research is required to determine the efficacy of Lesson Study in improving teacher knowledge and students performance.

The outcomes indicated that teacher collaboration and professional development play an essential role in the success of Lesson Study. Research is needed to determine other factors associated with the success of Lesson Study in schools of students with significant disabilities.

The results showed that it was not easy for teachers to accept culture change in school and implement Lesson Study; thus, conducting research to understand teachers' perspectives on Lesson Study in schools of students with disabilities would be worthwhile.

Conclusion

The narrative account of Rachel allows for the analysis of a system change, namely Lesson Study in center schools for students with significant disabilities. Throughout the first-person narrative, themes related to some factors that may contribute to successful school change emerged. These were setting a culture for change in patterns of practice within the school, sustaining professional development, and collaborative practice. Methodologically, the centering of these factors in practice through the story of Rachel was effective in bringing them to life and it helped the research team appreciate the valuable role of the reflexivity of the school principal. This emphasizes the need to listen to the stories of practitioners to gain greater insight into the real-life experiences of systems of change.

References

- Abdella, A. S. (2015). *Lesson study as a support strategy for teacher development: a case study of middle school science teachers in Eritrea* [Unpublished doctoral dissertation]. Stellenbosch University.
- Agran, M., Alper, S., & Wehmeyer, M. (2002). Access to the general curriculum for students with significant disabilities: What it means to teachers. *Education & Training in Mental Retardation & Developmental Disabilities, 37*(2), 123-133.
- Anast-May, L., Buckner, B., & Geer, G., (2011). Redesigning principal internships: Practicing principals' perspectives. *International Journal of Educational Leadership Preparation, 6*(1), 1-7.
- Arani, M. R. S., Keisuke, F., & Lassegard, J. P. (2010). "Lesson study" as professional culture in Japanese schools: An historical perspective on elementary classroom practices. *Japan Review, 22*, 171-200.
- Ball, D. L., & Cohen, D. K. (1996). Reform by the book: What is—or might be—the role of curriculum materials in teacher learning and instructional reform? *Educational researcher, 25*(9), 6-14.
- Barkley, S. G. (2005). *Quality teaching in a culture of coaching*. Scarecrow Education.
- Bature, I. J., & Atweh, B. (2019). Collaboration: A collective bargain for achieving quality mathematics classroom practice. *International Journal of Educational Methodology, 5*(3), 347-361. <https://doi.org/10.12973/ijem.5.3.347>
- Bennett, D., Arthur-Kelly, M., Foreman, P., & Neilands, J. (2014). Tailoring communication support for students with multiple and severe disability using a mentor-model approach: Four case studies from classrooms in special schools. *Developmental neurorehabilitation, 17*(2), 90-98.
- Bochner, A. P. (2016). *Coming to narrative: A personal history of paradigm change in the human sciences*. Routledge.
- Bolat, Y. (2019). A phenomenological investigation with prospective teachers of special education: If it was me! *International Journal of Educational Methodology, 5*(4), 607-622. <https://doi.org/10.12973/ijem.5.4.607>
- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher, 33*(8), 3-15.
- Bouck, E. C. (2007). Co-teaching... not just a textbook term: Implications for practice. *Preventing School Failure: Alternative Education for Children and Youth, 51*(2), 46-51.
- Browder, D. M., & Spooner, F. (2011). *Teaching students with moderate and severe disabilities*. Guilford Press.
- Brusca-Vega, R., Brown, K., & Yasutake, D. (2011). Science achievement of students in co-taught, inquiry-based classrooms. *Learning Disabilities: A Multidisciplinary Journal, 17*(1), 23-31.
- Cantrell, S. C., & Hughes, H. K. (2008). Teacher efficacy and content literacy implementation: An exploration of the effects of extended professional development with coaching. *Journal of Literacy Research, 40*(1), 95-127.
- Chia, N. K. H. (2013). A psychogogic perspective of Lesson Study for special education teachers. *Academic Research International, 4*(4), 334.
- Chia, N. K. H., & Kee, N. K. N. (2010). *Teaching practicum workbook for special education trainees: A modified Lesson Study approach*. McGraw-Hill.
- Clandinin, D. (2013). *Engaging in narrative inquiry*. Routledge.

- Coenders F., & Verhoef, N. (2018) Lesson study: professional development (PD) for beginning and experienced teachers, *Professional Development in Education*, 45(2), 217-230.
- Costa, A. L., & Garmston, R. J. (2002). *Cognitive coaching: A foundation for renaissance schools*. Christopher-Gordon Publishers, Inc.
- Darling-Hammond, L., & Richardson, N. (2009). Teaching learning: What matters? *Educational Leadership*, 66(5), 46-53.
- Day, C. (1999). *Developing teachers: The challenges of life-long learning*. Falmer Press.
- Dunne, K., & Villani, S. (2007). *Mentoring new teachers through collaborative coaching: Linking teacher and student learning*. WestEd.
- Fernandez, C. (2002). Learning from Japanese approaches to professional development: The case of lesson study. *Journal of teacher education*, 53(5), 393-405.
- Fernandez, C., & Yoshida, M. (2004). *Lesson study: A Japanese approach to improving mathematics teaching and learning*. Lawrence Erlbaum Associates.
- Fullan, M. G. (1992). Visions that blind. *Educational leadership*, 49(5), 19-22.
- Goddard, Y. L., Goddard, R. D., & Tschannen-Moran, M. (2007). A theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record*, 109(4), 877-896.
- Grumbine, R., & Alden, P. B. (2006). Teaching science to students with learning disabilities. *The Science Teacher*, 73(3), 26-31.
- Heller, J. I., Daehler, K. R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science. *Journal of Research on Science Teaching*, 49(3), 333-362.
- Hubers, M. D., Schildkamp, K., Poortman, C. L., & Pieters, J. M. (2017). The quest for sustained data use: Developing organizational routines. *Teaching and Teacher Education*, 67, 509-521.
- Imants, J., Wubbels, T., & Vermunt, J. D. (2013). Teachers' enactments of workplace conditions and their beliefs and attitudes toward reform. *Vocations and learning*, 6(3), 323-346.
- Imray, P., & Hinchcliffe, V. (2014). *Curricula for teaching children and young people with severe or profound and multiple learning difficulties*. Routledge.
- Isherwood, R., Barger-Anderson, R., Merhaut, J., Badgett, R., & Katsafanas, J. (2011). First year co-teaching: Disclosed through focus group and individual interviews. *Learning Disabilities: A Multidisciplinary Journal*, 17(3), 113-122.
- James, P. (2014). *Urban sustainability in theory and practice: Circles of sustainability*. Routledge.
- Jones, P. (2017). *Curricula for students with severe disabilities: Narratives of standards-referenced good practice*. Routledge.
- Jovanova-Mitkovska, S. (2010). The need of continuous professional teacher development. *Procedia-Social and Behavioral Sciences*, 2(2) 2921-2926.
- Kusnick, J. (2008). Teaming up for better teaching. *Science Scope*, 31(5), 52-55.
- Lancioni, G. E., Bellini, D., Oliva, D., Singh, N. N., O'Reilly, M. F., Sigafoos, J., & Lang, R. (2012). Two persons with multiple disabilities use camera-based microswitch technology to control stimulation with small mouth and eyelid responses. *Journal of Intellectual and Developmental Disability*, 37(4), 337-342.
- Lewis, C. (2009). What is the nature of knowledge development in Lesson Study? *Educational Action Research*, 17(1), 95-110.
- Lewis, C. C., Perry, R. R., & Hurd, J. (2009). Improving mathematics instruction through Lesson Study: A theoretical model and North American case. *Journal of Mathematics Teacher Education*, 12(4), 285-304.
- Lewis, C., Perry, R., & Hurd, J. (2004). A deeper look at Lesson Study. *Educational Leadership*, 61(5), 18- 22.
- Lewis, C., Perry, R., & Murata, A. (2006). How should research contribute to instructional improvement? The case of lesson study. *Educational Researcher*, 35(3), 3-14.
- Little, J. W. (1993). Teachers' professional development in a climate of educational reform. *Educational Evaluation and Policy Analysis*, 15(2), 129-151.

- Mastropieri, M. A., Scruggs, T. E., & Graetz, J. (2005). Cognition and learning in inclusive high school chemistry classes. In T. E. Scruggs & M. A. Mastropieri (Eds.), *Advances in learning and behavioral disabilities* (Vol. 18, pp. 107–118). Elsevier Science.
- Mattie, H. D., & Kozen, A. A. (2007). Consideration of behavior states and patterns in IEP development and daily planning: A multiple case study approach involving students with multiple disabilities. *Education and Training in Developmental Disabilities, 42*, 38-47.
- Marder, T., & deBettencourt, L. U. (2012). Using a hybrid model to prepare special educators to teach students identified with ASD. *Rural Special Education Quarterly, 31*(3), 12-23.
- Meng, J., Tajaroensuk, S., & Seepho, S. (2013). Recommendation for sustaining the in-service professional development of tertiary EFL teachers. *Theory and Practice in Language Studies, 3*(8), 1311-1321.
- Mutch-Jones, K., Puttick, G., & Minner, D. (2012). Lessons study for accessible science: Building expertise to improve practice in inclusive science classrooms. *Journal of Research in Science Teaching, 49*(8), 1012–1034.
- National Research Council. (2002). *Studying classroom teaching as a medium for professional development: Proceedings of a US-Japan workshop*. National Academies Press.
- Norwich, B., & Ylonen, A. (2013). Design based research to develop the teaching of pupils with moderate learning difficulties (MLD): Evaluating Lesson Study in terms of pupil, teacher and school outcomes. *Teaching and Teacher Education, 34*, 162-173.
- Orelove, F., Sobsey, D., & Silberman, R., (2004). *Educating children with multiple disabilities*. (4th ed.). Paul H Brookes.
- Onchwari, G., & Keengwe, J. (2008). The impact of a mentor-coaching model on teacher professional development. *Early Childhood Education Journal, 36*(1), 19-24.
- Penuel, W. R., Fishman, B., Yamaguchi, R., & Gallagher, L. P. (2007). What makes professional development effective? Strategies that foster curriculum implementation. *American Educational Research Journal, 44*(4), 921–958.
- Peterson, R. (2010). The persistence of low expectations in special education law viewed through the lens of therapeutic jurisprudence. *International Journal of Law and Psychiatry, 33*(5), 375-397.
- Petry, K., Maes, B., & Vlaskamp, C. (2005). Domains of quality of life of people with profound multiple disabilities: The perspective of parents and direct support staff. *Journal of Applied Research in Intellectual Disabilities, 18*(1), 35-46.
- Puchner, L. D., & Taylor, A. R. (2006). Lesson Study, collaboration and teacher efficacy: Stories from two school-based math Lesson Study groups. *Teaching and Teacher Education, 22*(7), 922-934.
- Rock, T. C., & Wilson, C. (2005). Improving teaching through Lesson Study. *Teacher Education Quarterly, 32*(1), 77-92.
- Roth, K. J., Garnier, H. E., Chen, C., Lemmens, M., Schwillie, K., & Wickler, N. I. (2011). Videobased lesson analysis: Effective science PD for teacher and student learning. *Journal of Research in Science Teaching, 48*, 117–148.
- Saito, E. (2012). Key issues of lesson study in Japan and the United States: a literature review, *Professional Development in Education, 38*(5), 777-789.
- Salisbury, C. L. (2006). Principals' perspectives on inclusive elementary schools. *Research and Practice for Persons with Severe Disabilities, 31*(1), 70-82.
- Saphier, J., King, M., & D'Auria, J. (2006). Three strands form strong school leadership. *Journal of Staff Development, 27*(2), 51–57.
- Sawyer, R. M. (2015). *The effects of coaching novice special education teachers to engage in evidence-based practice as a problem-solving process* [Unpublished doctoral dissertation]. The Ohio State University.
- Schildkamp, K., & Kuiper, W. (2010). Data-informed curriculum reform: Which data, what purposes, and promoting and hindering factors. *Teaching and Teacher Education, 26*(3), 482–496.
- Scruggs, T. E., & Mastropieri, M. A. (2004). Recent research in secondary content areas for students with learning and behavioral disabilities. In T. E. Scruggs & M. A. Mastropieri (Eds.), *Advances in learning and behavioral disabilities* (pp. 243-263). Emerald Group Publishing Limited.
- Sherer, J. Z., & Spillane, J.P. (2011). Constancy and change in work practice in schools: The role of organizational routines. *Teachers College Record, 113*(3), 611-657.
- Shifrer, D. (2016). Stigma and stratification limiting the math course progression of adolescents labeled with a learning disability. *Learning and Instruction, 42*(1), 47-57.
- Sibbald, T. (2009). The relationship between lesson study and self-efficacy. *School Science and Mathematics, 109*(8), 450-460.

- Silverman, K., Hong, S., & Trepanier-Street, M. (2010). Collaboration of teacher education and child disability health. *Journal of Early Childhood Education, 37*(6), 461-468.
- Snell, M., & Brown, F., (2006). *Instruction of students with severe disabilities* (6th ed.). Pearson Publishers.
- Stepanek, J., Appel, G., Leong, M., Turner Mangan, M., & Mitchell, M. (2007). *Leading Lesson Study: A practical guide for teachers and facilitators*. Corwin Press.
- Stigler, J. W., & Hiebert, J. (1999). *The teaching gap: best ideas from the world's teachers for improving education in the classroom*. Free Press.
- Stolp, S., & Smith, S. C. (1994). *School culture and climate: The role of the leader* (OSSC Bulletin, pp. 1-57). Oregon School Study Council.
- Thibodeau, G. M. (2008). A content literacy collaborative study group: High school teachers take charge of their professional learning. *Journal of Adolescent & Adult Literacy, 52*(1), 54-64.
- Turnbull, H. R., Turnbull, A. P., & Cooper, D. H. (2018). The supreme court, endrew, and the appropriate education of students with disabilities. *Exceptional Children, 84*(2), 124-140.
- Vygotsky, L. S. (1978). *Mind in society*. Harvard University Press.
- Wan, W. Y. S. (2011). *Teachers' perceptions and experiences of continuing professional development (CPD): opportunities and needs in Hong Kong primary schools* [Unpublished doctoral dissertation]. University of Nottingham.
- Wasonga, T. A. (2010). Leadership practices for social justice, democratic community, and learning: School principals' perspectives. *Journal of School Leadership, 19*(2), 200-224.
- Watanabe, T. (2003). Lesson study: A new model of collaboration. *Academic Exchange Quarterly, 7*(4), 180-185.
- Wiburg, K. M., & Brown, S. (2006). *Lesson study communities: Increasing achievement with diverse students*. Corwin Press.
- Wideen, M., Mayer-Smith, J., & Moon, B. (1996). Knowledge, teacher development and change. In I. Goodson & A. Hargreaves (Eds.), *Teachers' professional lives* (pp. 187-204). Falmer Press.
- Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S., Brock, M. E., Plavnick, J. B., Fleury, V. P., & Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorders, 45*(7), 1951-1966.