Creating an Online Virtual Staffroom for Teachers that Encourages Collaboration and Community

by

Lorrie Burnham

Bachelor of Science, Simon Fraser University, 1998
Bachelor of Education, University of British Columbia, 1999

A Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

MASTER OF EDUCATION

in the Department of Instruction and Curriculum

© Lorrie Burnham, 2015

Re-distributed by University of Victoria under a non-exclusive license with

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License
Supervisory Committee

Creating An Online Virtual Staffroom for Teachers That

Encourages Collaboration and Community

by

Lorrie Burnham

Bachelor of Science, Simon Fraser University, 1998

Bachelor of Education, University of British Columbia, 1999

Supervisory Committee

Dr. Valerie Irvine, Department of Curriculum and Instruction

Co-Supervisor

Dr. Tim Pelton, Department of Curriculum and Instruction

Co-Supervisor
Abstract

More often than not professional development still occurs during one-day top-down instructed workshops on specific dates and times. It is often considered to be ineffective due to a knowledge driven approach rather than a situated learning experience. With access to Web 2.0 tools, like Google+ communities and Twitter, that easily allow for co-collaboration and co-creation, an online community of practice is a feasible option that can provide asynchronous and synchronous professional development. In this project, Google+ Communities were created to provide teachers within a school district a place to be actively involved in collaboration, sharing of ideas, information, resources and practices. With careful design and consideration this virtual space will satisfy a teacher’s need for extended professional development and provide a rich repository of shared resources. This in turn will result in a teacher’s improved practice and increased student achievement.
# Table of Contents

Supervisory Committee ........................................................................................................ ii
Abstract.................................................................................................................................. iii
Table of Contents ................................................................................................................... iv
List of Figures ........................................................................................................................ vii
Dedication ............................................................................................................................... ix

Chapter One: Introduction of the Project .............................................................................. 1

Context and Motivation ........................................................................................................... 1
Teacher Isolation ....................................................................................................................... 1
Limited Sense of Community .................................................................................................. 2
Teachers Changing Assignments ............................................................................................ 3
Current Professional Development ......................................................................................... 3
Solution .................................................................................................................................... 4

Chapter Two: Literature Review and Conceptual Framework ............................................. 8

Teacher Isolation ..................................................................................................................... 9
Challenges to Current Professional Development ................................................................. 11
Communities of Practice.......................................................................................................................... 13
Reform of Professional Development..................................................................................................... 16
Advantages to an Online Community of Practice.................................................................................. 18
Disadvantages to Online Communities of Practice .............................................................................. 20
Design Considerations for Creating and Nurturing an Online Community of Practice 22
Conclusion .................................................................................................................................................. 24

Chapter Three: Reforming Professional Development with a Google+ Community for Langley
District Educators ...................................................................................................................................... 27
Home Page ................................................................................................................................................ 28
About Us .................................................................................................................................................... 32
How To… .................................................................................................................................................... 35
Feedback .................................................................................................................................................. 39
Elementary School Communities (Grades K – 5) .................................................................................. 41
Middle School Communities (Grades 6 – 8) ......................................................................................... 43
Secondary School Communities (Grades 9 – 12) ................................................................................ 45
Sample Screen Shots of Google+ Communities ..................................................................................... 47
   Elementary Google+ community sample .............................................................................................. 48
   Elementary community post categories .............................................................................................. 49
   Middle school community post categories. ......................................................................................... 51
   Secondary school Google+ community sample .................................................................................. 52
   Secondary school community post categories. .................................................................................. 53
Google Form for Acceptance into Community ....................................................................................... 54
Letter to the Superintendent ..................................................................................................................... 56
Project Proposal for SD#35 ................................................................. 58
Presentation for Langley School District Educators........................................ 62
Chapter Four: Summary and Reflection .......................................................... 72
Our Inspiration for the Project ................................................................. 72
Our Project Specifics .................................................................................. 73
Privacy ....................................................................................................... 74
Reasons for the Community Categories ......................................................... 75
Teacher Buy-In .......................................................................................... 76
Our Journey ............................................................................................... 76
Recommendations for Other Educators ......................................................... 79
  Research your theories ............................................................................. 79
  Collaborate on the project with a colleague ............................................. 79
  Reach out to others who have created communities of practice ................ 79
References ............................................................................................... 81
List of Figures

Figure 1. Webpage Header ........................................................................................................ 27
Figure 2. Home Page ............................................................................................................... 29
Figure 3. Continuation of Home Page ..................................................................................... 30
Figure 4. Continuation of Home Page ..................................................................................... 31
Figure 5. About Us page .......................................................................................................... 33
Figure 6. Continuation of About Us page .............................................................................. 34
Figure 7. How To page ............................................................................................................. 36
Figure 8. Continuation of How To page ................................................................................... 37
Figure 9. Continuation of How To page ................................................................................... 38
Figure 10. Feedback page ....................................................................................................... 40
Figure 11. Elementary Community page ............................................................................... 42
Figure 12. Middle School Community page ......................................................................... 44
Figure 13. Secondary School Community page .................................................................... 46
Figure 14. Sample of an Elementary Google+ Community .................................................... 48
Figure 15. Elementary Google+ Community Categories ....................................................... 49
Figure 16. Sample of a Middle School Google+ Community ............................................... 50
Figure 17. Middle School Google+ Community Categories ................................................. 51
Figure 18. Sample of a Secondary School Google+ Community .......................................... 52
Figure 19. Secondary School Google+ Community Categories .......................................... 53
Figure 20. Google Form for Acceptance into Community .................................................... 55
Figure 21. Letter to the superintendent ................................................................................ 57
Figure 22. Slide 1 of district presentation ................................................................. 62
Figure 23. Slide 2 of district presentation ................................................................. 63
Figure 24. Slide 3 of district presentation ................................................................. 64
Figure 25. Slide 4 of district presentation ................................................................. 65
Figure 26. Slide 5 of district presentation ................................................................. 66
Figure 27. Slide 6 of district presentation ................................................................. 67
Figure 28. Slide 7 of district presentation ................................................................. 68
Figure 29. Slide 8 of district presentation ................................................................. 69
Figure 30. Slide 9 of district presentation ................................................................. 70
Figure 31. Slide 10 of district presentation ............................................................... 71
Dedication

It is with utmost gratitude that I want to thank the people in my life that made this project possible. It is their support, flexibility, and guidance that have helped me to complete this.

Jason, you are my best friend and my rock. You carry me forward when I feel like I can’t go any more. Your words “you are not a quitter” have stuck in my head and helped me to cross the finish line! It was your love and encouragement that helped to make this happen!

Joel and Jacob, my sons, I fear that your sharp minds will be dulled by our antiquated education system. You are my inspiration for wanting to seek change in schools and not accepting the standard. It is your future that I hold in my heart when I create change in schools.

Tracey Thorne, my dear friend, I could not have done this without you! You push me when I get stuck, you carry me when I am tired, but most of all you have been there for me through this whole process. We have laughed and cried together and now we can celebrate our accomplishment together!

To my parents and sister, you have been an incredible source of support and encouragement! You have helped to make this possible!

Faye and Gord, you have been such a source of support in order to make this happen!
Valerie Irvine, you have had such a huge impact on my life and teaching career! That very first class when you said to us “Go and learn about something that interests you and share it,” was a defining moment in my life! You push the boundaries of education, inspiring me to do the same. I have been honoured to learn under you and know that even though #TIEGrad at UVic might be done #TIEGrad will live on forever!

Tim Pelton, you have been an incredible source of expertise. You have challenge me to rise outside of my comfort zone and for that I am grateful!

#Tiegrad, what a ride! I have been so inspired by your outstanding teaching practices and ideas. Each of you hold a special place in my heart! Together we are going to change the world forever!
Chapter One: Introduction of the Project

Context and Motivation

The reality for most teachers is that they will face the challenge of changing teaching assignments numerous times over the course of their careers. Last year, I was faced with teaching Science 10 and Math 10 for the first time in many years. It was a struggle for me to source out resources and ideas. I had no way to connect easily with other teachers of the same assignment in the district. As I am the only Math and Science teacher at my school, there was no one I could bounce ideas off or seek advice from. I had no way of connecting with other teachers in the district other than through email or Twitter. In my district, there is a need for a virtual space that would host a community of practice for teachers, where we could come together to share and connect with each other professionally. I firmly believe that, if designed properly, taking into account recent research on online community of practices, it would reduce isolation among teachers and fulfill the need for community between all that participate.

Teacher Isolation

Teaching can be considered a very isolated profession (Sarason, 1966; Vavasseur & MacGregor, 2008). Teachers frequently spend their entire day in their classroom with little peer interaction occurring, even with other teachers in their school. This can be detrimental to a teacher’s practice as it does not allow for peer feedback or collaboration (El-Hani & Greca, 2012). With no collaborative reflection, a teacher’s practice can become stagnant with little growth. It can be challenging for teachers to connect with one another due to rigid timetables (Dodor, Sira, & Hausafus, 2010) and the lack of scheduled collaboration time (Seo, 2014; Kopcha, 2012). In order for teachers to grow professionally, they need to overcome the isolation barrier and connect with their peers.
**Limited Sense of Community**

Within schools, the staff room can be a space for collaboration and it can provide a place to exchange ideas and support. The conversations that occur in this space help to foster a sense of community between teachers in a school. Time can be a constraint to this community as it is often difficult to get there during the recess and lunch time hours. In small schools, the conversation can be rich in collaboration because of the intimacy of a small staff. These conversations could be enhanced with access to a greater diversity of teachers from different schools with varying teaching assignments mixed with novice and experienced teachers. Although there may be a limited sense of community from direct contact with your colleagues at your school, there is a need to encourage and support the development of relationships between teachers at different schools. It can be especially difficult to connect with other teachers of the same grade level and subject area.

Outside of the school, teachers can use email to communicate with other teachers. While email does offer some opportunity to communicate and share, it is limited because, everyone has a different schedule for accessing email (reducing the likelihood of an immediate response to a pressing question), you need to locate a specific email address before you can use it, and it is sometimes challenging to communicate freely and fluidly with a teacher who you have not have met in person. It can be especially difficult to identify and locate specific email addresses of subject specific teachers from different schools.

Some/most districts have created Twitter accounts as a way to support more immediate collaboration between teachers. This has been helpful, but teachers have been slow to join Twitter and are hesitant to post on it. This might be attributed to several factors. First, there is a perception that Twitter is challenging in many ways including understanding how to signup, and
how to read and write posts. There may also be some frustration with the Twitter format (140 characters, no files, etc.) and there may be limits to the time and interest teachers have for accessing multiple Web 2.0 sites in a typical day.

**Teachers Changing Assignments**

Most teachers will change schools, grade levels, and subject areas during their careers. Every time a change occurs a teacher is required to find new resources, lesson ideas and units applicable to their new situation. Some teachers access ideas from online websites, such as TeachersPayTeachers.com, and other similar pay-based resource websites - but this is not an ideal or particularly collegial solution. The World Wide Web in general may contain lots of resources, but it can be difficult to filter through the many sites and ideas, and often they require modification to fit within the British Columbia (B.C.) Curriculum. Creating a local teacher-run and district-approved website where educators can post their ideas and resources is one potential district-based solution to this problem.

**Current Professional Development**

Although professional development workshops can be a source of collaboration between teachers, they often involve a one-stop, one-size fits all approach to delivering pedagogical approaches and content knowledge. During professional development workshops teachers are often treated generically rather than taking into account age-level assignment, subject or content specialization and prior experience (Twining et al., 2013). This can reduce the ability of teachers to connect with each other to collaborate and share experiences and resources. Teachers often listen passively to a knowledgeable outsider (Holmes, 2013; Roseler & Dentzau, 2013), and there rarely is any follow up with teachers to help them transfer ideas to the classroom. This can result in little change to their teaching practices (Little, 1993).
Solution

One possible solution to this problem is the creation of an online community to help teachers connect and collaborate with each other – a place where teachers can share ideas and resources, and provide support. This online community could foster professional relationships between teachers, both within the school and throughout the district. An online community is where teachers of similar teaching assignments might connect and collaborate and share, even when they are unable to meet in person. Resources and ideas can be discussed and collaboratively improved upon, leading to better student achievement. This type of community would be accessible anytime, anywhere, allowing teachers with busy schedules to choose the most convenient time to engage and participate.

Literature Overview

Most professional development consists of one-day workshops in which teachers listen passively to an expert. It is often disconnected to a teacher’s practice and focuses more on content that is not essential to teaching (Holmes, 2013; Roseler & Dentzau, 2013). Research has shown how ineffective this model is, resulting in little effect in schools and no significant change in teacher practices (Little, 1993).

When workshops are extended over a period of time, they allow for in-depth discussions and for teachers to try out new practices in their classroom and obtain feedback (Garet et al., 2001). Teachers prefer professional development to occur over a longer duration in order to achieve real change in their teaching practice (Kopacha, 2012).

Community of Practice

A community of practice (CoP) involves a group of individuals who share knowledge, abilities and experiences. They actively collaborate, sharing information, ideas, interests,
resources, and practices to build both personal and collective knowledge (Lave & Wenger, 1991; Wenger, 1998). Learning is not only individual, it is also social. In order to learn, we need to participate actively in social processes, resituating, and recontextualizing meaning while carrying out a task (El-Hani & Grca, 2013). A CoP provides teachers with the support and professional development needed to improve practices over time (Kopacha, 2012). A CoP can create a bridge between novice and experienced teachers where knowledge can be shared reciprocally and generationally.

**Advantages to an Online CoP**

As teachers become accustomed to Web 2.0 communication technology, it can be utilized to its fullest potential to create an online CoP. An online version offers many advantages over a face-to-face option. An online community could bring together teachers of similar grade-groupings, subject areas or specialized needs (Duncan-Howell, 2010). Teachers could log on and participate asynchronously, on their own schedule (Duncan-Howell, 2010). Asynchronous communities could give teachers time to think, reflect, and compose answers (Duncan-Howell, 2010). Synchronous meet ups via chat or video conferencing is also a very powerful tool in an online community. This could be a place of rich discussions and conversations. Teachers no longer need to be released from classes to travel to other places, saving time, and allowing them to complete virtual teacher development at a time that is convenient for them (Keown, 2009). Recordings of webinars and meetings can be posted for teachers to view when their schedule permits.

An online CoP might generate a repository of lessons, activities, resources and artefacts that could be shared online – where teachers could share, remix existing contributions and share again, and seek feedback from others. Even though the Internet has a vast array of ideas and
information, shared resources suggested by peers are often more accessible and relevant (Wang & Lu, 2012). As teachers develop a professional relationship with their peers online, they will be more confident in adopting recommendations from someone they have associated with. Novice teachers particularly would benefit from resources shared online helping them overcome their lack of experience and improve their teaching knowledge and practice (Seo & Han, 2013).

Project Overview

The Purpose. The purpose of this project is to create a proposal to the district for an online CoP for teachers. With access to Web 2.0 tools, like Google+ and Twitter, the Internet has moved beyond content based, static web pages, to dynamic user-generated content. This supports multiple methods of communication that almost anyone can manage. Online communities can be simply set up and easily accessible for participants. This creates an excellent opportunity for districts to host online communities that allow teachers to engage with colleagues who may have similar student needs, age-level assignments, or subject specialization.

The structure of the community. The virtual staffroom will consist of a central website that will host hyperlinks to the different online Google+ communities. The online Google+ communities will be created based on grade-level and will be subject specific. Additional communities that are not grade or subject specific, can be added based on needs.

The Google+ communities will include asynchronous communications where teachers can create posts and share their lesson ideas, and get to know each other on a professional level. They will be able to provide feedback and ideas by commenting on each other’s posts. Google Hangouts (on-demand video conferencing) are also an option to each community so that more immediate synchronous communications can occur as well.
The current model of professional development is antiquated and does not line up with 21st century learning. Web 2.0 tools, like Google+ and Twitter, can support asynchronous and synchronous online CoPs. Teachers no longer require the time needed to drive long distances or clear time after school for workshops. With careful consideration and design, an online CoP is a feasible option for professional development.
Chapter Two: Literature Review and Conceptual Framework

The majority of teacher professional development still occurs through one-shot face-to-face workshops. A great deal of research has found this form of professional learning to be ineffective (Borg, 2012). It can sometimes involve “an expert” not from within the teaching profession that provides a knowledge driven approach rather than a situated learning experience. Since classrooms are unpredictable and complex, knowledge imparted without consideration to the contexts teachers face is not sufficient to solve problems in reality (So & Kim, 2013). A CoP might be used to supplement one-day professional development workshops, and help create long term lasting results in both teaching practice and student achievement. Lave and Wenger (1991) define a CoP as a group of individuals who share knowledge, abilities, and experiences. They are actively involved in collaboration, sharing ideas, information, resources and practices. A CoP can generate a shared repertoire of resources that represents the knowledge built up by the community (El-Hani & Greca, 2013). It is a long-term solution that provides teachers with support and professional development to continue learning new practices over time (Kopacha, 2012).

In this digital age, the paradigms for learning are evolving from traditional classroom models to blended synchronous and asynchronous, interactive, and collaborative, learning models. Web 2.0 tools, such as blogs, wikis, and forums, have created an interactive experience on the Internet, rather than just a place to access information and resources. With Web 2.0 tools, a user can create a space that allows for sharing, co-creating, co-editing and co-construction of knowledge and resources. “Social networking technologies offer ways to participate in interactive dialogue and the means to conduct learning” (as on p. 8 of Gunawardena et al., 2009). These tools now make an online teacher CoP a viable option to
augment traditional professional development. With careful examination of research on the advantages and disadvantages of an online community, and evaluating previously successful design suggestions, an online CoP could be established to provide a viable option to sharing resources, knowledge, and practice over an extended period of time. This in turn could result in positive changes to both teaching practices and student achievement.

**Teacher Isolation**

Teachers struggle with isolation in their profession. It is considered by some to be one of the most isolated professions (Sarason, 1966; Vavasseur & MacGregor, 2008). Issues underlying this struggle include: the closed door, where teachers seek privacy, simplicity, and security in traditional approaches; limited opportunities to connect or collaborate due to busy schedules, unsynchronized prep-time, and no alternative communication opportunities; and limited opportunities for collaboration due to resistance to change, unfamiliarity, and insecurity. This is a problem for teachers and a greater problem for new teachers, who have limited classroom experience, fewer management strategies and do not want to appear unprepared.

Often teachers close the door to their classroom, both literally and metaphorically, and never connect to their colleagues. Even though they may share the same students with the same challenges they rarely have opportunities to come together to discuss their students’ needs (Rodesiler et al., 2014). This isolation can result in a lack of collaboration and limit the opportunities teachers have to reflect on their practice (El-Hani & Greca, 2012).

There are many reasons for teacher isolation. The structure of schools and their rigid timetables can leave teachers isolated in segregated classrooms, making collaboration difficult (Dodor, Sira, & Hausafus, 2010; Seo, 2014). Teachers often have no way to connect with their peers other than knocking on their door or flagging them down in the hallway. Teachers also
struggle to find time in their schedules to support collaboration (Seo, 2014; Kopcha, 2012), even teachers that share common interests with colleagues feel isolated because there is no time to talk (Hur & Brush, 2009).

In practice, beginning teachers do not often experience productive professional collaborations (McCluskey, Sim, & Johnson, 2011). They struggle with wanting to appear competent but would benefit from the expertise of a more experienced teacher. Often new teachers require help from experienced teachers but are unsure of how to access it (Rodesiler et al., 2014).

In order for teachers to grow professionally, they need to overcome the barrier of isolation and somehow connect to their peers. Renewing teaching requires generating new ideas and having opportunities to reflect on one’s own teaching (Vavasseur & MacGregor, 2008). An online professional community can give teachers a chance to connect with each other and to exchange ideas and ask questions as well as provide relevant resources and information (Rodesiler et al., 2014). It also provides a way for teachers to reach out to other teachers who might better understand particular issues that they may be struggling with (Hur & Brush, 2009). When teachers interact with each other and collaborate, new information and ideas are born, and further learning is stimulated and supported (Hadar & Brody, 2010). The use of information communication technology (simply referred to as technology in the remainder of this project) affords teachers an alternate channel upon which to build a community. Such a community provides teachers with a sense of shared purpose, opportunities to reflect critically on classroom practices, and collegiality (Prestige, 2010).
Challenges to Current Professional Development

At present, most professional development opportunities have challenges associated with them. One such challenge is that professional development efforts need to be more connected to the teacher’s practice taking into consideration their subject and grade. Recognizing that extended pro-d efforts may be more effective, providing teachers with time and opportunities to collaborate, transfer, and reflect, will help to overcome some of these challenges.

Some professional development opportunities can be seen as having little impact on a teacher’s practice. There are several underlying reasons for this claim. One-shot workshops are the most common form of teacher professional development (Boyle et al., 2004). They often involve one-stop, one-size-fits-all approach to delivering content knowledge (El-Hani & Greca, 2013). Sessions may not fully account for the varying levels of knowledge among the participants (Borg, 2012), resulting in limited impact or utility for some and bewilderment for others (El-Hani & Greca, 2013). These one-day workshops often entail teachers listening passively to a knowledgeable outsider or “expert” (Holmes, 2013; Roseler & Dentzau, 2013). There is rarely follow up with teachers after the presentation to help teachers apply their knowledge in the classroom. This results in some workshops having little effect in schools and no significant changes in teacher practices (Little, 1993).

Most professional development offered to teachers is disconnected from a teacher’s practice. Often workshops focus on updating content and procedural knowledge but do not deal with other elements involved in pedagogical practice (El-Hani & Greca, 2013). Professional development is limited when it is fragmented and only deals with one aspect of a teacher’s development rather than supplying the concrete needs of a teacher in their classroom. This can
result in the teacher not seeing evidence of a clear benefit from the professional development (El-Hani & Greca, 2013).

Teachers’ busy schedules often leave little time to collaborate with other teachers. In order for teachers to implement what they have learned they must be given time and support for reflection and interactions with other teachers (El-Hani & Greca, 2013). Teachers need to be given opportunities to engage in learning over a longer period of time (Duncan-Howell, 2010). When professional development is extended over a period of time it can be far more effective in improving instruction and student achievement (McConnell et al., 2013). Of course a teacher’s needs will change over time – a teacher new to technology will not require the same training when they become more experienced with it, and as a teacher develops skills and understandings with a pedagogical practice or new model they may advance to the role of mentor to other teachers. Transitioning to ongoing professional development will allow teachers to establish new practices and routines for teaching at various levels of understanding (Buckenmeyer & Hixon, 2009; Levin & Wadmany, 2008).

Another challenge to professional development workshops is that often teachers are not put together with subject specific groups, which can be less effective in creating a change in teacher practice. When designing professional development, teachers are often treated generically rather than taking into account age-level assignment, subject or content specialization and prior experience (Twining et al., 2013).

The cost of professional development should also be accounted for. Financial constraints are often a factor that teachers consider when selecting professional development (Duncan-Howell, 2013). When teachers have to pay some or all of the cost out-of-pocket for very costly
workshops they are less inclined to attend. Due to the financial strain of costly professional
development workshops a teacher’s ability to attend them can be hindered.

**Communities of Practice**

Lave and Wenger (1991) first coined the term “community of practice.” In a CoP a group
of individuals come together, with similar interests, to share their knowledge, abilities and
experiences. A sense of belonging is formed when individuals participate in the social processes
of the community, redefining and reinventing meaning, while carrying out a task as a group.
Members of a CoP bring together their competence and experience to share with the community.
Within a CoP, resources are generated which represent the knowledge built up by the
community. The community may reflect on their repertoire of resources and move forward
collectively in their learning.

A CoP involves a group of individuals who share knowledge, abilities, and experiences.
They are actively involved in collaborative processes, sharing information, ideas, interests,
resources, perspectives, and practices, to build both personal and collective knowledge (Lave &
Wenger, 1991; Wenger, 1998). Communities of practice are everywhere and of utmost
importance to our lives (Bahar & Cagiltay, 2010). Learning takes place within a community.
From the CoP perspective, in order to learn one needs to participate actively in social processes,
resituating and recontextualizing meaning while carrying out a task (El-Hani & Greca, 2013).
Practice is a public contribution to be shared, used, shaped and understood by the community.
This professional knowledge then becomes community property (Lieberman & Mace, 2010).
Communities that are created from existing social networks require focus and leadership (Hadar
& Brody, 2010). They do not form randomly; rather they are intentionally initiated and promoted
by leaders who are connected and in tune with the needs of the members and the organization
Communities of practice are more than ordinary groups. They are groups of professionals and “One of the most remarkable differences between an ordinary group and a CoP is the sense of community, in which members invest and contribute their shared projects and values” (Robinson et al., 2007, p. 7). Communities of practice can be seen as powerful catalysts for the improvement of teaching practices (van Braak & Vanderlinde, 2010).

In a CoP, knowledge acquisition involves two components: competence, defined by social communities, and experience. If competence and experience are too close, there is no challenge, and little learning occurs. On the other end of the spectrum if the distance between competence and experience is too far, competence and experience is disconnected, and little learning occurs (Wenger, 2000). Imagine yourself sitting in a group of rocket scientists, and trying to participate in their conversation. If your level of knowledge about rocket science were low, you would have trouble understanding and participating in their discussion. If you had brushed up on your rocket science knowledge prior to engaging, you might have a greater understanding of their discussion, and therefore learn more than if you had no pre-existing knowledge. Learning takes place inside a community because competence and experience converge. At the outskirts of the community learning can also takes place because competence and experience diverge (Wenger, 2000).

In some groups, people are core members while other may prefer to participate from the outskirts (Wenger, 1998). Certain individuals act as “brokers” between communities. They stay at the boundaries of many practices then move to the core of one practice. “Brokering knowledge is delicate. It requires enough legitimacy to be listened to and enough distance to bring something really new. Brokers often do not fully belong anywhere and may not contribute
directly to any one specific outcome, this can result in the value they bring being overlooked” (Wenger, 2000, p. 236).

In a CoP, Wenger (2000) defines three modes of belonging: engagement, imagination, and alignment. Engagement involves doing things together, talking, producing artefacts, or working through a problem together. Imagination is the ability to construct an image of ourselves, reflect on our situation, or explore possibilities. Alignment involves making sure local activities are aligned with other processes to be effective beyond our individual engagement. It is a mutual process of coordinating perspectives, interpretations and actions to realize higher goals. Engagement, imagination, and alignment usually can be found in every social learning system, to some degree and in some combination (Wenger, 2000). To function as a CoP, members should exhibit a sense of community, provide support to each other; and contribute to the communities shared repertoire of knowledge. In order to learn, a member of a CoP has to participate actively, even if silently, in the social processes that takes place in the community (El-Hani & Greca, 2013).

A CoP involves three elements: joint enterprise, mutuality, and a shared repertoire of communal resources (Wenger, 2000). With joint enterprise, members of the community collectively understand what their community is about. They must show leadership in moving their development along and maintaining a spirit of inquiry. It must remain open to new directions and opportunities as well as be cognizant of gaps in its knowledge. Mutuality, or mutual engagement, involves members interacting with one another to establish norms, creating a mutual trust among the community members. Developing strong interpersonal relationships is key in developing a sustainable teacher community (Borg, 2011; Skinner et al., 2008).
In order to be a competent community, they must have access to a shared repertoire of communal resources and use them appropriately. As a group they generate a shared repertoire of ideas, goals, and memories and develop resources, such as tools, wikis/vocabularies, documents, routines, and symbols, which represent the knowledge built up by the community (El-Hani & Greca, 2013). A CoP would develop resources and artefacts that could be shared online. It would allow access to materials that teachers might use to improve their lessons (El-Hani & Greca, 2012). Wang and Lu (2012) found that many teachers agreed that the shared resources were useful for them in preparing and customizing lessons. Even though in this information age where teachers could easily access information from the internet, the shared resources suggested by peers were often more relevant (Wang & Lu, 2012). A recommended resource is a much better one than a Googled resource because it has been vetted or curated by someone you trust. The teachers felt the exposure to shared resources expanded their horizons as they had never seen those resources before. Shared resources can be particularly helpful for new teachers in overcoming their lack of experience and improve their teaching knowledge and practice (Seo & Han, 2013). A community that is reflective on their repertoire moves forward. “Without the learning energy of those who take initiative, the community becomes stagnant, without strong relationships of belonging, it is torn apart. And without the ability to reflect, it becomes hostage to its own history” (Wagner, 2000, p. 230).

Reform of Professional Development

In order to improve upon professional development, a few key components could be implemented. Extending professional development over time, in the form of a CoP, rather than one day workshops would help teachers implement change. Providing teachers with support in the form of time, flexible scheduling, and proper leadership to get a CoP started, would help to
foster a positive learning experience. The final component to professional development reform is utilizing technology to its fullest in order to create an online CoP.

In addressing reform of professional development, it is important to identify the need for workshops to be extended over a longer duration of time rather than one-shot occurrences. Effective professional development for teachers involves ongoing interactive activities in the school community context with the inclusion of school administrators (Green & Cifuentes, 2008; Guskey, 2003). When professional development is sustained over an extended period of time, it allows for in-depth discussion of content and for teachers to try out new practices in the classroom and obtain feedback on their teaching (Garet et al., 2001). Kopacha (2012) found that teachers prefer professional development to occur over a longer duration of two to three months in order to achieve real change in their teaching practice.

A CoP provides a long-term solution to professional development. It provides teachers with the support and professional development needed to sustain practices over time (Kopacha, 2012). Instead of hiring professional consultants that charge a large fee, it is far better to use the knowledge of teachers within the community (Roseler & Dentzau, 2013). By developing a community of teachers, it will create learning experiences between novice and experienced teachers, incorporating knowledge reciprocally.

Borg (2012) suggests that in order to develop a CoP teachers need to be given the support to ‘get off the ground.’ This support should include time to develop strong interpersonal relationships; professional development opportunities to both gain and share knowledge, training that enhances individual capacities for collegiality and a balanced workload that allows teachers to work in innovative ways. Teachers should be given recognition when they achieve goals that are not easily measured by performance data. Teachers participating in personal learning
communities appreciate administrators who support them with time and resources for meeting. In turn, administrators develop teachers who are collaborative, self-directed, and empowered by their work (Linder, Post, & Calabrese, 2012). School leaders must be made aware of factors, such as marginality, that might undermine the community’s evolution (Borg, 2012). Through its leadership, an organization needs to be well aligned to the CoP it fosters (Wenger et al. 2002). This support needs to be maintained beyond the initial formation phase as a CoP will change and evolve in order to remain viable and dynamic.

In this digital age, access to technology should be utilized to its fullest potential to create an online CoP. As teachers become more comfortable with technology it is becoming a more viable option to offer professional development online through social media and communication technologies. An online CoP provides many advantages over a face-to-face option. Most teachers that have participated in an online community have found it to be a meaningful form of professional development (Duncan-Howell, 2010). Duncan-Howell (2010) reported that 86.7% of teachers found membership to an online community provided a rich source of professional learning. Henderson (2007) found that participants in a multiple case study of an online CoP demonstrated sustained engagement for more than twice the minimum requirement.

**Advantages to an Online Community of Practice**

An online CoP has advantages over face-to-face professional development such as: time, relevancy of subject matter, a sense of immediacy within the learning environment, and a sense of community that could be created in an online environment. There is also the potential for an online CoP to develop into a strong community.

One advantage to an online community is time. When creating a CoP there often is a lack of time for face-to-face meetings where teachers can engage in extensive collaboration. Online
collaboration using digital tools for problem solving, planning, curriculum development, assessment, and reflection helps to address this challenge (Beach, 2012). Teachers can log on and participate on their own schedule (Duncan-Howell, 2010). Teachers no longer need to be released from classes or travel to other places, allowing them to be able to complete virtual teacher development in non-teaching periods at school, before or after school, or at home (Keown, 2009). The asynchronous nature of communities gives teachers time to think, reflect, and compose answers (Duncan-Howell, 2010). Synchronous meetings can also provide a more convenient approach to professional development. They can cut down on travel time and can be scheduled at better times, such as right after school. They also have the option be recorded, with warning and permission, for those who cannot make them.

Another advantage of an online community is the relevancy of subject matter. An online community can be focused on an individual teacher’s needs (Duncan-Howell, 2010). It provides an opportunity for teachers to connect with other teachers of similar teaching assignments. This creates a more individual approach to professional development.

An online CoP can also offer a sense of immediacy within the learning environment. Topics can be discussed rapidly. Responses are fast and solutions can be created quickly (Duncan-Howell, 2010). A post in an online community can almost always ensure a quick response from other members, allowing immediate feedback on a pressing matter.

The sense of community that is created in an online environment must also be acknowledged. Professional dialogue that is facilitated with peers outside of the workplace gives a wider experience (Duncan-Howell, 2010). An online CoP can be used to increase communication and collaboration among teachers (Vavasseur & MacGregor, 2008). It provides an opportunity for teachers to share individual teaching experiences with peers and get feedback
and suggestions from others (Gunawardena et al., 2009). It provides a space for novice teachers to ask more experienced teachers for advice as to how to solve problems. This gives them an opportunity to improve their classroom management strategies based on the suggestions they received (El-Hani & Greca, 2012; Wang & Lu, 2012). A successful collaborative community can help to increase a teacher’s confidence, which in turn will affect their involvement in a community (Wang & Lu, 2010).

Teachers’ postings within an online forum facilitate the development of a community. Controversy, humour, personal experience and positive feedback all play a valuable role in the development of an online community. Cross posting, inviting comments and sharing the leadership role, all help to replicate the dynamics of a face-to-face community (Prestige, 2010). Gunawardena et al. (2009) found that an idioculture formed when the participants brought their life experience, knowledge and insights to the group through discourse. Negotiation of meaning helped to reinforce the strength of the community. Although a learning community is built on camaraderie, there must be equal opportunities for critique to occur, in order for learning to happen (Prestige, 2010). This requires an openness of teachers about their own practices (El-Hani & Greca, 2012), in a place where they feel safe to be open.

**Disadvantages to Online Communities of Practice**

In order to develop a feasible online CoP, obstacles to an online community must be identified. These could include: time management issues; creating an environment where teachers feel secure; and participation inequality. Sustaining an online community over time can also be a challenge that will need to be overcome.

One obstacle to an online CoP is time management issues (Duncan-Howell, 2010). An online community requires extra time to check messages, post comments, and read responses.
Just like managing an email account, members of the online community need to develop a system to manage their online community involvement.

Another obstacle to an online community is that it can also be challenging to create an environment in which teachers feel confident to collaborate on developing teaching materials. Often teachers can be reluctant to criticize materials that are created by others (Seo & Han, 2013). Instead, they might not bother with materials that they deem low quality in hopes of not hurting that teacher’s feelings rather than posting comments that might help to improve the materials. Another disadvantage with online communities is the negative impact of dominators. Discussions can often get sidetracked. There can be misunderstandings and members can push personal agendas (Duncan-Howell, 2010).

In virtual communities, participation inequality is very common. In an online community, it tends to be a small number of individuals that do all the contributing (Parr & Ward, 2006). Some members are lurkers, or participants who read and observe, often involved in legitimate peripheral participation, but do not contribute much in an explicit manner (El-Hani & Greca, 2013; Preece, Nonnecke & Andrews, 2004). This kind of participation is characteristic of communities of practice. Gradually moving from partial to full participation in the community can be conceived as a process of social learning in which members gradually engage in exchanges and practices (El-Hani & Greca, 2013). Seo and Han (2013) found that when it came to sharing resources, there was not a widespread reciprocal sharing of teaching materials. A few teachers posted their teaching materials to share and the majority of teachers used them but did not post their own in return.

Although an online community can be an effective form of professional development it can be difficult to sustain over an extended period of time (Tsai, Laffey, & Hanuscin, 2010). It
can be difficult to sustain members’ feelings of a sense of ownership, connections, trust, commitment to the community, and a sharing culture (Tsai et al., 2010). The participants in an online community will change over time. If a key member of the community chooses to leave, it is important to ensure that their role and leadership in maintaining the community is replaced with another key member.

**Design Considerations for Creating and Nurturing an Online Community of Practice**

The success of an online CoP will hinge upon its design and the plan for support. Some of the design aspects that need to be addressed are: establishing clear learning goals of the community, good leadership, and creating a sense of community where teachers feel safe and secure enough to participate in. In a successful online CoP it is important to recognize your brokers, or experts that can relay information and learning experiences to the group in simple language. Also a reasonable sized group of individuals with a wide variety of participants is essential for an effective CoP.

When designing an online community, it is very important to have clear learning goals of the community (Liu, 2012). It is even more essential to have clear, specific goals as online participants do not have opportunities to meet face-to-face to clarify expectations and uncertainties (Liu, 2012).

Another important factor that needs to be carefully planned is the role of leadership. Keown (2009) found that a core group exhibited keenness and a sense of co-leadership that helped to ensure that the dialogues operated with good pace and rhythm. They helped to develop and nurture in-depth dialogue and thinking. This helped to develop strong community relationships and values. A facilitator has an important role to keep a community viable. They should define norms and expectations, model appropriate communications, foster interactions,
provide relevant resources, and define roles and responsibilities for collaborative work (Beach, 2012).

When establishing an online learning environment, it is important to establish a sense of community to promote meaningful discussions (McConnell et al., 2013). Building a sense of community is critical to the success of the group (Linder, Post & Calabrese, 2012). In order to grow, teachers should be encouraged to reflect using a wiki, blog or website and then share their reflection and invite feedback (Beach, 2012). Hutchison and Colwell (2012) suggest that wikis could provide teachers with a place to share ideas with teachers in other schools. Wikis should be utilized in less restrictive ways that allow the collaborative nature of user generated, Web 2.0 tools to emerge. Teachers need to publicly share their beliefs about their teaching and be able to professionally challenge their colleagues’ beliefs in ways that may lead to a positive evolution of beliefs about effective instruction (Prestige, 2010; Voogt et al., 2011).

When establishing an online CoP you must recognize your “brokers,” or members that stay at the boundaries of many practices and then move to the core of one practice. Informally recognized experts play a critical role in triggering transformational changes and adapting pedagogical approaches. It is their expertise and assistance that provides concrete examples to learn from (Wang & Lu, 2012).

In an online CoP, a reasonable sized group of individuals with a wide variety of participants is needed for an effective virtual CoP (Keown, 2009). A more diverse community with both newcomers and experienced teachers will facilitate learning experiences from each other. A larger pool of participants will increase the likelihood that some will be prepared to assume different roles in the community (Keown, 2009).
Conclusion

Teachers often work in isolation with little collaboration with other colleagues. Isolation can be due to many factors. Schools often have rigid timetables and segregated classrooms that are not conducive to teacher collaboration. Novice teachers often feel disconnected from more experienced colleagues and do not want to seem incompetent when they ask for advice. This can be detrimental to their teaching, and limit their opportunities for reflection on practice. Reflection and professional development are necessary in order to implement new curriculum and teaching strategies.

Currently, most professional development consists of one-day workshops led by an “expert” that is often outside the teaching profession who disseminates knowledge with little follow-up to help teachers in applying their knowledge in the classroom. Often it is disconnected from a teacher’s practice, which can result in little evidence of the benefit of the opportunity. It can often lack subject and content specific workshops that can feel generic. A requirement for collaboration and reflection is time. Teachers often lack scheduled time for ongoing collaboration with others. Professional development extended over a period of time is more effective in improving instruction and student achievement (McConnell et al., 2013). Professional development can also cause an individual teacher financial strain to attend expensive workshops.

A CoP consists of a group of individuals who actively collaborate together to share knowledge, abilities and experiences. It was a term first coined in 1991 by Lave and Wenger who described learning as a social process in which a community constructs meaning from participating in a collaborative process. This process usually results in the community constructing a shared repertoire of communal resources that represents the knowledge built up by
the community (El-Hani & Greca, 2013). A CoP provides a long-term augmentation to professional development and can supply teachers with the support needed to sustain practices over time (Kopacha, 2012).

In this digital age, where access to Web 2.0 tools is easily available to co-collaborate and co-create, there is no reason why teacher’s professional development cannot be augmented with an online CoP. As teachers gain confidence in the area of online collaboration, this affords the opportunity to develop an online CoP. There are many advantages to an online CoP such as: time; relevancy of subject matter; sense of immediacy in the learning environment; and the sense of community that can be created. A bank of shared resources can be developed within the CoP community.

In order to properly develop an online CoP, one also has to acknowledge the disadvantages of an online community. One such disadvantage can be the inequality of participation that can occur. Another such disadvantage to an online CoP is its sustainability over time. Often it can be difficult to maintain that sense of community and leadership required to perpetuate the community over a sustained period of time (Tsai, Laffey, & Hanuscin, 2010).

When designing an online CoP several factors must be considered. It is important to have clear learning goals so that participants are clear on what their role should be. Leadership in a community is required to develop and nurture the community and it can be shared among participants. Establishing a sense of community is necessary to promote meaningful discussions and critical to the success of the group (McConnell et al., 2013; Linder Post & Calabrese, 2012).

In this digital age, the global staff room is a no longer a futurist idea but rather a reality. Teachers can now turn to online CoPs to develop their knowledge base and resources. These virtual spaces satisfy a teacher’s need for extended professional development and provide a rich
repository of shared resources. This in turn can result in improved educational practice and increased student achievement.
Chapter Three: Reforming Professional Development with a Google+ Community for Langley District Educators

Figure 1. Webpage header. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/
**Home Page**

On our home page we wanted to create a personal and welcoming feel to our site. We included a YouTube video where we introduce ourselves and explain the story behind why we created the Langley Virtual Staffroom and what we hope other teachers in the district might take from it (see Figures 2, 3, & 4). We also included a text version of our video that will re-emphasize our story and rational for building it. At the end, we included our email addresses in case there was a need to make contact with us.
Hello there....

The story behind The Langley Virtual Staffroom

Lorrie Burnham and Tracey Thorne have been educators in the School District #35 (Langley) for over 10 years. In 2013, we started on an adventure to obtain our Masters Degree. One of the most difficult decisions when completing this degree is deciding on a topic of interest, as there are so many areas in education to explore. As we talked, collaborated and brainstormed for hours, days and weeks, we came to the conclusion that our project needed to be something that would benefit all teachers in our district, a district that has become home for us.

Figure 2. Home page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/
Both of us have started new teaching assignments recently, and with that comes a complete set of new curriculum, new planning and new ideas. The question of “where do I even start?” can become overwhelming at times. As we thought about this further, and realized that so many teachers would be in a similar situation sometime throughout their teaching career, we decided that we wanted to create a hub or space where teachers could connect, share ideas, and learn from one another.

With our Masters being an online community, we have realized the power of online professional relationships, and the trust that can be built without even physically meeting in person. Extending our professional learning network has changed the way we teach within our own classrooms, and by having the necessary conversations that make us think, question, and try something new has opened up our desire to challenge our teaching practices.

*Figure 3. Continuation of Home page. (Burnham & Thorne, 2015). Retrieved from [http://langleyvirtualstaffroom.weebly.com/](http://langleyvirtualstaffroom.weebly.com/)*
Whether you are a new teacher, you have a new assignment, or you are a veteran educator who may be looking for new ideas to implement into your classroom, our hope is that The Langley Virtual Staffroom will be a place for you to share and gain information about curriculum, struggles and successes within the class. We hope that it is a place where you can put a face to a name of the Langley District teachers, and that you can find a community of subject specific educators to connect with and share your ideas. We hope that these online communities will make it easier for you to access resources and support at your own time and pace, in the comfort of your own living room or backyard. We hope that the connections that are made will help to make our district closer in terms of collaboration and teamwork. After all, we are all in this together, and the more we help one another, the better educators we will become which in turn makes the learning environment stronger for our students. Most of all, we hope that The Langley Virtual Staffroom will become our collective work in progress as a district of educators. It has been created for all of us to enjoy, take ownership of, and connect with each other.

If you ever have any questions, please don’t hesitate to contact us.
Lorrie Burnham: lburnham@sd35.bc.ca
Tracey Thorne: tthorne@sd35.bc.ca

**Figure 4.** Continuation of Home page. (Burnham & Thorne, 2015). Retrieved from [http://langleyvirtualstaffroom.weebly.com/](http://langleyvirtualstaffroom.weebly.com/)
About Us

When building this site we felt it was really important to make a connection with the teachers who might be visiting our site. This is why we included an “about us” section (see Figures 5 and 6). On this page we again included both a YouTube video as well as a text-based biography, giving a brief history about our teaching career and some of our passions. We felt this was an important component to give the site a more personal feel and to help make a connection with other teachers.
Tracey Thorne

I have been an educator in the Langley District for over 10 years. As an 18 year old, I was able to travel and live in Monaco, where I learned to speak French, and despite me ever thinking I would teach French when I was in high school, I grew a deep passion for FSL teaching and have loved making my classes interactive and fun. This coming September, I have the opportunity to get back to a Grade 4 classroom at Fort Langley Elementary, which I am so excited about!!! My husband's office is nearby, so I should expect daily lunch deliveries, right???

I have 2 boys who keep me on my toes, a husband, who is very involved in the community, and 2 cats. Running is one of my hobbies, although I need to make sure to take the time to actually do it! I also love watching my boys play sports, and hanging out in our backyard.

I am VERY excited about the potential of this community. Many times I have wondered what other teachers might be doing in their classrooms, and I always wish for the time to be able to watch others in action. I believe this site will give us a chance, as Langley educators, to share our expertise, to learn from others, and to connect faces to names which will bring our district closer together. After all, this is OUR community, and it will be what we all make of it!!

Figure 5. About Us page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/about-us.html
Welcome to Langley Virtual Staffroom! My name is Lorrie Burnham and I am so excited that you took some time out of your busy day to check it out! I have been a teacher in the Langley School District for 15 years (how time flies!) where I have taught everything from Grades 2 - 12. My passion is for Science, Math, and Technology. This year I am currently teaching Math 8, 9, 10, 11 and Science 10.

I love to think outside of the box and push the limits of education, incorporating technology into my teaching. This was not always the case! Three years ago the extent of my tech knowledge was answering emails and writing report cards in Report writer! After embarking on a Master's program in technology and education I have changed my whole philosophy on teaching. I no longer view technology as a waste of time but rather an important tool for students to master. I am always looking to take it to the next level. My latest adventure has included a multi-access class, where I have students log in from around the province and interact with the students in my class.

As a parent of two boys, aged 9 and 3, I am very much aware of how the world is rapidly changing around them. They are one of my main reasons that I am so driven to help bring change to education and teaching.

Teaching can be a tough gig! My hope is that you view this community as a place to seek support. This could be in the form of resources and ideas from each other as educators in the Langley School District. So many times our teaching assignment changes and we are left scrambling to find new resources and lesson plans. Just last year I taught Science and Math 10 for the first time in years. I am the only Math teacher at our school and I would have loved a place I could have connected with other teachers with similar teaching assignments.

As we begin to implement the new curriculum my hope is that this is an adventure that we can travel together! I look forward to connecting with you in the community!

Figure 6. Continuation of About Us page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/about-us.html
How To....

We felt that a “How to” page was an especially important component to our project. From the drop-down menu on the Home page, this link will provide pertinent information on getting started within the Google community. On this page we included YouTube video tutorials that will help those teachers who are new to Google+ communities as well as those who need to be reacquainted with them (see Figures 7, 8 & 9). We included a video tutorial on “How to Create a Gmail Account,” “How to Use Google+ Communities,” “How to Make a Post in a Google+ Community,” and “How to Upload a Video to a Google+ Community.” It was our feeling that the easier it was for teachers to join the Google+ community, the higher the teacher ‘buy-in’ would be, which in turn, would make it more successful.
Feeling Lost? Hopefully the How To Videos below will help you find your way!

Here is a selection of videos on how to sign up for a community, create a post, or share a video/photo with the community. If after watching the video, you are still feeling like you need personal assistance, reach out and contact us!

How to Create a Gmail Account

Figure 7. How To page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/how-to.html
Figure 8. Continuation of How To page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/howto.html
Figure 9. Continuation of How To page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/how-to.html
Feedback

We wanted to provide a page where teachers could easily provide feedback to us. This prompted us to create a contact page (see Figure 10). This allows for teachers to contact us individually through email. This also makes it easy for novice teachers, who may not be as familiar with technology, to reach out for help if they are unable to sign up for a Google+ account. It can also be used to give us feedback, both positive and negative, and allows teachers to present their own ideas about possible future communities.
Elementary School Communities (Grades K – 5)

We divided our communities into three categories: Elementary (K-5), Middle (6-8) and Secondary (9-12). Within the *Elementary Community Page*, we divided the communities according to grade (see Figure 11). Each community link has been placed on a button that when clicked on will direct them to that specific Google+ community where they can ask to join. We included a link to create a Gmail account in case someone did not have one already. We also gave a few suggestions such as: leaving a brief introduction about yourself when you join the community, where to access help tutorials, and that suggestions to the site are always welcome.
Welcome to the Elementary Community Pages!

Please access your grade specific community by clicking on the links below. This is a Google+ Community. You will require a gmail account to be able to access these communities. Once you have requested an invite you will be given access to begin your resource and professional sharing journey.

Suggestions:
1) In order to start to create a feel of community we would love for you to record a brief introductory video. You can include your name, grade level, school and any interests that you have. This will help the community to start to put names to faces. Please make sure to tag it with the “Getting to know you” category.

2) If you need a tutorial on how to upload a document or video, please watch the tutorial videos that have been posted on the home page.

3) Please feel free to make suggestions on this resource site as this is our collective district site and it is meant to serve all educators in the Langley School District.

Our Community Pages

- Kindergarten
- Grade One
- Grade Two
- Grade Three
- Grade Four
- Grade Five

Middle School Communities (Grades 6 – 8)

Within the *Middle School Community Page*, we divided the communities according to subject area (see Figure 12). Each community link has been placed on a button that when clicked on will direct them to that specific Google+ community where they can ask to join. We included a link to create a Gmail account in case someone did not have one already. We also gave a few suggestions such as: leaving a brief introduction about yourself when joining the community, where to access help tutorials, and that suggestions to the site are always welcome. We will always be open to adding more communities if teachers approach us with a need.
Welcome to the Middle School Community Pages!

Please access your subject specific community by clicking on the links below. This is a Google+ Community. You will require a Gmail account to be able to access these communities. Once you have requested an invite you will be given access to begin your resource and professional sharing journey.

Suggestions:
1) In order to start to create a feel of community we would love for you to record a brief introductory video. You can include your name, grade level, school and any interests that you have. This will help the community to start to put names to faces. Please make sure to tag it with the “Getting to know you” category.

2) If you need a tutorial on how to upload documents, photos, or videos, please watch the tutorial videos that have been posted on the home page.

3) Please feel free to make suggestions on this resource site as this is our collective district site and it is meant to serve all educators in the Langley School District.

Our Community Pages

- English
- Math
- Science
- Social Studies
- Physical Education
- Fine Arts

Figure 12. Middle school community page. (Burnham & Thorne, 2015). Retrieved from http://langleyvirtualstaffroom.weebly.com/middle-6-8.html
Secondary School Communities (Grades 9 – 12)

With the *Secondary School Community* page our rationale was the same as the Middle School Community page, where we divided the communities according to subject area (see Figure 13). We kept the format very similar to the other community pages, including suggestions and a link to sign up for a Gmail account.
Welcome to the Secondary School Community Pages!

Please access your subject specific community by clicking on the links below. This is a Google+ Community. You will require a gmail account to be able to access these communities. Once you have requested an invite you will be given access to begin your resource and professional sharing journey.

Suggestions:
1) In order to start to create a feel of community we would love for you to record a brief introductory video. You can include your name, grade level, school and any interests that you have. This will help the community to start to put names to faces. Please make sure to tag it with the “Getting to know you” category.

2) If you need a tutorial on how to upload documents, photos, or videos, please watch the tutorial videos that have been posted on the home page.

3) Please feel free to make suggestions on this resource site as this is our collective district site and it is meant to serve all educators in the Langley School District.

Our Community Pages

- [ENGLISH]
- [MATH]
- [SCIENCE]
- [SOCIAL STUDIES]
- [PHYSICAL EDUCATION]
- [FINE ARTS]

Sample Screen Shots of Google+ Communities

Within each community we included a description of what the community is about and how to use it (see Figure 14 - 19). We included a link back to the Langley Virtual Staffroom website. We also pinned a post indicating that by being a part of this community we are using cloud computing where personal information is stored outside of Canada. As it is a pinned post, it will always remain at the top of the feed.
Elementary Google+ community sample

Figure 14. Sample of an elementary Google+ community. (Burnham & Thorne, 2015).
**Elementary community post categories.** These are the categories within the Google+ community (see Figure 15). When making a post in this community, you must tag it with a specific category. We determined that these communities would be most pertinent to elementary teachers.

*Figure 15. Elementary Google+ community categories. (Burnham & Thorne, 2015).*
Middle school Google+ community sample

*Figure 16.* Sample of a middle school Google+ community. (Burnham & Thorne, 2015).
**Middle school community post categories.** These are the categories within the Middle School Google+ community. When making a post in this community, you must tag it with a specific category. As the Middle School Google+ Communities have already been divided into subject areas, we determined that these communities would be more applicable to Middle School teachers.

<table>
<thead>
<tr>
<th>All posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
</tr>
<tr>
<td>Getting to Know You</td>
</tr>
<tr>
<td>Resources</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
<tr>
<td>Events</td>
</tr>
<tr>
<td>Photos</td>
</tr>
</tbody>
</table>

*Figure 17. Middle school Google+ community categories. (Burnham & Thorne, 2015).*
Secondary school Google+ community sample

Figure 18. Sample of a secondary school Google+ community. (Burnham & Thorne, 2015).
Secondary school community post categories. We kept the categories in the Secondary School Community very similar to the Middle School Community, as the Secondary had also already been divided into subject areas. We felt that these communities would be more applicable to Secondary School teachers.

<table>
<thead>
<tr>
<th>All posts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discussion</td>
</tr>
<tr>
<td>Getting to Know You</td>
</tr>
<tr>
<td>Resources</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
<tr>
<td>Events</td>
</tr>
<tr>
<td>Photos</td>
</tr>
</tbody>
</table>

Figure 19. Secondary school Google+ community categories. (Burnham & Thorne, 2015).
Google Form for Acceptance into Community

In order to align with FIPPA regulations and to ensure that teachers are aware that the information on this site is stored outside of Canada, as well as guidelines we have for the Google+ Community, we ask that before each teacher is granted access to the community that they must fill out a Google+ Form (see Figure 20). By submitting the form, they agree to the guidelines. This information will be stored in a time and date stamped Google Sheet.
Figure 20. Google form for acceptance into community. (Burnham & Thorne, 2015).
Letter to the Superintendent

Dear Suzanne Hoffman;

Attached you will find a passion and Masters project proposal from Lorrie Burnham and Tracey Thorne. We have both been teachers in the Langley School District for over 10 years.

In September 2013, we were accepted into the MEd pilot program (#TIEgrad) through the University of Victoria. As this is a Master's program which focuses on a final project, we began to brainstorm ideas that we believed would be beneficial in a district we so dearly love. As we talked about many options and directions, we discussed the need for shared resources and a collaborative community for educators within our district. So often, there are so many amazing teachers with incredible lessons, and those lessons are seen solely by a small group of students. Master teachers retire and their strategies and resources are rarely passed onto other educators. Teaching can sometimes feel like an isolated profession due to the structure of schools and their rigid timetables. Teachers can feel isolated in their own classrooms, and due to time constricts, seldom communicate with fellow colleagues. Our hope is that by providing a district online educational community, teachers will connect and meet other educators in the district, where they can share resources and ideas, and seek support and advice with one another.

The site we have created is called www.langleyvirtualstaffroom.weebly.com. Members will need to ask to join the community and complete a User Agreement. This will address any FIPPA concerns, and allow us to check the district staff directory to ensure that the member is a part of our school district. After careful consideration we determined that the community should be kept private. As we have seen with many public communities, there is no way to manage the members or content. Through our research, we found a Ministry of Education directed Google+ Community called Edtech Mentorship
Network. While we applaud the direction of the Ministry in creating and encouraging membership in this community, there are some questionable members, which, in our opinion, de-professionalised the community. As Google+ Communities are cloud-based, much like iTunesU and Office365, we want to make sure that members within Langley Virtual Staffroom are aware of the FIPPA regulations. We would enforce that they have completed a user agreement before being accepted into the community, and that it would be a closed community, solely open to Langley District employees.

As technology has become commonplace for so many of our students, we need to provide an opportunity for teachers to learn from each other. Having this community will add to the current professional development opportunities, as it can be accessed at anytime, from anyplace, and we believe that many powerful conversations can be had when educators have a chance to connect. Web 2.0 tools, like Google+ and Twitter, can support asynchronous and synchronous online communities of practice. Teachers no longer require the time needed to drive long distances or clear time after school for workshops. With careful consideration and design, an online community of practice is a feasible option for professional development.

We appreciate your time Mrs. Hoffman and we look forward to hearing from you.

Sincerely,

Lorrie Burnham (Lochiel U-Connect)
Tracey Thorne (Fort Langley Elementary)

*Figure 21. Letter to the superintendent. (Burnham & Thorne, 2015).*
Project Proposal for SD#35

Project Proposal for an

Online Community of Practice

(Langley School District)

October 6, 2015

Purpose of the Project

- to provide a site where teachers can make connections with fellow colleagues within the Langley district
- to have a hub where resources and ideas can be shared, so that we are creating a teamwork, collective and collaborative approach to teaching in our district

Title of the Project

We have created a webpage called the “Langley Virtual Staffroom”, which houses focused, Google+ Communities in order to support the development and nurturing of an online CoP. It can be accessed at langleyvirtualstaffroom.weebly.com. However, membership must be approved before access to the site can be granted.

Why? What is this project about?
How do we collaboratively create a necessary resource using social media in our district that allows for resource sharing, making connections, building community, and promoting an open concept of best practice for all teachers and students, which in turn lessens isolation? Once we have created a platform for resource sharing, how do we guide that effort to make it most productive for teachers? How do we engage teachers who may be skeptical about sharing their resources with others?

In the 21st century, as becoming a digital citizen is necessary in the workplace and, therefore in education, professional learning communities can provide an opportunity for teachers to learn from other educators within our own district. We have a community of well-versed and knowledgeable teachers with so many talents, yet that knowledge and those talents are seldom shared with one another. The Langley Virtual Staffroom provides the central hub where in-district educators can connect.

Inspired by a Google community page out of Indiana, our goal is to create a virtual community space for teachers, “The Langley Virtual Staffroom”, within our school district. The subject-specific Google+ website will be hyperlinked with communities that will allow teachers to efficiently share materials with educators who teach similar subjects, or grade levels. The hope is that this site can also help to form professional connections between colleagues. The goal is to provide educators with a broad bank of resources and connections to support professional development, collegiality, efficiency and teamwork.

The central site will be clear, concise and organized. With the understanding that some teachers may not know how to upload documents or videos, there will be a help menu containing tutorials and step-by-step guides to support members. Facilitation, which will begin with Lorrie Burnham and myself, will also be key to help foster relationships, respond to specific requests, answer questions and to encourage teacher participation. Over time, those responsibilities can be shared with fellow colleagues.

The “Langley Virtual Staffroom” will be a private community, which means that members will need to be accepted to the site in order to become a member. This ensures that all members, before acceptance, have been verified as Langley School District employees, and that they have all accepted the FIPPA regulated User Agreement. They will need to adhere to the strictly professional regulations of the site, and that no students or non-members shall be mentioned.
Project

The Langley Virtual Staffroom

By creating an online community, teachers within our district will have the ability to brainstorm new ideas as the B.C. Ministry of Education is releasing a new scope on curriculum. This will create a more team-based, collaborative approach to building resources together. There is also an overwhelming collection of online resources, and educators can be flooded with cognitive overload. A collaborative curation system seems necessary, and this will also allow the district to capture the essence of lessons, units, and strategies of veteran teachers who may soon be retiring, fresh insights and tried and true resources.
Each teacher will be able to access a specific subject, and/or grade level. By creating smaller communities, within the virtual staffroom, educators will truly be able to connect with educators of similar grade compositions. Educators will also be able to access video tutorials, if help is needed (e.g., How to create a post, or how to upload a video). This will continue to be a work in progress as new questions may arise.

**What is Required from the District Level**

1. Your support!!!

2. To help promote this site within district and to encourage other teachers to sign up and to take on moderator roles for the communities

**Conclusion**

In this digital age, the global staff room is a no longer a futurist idea but rather a reality. Teachers can now turn to online communities of practice to develop their knowledge base and resources. These virtual spaces satisfy a teacher’s need for extended professional development and provide a rich repository of shared resources. This in turn can result in a teacher’s improved practice and increased student achievement. With it being a grassroots community, we feel that teachers will have a greater investment in their own learning, as it will be information or connections that they are seeking out personally.

We would be thrilled to be able to bring this community into our district.

Lorrie Burnham & Tracey Thorne
Presentation for Langley School District Educators

This is the slide presentation that will be used when presenting the website to the district (see Figures 22-31).

Figure 22. Slide 1 of district presentation. (Burnham & Thorne, 2015).
Figure 23. Slide 2 of district presentation. (Burnham & Thorne, 2015).

- Online community of practice
- Grassroots - from teachers for teachers
- Subject and grade specific communities for resource sharing
- Area for collaboration and connectedness
- Structured communities - Elementary, Middle, and Secondary communities
Why is it necessary and what are the goals?

- Reduce teacher isolation
- Connecting new teachers with seasoned teachers
- From research and experience - traditional professional development (top down) does not allow for integration into the classroom, and reflection
- Rapid change of technology and need to gain insight and find support for these changes in order to captivate, motivate and communicate with digitally savvy students.
- Introduction of new curriculum - support for integration
- Curation of amazing teaching practice

*Figure 24. Slide 3 of district presentation. (Burnham & Thorne, 2015).*
Maintaining Community - Role of Facilitator

- Facilitator - necessary for success: will need to help and manage members/posts within the communities
- Make it personal: teachers need to feel connected and take ownership
- Manage negative comments to keep it positive
- Role modeling participation: encourage feedback and constructive criticism
- Encourage “lurkers” to participate and contribute to the community

Figure 25. Slide 4 of district presentation. (Burnham & Thorne, 2015).
Privacy Policy

● The Langley Virtual Staffroom is a private, closed community where teachers can gain access solely by invitation or request.

● Teachers are made aware of the Fippa document. Before joining, they are informed that this is a cloud-based site. After requesting access, they will receive a Google form that will need to be completed and submitted before access to the community is granted.

*Figure 26. Slide 5 of district presentation. (Burnham & Thorne, 2015).*
How to Get Buy-in

- Present to digital literacy coaches, administration and the school board
- Posters in staffrooms - “Have you joined The Langley Virtual Staffroom?:
  Where collaboration, new ideas and professional connections are made!
- Send link to teachers and ask them to join the community
- Word of Mouth
- CTAP workshops?

Figure 27. Slide 6 of district presentation. (Burnham & Thorne, 2015).
Figure 28. Slide 7 of district presentation. (Burnham & Thorne, 2015).

Technology Guidance

Video on how to’s:
- Intro of how the site works
- How to sign up or receive an invitation
- How to create a Gmail account
- How to access the Google+ community
- How to upload video
- How to create a post
- Providing individual assistance when needed
Obstacles to Online Communities

- Time management - requires extra time to check messages, post comments, and read responses
- Level of engagement within the community: “lurkers”
- Creating an environment in which teachers feel confident to share and collaborate on developing teaching materials.
- The need to keep the community positive, and to encourage teachers to reflect, and provide constructive feedback
- Negative impact of dominators. Discussions can often get sidetracked. There can be misunderstandings and members can push personal agendas

*Figure 29. Slide 8 of district presentation. (Burnham & Thorne, 2015).*
Future Potential of the Community

- Online professional development workshops
- Google hangouts on air with experts that are recorded and posted into communities.
- Group meet-ups to collaborate
- Interactive online events

Figure 30. Slide 9 of district presentation. (Burnham & Thorne, 2015).
What we need to move forward

- Your support
- To help promote this site within district and to encourage other teachers to sign up and to take on moderator roles for the communities

*Figure 31.* Slide 10 of district presentation. (Burnham & Thorne, 2015).
Chapter Four: Summary and Reflection

Professional development has remained stagnant for many years, as teachers attend one-day, top-down instructed workshops, on specific dates and times. As technology is quickly changing societal norms, students need to be better prepared for their entrance into the workplace. Yet, professional development opportunities do not always address the technological needs, or the changing dynamics in the classroom. One-shot workshops often do not provide the opportunity for educators to apply what has been learned, reflect on that practice, and revamp the lesson to make it more effective for the students.

Our Inspiration for the Project

The Langley School District has been home for both Lorrie Burnham and Tracey Thorne for over ten years. When brainstorming ideas about our project, we both reflected on our passion for collaboration and we thought that our district would also benefit from a community: a place for other educators in our district to meet, learn from one another, and share experiences and resources. In the past, there have been so many educators who have retired, and have taken their skills with them without the opportunity to share with others. Currently, there are so many incredible educational experts within our district, and their students are the only ones who benefit from the fruits of their labour. Our hope, and vision, is that we will create a community where teachers can learn and share with one another, and in turn, provide new, and fresh ideas within their classrooms.

Inspired by a Google Community out of Indiana, (http://www.doe.in.gov/elearning/online-communities-practice), we contacted the creators, and asked for feedback. Michelle, one of the creators, shared with us that the
size of the community could be a concern. She stated that, “the scale of the communities does make it a bit more challenging than if it were a district level initiative.” Therefore, we decided to start with solely our district, which we hoped would better build connections amongst members. We feared that if we started too big, members would be less likely to engage, as they would not feel comfortable contributing or sharing with a larger audience. We also wanted to create a community where educators in our district could get to know each other online, which in turn will lead to a familiarity in person, and help foster connections around the district.

Why a Google+ Community? Educators continue to learn new technologies alongside our students. Many teachers are beginning to feel more proficient with the use of technology in this digital age. A Google+ Community provides simplicity of use. It is easily accessible by anyone with a Gmail account. Within our TIEgrad cohort, Google+ communities were often used, and we found that it was very effective when wanting to post or share information.

**Our Project Specifics**

We began building a website, using Weebly as our platform. On this site we included our reason for this project, information about our background, how-to videos, and grade and subject specific Google+ communities. Educators within the district can ask to join a grade/subject-specific Google+ community. Here, they can connect with other educators with similar grade-level compositions or subject levels. Once they have joined, they can add an introductory video, share resources, their struggles and successes, chat with others and build connections within the district.
“How-to” videos have also been created in case a member needs guidance or a reminder on how to create a Google+ account, how to post, and how to upload to the Google+ community. This was included to help ease potential struggles educators may have if technology is an initial hurdle when joining the community.

We have included a feedback form on our Weebly site where teachers can easily share their ideas and concerns. We hope that they will contact us if they require an additional Google+ community, or if they require more assistance when attempting to join a community. We will use their ideas and comments to continually build upon our project.

Our Google+ communities are designed to run asynchronously, but access to a Google Hangout could provide the ability for educators to meet synchronously face to face, once a connection has been made. Our hope is that this will create new opportunities for professional development to occur. Teachers will be able to connect online with other educators in the district to collaborate, and in turn, will not have to travel in order to meet. These hangouts could also be recorded and posted to the community for educators who were unable to watch it live.

Privacy

While online collaboration and cloud computing is a solution to the demands of teacher time, giving educators the opportunity to collaborate anytime and anyplace, there is the concern of privacy. While there are professional, educational communities such as the EdTech Mentorship Network (n.d.), that are public and have little control over members, we felt that it was important to adhere to the FIPPA privacy policy. Therefore, the Langley Virtual Staffroom is a private site. Once members ask to join, we will consult
with the district staff directory to ensure that they are School District #35 members. They will then be asked to complete a Google form where they will be required to provide their name, school district email, and their position within the district. Within the form they will need to check a box indicating that they agree to the user agreement. Once their completed form has been received they will then be granted access to the communities.

**Reasons for the Community Categories**

After conversations with colleagues, and personal decisions, we felt that it was integral that the communities initially be divided into specific categories: Elementary K-5, Middle 6-9 and Secondary 10-12. At the Elementary level, K-5, the communities were split into grade specific groupings, while at the Middle and High School levels, they were divided into subject-specific groupings. This way, the material or conversations posted would be relevant to those involved.

Feedback and involvement is also always encouraged. While we have created specific communities for educators, there is a contact form for members to provide feedback or suggestions. There may be certain requested communities to be added, or communities that exist and are not being utilized, so should be removed.

At first, we may need to be strong moderators or facilitators within the communities. We will need to monitor the postings, and help to maintain a positive, communal atmosphere. However, the hope is, over time, subject-specific or grade-specific teachers will emerge as facilitators for their small community of teachers, which would alleviate our personal time constraints.
Teacher Buy-In

Through our research and after talking with the creators of the Indiana Google community, one of the major drawbacks to an online professional community is the initial buy-in and continued participation. Often, the problem is that many educators may ‘lurk’ in the community, and they will access the resources, but they may not contribute to the actual communities themselves. Our goal is to build trust with members so that they feel more secure and confident. With that confidence, we hope, comes more of a desire to share with others and not simply take ideas without contribution. Our hope is that when a teacher has posted resources or lessons, others will comment and add feedback to that posted lesson. The end product will be a resource that has been created collaboratively and the result will be a better resource or lesson overall.

After quick conversations with teachers in our district, they seemed eager and willing to contribute because this is a grassroots project: to teachers from teachers. When building the community, our aim was to make the Langley Virtual Staffroom about all of us and for our entire district. Our hope is also that if the members feel more ownership over this project, they will be apt to contribute to its success.

In order to increase interest in our site, we plan to present our project to the digital literacy coaches for the district. This will ensure that at least one teacher at every school in the district will have been introduced to our website. From that word of mouth will be a large part of letting others in the district know about the existence of our site.

Our Journey

Being a part of the #TIEgrad cohort at the University of Victoria has been a major motivator for our project. It has shown us that online professional relationships are
powerful, real, and influential. Trust is a key concept to sharing in an online community. As trust develops, community members are more apt to sharing personal successes and struggles. While some may argue that online professional relationships differ from real-life encounters, we would disagree. The members of TIEgrad feel like family. We recently met for the first time, in person, and the gathering felt much more like a reunion rather than an introduction. They have been our biggest supporters.

TIEgrad has also challenged the way many of us initially thought about collaboration and resource sharing. Unfortunately, in the teaching world, many educators hold tightly onto their own lessons, as they were the ones to spend countless hours creating them. TIEgrad has shown us that so many other educators want to share. They want to improve the profession as a whole. They want to do whatever they can to help colleagues best reach their students, and as a result, they are open and willing to exchange lesson ideas, stories and provide suggestions or feedback.

Before TIEgrad, we were much more stringent with student choice. We were honestly afraid to let students have choice with projects and assignments. TIEgrad has encouraged us to focus on our passions and to choose what would be truly meaningful to us. We have, in turn, brought this to our classrooms. As a class, we may need to cover a certain concept, but by allowing students to have choice over how to represent their own learning, they are more engaged and excited to showcase what has been understood.

Our hope is that, over time, many of the Langley School District educators will see value in our Google Community. With it being a grassroots community, created by teachers for teachers, we are hoping that they will see the benefit of sharing with colleagues within the district and will trust the honesty and passion that went into
building it. We are realistic that the community will take time to build, but by word of
mouth, and positive experiences within the space, the hope is that the community will
continue to grow and that Langley educators will see the value in sharing with one
another.
Recommendations for Other Educators

**Research your theories.** What are you wanting to accomplish? For us, it was the decision between the Community of Inquiry and the Community of Practice. After careful consideration, we focused on the Community of Practice as we felt that our community needs to be collective and reflective, where collaboration between inexperience and experience will help to guide conversations around a common profession.

**Collaborate on the project with a colleague.** It has been an absolute honour to create the Langley Virtual Staffroom together. We are not simply colleagues; we have become best friends over the years. When one of us was uncertain about the next direction to take, the other was there to talk through the scenario and come up with a solution. Two heads are always better than one, and each of us had insight into how to make this community effective for our district.

**Reach out to others who have created communities of practice.** It has been our experience, that these are the people who have great feedback and suggestions, as they have already gone through the growing pains of initial community development. So often, they are also completely willing to share these experiences, as their philosophy is also to spread the word, share what we know, and learn from one another.

We hope that the Langley Virtual Staffroom is just a tool in order for Langley district employees to have meaningful conversations - conversations that matter. It is our goal for our colleagues to feel supported, and in turn, less isolated in individual classrooms. It is our hope that members of the community will understand the benefit of learning from each other and sharing resources in a give and take environment. I strongly
suggest that you also search my Master’s of Education partner, Tracey Thorne (@ThorneSD35), on Dspace (https://dspace.library.uvic.ca/) to find her corresponding Master’s project for more information on our topic of online CoP’s.
References


Kopcha, T. J. (2012). Teachers' perceptions of the barriers to technology integration and practices with technology under situated professional development. Computers & Education, 59(4), 1109-1121. doi:10.1016/j.compedu.2012.05.014


Seo, K., & Han, Y. (2013). Online teacher collaboration: a case study of voluntary collaboration in a teacher-created online community. KEDI Journal of Educational Policy, 10(2), 221-242.


