

Spirals of Inquiry: Building Professional Inquiry to Foster Student Learning

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Paper presented at ICSEI 2011, Limassol, Cyprus as part of the symposium entitled: *What is Inquiry and How Does it Work? Examining Linkages in Assessment, Leadership, Teacher and Student Inquiry* Ref # 0053 January 6 2011 15:45

Abstract

This paper describes the development of inquiry thinking in a network of schools in British Columbia, Canada. From an initial study of the inquiry cycle used within the Bay Area School Reform Consortium to the more recent knowledge on teacher professional learning, the approach to inquiry is evolving and deepening. The description of the way in which inquiry-mindedness is now being applied at the level of the individual learner is illustrated through the reflections of a teacher leader in a key network school.

Introduction

This paper represents part of an emerging set of perspectives on inquiry examining the linkages among assessment, leadership, student and teacher learning. Our intent is to explore the ways in which teacher inquiry can lead to student inquiry and to provide a case study as illustration. We suggest that:

1. The development of an inquiry mindset is a new basic for learners navigating in a complex, interconnected world. Teachers and principals must develop sophisticated approaches to inquiry in order to create stronger learning orientations in their classrooms, schools, and systems.
2. Building a powerful inquiry repertoire requires sustained development and support. This is a complex shift in pedagogical design that is more effectively accomplished through the active participation of educators in a nested community of practice and research.
3. Changed assessment practices focused on both content and process are required in inquiry-oriented forms of learning and teaching.
4. Conceptualizing inquiry as a cycle – or as a set of interconnected spirals – is more helpful than considering inquiry as a fixed trajectory.

The context for this paper is drawn from our experience over ten years in facilitating a network of inquiring schools in British Columbia, our work with hundreds of formal and informal school leaders through graduate level programs,

and our case study analysis of schools making substantial gains in both quality and equity. The case study of Glenview Elementary School has been selected to illustrate the difference that can be made by teacher leaders with an inquiry mindset embedded in a network of support.

Inquiry Mindset – A New Basic

We have argued elsewhere (*Leadership Mindsets: Innovation and Learning in the Transformation of Schools*, 2009) for the importance of formal and informal leaders approaching the challenge of deepening learning for young people through developing an inquiry mindset. We have learned from the work of Lorna Earl and Helen Timplerley (2008) who state:

Leaders with an inquiry habit of mind do not presume an outcome; instead they allow for a range of outcomes and keep searching for increased understanding and clarity. Inquiry mindedness demands engagement in questioning, reflecting and decision-making. (p.9)

Not only is an inquiry mindset fundamental for educators, it is also essential for young learners. Developing life-long curiosity, fostering creativity, increasing engagement and self-regulation, encouraging greater collaboration and cooperation, building resilience and resourcefulness are all features of more personalized, contemporary approaches to learning.

In their recent summary of research regarding inquiry oriented teaching approaches, Brigid Barron and Linda Darling Hammond (2010) state that students learn more deeply when they can apply classroom knowledge to real world problems. Inquiry and design approaches are an important way to nurture communication, collaboration, creativity and deep thinking. They further suggest that, if we value the development of critical thinking capacities for young people, we must ensure that:

Students are given opportunities to develop them [thinking capacities] in the context of complex, meaningful projects that require sustained engagement, collaboration, research, management of resources, and development of an ambitious performance or product. (p. 200)

Barron and Darling Hammond (2010) further argue that individual and small group inquiry approaches have the potential to be extremely powerful for learning. To be effective, however, they need to be guided by teachers using thoughtful curriculum with clearly defined learning goals, well-developed inquiry scaffolds, ongoing formative assessments and rich informational resources. These researchers are realistic in their depiction of the challenges involved in developing a system of inquiring educators and learners, as they conclude:

Inquiry approaches to learning are challenging to implement. They are highly dependent on the knowledge and skills of the teachers engaged in trying to implement them. Teachers need time and a community to support their capacity to organize sustained project work. It takes considerable pedagogical sophistication to manage extended projects in classrooms so as to maintain a focus on “doing with understanding” rather than “doing for the sake of doing” (p. 215)

If we agree with the arguments that increasing inquiry-focused approaches for young learners – and encouraging inquiry mindsets for all educators – are necessary, then we must ask under what conditions inquiry practices can best be developed.

Developing Inquiry - Sustained Support

Making changes to one’s teaching repertoire - especially for highly experience teachers - is never easy to do. Making significant shifts to a stronger emphasis on inquiry is even more difficult. From our experience with an inquiry network of schools and from our work with hundreds of formal and informal school leaders, we believe that a deep focus on inquiry is most effectively realized through the active participation of teachers in a nested collaborative inquiry community.

According to Earl and Timplerley (2008), collaborative inquiry merges deep collaboration in the form of rigorous and challenging joint work with inquiry. This is consistent with Little’s (2005) reference to a large body of research suggesting that conditions for improving learning and teaching are strengthened when teachers collectively question ineffective teaching routines, examine new conceptions of teaching and learning, find generative means to acknowledge and respond to difference and conflict, and engage actively in supporting one another’s professional growth. (p. 124)

Having challenging conversations focused on individual theories of action are not easy. This was clearly evident in the case studies examined by Earl and Timperley (2008, *Professional Learning Conversations: Challenges in Using Evidence for Improvement.*) It has been important within the Network of Performance Based Schools that teachers have had sustained support which has allowed trust to build over time. Reducing norms of isolation, providing a framework for inquiry to develop, and ensuring sustained opportunities for focused professional learning are helping to create the conditions required for inquiry to flourish.

Developing an inquiry perspective early in one’s teaching career is important in establishing norms of collaborative inquiry. Too often, beginning teachers start their careers in contexts where transmission teaching and survival skills rule the informal culture. Lead teachers in northern British Columbia are shifting this

negative pattern through initiating new relationships with teacher candidates to encourage inquiry as a way of life:

We are confident that the community of teachers learning formative assessment through our networked community inquiries can be expanded to include teacher candidates. We envision mentoring relationships as mutually beneficial, with teacher coaches deepening their knowledge and perhaps questioning their practices as they responded to questions. We see learning partnerships as a natural, personalized way to support professional learning. (2010, p.5)

Their determination to foster inquiry has led to a new partnership between the University of Northern British Columbia and experienced network teachers:

Beginning teachers, who are provided with positive experiences with inquiry coaching colleagues early in their career experience, are best positioned to make inquiry an ongoing and major part of their pedagogical repertoire. (Brown, Davy, Koehn, Wilson, forthcoming, 2011)

Sustained support over time for teacher professional learning in networked communities is required for inquiry to flourish. As inquiry becomes more of a reality for learners, new approaches to assessing their learning are also required.

Shifting Assessment Practices

Teachers in the BC network have been working hard to apply key strategies of assessment *for* and *as* learning as an integral part of their inquiry work. The content area progressions developed by BC teachers¹ are an excellent resource to assist teachers in setting criteria with learners, providing descriptive feedback and ultimately in assisting learners with taking ownership of their own learning. Developing confidence and expertise in formative assessment requires on-going professional learning, practice, reflection and discussion. As teachers move from inquiry about their own pedagogy and its impact on student learning to inquiry at the level of the individual learner, practices must expand to include both content area learning outcomes and assessments about the process of reasoning and the quality of thinking.

Not only are new forms of assessment required at the level of the individual learner involved in inquiry-based learning, Barron and Darling Hammond (2010) argue that assessment design is a critical issue for revealing the benefits of inquiry approaches for group efforts. Their findings indicate that, if one only looks at traditional learning outcomes, inquiry-based and traditional methods of instruction appear to yield similar results. Benefits for inquiry learning are found

¹ BC performance standards available at www.npbs.ca

when the assessments require application of knowledge and measure quality of reasoning. (p. 201)

Only with sufficient attention to formative coaching of ongoing inquiry processes, and regular use of performance assessments to demonstrate the intelligent application of inquiry, will the potential power of inquiry for the cognitive development of young people be fully unleashed. This requires another mindset shift as Timperley points out in her forthcoming book on professional learning:

In many cases it involves taking a whole new perspective on the purposes of assessment as one of professional inquiry rather than one of grouping, labeling or credentialing students. (Draft 2010: p.11)

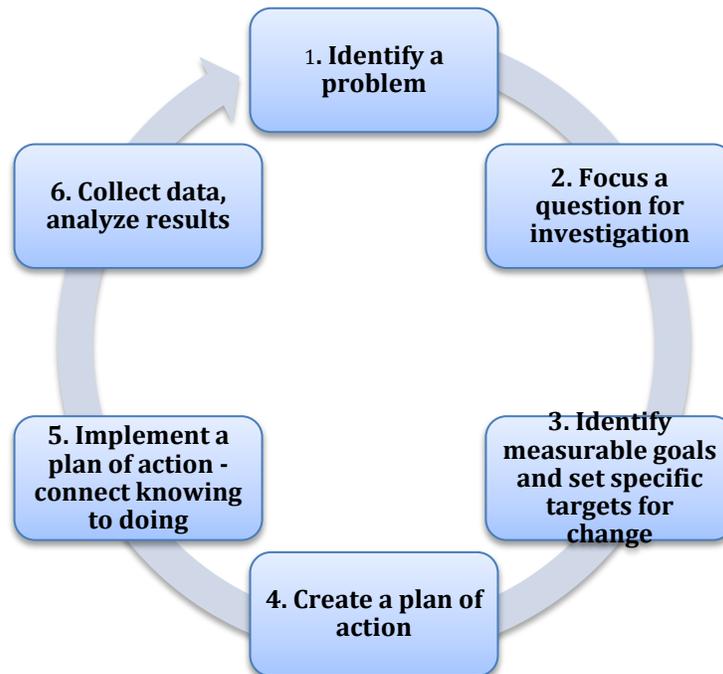
Linked and Evolving Cycles of Inquiry

Over the past decade we have been exploring inquiry as a conceptual tool for educational change within a sustained network of schools. In this network, educators are gaining experience using a cycle of inquiry that incorporates the use of formative assessment strategies, and encourages teacher collaborative action research.

Bay Area School Reform Consortium Cycle of Inquiry

The inquiry cycle used by the network evolved from studying the equity work of the Bay Area School Reform Consortium (BASRC), a well-funded networked learning community initiative operating in the San Francisco area during the 1996-2001 time period. The BASRC theory of action for school reform involved the use of a six-stage inquiry cycle:

Fig. 1 Bay Area School Reform Consortium Cycle of Inquiry



The BASRC leaders proposed that the Cycle of Inquiry would enable the 87 participating schools to identify key areas for change, and evaluate their change actions in terms of evidence of their consequences for students. This model was based on the assumption that inquiring schools would build knowledge for continuous improvement.

Over time, BASRC increasingly emphasized that the Cycle of Inquiry should operate at multiple levels of the school as an interconnected system. At the school, department/grade, and classroom level, the inquiry process should operate to manage and bring coherence to change efforts and, most importantly, to support teacher learning and reflection about relationships between teacher practice and student outcomes. The interconnection of cycles at these levels was also intended to strengthen the personalization and individualization of support for students, as well as bring the focus on the achievement gap/ underperforming groups closer to the classroom. Finally, these cycles at multiple levels were meant to help teachers make meaning around the school cycle in regards to their own day-to-day practice.

The BASRC had a theory of action based on three key ideas:

1. The work of improving schools had to be accomplished collectively by the people in the school itself;
2. Leadership for improving teaching and learning had to be based on continuous inquiry, at the school level, regarding improved

student learning connected with high standards, equity and best practices; and,

3. The decisions made in the schools regarding identification of and the development of solutions for critical problems, had to be made collectively through an intense focus on improving the learning of all students. (Copland, 2002 p.2)

Lead researchers from Stanford University (McLaughlin and Talbert 2002, Copland, 2002 McLaughlin and Mitra, 2003) conducted an intensive study of this reform and their findings helped to frame the approach of the BC network and the initial network spiral of inquiry.

Although their findings regarding the degree to which participating schools moved along an inquiry continuum from novice to advanced could be viewed as discouraging, we have found the frankness of their observations very helpful:

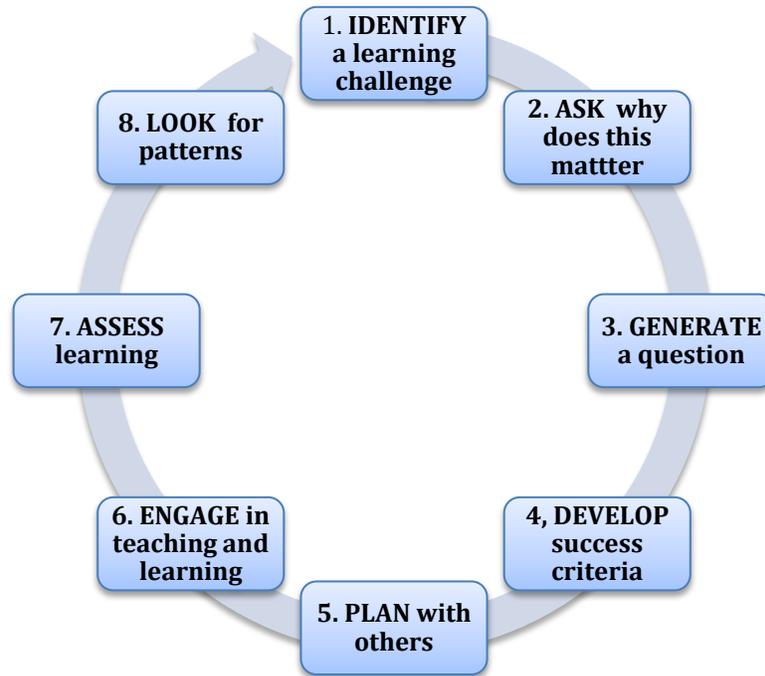
As inquiry practices became more deeply engrained in school culture, teacher communities generated new, more probing, questions and deeper analysis of student outcomes and teaching practices. And in schools advanced in inquiry, this analysis took place at multiple levels—classroom, grade, department and school. Such interconnected inquiry cycles were essential to engaging instructional issues for the whole school. Without these interconnections, inquiry occurred in pockets and did not engage questions of school level practice or instructional decisions. (McLaughlin and Talbert, 2002 p.18.)

Their discovery that those schools that were able to do connected inquiry work over the life of the reform were the ones that had a culture of teacher inquiry when they joined the reform movement, was a very important insight in shaping our subsequent work.

Network of Performance Based Schools – Initial Cycle of Inquiry

Unlike the Bay Area School Reform Consortium, we had neither huge funding nor schools with a history of active inquiry. What we did have, however, were a recent set of learning progressions developed collaboratively by hundreds of outstanding teachers through a provincial assessment initiative. There was substantial interest from teachers and principals in adopting the progressions. The initial network inquiry cycle used these learning progressions as a “given” and encouraged teachers working together to go through the following eight steps in what was described as a spiral of inquiry:

Fig. 2 NPBS 8 Part Cycle of Inquiry:

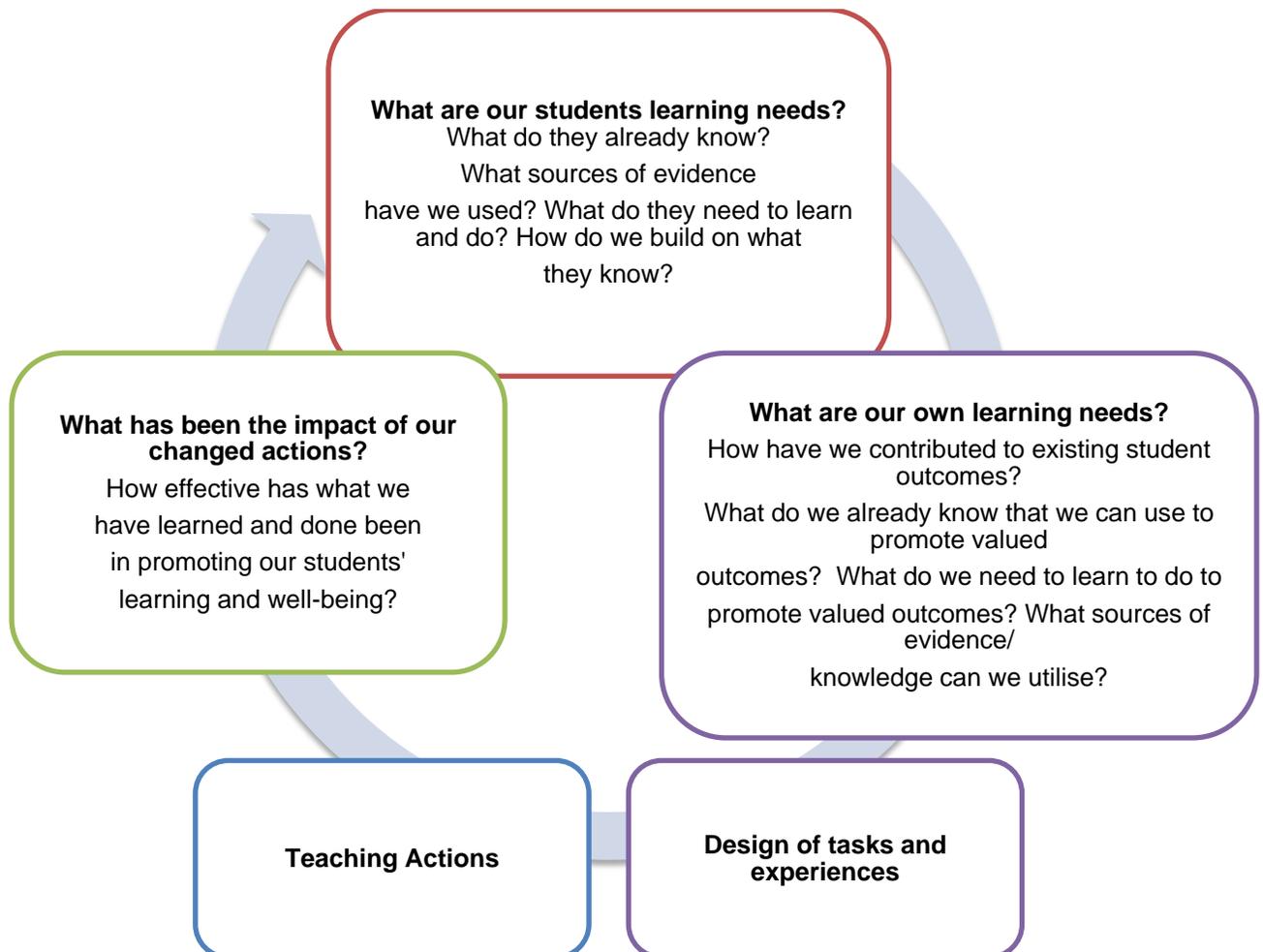


Network educators engaged in this cycle of inquiry over a period of one year. The involvement of schools varied – sometimes it was interested individual teacher leaders, sometimes it was entire departments, and sometimes it was whole schools. We now have hundreds of schools that have had many years of experience with using continuous teacher inquiry as their major professional learning focus. These schools have learners who have strongly benefitted from this active, inquiring approach.

Cycle of Teacher Professional Learning

In spite of the early success in encouraging a stronger inquiry orientation in network schools, we understood that greater attention needed to be paid to professional learning. At this point the work of Helen Timperley (2007) and her colleagues in New Zealand had a significant influence on the ways in which we needed to think about teacher professional learning and the ways in which we could build the research findings from the Best Evidence Synthesis into network design and development. The cycle of teacher learning that Timperley identified as critical to student learning helps in providing greater focus for professional learning and cohesion in network schools.

Fig 3. Teacher inquiry and knowledge building cycle to promote valued student outcomes²



Timperley's (2011 in press) recent work, *Realizing the Power of Professional Learning* is further helping to refine our understanding about the importance of building teacher learning into the network spiral of inquiry connected to improving student outcomes. Within the Network, teachers have become relatively skilled in using the content area progressions to identify student learning needs and to pose a question designed to move their learners forward. What has needed stronger development is the direct connection to teacher learning needs.

² Inquiry figure from inside cover of H. Timperley, A. Wilson, H. Barrar & I. Fung (2007) *Teacher Professional Learning and Development: Best Evidence Synthesis Iteration* Wellington, New Zealand: Ministry of Education
<http://educationcounts.edcentre.govt.nz/goto/BES>

The second part of the cycle asks teachers to identify what it is they need to know and do to be more effective, particularly with struggling students. Timperley argues persuasively that engaging in professional learning that has immediate application and is motivated by teachers' *need to know* is much more effective than professional development motivated by someone else's *desire to tell*:

Policy makers, researchers or professional development providers believe or have evidence that some kinds of teaching practices are more effective than others. They then create professional development opportunities to inform teachers about these practices without creating the need to know beyond compliance or teacher interest. They are then surprised that teachers are not very motivated to implement what is presented. As with most learners, the need to know provides a stronger motivation to engage than someone else's desire to tell. (2010 draft p. 10)

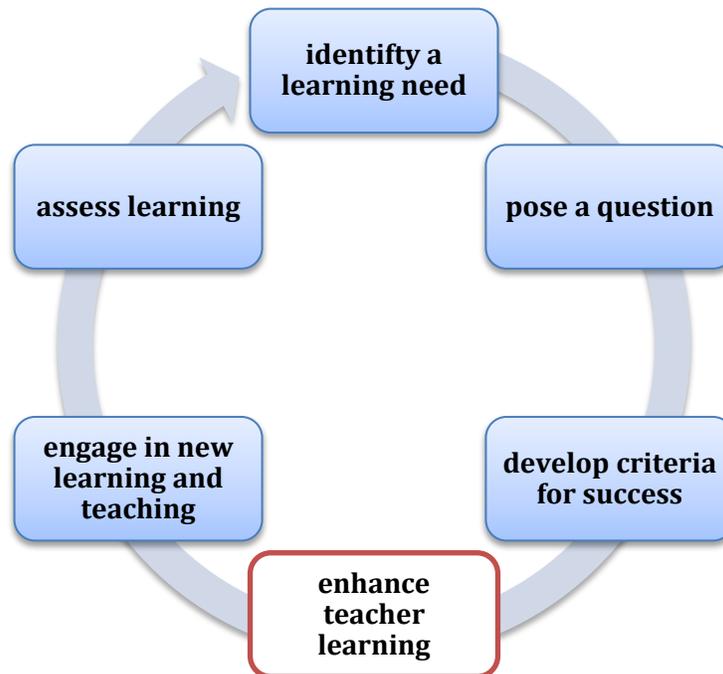
Timperley also observes that it is difficult for teachers to identify their own professional needs and that the assistance of an external facilitator is usually necessary. She offers the following specific questions for teachers to answer with a professional learning facilitator in this part of the cycle:

- What knowledge and skills do we, as professionals need to meet the learning needs of our students?
- How have we contributed to existing student outcomes?
 - In what areas and with whom are we most effective?
 - In what areas and with whom are we less effective and why?
- What do we already know that we can use to promote better outcomes?
- What do we need to learn and do to promote better outcomes?
- What sources of evidence/ knowledge can we utilize? (2010 draft p. 11)

Evolving Spiral of inquiry

As our understanding of the importance of teacher professional learning connected to inquiry about learner outcomes has deepened, our conceptualization of an inquiry cycle has also evolved. Currently we are suggesting the inquiry is both a cycle and a spiral, with one inquiry leading to another with increasingly greater depth:

Fig 4 Current NPBS Spiral of Inquiry



By connecting Timperley’s work on teacher professional learning with the specific focus on student learning needs, we are seeing schools make more significant gains. We are also seeing teachers apply the spiral of inquiry directly to learners. To provide a view of these cycles in action we draw on a case study from a small elementary school in the northern part of BC. Glenview has had an extended experience with inquiry work focused on formative assessment practices in the areas of literacy, mathematics, social responsibility and healthy living. This year the school team is exploring the following question: How will using the six formative assessment strategies (see appendix A) help our student develop greater meta-cognition and establish inquiry-mindedness as a way of life? The following section traces their journey and provides excerpts from the reflective journal of teacher Debbie Koehn.

How Inquiry Is Shaping Learning – For Teachers and Young Learners – At Glenview Elementary School

When I first joined the Network of Performance Based Schools I was desperate to reconnect with my career and to regain the feeling of self-efficacy in the classroom. I wanted my students to improve their own performance and not be dependent upon a teacher directing their learning. I needed to know how I could reinvest myself back into my teaching so that my students would receive the kind

of education that they deserved. I wanted to no longer impose curriculum on students, I wanted students to want to learn. I needed to feel happier about how I was interacting in the classroom. I needed to feel pride in myself and the students in my classroom.

My first question was:

Would purposefully teaching metacognitive skills in reading and writing improve my students' performance according to the BC Performance Standards?

After I had attended two network meetings, the network leaders asked if I would be interested in attending the Certificate of School Management and Leadership diploma program at the University of Victoria. I realized my own need for social interdependency when I was learning. I needed to talk about my learning and how I interpreted new ideas. Reflecting on how I learned best helped me to understand students' needs for mentoring/coaching.

My question for the network, developed through the CSML program was:

How would participating in a cross-grade student coaching program improve student performance in reading and writing? Would both grade levels of students show improvement and what would be factors affecting performance according to the BC Performance Standards?

After a year of listening to my students question each other and discuss their learning I realized there was a correlation between their level of understanding, and their levels of achievement. As a result, I decided to specifically state learning intentions and criteria. At the same time we became very aware of individual students' learning similarities and differences. How could we bring each student's interests, knowledge and experiences into their daily learning?

Our next year's question was:

In what ways does understanding how to use learning intentions (the what of learning) and criteria (how will you learn it) influence students' academic achievement? Can student coaches help younger students understand how to use learning intentions and criteria more thoroughly than adults? What factors will influence this use – deliberate training, understanding the use of rubrics, personal student success, peer and self assessment as well as teacher assessment – how are these strategies intertwined?

This was the year that we started inviting other learners into our building to share our learning and we began working extensively in other districts.

Our next question centered on the importance of teacher learning and the importance of having the same language of learning used throughout the

building. We wanted the students to talk to each other, teachers and family members about their learning in a common way so that everyone knew what was being discussed. We knew that students needed to be actively involved in communicating their learning, rather than being told about their learning.

If teachers learned deeply about Assessment for and as Learning how would student learning be influenced? We began to look closely at how we are using data? What do we know? What do we need to know? Where are we going to get what we need? Would student achievement improve according to the BC Performance Standards if teachers became deeply immersed in formative assessment practices? Could we share the language of what we were learning with the students? How are we accommodating individual learning differences and providing the students with the skills to communicate their learning?

We decided that teachers had to become experts in all areas of formative assessment. Together we needed to:

- Provide learners with clarity about and understanding of learning intentions of the work being done
- Provide to and co-develop the criteria for success
- Provide regular, thoughtful feedback that moves the learning forward to the individual learner
- Design and use thoughtful questions to lead discussions that generate evidence of learning
- Put learners to work as learning/teaching resources for each other
- Do everything we could to ensure that learners are the owners of their own learning

The interdependence of teachers learning became very important as we asked each other, how are your students using the formative assessment strategies? What does it look like? How are we using the content area progressions to help learners coach themselves? We were examining what implementing each strategy looked like both for the teachers and the students. What was being successful across the grades? What was successful in some classrooms but not others? What were we doing to create an equitable playing field for all students? We became very aware of what our practice was looking like in our classrooms. What learning strengths did our students demonstrate? What learning challenges? What does differentiated instruction actually look like?

The following year our question was:

If students learned in student partnerships, would working in teacher partnerships move teacher learning ahead? Could we create a learning community where students worked in cross grade partnerships and teachers worked in cross grade teaching partnerships? Would we see an increase in student achievement according to the BC Performance Standards?

At this time we restructured our school, creating team teaching classrooms. Two teachers worked in the same space, team teaching two separately enrolled classes. This enabled teachers and students to develop learning partnerships on many levels. Teachers were able to model coaching/mentoring relationships with each other in the classroom. Students coached each other both inside their classrooms and across classrooms. Students began to coach each other more effectively than teachers could move them forward. Teachers created coaching frameworks or scripts for students to use with each other. Skilled students shared strategies and their understandings with others. Students moved to take the ownership of their learning and responsibly gave and received feedback. Students became experts at understanding criteria and finding evidence in each other's work that proved learning intentions and criteria were followed. Teachers continued to learn from the students and from each other.

Partnerships were formed between schools and between districts. Teachers e-mailed, phoned, observed, discussed, strategized and moved each other forward. Teachers adapted Jan Robertson's coaching model. We examined our teaching. We co-developed learning intentions and criteria and moved each other forward by examining the evidence that teaching strategies were changing.

We have changed. Our school community has changed because we have amalgamated with two other schools and we have attracted students from the Prince George community. However, our learning journey continues. This year (2010-2011) we are examining:

How will using the six formative assessment strategies help our students develop metacognition of learning and establish inquiry mindedness as a way of learning?

Students and teachers at Glenview will focus on using the six strategies consistently in the classroom. We use these strategies to foster students' abilities to set self-achievable goals, use strategies to reach individual goals and be able to discuss meaningful questions like: "*What do I know? What do I need to know? How will I get what I need? What have I learned?*" in an effort to create an inquiry based approach to learning. Adult and student learners new to the school and new to formative assessment because of school amalgamations will be supported in their journey.

Teachers and students experienced with using the six formative assessment strategies are exploring individual student inquiry projects in an attempt to link curriculum outcomes to independent areas of interest. Students are being supported as they independently use the strategies they have been taught, and as they self assess and peer assess their learning and move their projects from fact gathering into deeper learning. Teachers are focused on creating powerful learning environments that are focused on students' needs.

This will definitely be a learning year for all staff members.

Some adult learners are implementing the formative assessment strategies for the first time and some are moving from consciously using the strategies into instinctive practice but all are reflecting on the important role that inquiry plays in creating learning mindsets. We will continue to use evidence based on the school wide use of reading, writing and numeracy performance standards and the data gathered from them to evaluate school effectiveness.

Many of the staff recognize the importance of working with teachers-in-training at the University of Northern British Columbia, so we are also engaged in this inquiry:

How will the continued development of a mentoring program with coaches from NPBS help to: a) increase teacher candidate's belief in and use of formative assessment strategies; and b) contribute to the capacity of networked learning communities, as indicated by extending the social responsibility performance standards, with a focus on contributing to the classroom and school community and exercising democratic rights and responsibilities.

We hope that by providing a support through coaching that teachers-in-training will realize the importance of engaging in inquiry and thoughtful assessment practices right from the beginning of their careers.

Conclusions

The inquiry orientation of the teachers and students at Glenview is the result of courageous, informed teacher leadership embedded in a network of support. We believe that the work at this school exemplifies the kind of pedagogical sophistication described by Barron and Darling-Hammond (2010). The education community in our province is fortunate that the staff of Glenview are opening up their practice to hundreds of teachers and are linking their practices with teachers-in-training.

If we want inquiry to be a way of life in Canadian schools, we must persevere in developing the conditions that make inquiry mindedness possible at a much larger scale. We need many more 'Glenviews' where sustained learner and adult inquiry is a way of life. As a networked and living learning community we will continue to probe the linkages among leadership, assessment, student and teacher learning in this critical area of explorations. We will persevere with opening up our professional practices and providing opportunities for educators to learn from and with each other in networks of inquiry. This is an ongoing spiral of inquiry.

APPENDIX A

Network Learning Strategies

1. Do everything you can think of to make sure that **learners are the owners** of their own learning. This means that learners are genuinely engaged in learning and confident that they can learn and think about their own learning.
2. Provide learners with clarity about and understanding of the **learning intentions** of the learning being engaged with – this means that learners should be able to tell someone else in their own words what the learning intentions are and how they connect to life beyond school. They should be able to answer the three key questions:
 - a. What are you learning?
 - b. How is it going?
 - c. Where to next?
3. Co-develop with learners the **criteria for learning success**. This means that learners have clear criteria for quality and know in which specific area they are aiming to improve.
4. Provide regular, **thoughtful feedback** that moves learning forward for the individual learner. This means that, over time, learners get used to knowing how to improve.
5. Design and use **thoughtful classroom questions to lead discussions** that generate evidence of learning. This means that learners practice being ready to think and know that “no hands up” and individual responsibility for thinking about the question are regular parts of learning life. It also means that teachers work together ahead of time to develop strong questions to use part way through a learning sequence.
6. Put learners to work as **learning/teaching resources for each other**. This means that learners know strategies and have internalized quality criteria so that they can be productive with their same age and older and younger learning colleagues.

Adapted from the work of Network Schools, Dylan Wiliam, Helen Timperley and Lorna Earl

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