Capturing, Assessing and Communicating Student Thinking in a Digital World

by

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Bachelor of Science, University of Victoria, 1992
Bachelor of Education, University of British Columbia, 1994

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Supervisory Committee

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Abstract

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The purpose of this project is to examine shifts in our education system and in classroom practice, particularly around creating meaningful learning experiences through a more personalized curriculum and focusing on communicating student learning in innovative ways. Research was conducted in the areas of formative assessment, digital portfolios, visible thinking, and pedagogical documentation. The capstone project was the design and creation of the website, Stories of Change: storiesofchange.ca. This site is a resource for educators to share and find information on the topics of digital portfolio assessment and making thinking visible. The site also hosts a blog where stories of classroom innovations are published. The narratives on the blog are not only created by the site owners, but also by guest authors. This aspect of the website presents an opportunity for educators to learn from and support one another by sharing stories of innovation and change happening in their classrooms.

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Acknowledgments

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Chapter 1

Introduction

Schools today are in the process of shifting and transforming to meet the changing needs of their students. A more personalized approach to learning is seen as an effective way to engage students and connect more intentionally with their interests and passions. Curriculum and assessment are being redefined to incorporate 21st century competencies, and education professionals are approaching these reforms with a greater awareness of what it means to learn.

Research Problem

In British Columbia, the current Education Plan (2015) focusses on the need for a system that engages students and personalizes curriculum through meaningful learning experiences. A system that not only transforms and modernizes its curriculum, but also its assessment. Emphasis is made on promoting deeper learning for students, enabling them to solve problems, to make decisions, and to communicate their ideas. This plan places a greater emphasis on assessment for learning. The Ministry communicates that "assessment is ongoing and inseparable from the instructional, assessment and learning cycle" and that "as curriculum becomes more personalized, with reduced prescriptive content and more flexibility, assessment will follow accordingly" (British Columbia Ministry of Education, 2013c, para. 11).

As schools continue to approach curriculum through the lens of a 21st century learning environment, educators are charged with providing opportunities for students to be more than receivers of knowledge but rather to be knowledge builders through exploration, asking questions, and through reflection. However, when assessing and documenting student learning and thinking, there is a need to better understand what learning is occurring, what knowledge is being built, and how this learning can be made visible. From this problem, the following research questions arose,

- How can making thinking visible and documentation be used as assessment for learning?
- How does the use of digital portfolios support visible thinking for students?

Definition of Terms

Visible thinking. Simply put, making thinking visible is making the processes going on in our brains visible during the thinking process. In an educational setting, visible thinking can be made possible by teachers' modelling thoughtfulness, asking questions of themselves, and encouraging students to notice problems and ask questions that provoke thought. Questions such as, "What is going on here?" and "What do you see that makes you say so?" provide opportunities for students to bring forth evidence and demonstrate their thinking. Having students identify differing viewpoints and generate questions themselves are practices which help us to define this term (Perkins, Tishman, Ritchhart, Donis, & Andrade, 2000). Visible thinking, as identified by Ritchhart, Church, and Morrison (2011), is a research-based learning approach that supports deep student thinking and learning within content areas. This approach makes use of common structures, procedures, patterns, or tasks referred to as thinking routines within the classroom. The repeated use of these routines aid to cultivate a thinking culture within a learning environment. These routines and other approaches to questioning and building knowledge are ways in which students go about the process of learning and demonstrating understanding.

Digital portfolios. A digital portfolio (also known as an electronic portfolio, ePortfolio, e-portfolio, learning portfolio, or online portfolio) is an accessible digital collection of artefacts or evidence that shows a student's learning journey over a period of time. Barrett (2011) summarizes two distinct ways in which digital portfolios are utilized in the K-12 classroom. In the first instance, the process-oriented digital portfolio can be used as a workspace or a tool for learning and reflection. In using the digital portfolio in this way, students are able to reflect and

share their thinking about specific artefacts, why they were chosen, and pertinent information about the process of learning. By including artefacts, students are able to communicate to and receive feedback from an audience about their skills, experiences, and learning. The second way in which digital portfolios can be used is as a showcase or a landing place for a student's finished work.

Professional Journey and Relevance

Over the last five years, "show me what you know" has become a request I make of students that has changed the way I think about education and has guided me to this place in my own learning. In the past, by observing intermediate students sitting dispirited and challenged by a unit test or midterm exam which I had prepared for them, I recognized that I needed to discuss the disassociation students were displaying with these formal and traditional means of assessment. I knew I wanted to discover more about student thinking. As a result of these conferences, I experimented and let go of my initial expectations and asked learners to show me what they did know about the problems on the tests. In response, the knowledge and explanations which were shared with me by students were revealing and considerable. The dialogue gave me great insight into students' prior knowledge, their conceptual understanding, and where their weaknesses appeared. I recognized that the depth of their learning which I was initially testing was not being fully demonstrated. In this scenario, my conventional assessment methods of a unit test or midterm exam was useful to measure a student's ability to respond to factual recall with some application, but it did not provide an opportunity for children to show the depth and complexity of their learning.

In my many years as an educator in a variety of teaching positions, I have attempted to build a successful learning environment in the classroom. In order to meet this goal, I listen intently to my students, build relationships, organize and prepare the learning pathways for my

students, and provide many different methodologies and forms of assessment. Being compassionate, respectful, and creative are also attributes I nourish within myself as key to the success of my students. But despite all these present elements that contribute to a desired learning environment, it was apparent to me that there was still work to be done. My classroom needed to be a place where a culture of thinking was nurtured. Where thinking and learning are valued by all constituents before, during, and after tasks. I needed to facilitate this shift within myself, my students, and in their learning environment. A new classroom culture needed to be cultivated.

As I journeyed into understanding a thinking culture more deeply, another opportunity presented itself. I was asked to pilot a 1-1 iPad project in my classroom. Another significant paradigm shift in my understanding of education occurred while implementing this project with my grade four class. Through the use of this mobile device, in particular, with the employment of the many interactive whiteboard apps such as ShowMe (Learnbat, 2015) and Explain Everything (Explain Everything sp z o.o., 2015), I was able to hear the explanations and the voices of my students. Their experiences, thoughts, knowledge, and rationales were all captured digitally. This tool and approach put the students in the driver's seats helping them to build their own knowledge. I observed as they accessed information and applied this to their own thinking to transform and construct new knowledge. The access was undeniable; resources were available when and where they were needed. The technology provided options for personalization of learning and a platform to demonstrate student thinking. The content or facts were no longer the only important pieces of a lesson as they had this at their fingertips; what was important for me now was asking thoughtful questions, listening, and capturing their thinking. My role as a teacher was firmly set as a "guide on the side" instead of a "sage on the stage." The instruction

paradigm where the instructor or teacher transfers knowledge to students clearly had no place in this new classroom culture I was nurturing. A learning or thinking paradigm was needed, where my role was now that of coach or facilitator.

Regardless of what traditional forms of assessment I had used in the past, I knew that capturing and documenting the thinking of my learners was necessary for student success. Redesigning curriculum to develop units of study around the understanding of concepts was a starting point. Implementing routines and inquiries for students to construct their own knowledge around ideas, that already existed within them, was required to aid them in transforming new knowledge and understanding. As I observed how asking questions instead of providing facts supported my students to think, articulate, and develop opinions and new thoughts, I also became aware that I needed to consider my methods of assessment and documentation. Tasks and activities within my changing classroom needed to be used as assessment tools for learning.

An important consideration for me now was how could I support my students to make their thinking visible to themselves and the world, and how could they gain feedback from others to grow their ideas and learn? How could this thinking be pedagogically documented in a meaningful way? What role did a digital portfolio have in student learning? These questions have been the driving force behind my Master's project. Seeking answers to these questions has created a purpose for my project: to identify ways that different tools, processes and mechanisms can help to make learning and thinking visible within classrooms today and in the future.

Literature Review

The literature review in Chapter 2 focuses on the topics outlined in this chapter and helped me to define my project. Current and future trends and transformations in the K-12 classroom are explored as a context for the research. In addition, research on the role of pedagogical documentation and visible thinking to promote deeper learning is presented. Finally,

an in-depth analysis of articles and books exploring assessment for learning and the use of digital portfolios for student learning is shared.

Methodology. The literature search methods employed for this project included accessing the University of Victoria Libraries databases, specifically ERIC (Ebscohost) and Google Scholar. Summon 2.0 was also an invaluable search engine providing access to all collections and records within the University of Victoria library catalogue. Searches were refined, but not limited to, peer-reviewed articles in scholarly journals. Extended results also included recommendations from advisors and colleagues and from consulting the reference lists of a variety of sources accessed. The list below includes sample Boolean logic strings used in Summon 2.0 and other databases. Searches were mostly limited to 2010 onwards.

- ("digital portfolios" OR eportfolio OR e-portfolio OR "student blog" OR "learner blog" OR "student video" OR "screencast") AND (K-12 OR classroom OR school*)
- (“visible thinking” OR documentation OR “pedagogical documentation”) AND (K-12 OR classroom OR school*)
- (“assessment for learning” OR “formative assessment”) AND ("digital portfolios" OR eportfolio OR e-portfolio OR "student blog" OR "learner blog")

Project Overview

I will be working collaboratively on this project with fellow Master’s student, teacher, and administrator, Melody Watson. Her project, Portfolio Assessment: Walking the Talk to Make Professional Learning Visible, is searchable in University of Victoria’s DSpace at http://dspace.library.uvic.ca. In our project, we built and documented the journey of creating a central repository, in the form of a website, blog and other related online social media tools, where teachers’ in British Columbia and beyond, can begin to share their stories of change happening within their classrooms. As educators around the province take risks, meet challenges in new ways, and experiment with different methodologies in their classrooms, it has become

apparent that a means to communicate these pockets of innovation to the world was needed. Our blog is an effort to centralize and communicate the stories of innovation, both in assessment practices and other related topics, for the purpose of supporting other teachers to grow and learn professionally. Initially, the focus of the stories has documented growth in assessment for learning and included an online resource of digital portfolio tools and processes. In understanding the integrated way in which transformations occur in education, contributors are encouraged to include all aspects of innovation occurring in educational settings, and not to limit their stories to that of assessment. The blogging platform was chosen intentionally to create a meta-portfolio, making our own professional learning visible in an ongoing way. The process of gaining feedback in which to learn from was an essential component for this project. This cycle of feedback shared between contributors, visitors to the site, and through other social media platforms creates a community of practice supporting teacher growth.

Chapter 2: Review of the Literature

Introduction

This chapter will include an explanation of the theoretical frameworks, constructivism and constructionism, which will be used as the lens to address the the role of student thinking and digital portfolios in student learning. Changes occurring in the K-12 classroom will be shared with attention given to transformations in curriculum delivery models, personalization and assessment. A rationale will be given for the need to make thinking and learning visible in the K-12 classroom, recognizing how visibility supports student learning. Research will be shared on the effectiveness of digital portfolios to motivate and engage students, to support improved literacy, to support formative assessment in the classroom, and finally to promote reflection and metacognition with the goal of growth and making students' learning visible.

Theoretical Framework

Constructivism. The research problem addresses the shift in how learners are expected to interact with knowledge and ideas. No longer being the receivers of knowledge, students need to be taught to understand, think and inquire in order to learn. With this in mind, the constructivist learning theory has been chosen as a contributing theoretical framework for this project. This theory includes the notion that learners construct meaning and knowledge themselves. The process of constructing meaning is learning in and of itself. Although sometimes recently considered a paradigm shift in education, the idea of inquiry and experiential learning is not a new one. First theorized by John Dewey (1938), he called for learning to be an active process where meaning was constructed through experiencing, reflecting, questioning and examining one's experiences, suggesting that people learn to learn as they are engaged in the learning process. The fundamental principles of constructivism promote effective reflection as a process which involves students, teachers and peers. From the individual perspective, learners

are believed to actively build up knowledge based upon their prior experience and personal interpretation of the world (Piaget, 1971). These beliefs support educational models where teachers take on the role of facilitator and/or guide on the side allowing students to discover meaning in their learning. “Each time one prematurely teaches a child something he could have discovered for himself, the child is kept from inventing it and consequently from understanding it completely” (Piaget, 1970, p. 715). Whereas knowledge construction can be seen as an individual's journey, it can also be regarded as a process of learning with peer and teacher feedback in sociocultural contexts (Vygotsky, 1978). Vygotsky stated “children grow into the intellectual life of those around them” (p. 86), claiming that students construct and make meaning not only from personal experiences, but also from the direct contact and influence with those they have interactions with, teachers and peers included. In a constructivist learning environment learners are expected to work with one another collaboratively to develop new ideas about their thinking. Learners are expected to inquire and formulate their own questions of interest. Reflecting on their own thinking and asking questions of themselves and others, in order to build knowledge, are elements of constructivist teaching and learning.

Constructionism. Papert (1980), while also considered a constructivist, proposed that learning is an active process, where learners are continuously building mental models, and theories about their surrounding world. He argued that this learning is more effective when people physically construct in their world. He explained that children learn effectively when they are engaged in constructing personally meaningful artifacts such as computer programs, animations or robots (Papert, 1980). When constructing digitally, the computer is seen as more than just a tool: it is a potential carrier of new ways of thinking about teaching, learning and education. (Urrea & Bender, 2012).

These frameworks provide a basis of support for the implementation of digital portfolios constructed by students and designed for reflection and interactivity within a social construct.

Changes in the K-12 Classroom

The most innovative schools of today are equipped with accessible technology, facilitated by deeper learning curriculum models and support a student-centered approach to learning (Abrami, Wade, Pillay, Aslan, Bures & Bentley, 2008). Using digital connections, students can consider viewpoints from individuals around the globe as well as collaborate with people near and far. Teachers play a drastically different role in the learning process than they did in the past, dealing with fundamental changes in students' access to information. In recognizing all the transformations occurring in education, it is noted that the classroom of the 21st century is fast becoming a different environment from that of its predecessor decades ago. Three notable shifts in education in British Columbia are personalization, curriculum design, and formative assessment.

Personalization. Personalized learning is an approach to learning and education which places the student at the center of the learning experience. It acknowledges the student as an individual with unique experiences, gifts, interests, and learning styles (British Columbia Ministry of Education, 2015). The lives of young people today are completely immersed in 21st century media and culture; access to information is more immediate and constantly being updated, demands of future employers will be for innovative, creative, collaborative individuals who thrive on complex problems (British Columbia Ministry of Education, 2015). As the Ministry of Education is researching and gaining knowledge of how the brain works, the boundaries of how learning is understood is constantly being pushed. Our education system needs to reflect these changing aspects of society. Research tells us that learners think, learn, and adapt in the most individualized ways. The British Columbia Education Plan (2015) states that

the "the best outcomes are achieved through learner-centered approaches that are sensitive to individual and group differences, that promote inclusive and collaborative learning, that harness students' passions and interests, and that deliver tailored feedback and coaching" (p. 3).

Creating a personalized model that incorporates choice and places the student in the center of their learning journey, with the skills to direct their course, is a transformation in K-12 education which has been evolving over time (British Columbia Ministry of Education, 2015).

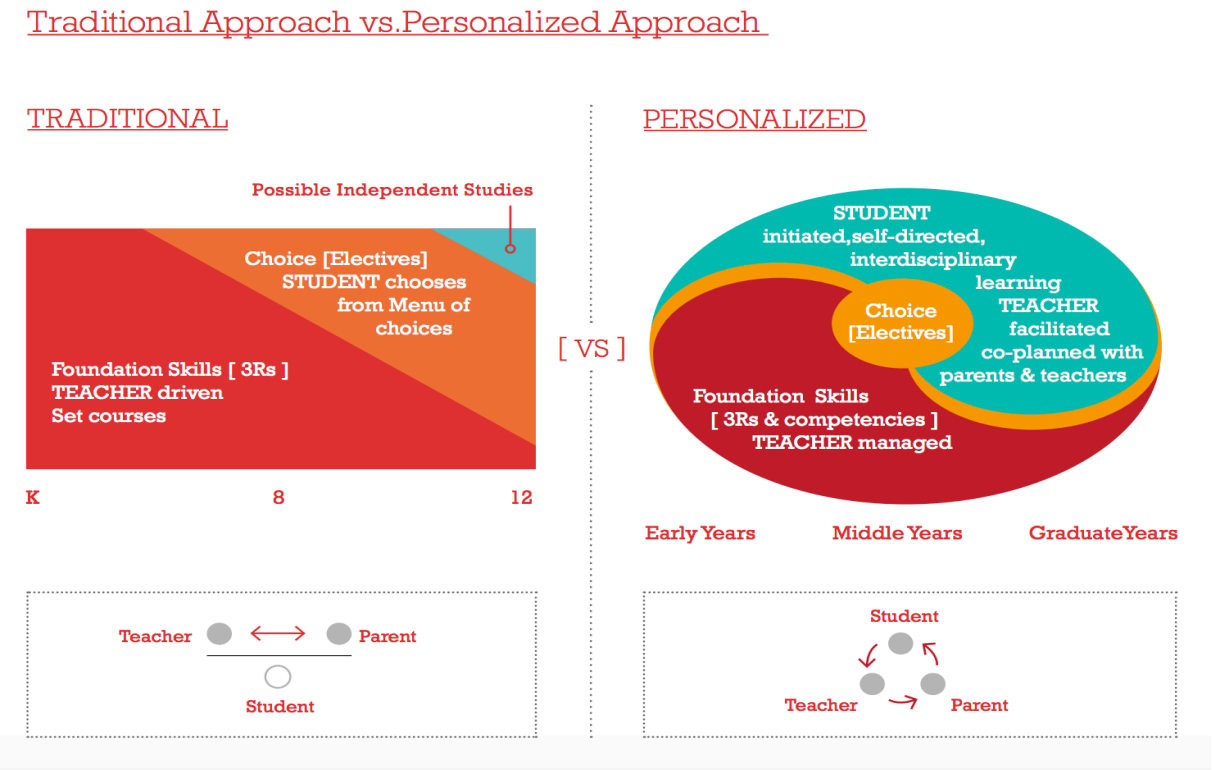


Figure 1. Traditional Approach vs. Personalized Approach.
BC's education plan: Focus on learning by British Columbia Ministry of Education, January 2015, p. 5. Copyright 2015 by British Columbia Ministry of Education.
Retrieved from http://www.bcedplan.ca/assets/pdf/bcs_education_plan_2015.pdf

As per *Figure 1*, the shift in instruction, planning, and choice can be seen in relation to the student. In a Canadian study of 16 classrooms exploring electronic portfolios and their potential to assess student literacy and self-regulated learning, it was noted that, "traditional pedagogical approaches are coming under increasing criticism in part due to alarming attrition

rates in Canada coupled with low literacy and numeracy skills in most westernized countries" (OECD, 2008, p.3).

A key component of personalized learning is engaging the learner through their own interests and also through access to learning via different technological modalities. The role of technology will continue to be a key component in the student learning, supporting documentation, and communication of student understanding, personalization, as well as enriching the learning of our children (British Columbia Ministry of Education, 2015). Meyer, Abrami, Wade, Aslan and Deault (2010) summarize, in their study which analyses teacher and student response to using the ePearl portfolio platform to enhance student core competencies, that "technology can play an important role as a powerful tool in promoting educational change" (p. 1), especially in a student-centered approach. Schleicher (2012) notes in his article summarizing views shared by education leaders, how to turn vision into reality, that technology has the ability to automate and digitize the simple classroom skills easily, but where the real work remains is in developing personalized ways of thinking and communicating. The future growth of these competencies includes the necessity to develop information and communication technologies.

Curriculum design. The need to empower students through innovative curriculum design and thoughtful practice is upon us. Student agency can be manifested by students learning in an engaging, real life connected environment, but it is also paramount for educators to be mindful of co-constructing curriculum and being present in caring, supportive, student-centered environments which contribute to deeper learning. Deep learning can promote genuine understanding leading to the ability to retain, retrieve, and apply learning in new situations (Bransford, Brown, & Cocking, 2000). Understanding is a focus of current educational practices

as evidenced in the development of curricular planning tools such as the Teaching for Understanding (TfU) framework (Blythe & Associates, 1998) and Understanding by Design (UBD) (Wiggins, McTighe, Kiernan & Frost, 1998). Teaching for understanding and deep learning is a complex, messy, and often dynamic endeavour that does not unfold sequentially through set curriculum but rather aligns with student interest and inquiry in an integrated way (Ritchhart, Church & Morrison, 2011; Wiggins, McTighe, Kiernan & Frost, 1998). In an educational setting,

> the important role that models of thinking and learning play helps us to see that an education is much more than the delivery of content. A quality education is also about the development of the habits of mind and thinking dispositions that will serve students as learners both in our own classrooms and in the future. (Costa & Kallick, 2009; as cited in Ritchhart, Church & Morrison, 2011, p. 29)

Assessment. In an effort to meet the needs of all learners, assessment plays an important role in informing students, teachers, and parents of progress throughout the learning process. As stated by the British Columbia Ministry of Education (2013b) in the document, *Transforming Curriculum and Assessment*, "a central purpose of all assessment is to understand where learners are in their learning at the time of assessment with the objective of improving their learning. All forms of assessment play an important role in understanding and improving student learning" (p.1).

Traditionally, summative assessment has held an important place in assessment of learning. Standardized assessment traditionally allows us to measure student achievement across a range of different and individual teaching and learning contexts, creating comparable scores with objective marking approaches. There is a perception with this type of assessment that the

test scores may be consistent and reliable, with little error (Frisbie, 1998). What his research has shown is that there is a range between the reliability scores of commercially prepared standardized tests and teacher made tests. “Most published standardized tests yield scores that have reliabilities in the range .85-.95, values regarded by most as highly acceptable. Teacher-made tests, on the other hand, tend to yield score reliabilities that average about .50” (Frisbie, 1998, p. 16). As these scores are often used to assess student progress and make decisions about future steps within the classroom, the use of these assessments needs to be considered carefully. Testing in this manner is still widely used in K-12 classrooms today, and often preparation and practice for these assessments has taken precedence over thinking activities which promote creativity and discovery for students. Using summative assessment as the sole progress indicator, creates a limited view of students’ competencies and skills (McLeod & Vasinda, 2009). “The educational system becomes distorted, being more concerned with producing effective test takers than successful learners” (Gallagher, 2010; as cited in Ritchhart, Church & Morrison, 2011, p. 25).

Traditional methods for measuring student’s progress, such as standardized tests, do not reveal learner attitudes towards learning or make their thinking visible. They also do not measure how students apply knowledge in real-world situations or integrate information in an interdisciplinary way (Helm, Beneke, & Steinheimer, 1998). Using summative assessment as a single source of data without aligning to the formative assessment process, limits student learning (Johannesen, 2013; Clark, 2010). This research and renewed assessment principles reflect the need for varied assessment practices.

Reforms in education have focused on personalization of learning and curriculum design; there is also attention which has been placed on assessment with greater emphasis on assessment

for learning or formative assessment. Teacher instructional practices and engagement with the curriculum are crucial to the success of implementing the process of formative assessment. According to the New Media Consortium Horizon Report: 2014 K-12 Edition (Johnson, Adams Becker, Estrada & Freeman, 2014), two key trends affecting education now and projected to affect education in the future are the rethinking of the role of teachers in the classroom and the shift to deeper learning approaches. A teacher's interaction with student and content over an extended period of time leads to the dialogue and conversation needed to assess for learning. Formative assessment can be viewed as a method to support the changing role of the teacher in the 21st century classroom (Johannesen, 2013). While summative assessments, sometimes referred to 'assessment of learning', often only illustrate a student's' level of knowledge after a unit of teacher-centered instruction, formative assessment, often referred to as assessment for learning, attempts to promote learning and develop a student's deeper understanding and the goals of metacognition and creativity (Barrett, 2007; Johannesen, 2013;). Ritchhart, Church and Morrison (2011) address the benefits of different types of assessment stating that, "Surface learning focuses on memorization of knowledge and facts, often through rote practices whereas deep learning has a focus on developing understanding through more active constructive processes (p. 7).

Formative assessment focuses on exemplary interactions involving feedback models between teachers, students and peers. In John Hattie's (2013) meta-analysis study on visible learning, he recognizes that student learning is enhanced greatly by the use of feedback during the learning process. In his research, the changing role of the teacher is emphasized as he outlines the need for teacher training to include teachers learning to give and receive meaningful feedback for student learning to be optimized.

Innovative ways of discovering more about how students think and learn is closely linked to assessment for learning, and has been significant in recent education policy. Pedagogical documentation and making thinking visible are ways to observe student thinking (Ontario Ministry of Education, 2012). These assessment processes are essential to improve engagement and elicit and interpret evidence of students' thinking. Making thinking visible is an important practice to promote deeper learning.

As transformations in education continue to be shaped by our growing vision of what thinking and learning looks like, no longer can we view learning as the passive receiving of knowledge, we must celebrate the fact that learning occurs as a result of our thinking and "active sense making" (Ritchhart, Church & Morrison, 2011, p. 26).

V*isible Thinking and Learning*

Rationale. One goal of teaching is to promote understanding and student engagement. Understanding in the classroom context is not a type of thinking but rather a goal of thinking. As educators focus less on rote memorization, the completion of assignments, and telling students the necessary skills and knowledge to practice, Ritchhart, Church and Morrison (2011) identify the need to shift educators' energies to fostering true understanding, and to create opportunities and routines for students to make their thinking visible. They state that

> as we make thinking- our own as well as that of our students - visible, we draw attention to the mechanism by which individuals construct their understanding. To the extent that students can develop a greater awareness of thinking processes, they become more independent learners capable of directing and managing their own cognitive actions. (Ritchhart, Church & Morrison, 2011, p. 22)

Pedagogical documentation. Documentation of learning has its roots in the Reggio Emilia approach. In these early childhood settings, there is an emphasis on authentically documenting student thinking and progression of ideas over time (Giudici, Rinaldi, & Krechevsky, 2001). In a Reggio-inspired learning space, it is important to make students thoughts visible through a variety of ways designed to show children's learning process. Ritchhart, Church and Morrison (2011) and their team at the *Making Learning Visible* project have moved this focus on documentation up through the grade levels and endeavored to understand the learning process better by "trying to capture the events, questions, conversations and acts that provoke and advance learning over time" (p. 38). Documentation can also be defined "as the practice of observing, recording, interpreting, and sharing through a variety of media the processes and products of learning in order to deepen learning" (Given, Kuh, LeeKeenan, Mardell, Redditt, & Twombly, 2010, p. 38). In an article analyzing the role of documentation panels in relation to teacher, student, and community accountability, Krechevsky, Rivard, and Burton (2009) posit that building a collective identity is strengthened by both groups and individuals using documentation as a learning tool.

Understanding student learning through a variety of media is a necessity. In an evaluative study interested in stakeholder satisfaction when using digital portfolios to communicate learning, McLeod and Vasinda (2009) noted the increased motivation articulated by students when they were offered multiple ways to document and capture their learning. In addition, the process of curating thinking to promote learning has been a recognized practice in the classroom long before the inception of the digital portfolio. Documentation panels and paper portfolios, precursors to the digital portfolio, have served as visual archives of children's learning through the inclusion of photographs, teacher's notes, transcription and artefacts artistically displayed on

boards or in cases (Helm, Beneke & Steinheimer, 1998; Kline 2008; Wien, 2013). In Barrett's (2011) paper, in which she outlines the purpose of different approaches to digital portfolios and how they can co-exist, she informs the reader that nowadays, evidence of student thinking might include digital inclusions of writing samples, photos, videos, research projects, observations and feedback from mentors and peers, and/or reflective thinking.

Whatever the media utilized in making thinking visible, it is important to note the purposes that documentation serves throughout the learning process. According to Krechevsky, Rivard and Burton (2009), it is "a tool for internal use – an aid to teachers' or students' reflections and to inform future learning" (p.66), also they assert that "through documentation teachers and children are able to revisit their work and their words, deepening their own learning and becoming better observers of learning in the process" (p.66). In classrooms focused on formative assessment, teachers use observation, documentation and reflection to gain valuable insights into how students construct their knowledge and develop their own ideas. In her article describing the "Making Learning Visible," project, designed for use as an assessment tool for the *National Council for Accreditation of Teacher Education/National association for the Education of Young Children (NCATE/NAEYC)*, Kline (2008) notes that throughout the complex and continuing documentation process, collaboratively teachers and students are able to reflect on their findings and use this information to plan future learning experiences. By being aware of the understanding students have, as well as the kinds of thinking that educators want from the students, future instructional planning can be more intentional and effective (Ritchhart, Church & Morrison, 2011).

Capturing thinking. Building a culture of thinking in the classroom can be done through the process of documentation. Having ubiquitous access to digital tools to capture this thinking

allows for this culture to be nurtured. Ultimately, the tools do not drive the process of documentation but access to the tools during the process of learning helps to create the attitude of teaching and learning desired (Wien, Guyevskey, & Berdoussis, 2011). This desired attitude focusses on the process of learning, not the product. When capturing thinking, efforts should be made to be creative and incorporate classroom strategies that communicates student voice, thinking, and understanding (Wien, Guyevskey, & Berdoussis, 2011).

Evidence in a variety of forms can be used to make students thinking visible. As can be interpreted from *Figure 2* below, the elements of voice and visual image, especially when combined, can be useful and powerful in the process of documentation. When students can construct multi-modal representations of their thinking, insights are gained into their learning and understanding (Ontario Ministry of Education, 2012).

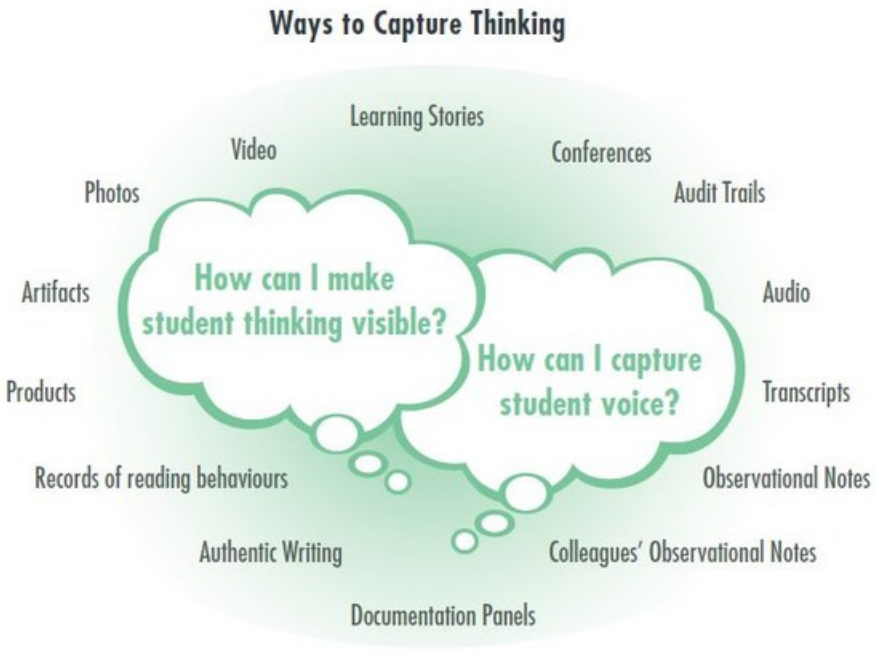


Figure 2. Ways to Capture Thinking.
Capacity Building Series K-2: Pedagogical Documentation by Ontario Ministry of Education, 2012, p. 5. Copyright 2012 by Ontario Ministry of Education.
Retrieved from
https://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_Pedagogical.pdf

Digital Portfolios Supporting Student Learning

The use of digital portfolios plays a key role in supporting visible learning in students. In recognizing the role of documentation in student understanding and learning, it is significant to make connections between pedagogical documentation and the role of digital portfolios. Evolving from documentation panels and traditional portfolios, digital portfolios take advantage of access to digital media and storage capabilities for auditory and visual content (Abrami & Barrett, 2005; Madden, 2007). According to Barrett (2011), "a digital portfolio (electronic portfolio, ePortfolio) is an electronic collection of evidence that shows your learning journey over time" (p. 291). Another definition by Barnstable (2011) states that a digital portfolio, simply defined,

> is a collection of evidence that is gathered and organized in a specific way to demonstrate a learner's learning, abilities and experiences. A portfolio may serve various purposes depending on the intent of the learner and the audience that may be viewing the collection. An ePortfolio is an electronic version of that collection. (p. 310)

Generally, digital portfolios are organized into two categories; showcase portfolios and process portfolios. Showcase portfolios act as the name suggests; as a showcase for a student's finished product, often considered their 'best' work (Nicolaidou, 2013). Alternately, process portfolios consider all parts of a student learning journey, they are not merely a collection of student's finished products, but rather a portfolio that honours the entire learning process; encouraging student reflection and ownership. "Process portfolios are personal learning management tools. They are meant to encourage individual improvement, personal growth, development, and a commitment to lifelong learning" (Abrami, et. al, 2008, p. 2). Giannandrea and Sansoni (2011) used process portfolios in their research of student perceptions of learning,

having students "select and put meaningful works on their ePortfolio linking an explanation of the reason why they had chosen each material" (p. 2). By revisiting the artefacts, through a process of reflection, it was noted that by reconnecting with the experiences represented in the portfolio that their learning paths were more meaningful and deeper learning occurred. "The key aspect of an ePortfolio is the reflection on the evidence, such as why it was chosen and what was learned from the process of developing the ePortfolio" (adapted from Philippa Butler's "Review of the Literature on Portfolios and eportfolios," 2006, as cited in Barrett, 2011, p. 2).

Motivation and engagement. Research shows how the use of digital portfolios can produce an improvement of learning through the stimulation of students' motivation. According to Multisilta, Suominen and Östman, (2012), the idea of motivation is also tied to the use of "technology-enriched learning tools and spaces with mobile technology, Web 2.0 applications, social media, and all existing digital resources providing powerful arenas for learning, both in formal and informal education settings" (p. 68). Students continue to be engaged by different social media tools such as blogs, forums and platforms eliciting contact and friendship with others. This connected online learning environment provides a motivating arena for digital portfolio construction (Ito, Baumer, Bittanti, Boyd, Herr-Stephenson, Horst, Lange, Mahendran, Martinez, Pascoe, Perkep, Robinson, Sims & Tripp, 2010).

Giannandrea and Sansoni (2011) conducted research of 18 primary students (10 year olds) in Italy to highlight how the use of a specific digital portfolio tool, Mahara, improved learning through stimulating students' motivation. In the first part of their study, they recognized that the social aspects of this first phase of collection was a motivational factor that could foster the adoption of the digital Portfolio in school. Discussing and conversing with other students about their reasons for the selection of a piece of writing was highly motivating for students.

Another example of digital portfolios providing motivation for learning was seen in a study by Nicolaidou (2013). Learner feedback derived from a wider audience of different sources: parents, teachers, and peers, proves to be a positive aspect of well-designed process portfolios, as was revealed in a year-long study of elementary students. Nicolaidou (2013) also states that the "additional advantages (of ePortfolios) included easier making of editorial changes by students on multiple drafts, students' increased motivation through the use of technology and the potential of parental involvement to support and extend the work that is done in the classroom" (p. 410).

In the research summary of ePEARL and other digital portfolios, Meyer, Abrami, Wade, Aslan and Deault (2010) share their findings that through the process of scaffolding their knowledge, reflecting, transforming and conferencing with teachers, parents and peers; learners were motivated by the social nature of the platform. They state, that

> the process electronic portfolios build important skills for lifelong learning and learning how to learn. Process electronic portfolios also provide remote access encouraging anywhere, anytime learning and easier input from peers, parents and educators, letting them provide feedback through a single electronic container. (p. 2)

The digital platform and ubiquitous nature of learning and feedback was seen as highly engaging for students. Social and collaborative aspects of technology-rich digital portfolios can improve engagement and motivation of students to learn.

Improved literacy. Another aspect of student learning which is particularly affected with the implementation of digital portfolios is literacy. As students develop habits of practice around communicating their learning, their literacy skills will be called upon to narrate a story of their own thinking and learning path. There is growing evidence that electronic portfolios allow

students to improve literacy and engage in more authentic writing practices (Abrami & Barrett, 2005; Meyer, Abrami, Wade & Scherzer, 2011). Authentic real-world writing opportunities coupled with a genuine audience provides motivation and greater purpose and interest in literacy among learners. Digital portfolios provide the platform for this online literacy experience. Yancey and Weiser (1997) suggest that a key part of improvements made in literacy result "partially as a function of how reflection in the portfolio asks students to describe, narrate and analyze their own learning and partially as a function of the the electronic media" (p. 16). From the study by Nicolaidou (2013), which promoted interactivity and peer feedback in student writing, it was analyzed that learning gains in primary students' writing performance, peer feedback skills, and improved essay writing occurred as result of the use of a digital portfolio tool. Strong literacy skills and the construction of meaning is garnered through the process of work selection and reflection. This growth is afforded through the use of digital portfolio where "technology creates new models of storytelling to help with making meaning" (Barrett, 2011, p. 295).

Assessment. Portfolio assessment can be likened to the strategies defined as the process of documentation inspired by the Reggio Emilia approach. This portfolio development takes the focus away from summative and standardized methods of measuring student success and emphasizes a more qualitative and formative understanding of student learning over time (Turner & Wilson, 2009).

Digital portfolios can be used as both a student and teacher assessment tool. The artefacts and performance pieces a student selects for their portfolio will be the result of careful consideration, and reflection regarding tasks that meet criteria generated by the student, class, or teacher. A student digital portfolio should include content which communicates growth in certain

curricular areas over time and a rationale or justification for their content selection (Barrett, 2007; Hicks, Russo, Autrey, Gardner, Kabodian & Edington, 2013). This organized collection of student documentation shows how they integrate content and competencies and apply their learning in multiple circumstances (Helm, Beneke, & Steinheimer, 1998). Based on student self-assessment and teacher feedback, digital portfolios can inform next steps in a student's personalized learning pathway.

Digital portfolios offer greater insight to learner thinking and add another level to the assessment process (McLeod & Vasinda, 2009). In their study, compiling student, teacher, and parent perceptions about assessment, methods were used to explore multiple ways of documenting learning going beyond traditional procedures.

> Digital portfolios were used as an additional way to capture and enhance the learning of elementary students in a public school setting to provide those students with both voice and choice in what they consider important artifacts of their learning, and as an opportunity to communicate this learning to parents. (McLeod & Vasinda, 2009, p. 30)

Research shows that through the use of a portfolio tool students began to think more deeply about themselves as learners, grew to know themselves better and evaluate new tasks by making student self-assessments (Giannandrea & Sansoni, 2011; McLeod & Vasinda, 2009).

Teachers routinely seek new ways to evaluate complex student thinking and learning, pushing to go beyond the low order thinking summative tests. As a formative assessment tool, teachers can gather insights from portfolios to inform instruction, plan next phases of curriculum with more authenticity (Giannandrea & Sansoni, 2011; Kline, 2008). Teachers can use pedagogical documentation and the digital portfolio to make learning visible, thus supporting deeper thinking and understanding.

Documentation of students thinking through the use of a digital portfolio is valuable for assessment. Today, digital technology (e.g., digital cameras, interactive whiteboards, and mobile devices) makes for an environment where capturing learning is easy. Communicating and sharing this thinking through a digital portfolio can benefit student learning. Engagement and motivation is supported through the use of a digital portfolio. In addition, capturing students' thinking is a way to assess for learning and to support metacognitive practices for today's learners.

Supporting metacognition. An important component of self-regulated learning is metacognition. Metacognition is the "awareness, knowledge and control of cognition" (Abrami, et al., 2008, p. 2). "Self-regulation refers to a set of behaviours that are used to guide, monitor and evaluate the success of one's own learning. Students who are self-regulated are metacognitively, motivationally and behaviourally active participants in their own learning process" (Zimmerman, 1989; as cited in Meyer, Abrami, Wade, Aslan and Deault, 2010).

The digital portfolio, as a tool, can aid in developing students' ability to reflect on their learning pathways by engaging in a process of artefact collection and publication in order to build a reflective attitude toward learning. A key aspect of a digital portfolio is the reflection and insights shared about the evidence of thinking chosen by the student. According to Abrami, Wade, Pillay, Aslan, Bures, and Bentley (2008), digital portfolios provide evidence to show self-regulatory behaviour for learning and to enhance their understanding of valuable educational concepts. Zellers and Mudrey (2007) also suggest that their study on digital portfolios in a community college setting indicates that "electronic portfolios can be an effective tool for increasing student metacognition" (p. 428).

Metacognition is essentially thinking about one's own thinking, achieved through the process of reflection. The success of both process and showcase portfolios does not lie in the products but in the reflection process that happens throughout the learning journey and construction of meaning (Barrett, 2011). Reflection is the "heart and soul" of a portfolio and is paramount to learning (Kolb, 1984; as cited in Barrett, 2011, p. 266). All stakeholders in learning, teachers, students, and parents, can use reflection as a means to assess progress, make informed decisions and direct next steps in student learning (Urrea & Bender, 2012). "Reflection is a form of thinking that allows the learner to further process knowledge, understanding and emotions leading them to a greater depth of learning" (Moon, 1999, as cited in Barnstable, 2011, p. 310). As can be seen here, particular emphasis is placed on the need to make thinking visible in the classroom and to document this thinking by way of a digital portfolio for the purpose of reflection, deeper learning and growth.

In Yagelski's (1997) work, a strong argument is made supporting the role of portfolios in learning. He believed that, "the portfolio would be not simply a means to assess growth and reflection but a vehicle for that growth and reflection (p. 231). "The visibility afforded by documentation provides the basis for reflecting on one's learning and for considering that learning as an object for discussion" (Ritchhart, Church & Morrison, 2011 p. 39). As both Barnstable (2011) and Barrett (2011) caution, portfolios created without the process of reflection are nothing more than repositories of 'work,' it is through the documentation and thoughtful metacognitive behaviour that quality learning can occur.

Conclusion

This literature review informed the directions and interest of my project. It has been shown that the digital portfolio has many benefits and is a powerful tool for communicating and learning. It is hoped that by creating a process meta-portfolio, narrating stories of change within

the area of formative assessment, my own learning will be made visible. One main objective of this project is to document the process of creating a central repository for sharing teachers' stories of change implementation in the classrooms of British Columbian educators and beyond. Also, this project will model the practice of making thinking and learning visible through the use of a process-oriented digital portfolio. Contributors and visitors to this portfolio or blog will have the opportunity to engage with others, and feel supported by stories of innovations in assessment and other related topics. This central repository for stories of change, presented in the form of a blog, is designed to share innovations and support teachers to learn from others and challenge themselves to take risks in their own practice.

Chapter 3: Professional Project

In this chapter, we will document the creation of the Stories of Change website and explain the choices made for content, style, and function. The purpose of this site is to provide a forum for educators to share the innovations occurring within their classrooms, schools, and districts. The website also contains background information on the topics of digital portfolios, making student thinking visible, and communicating student learning, as well as, links to helpful resources.

We made the decision to create a website and find a way to host it in Canada in order to adhere to the Freedom of Information and Protection of Privacy Act (FOIPPA). Through Host Papa we were able to purchase a domain name, set up a WordPress blog, and ensure all content would be stored in Canada. The theme, widgets, page structure, and plugins were chosen to maximize functionality and visual appeal. The figures in this chapter are screen captures of the pages found at storiesofchange.ca. The accompanying annotations explain the rationale for the content on this site.

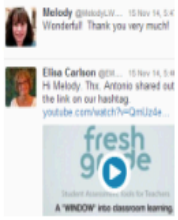
In the following sections of this chapter, we will describe the content of our website. The website is organized under the following headings: Home, About, Background, Resources, Contact Us, and Submit Your Story. Under the Background tab, you will find sections entitled: digital portfolios, making student thinking visible, and communicating student learning. These sections and their accompanying subsections provide visitors with information. Although they are meant to be static resources, updates will be made as needed. Within the digital portfolio section you will find information organized under the headings: benefits, platforms, purpose, and supporting change. Within the making student thinking visible section you will find information organized under the headings: capturing thinking, pedagogical documentation, and thinking

routines. Under the Resources tab you will find sections entitled: pro D, professional reads, and websites.

Home

Figure 3 shows a sample blog post which represents the innovative stories which may be shared by educators on this website. Because this is the home page, the content will change to highlight the most recent blog post and comments by contributors.

Figure 3. Sample blog post from home page.



Being the first school in our district to make changes like this left us without colleagues to bounce ideas off of or look to for support. Luckily there were others in the province making similar changes that we could go to for advice. Julie Hearn from Maple Ridge was a great deal of help, as was Elisa Carlson form Surrey, Lucinda Wolters from the Comox Valley, and Ian Landy from Salmon Arm. These educators were so supportive and open in sharing the work that their schools and districts were doing. I am grateful for their willingness to share and make their learning visible. I also love that with Twitter help is only 140 characters away.

We started our work by looking at our current process. We talked about the things we liked and the things that weren't working. Then we looked at what others were doing in the province with the same lens, creating a sort of wish list of elements we would like to include. We also kept the lines of communication open with our PAC letting them know the types of changes we were hoping to make and sharing as we went along.

Due to job action we had to put our work on hold until the beginning of the next school year. We wondered if there would be time to have everything done before the end of first term. Let's just say it was incredibly close, but we did it.

We decided on a process similar to Maple Ridge, but reworked their template to fit our learners and their families. We would have three-way conferences for first and second term using a new template. Before the conference the students would complete a self assessment based on the competencies and the teacher would complete the same assessment after the students. We would also assess curricular areas, but around big ideas that would stay the same across each term and we would change the language we used in the frames (moving away from Not Yet Meeting, Minimally Meeting, Fully Meeting, or Exceeding). We would then meet with students and their families for our conferences and discuss these assessments and the students' portfolios in order to set collaborative goals for the next term.

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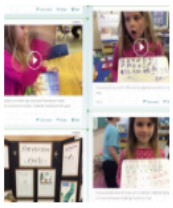
Figure 3 (continued). Sample blog post from home page.

Term one was scary, there were so many unknowns. Even though we met with our PAC along the way, held a parent informational meeting, and sent information home there was still a lot of uncertainty about the new process expressed by our parents, especially in the older grades. Some came to their conferences and opened by saying that they were still going to want letter grades (we made sure that all parents knew this was an option). I am happy to say though, that by the end of their conferences, not one family requested letter grades.

We received wonderful feedback from the first term conferences including some suggestions to improve the process. We let parents know all along that this was a work in progress and that we valued their input. As a staff we also had things that we wanted to change and so we reworked parts our template to better meet the needs of our learners. We shared things that worked well and worked together to brainstorm ideas to make other things work better.

We noticed some big changes in our students last year. No longer was the focus on letter grades or how many checks were in each column. Students weren't rushing to open report cards to compare the number of As or Bs they got with their friends, they weren't mentally calculating how much they were going to get paid for their grades, no one was crying because they got a grade they weren't expecting, and no one was trying to figure out the bare minimum they needed to do to get a particular grade. Learning doesn't end at the end of the term. What we now talk about is what our goals are, how we are doing with our learning, where to next, and how are we going to get there.

Parents have commented on how much they enjoy having a voice in the process and how powerful it is for their children to be taking more responsibility for their learning. They have also said that this format gives them much more information than a letter grade ever could and a better understanding of how their child is doing.



We are still learning and making changes as we go. This year we are focusing on how we can improve our use of portfolio assessment. I love that we are reflecting and growing together just as our students are.

I hope that in sharing our journey it might help us connect with others on same same path, or who might be looking to make changes of their own.

Figure 3 (continued). Sample blogpost from home page. http://storiesofchange.ca

About

Figure 4 shows the context for the creation of this website and a brief overview of the content. This page was also created to invite visitors to share stories of their own.

Figure 4. Content of About page.
http://storiesofchange.ca/index.php/about/

Background

Figure 5 shows the page which is an access point for the background information on this website. Although this is a static page, we will revisit it occasionally and update it as necessary. In the following sections, we share each of the elements of the background page and their subsections.

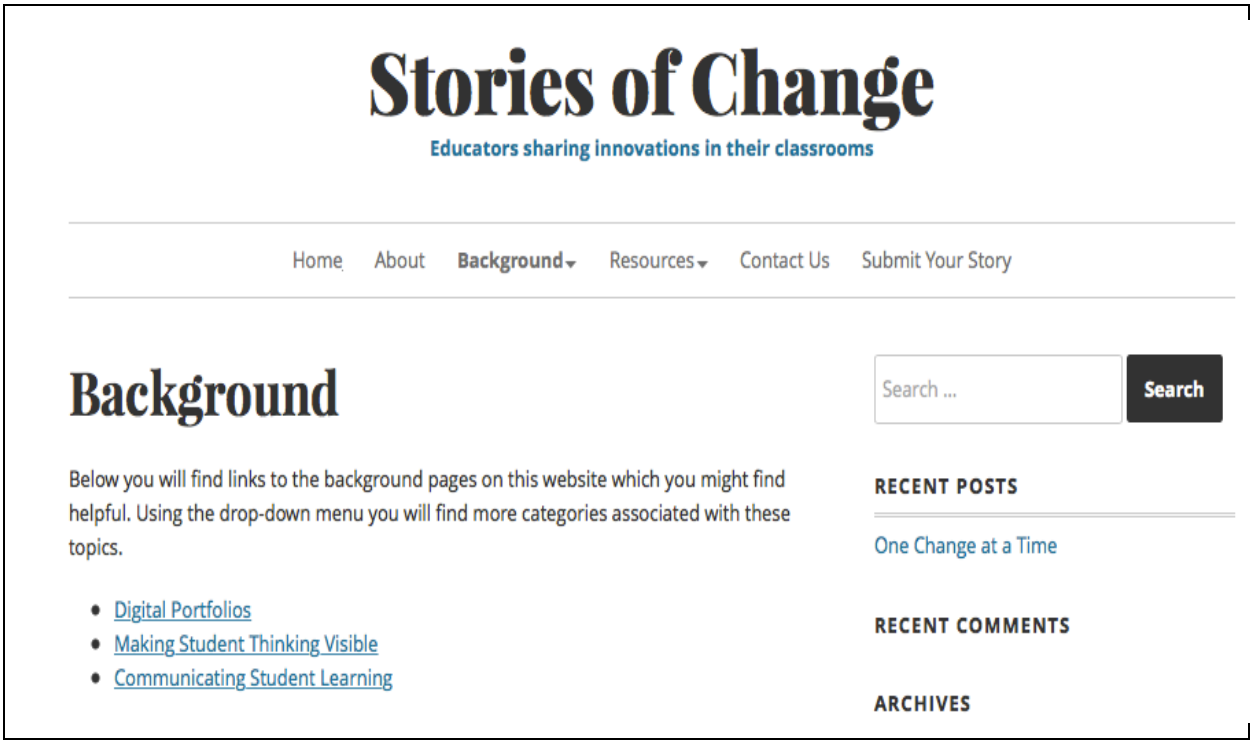


Figure 5. Content of background landing page.
http://storiesofchange.ca/index.php/background/

Digital portfolios. Figure 6 shows the information provided on the website about digital portfolio assessment and gives a rationale for the use of digital portfolios in the classroom.

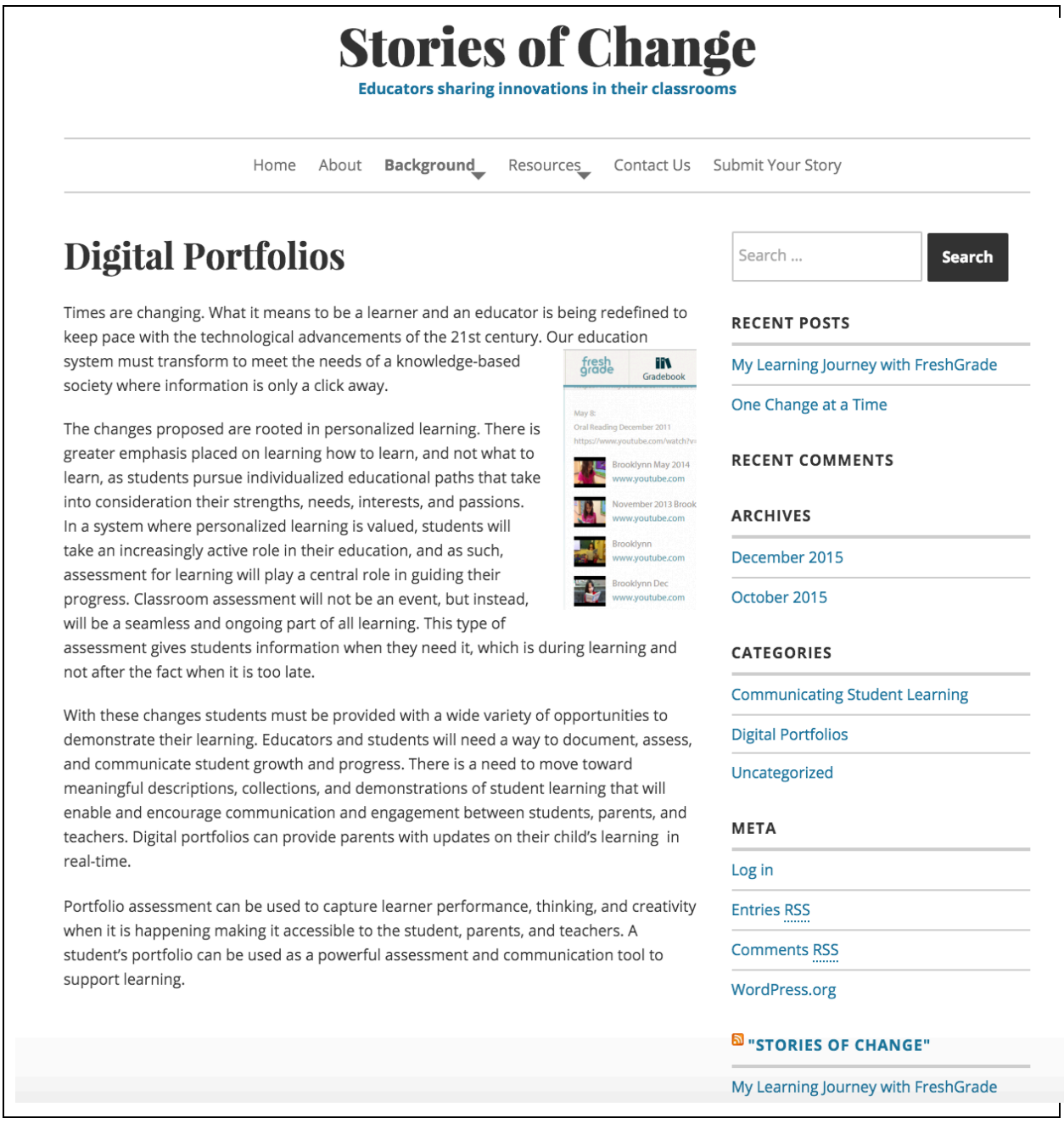


Figure 6. Digital Portfolios page under Background section.
http://storiesofchange.ca/index.php/background/digital-portfolio-assessment/

Benefits. Figure 7 shows the benefits of digital portfolio assessment. We broke this down to include information about the benefits for parents, students, and teachers. The information on this page is supported by the study done by McLeod and Vasinda (2009), which explores the perspectives of these stakeholders.

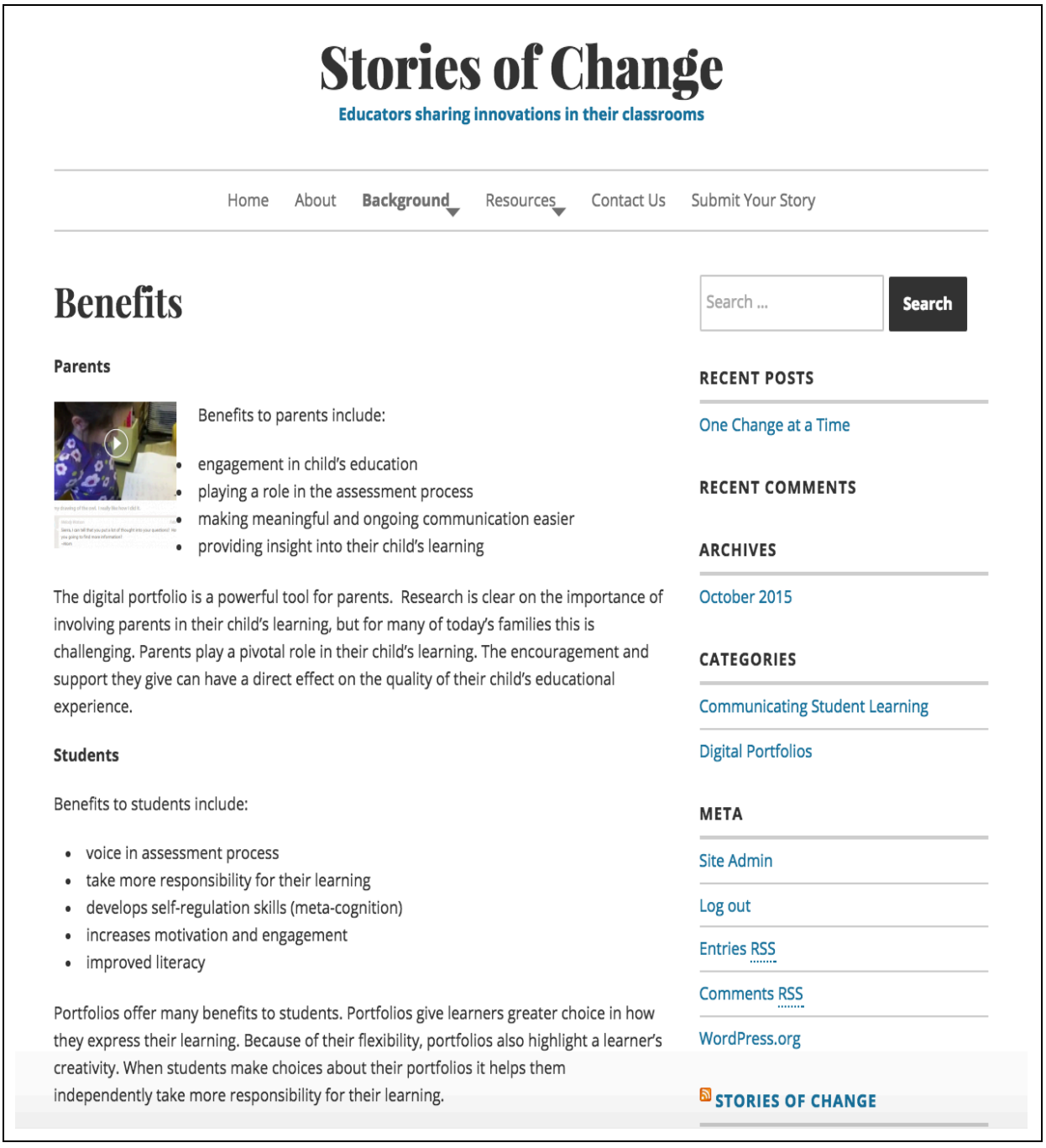


Figure 7. Benefits page under Digital Portfolios under Background section.

Voice is another benefit offered to students through their portfolios.With portfolio assessment, learning is ongoing and the student plays a key role. As students are able to, they should take increasing ownership of, and responsibility for their portfolios. The multimedia capabilities of digital portfolios allow a child's authentic voice to be heard. A student's voice can be heard through the artefacts they choose to include and through the written, audio, and video reflections that document their learning process.

Portfolio assessment helps students to become self-regulated learners. When using portfolios students begin to think more deeply about content and themselves as learners Students also reflect on the feedback they receive from those viewing their portfolio. As students reflect on the feedback, they receive it helps them to understand the gap between their current progress and their learning goals. It also enhances their ability to use metacognitive strategies and optimizes their learning.

Technology is changing the way we use portfolio assessment, making the process more motivating for students. For many students, knowing that others will be reading/viewing and responding to their work is motivating and can cause them to put more care and attention into what they are producing. Providing students with choice in how they document and communicate their learning is also motivating. This personalization of learning allows students to demonstrate their learning in a way that fits them best. Students can use and respond to the feedback they receive, allowing the learning process to be a conversation and social activity. Students also benefit from participated in peer assessment, learning from and with their classmates.

Improved literacy is another benefit of portfolio assessment. As students develop habits of practice around communicating their learning, their literacy skills will be called upon to narrate a story of their own thinking and learning path.

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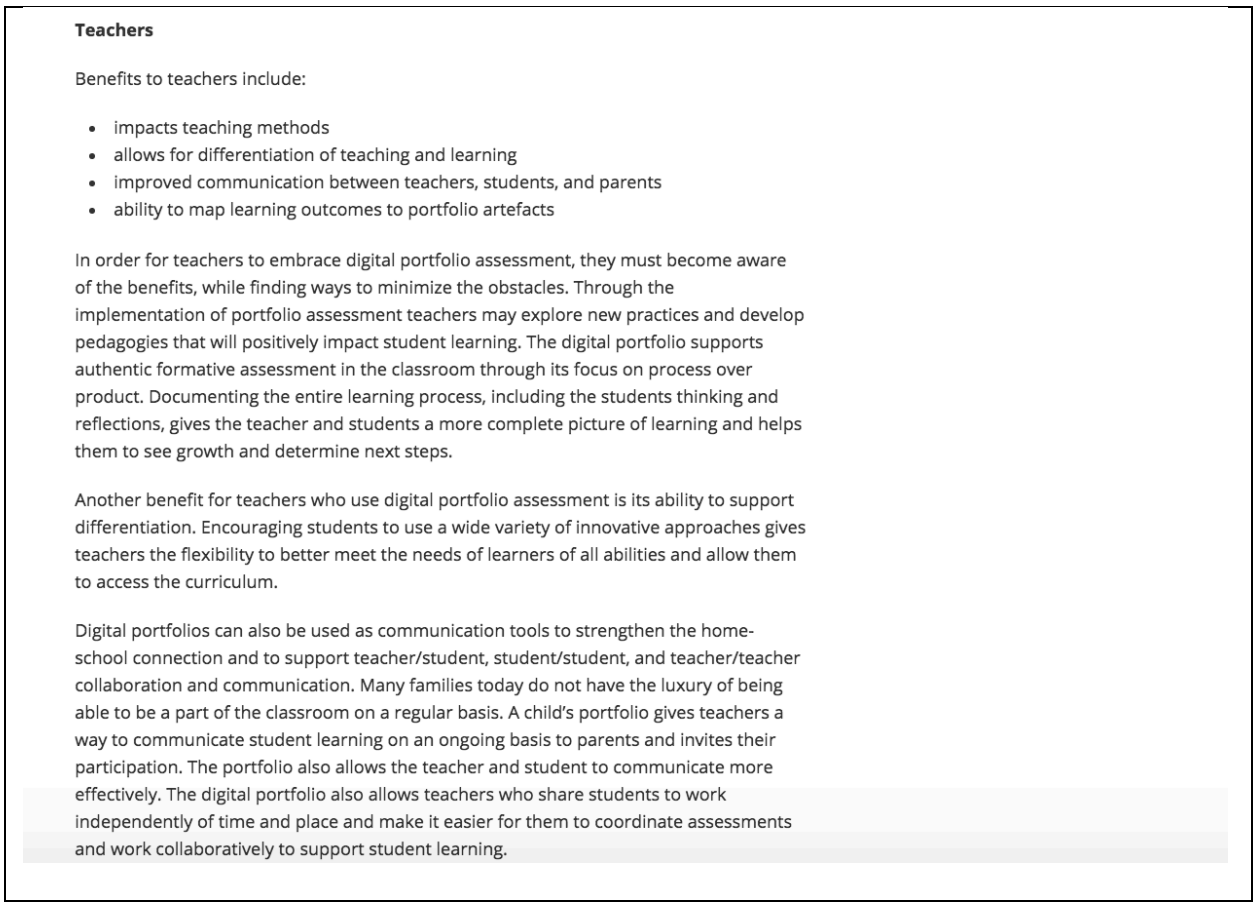
Figure 7 (continued). Benefits page under Digital Portfolios under Background section.



Teachers

Benefits to teachers include:

- impacts teaching methods
- allows for differentiation of teaching and learning
- improved communication between teachers, students, and parents
- ability to map learning outcomes to portfolio artefacts

In order for teachers to embrace digital portfolio assessment, they must become aware of the benefits, while finding ways to minimize the obstacles. Through the implementation of portfolio assessment teachers may explore new practices and develop pedagogies that will positively impact student learning. The digital portfolio supports authentic formative assessment in the classroom through its focus on process over product. Documenting the entire learning process, including the students thinking and reflections, gives the teacher and students a more complete picture of learning and helps them to see growth and determine next steps.

Another benefit for teachers who use digital portfolio assessment is its ability to support differentiation. Encouraging students to use a wide variety of innovative approaches gives teachers the flexibility to better meet the needs of learners of all abilities and allow them to access the curriculum.

Digital portfolios can also be used as communication tools to strengthen the home-school connection and to support teacher/student, student/student, and teacher/teacher collaboration and communication. Many families today do not have the luxury of being able to be a part of the classroom on a regular basis. A child's portfolio gives teachers a way to communicate student learning on an ongoing basis to parents and invites their participation. The portfolio also allows the teacher and student to communicate more effectively. The digital portfolio also allows teachers who share students to work independently of time and place and make it easier for them to coordinate assessments and work collaboratively to support student learning.

Figure 7 (continued). Benefits page under Digital Portfolios under Background section. http://storiesofchange.ca/index.php/background/digital-portfolio-assessment/benefits/

Platforms. Figure 8 shows our analysis, created in the form of a Tackk (Tackk Inc., 2015), an online presentation tool, of common digital portfolio platforms. We included information about age/grade suitability, purpose, the learning artifacts supported, and the pros and cons for each platform. Live links and video tutorials can also be found on this page.

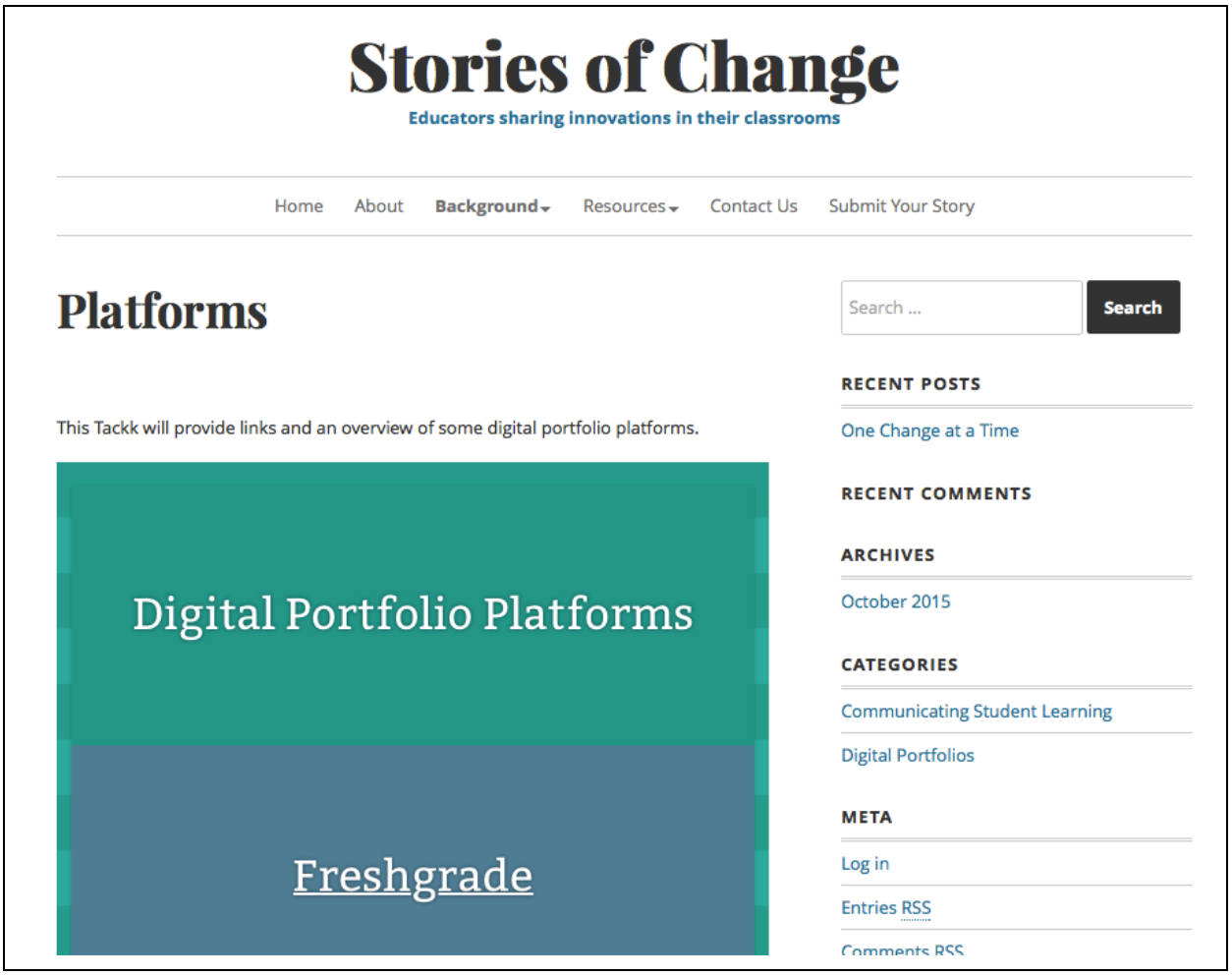


Figure 8. Platforms page under Digital Portfolios under Background section.

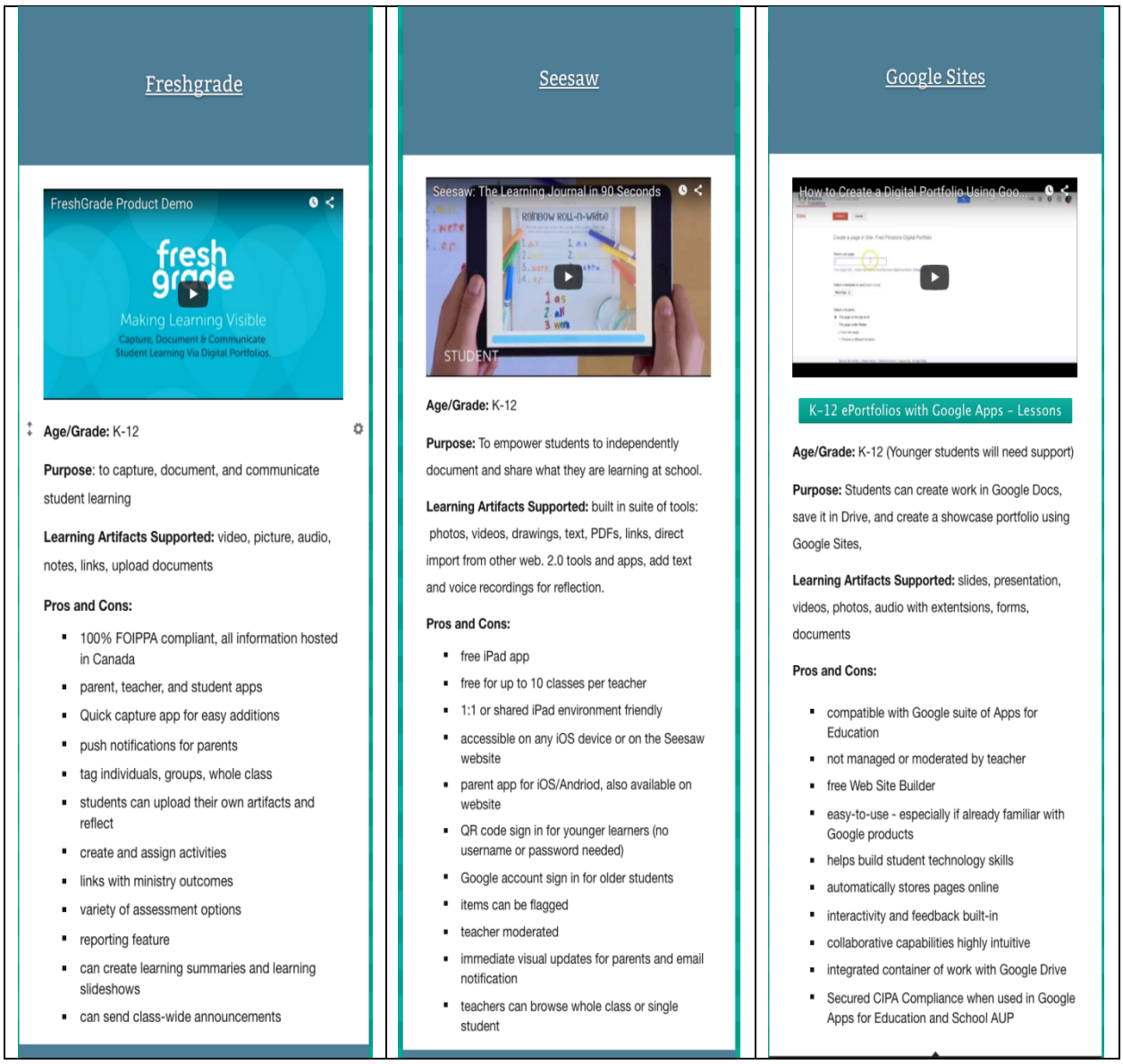


Figure 8 (continued). Platforms page under Digital Portfolios under Background section.

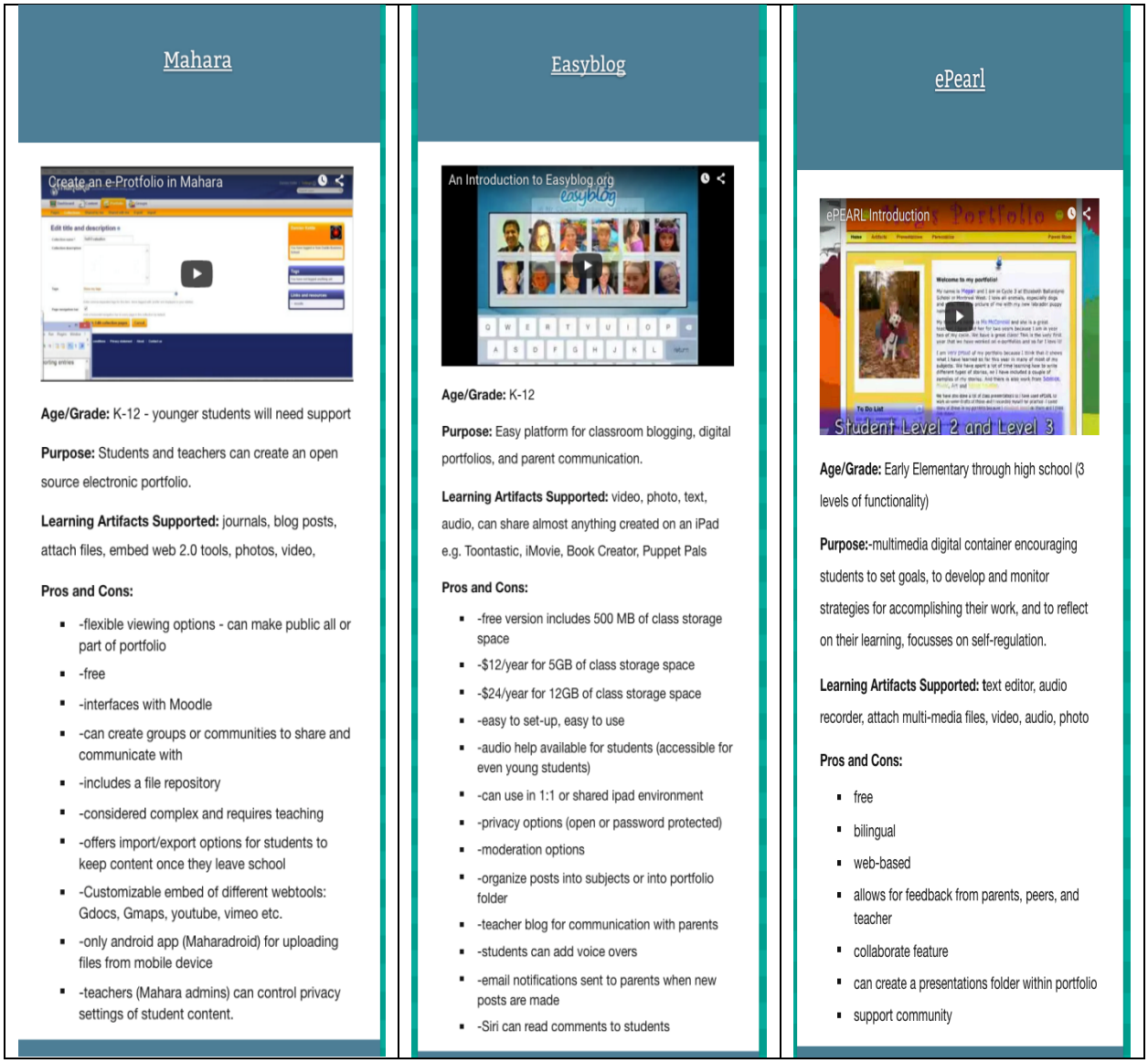
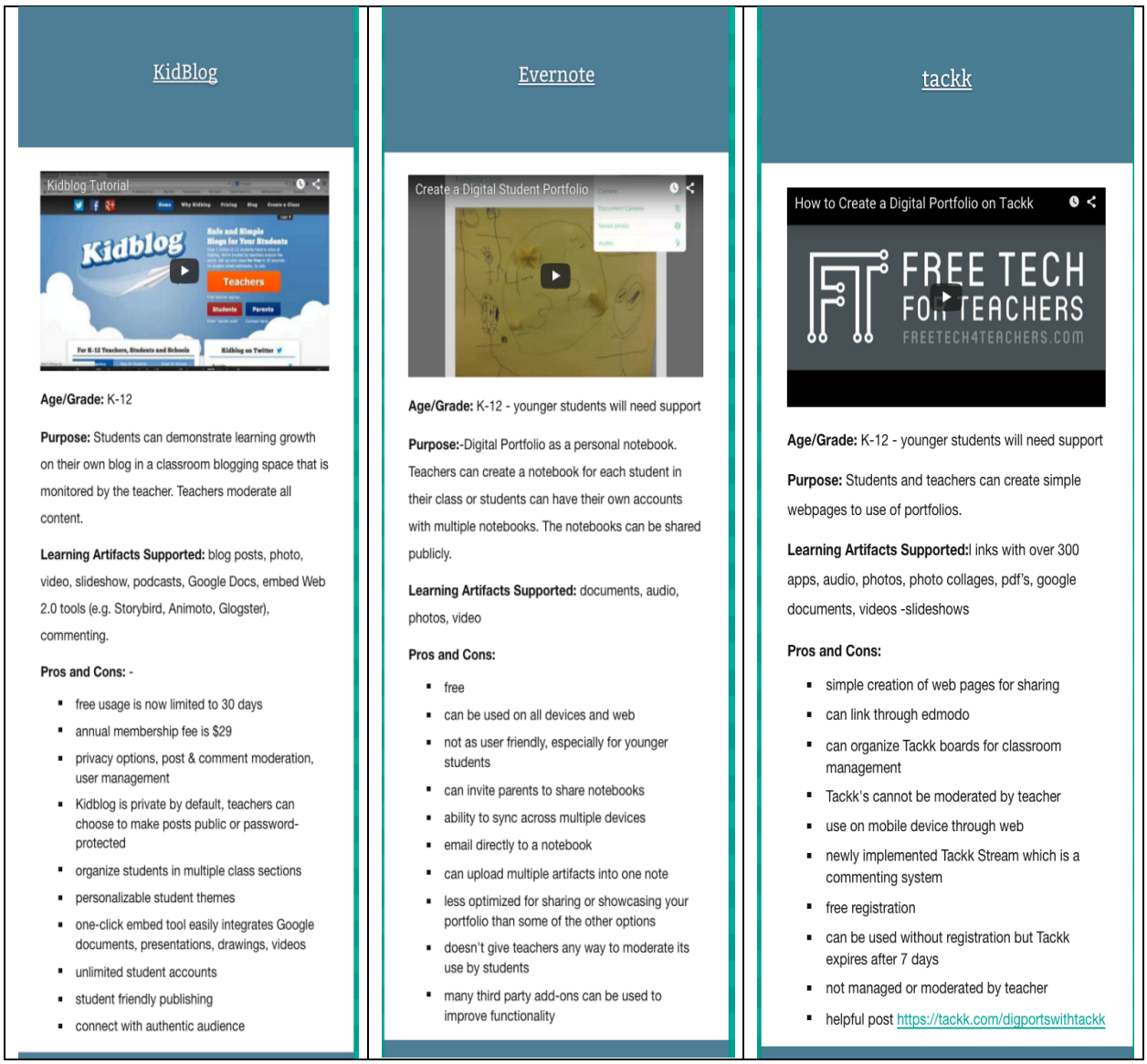


Figure 8 (continued). Platforms page under Digital Portfolios under Background section.



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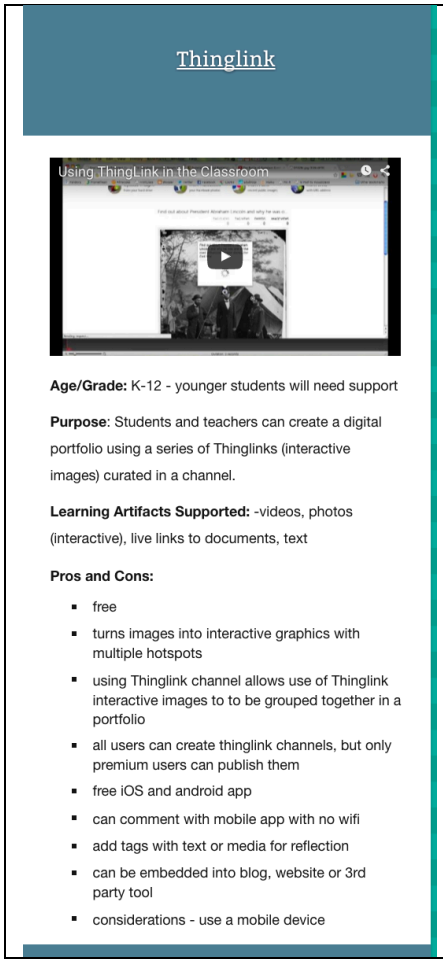

Figure 8 (continued). Platforms page under Digital Portfolios under Background section. http://storiesofchange.ca/index.php/background/digital-portfolio-assessment/platforms/

Purpose. Figure 9 shows three common types of digital portfolios (process, showcase, and hybrid) and explains their different uses (Barrett, 2007).

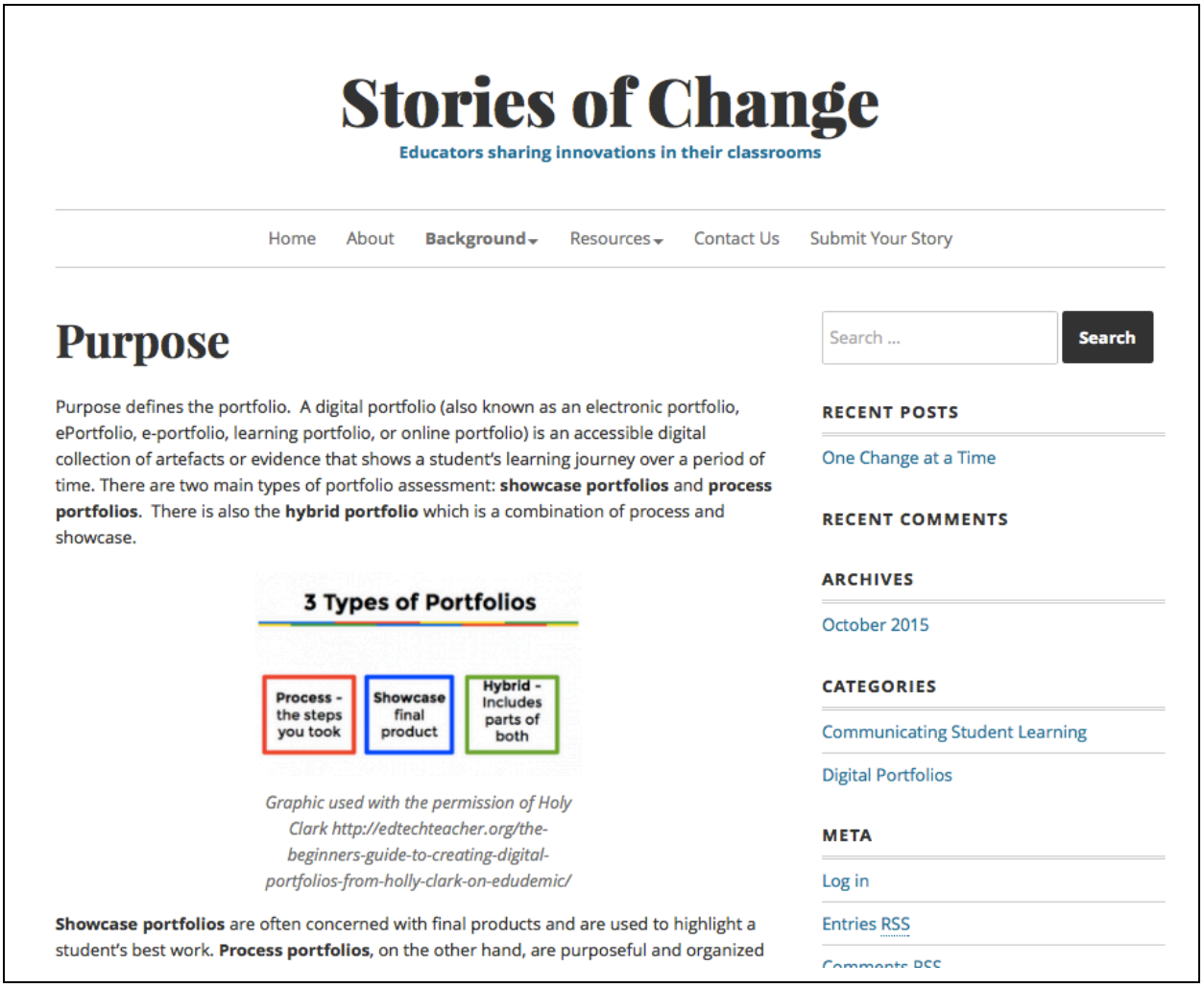

Figure 9. Purpose page under Digital Portfolios under Background section. http://storiesofchange.ca/index.php/background/digital-portfolio-assessment/how-to/

Supporting change. Figure 10 shows an explanation of the variables that need to be considered when implementing portfolio assessment in order to support change. This is consistent with the work of Meyer, Abrami, Wade, and Scherzer (2011) on the factors that impact the integration of new technologies and pedagogies.

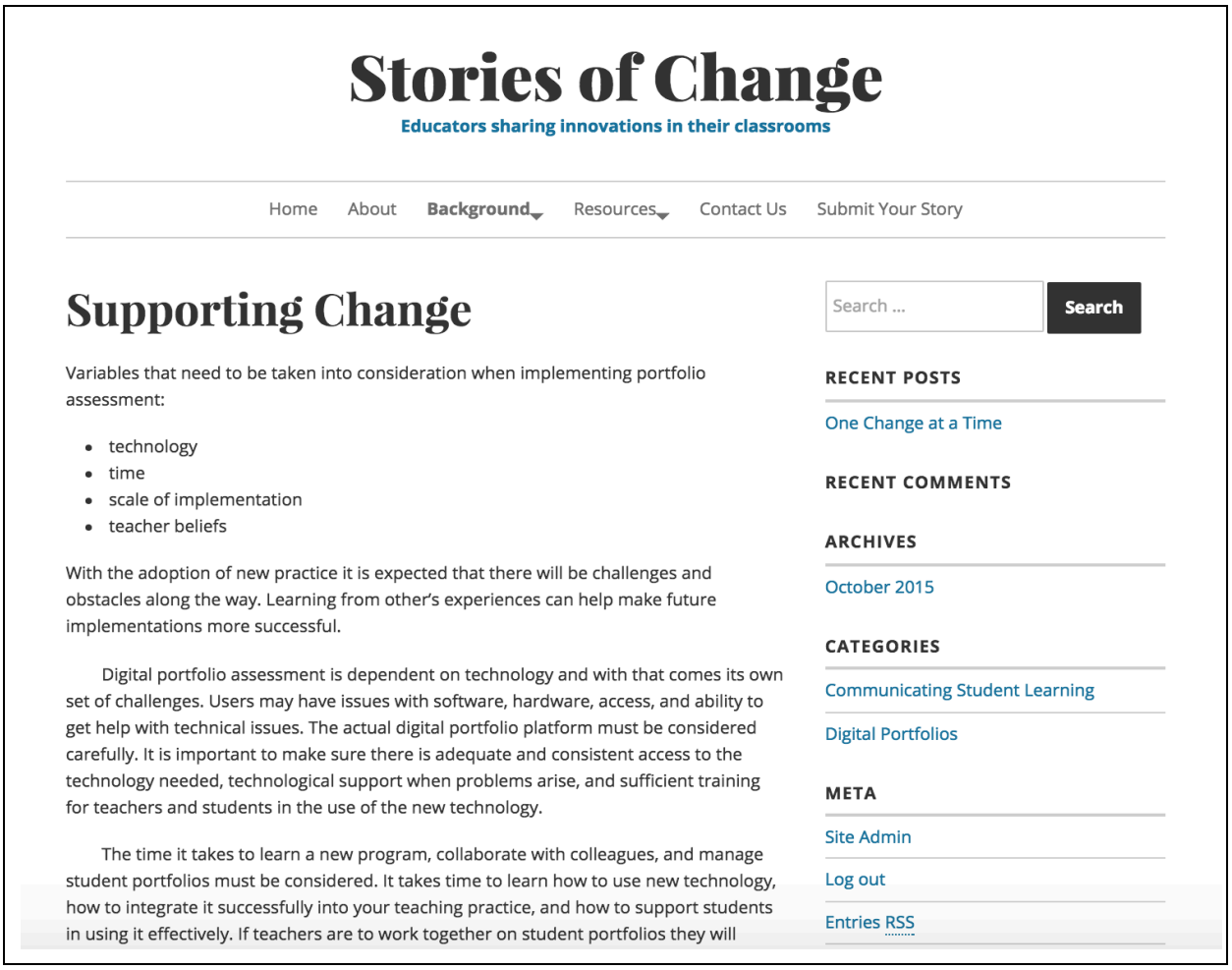

Figure 10. Supporting Change page under Digital Portfolios under Background section.

require time to meet and discuss student learning. This collaboration time also supports professional growth as teachers learn with and from each other. Finally, there is the time it takes to add artefacts, provide feedback, and respond to comments made by students and parents. Training can be provided through professional development or in-service, scheduling can be done creatively to include time for collaboration, and platforms can be chosen carefully to ensure they meet the needs of students and teachers without being overly complex or overwhelming.

For teachers trying to implement portfolio use on their own it can be very challenging. These teachers lack a community of practice to call on for support, and have no one to discuss and share their experiences with. Research has found that school-based or district-based initiatives are most successful. This type of implementation builds a community of practice where teachers can share and learn from each other.

A final variable to consider is teacher belief in the change and level of motivation. When teachers are personally committed, see pedagogical benefits to use, and feel supported portfolio assessment is integrated into their teaching more consistently and regularly. Focussing on the why, and using testimonials, demonstrations, and collaboration, can help to support implementation. The level of personal investment and motivation are important factors in teachers' decisions to persist when faced with challenges.

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Figure 10 (continued). Supporting Change page under Digital Portfolios under Background section.
http://storiesofchange.ca/index.php/background/digital-portfolio-assessment/supporting-change/

Making student thinking visible. Figure 11 shows the rationale for the learning approach of making student thinking visible. This aligns with the work of Ritchhart, Church, and Morrison (2011), which supports the idea of creating opportunities and routines for students to make their thinking visible.

Figure 11. Making Student Thinking Visible page under Background section. http://storiesofchange.ca/index.php/background/visible-thinking/

Capturing thinking. Figure 12 highlights how digital tools and digital portfolio assessment can be used to capture students' thinking.

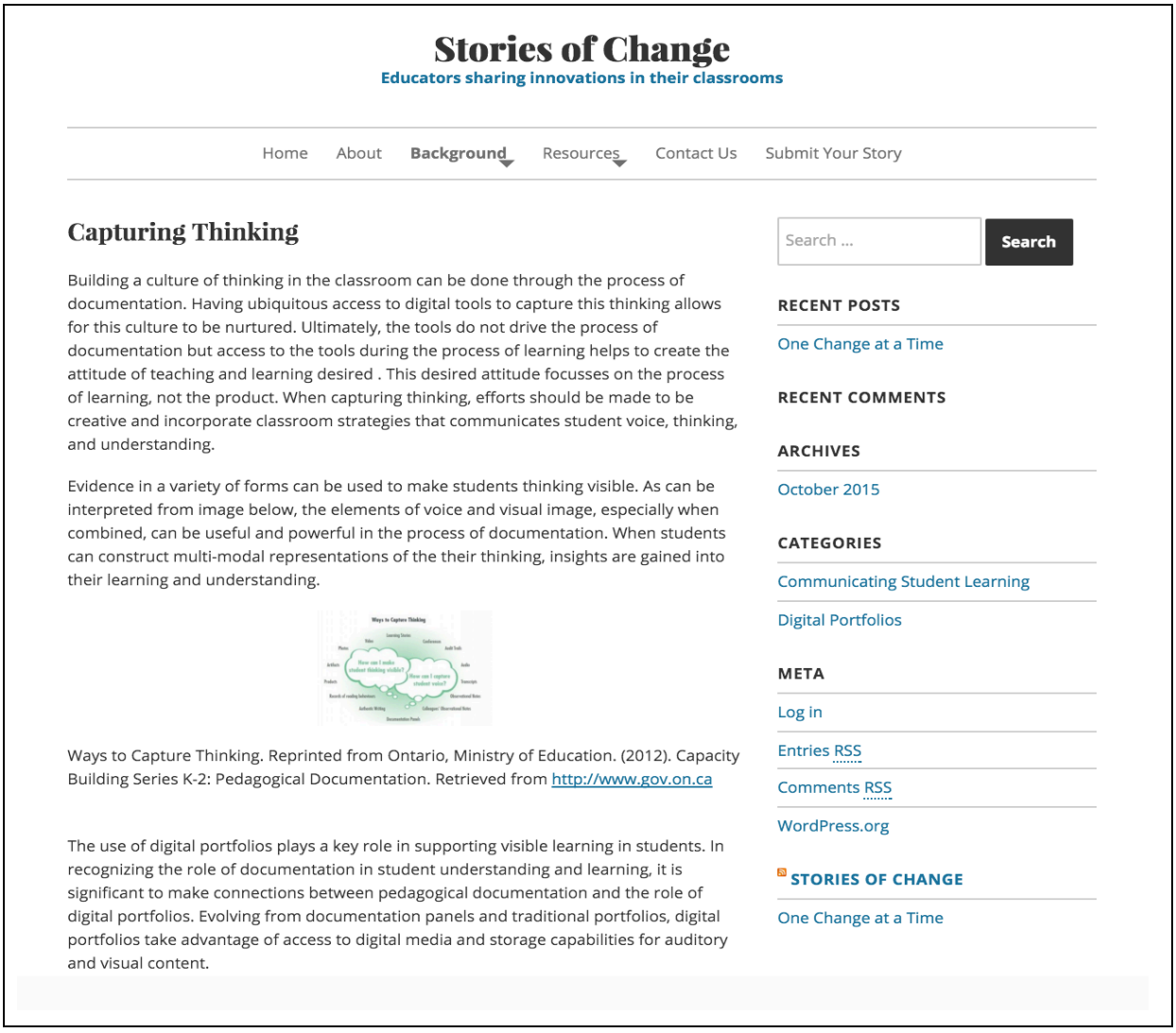

Figure 12. Capturing Thinking page under Making Student Thinking Visible page under Background section. http://storiesofchange.ca/index.php/background/visible-thinking/classroom-cultures-of-thinking/

Pedagogical documentation. Figure 13 shows the rationale for documenting student learning. Krechevesky, Rivard, and Burton (2009) cite this more thoroughly in their work which explores the the role and purpose of observation, documentation, and reflection in a classroom setting.

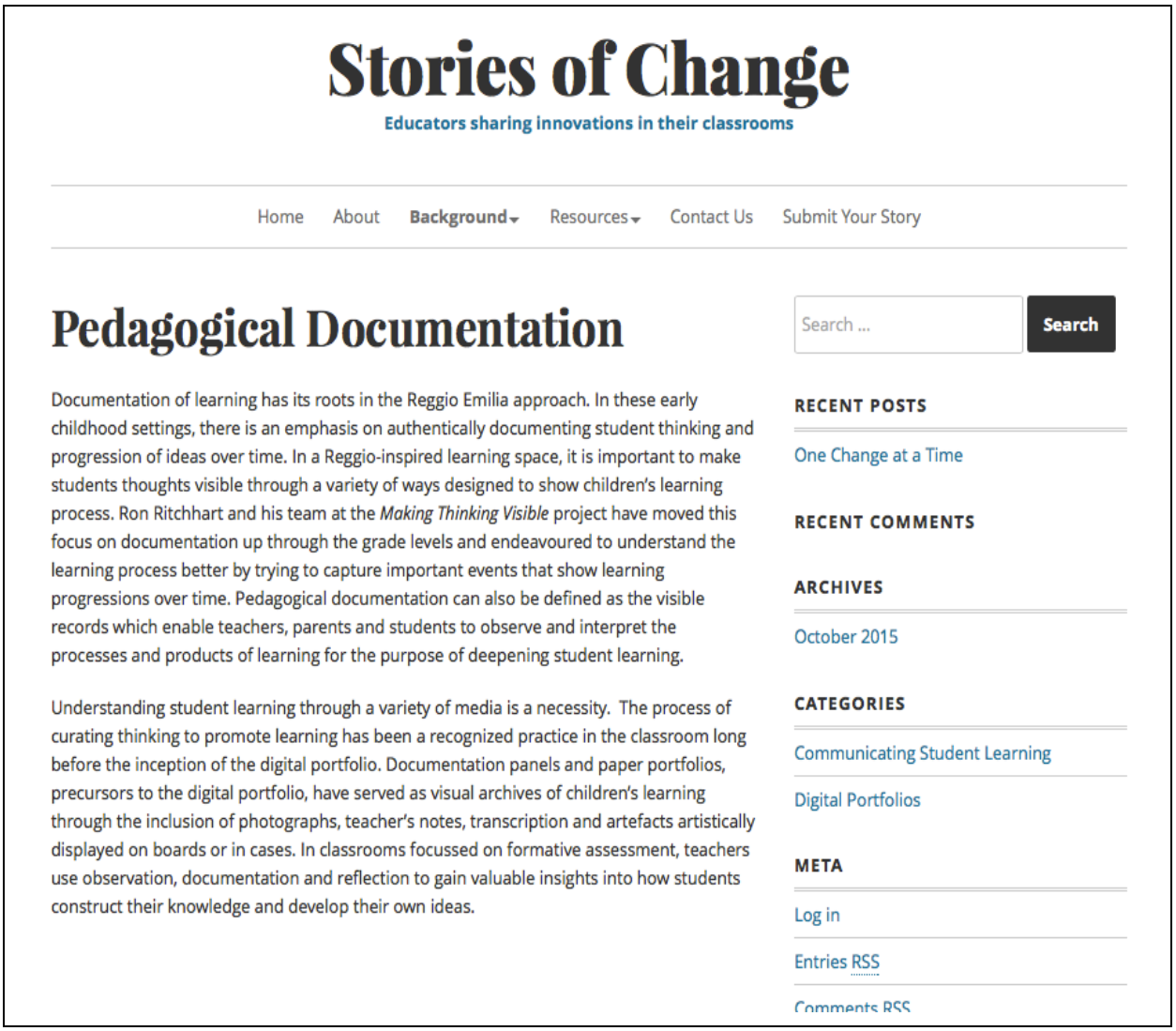

Figure 13. Pedagogical Documentation page under Making Student Thinking Visible page under Background section.
http://storiesofchange.ca/index.php/background/visible-thinking/pedagogical-documentation/

Thinking routines. Figure 14 shows an online resource (Curkovic, 2012) and Langwitches infographic (Tolisano, 2013), which are shared to outline and detail the common thinking routines.

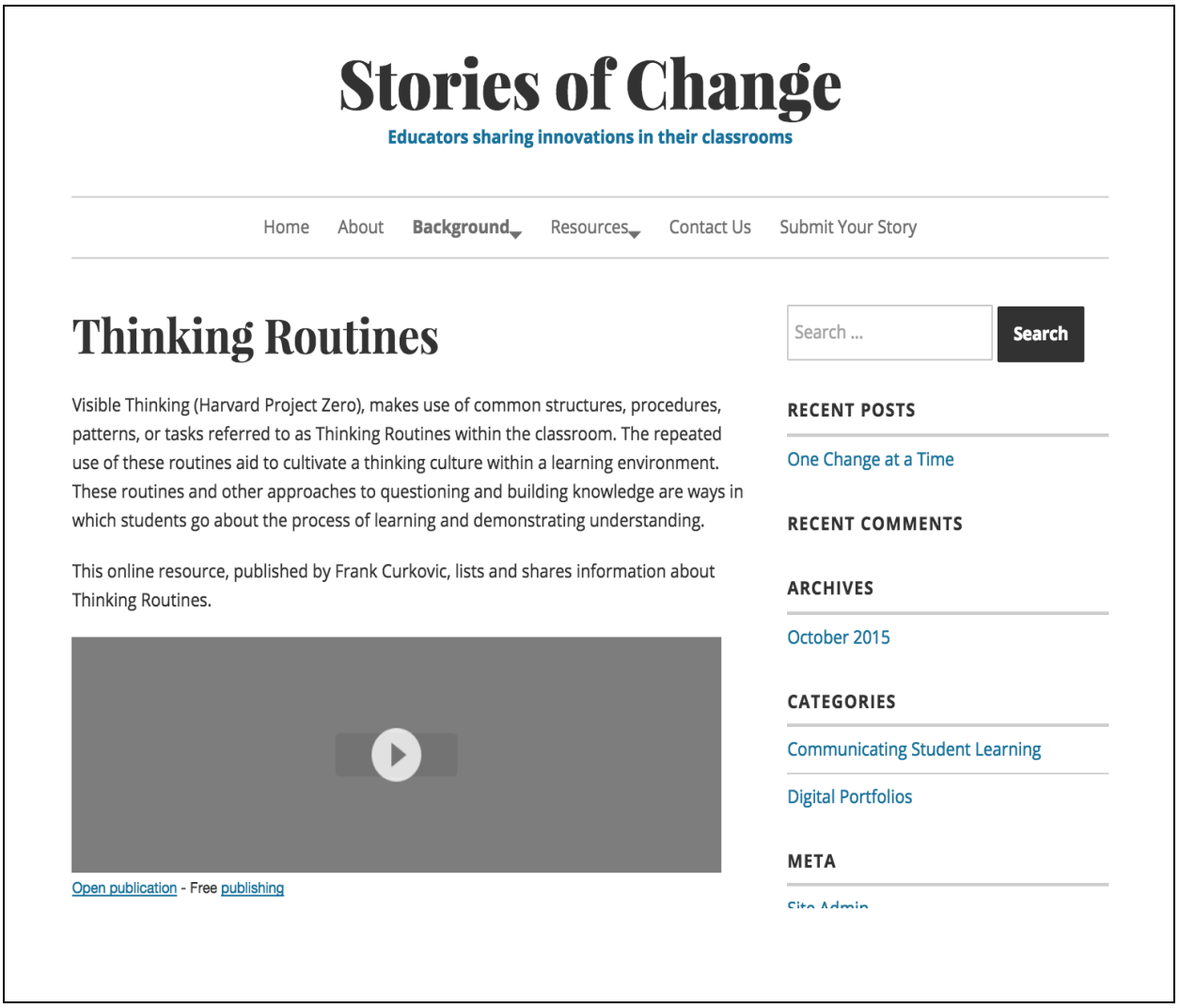

Figure 14. Thinking Routines page under Making Student Thinking Visible page under Background section.

Understanding the importance of creating a culture of thinking, and the visible thinking approach for students is clearly shown in this infographic produced by Langwitches.

Log in

Entries RSS

Comments RSS

WordPress.org

STORIES OF CHANGE

One Change at a Time

Figure 14 (continued). Thinking Routines page under Making Student Thinking Visible page under Background section.

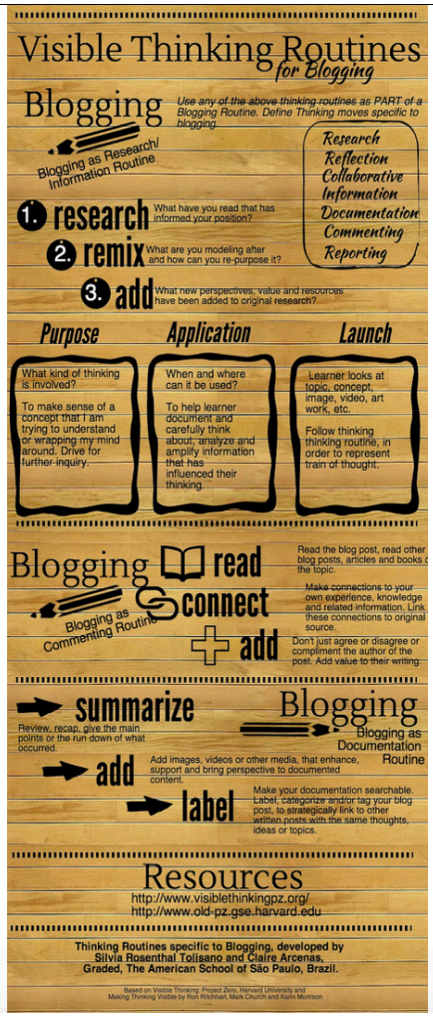

Figure 14 (continued). Thinking Routines page under Making Student Thinking Visible page under Background section.
http://storiesofchange.ca/index.php/background/visible-thinking/thinking-routines/

Communicating student learning. Figure 15 shows the need for innovative practice around communicating student learning, and makes reference to the links found in the resources section.

Figure 15. Communicating Student Learning page under Background section. http://storiesofchange.ca/index.php/background/communicating-student-learning/

Resources

Figure 16 shows the page which is an access point for the resources found on this website. This is a static page. In the following sections we share each of the elements of the Resources page. Resources included fall under the categories of: Pro D, professional reads, and websites and articles.

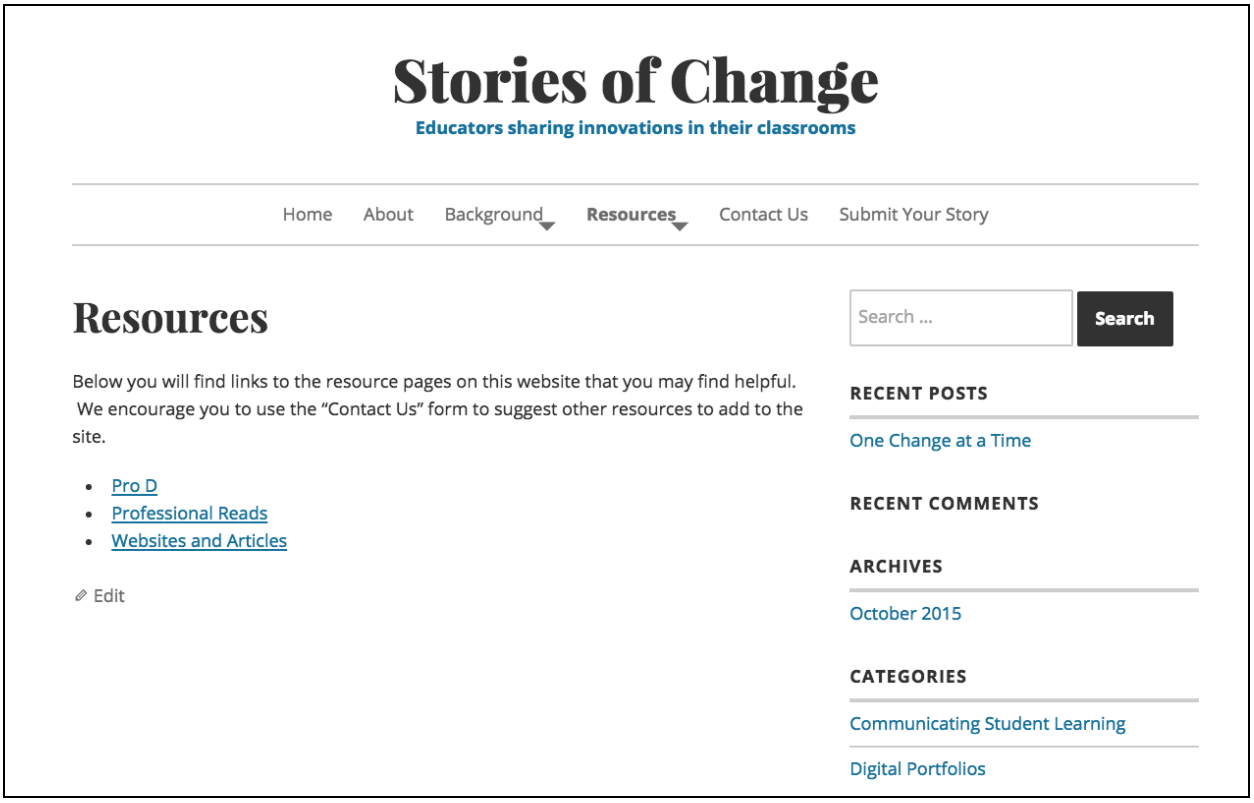

Figure 16. Content of Resources landing page.
http://storiesofchange.ca/index.php/resources/

Pro D. Figure 17 shows professional development opportunities in the area of innovative assessment practices. This page will be updated regularly as we receive new information.

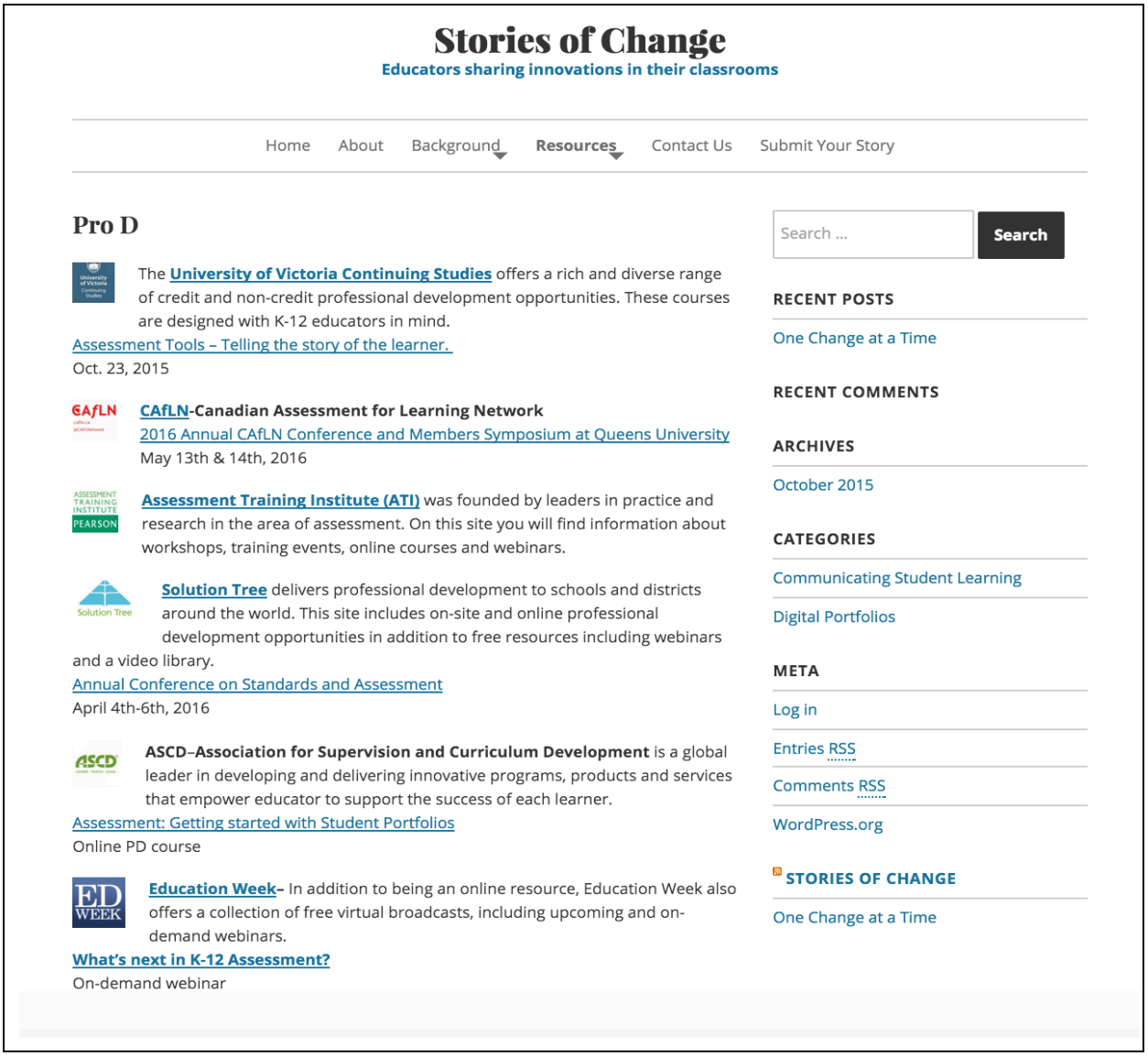

Figure 17. Pro D page under Resources section.
http://storiesofchange.ca/index.php/resources/prod/

Professional reads. Figure 18 shows professional reads including online articles, texts, and online books supporting the philosophy of this website. This is a curated page where we may choose to add suggestions made by visitors to the site.

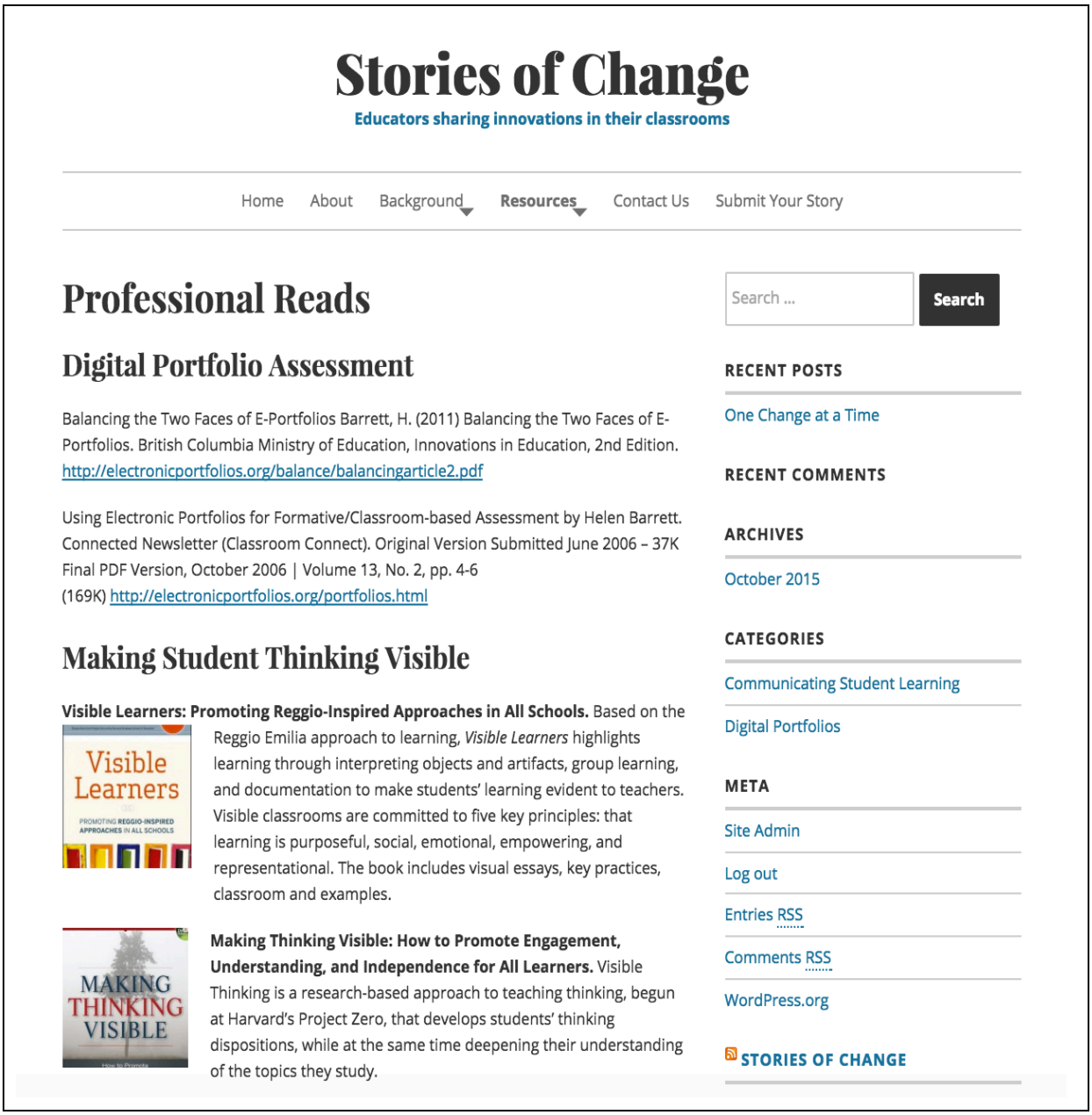

Figure 18. Professional Reads page under Resources section.

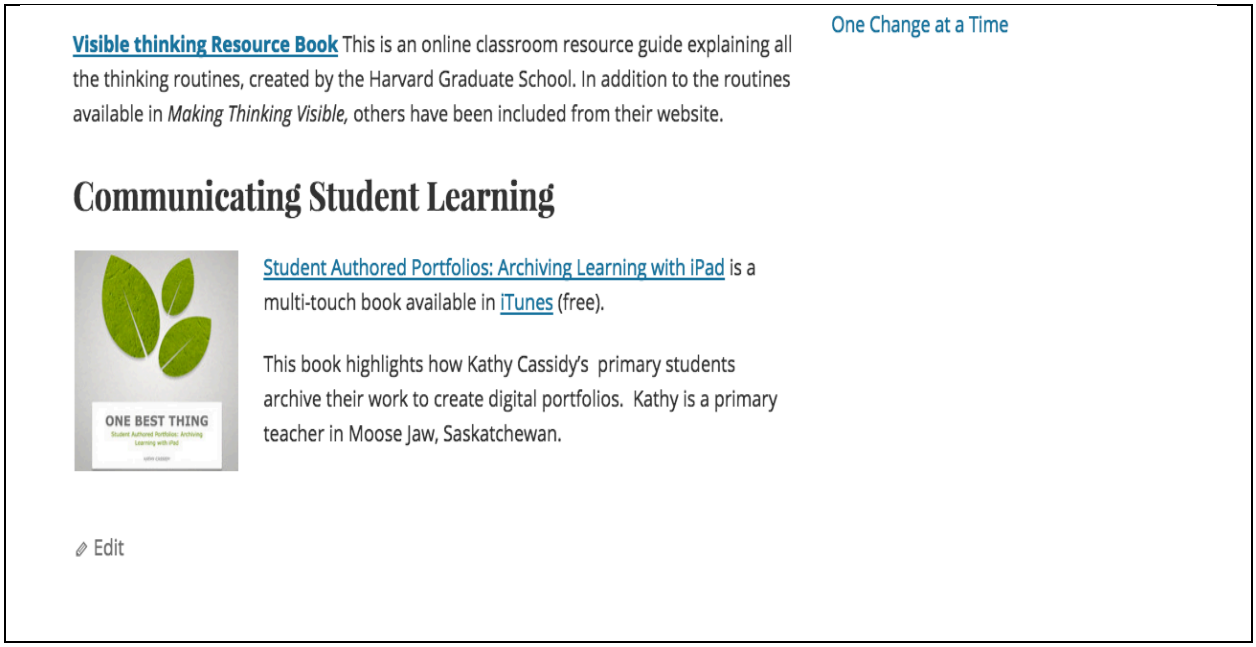

Figure 18 (continued). Professional Reads page under Resources section. http://storiesofchange.ca/index.php/resources/professional-reads/

Websites. Figure 19 shows links to websites supporting the philosophy of this website. As new resources are suggested or discovered, they will be added to list of links.

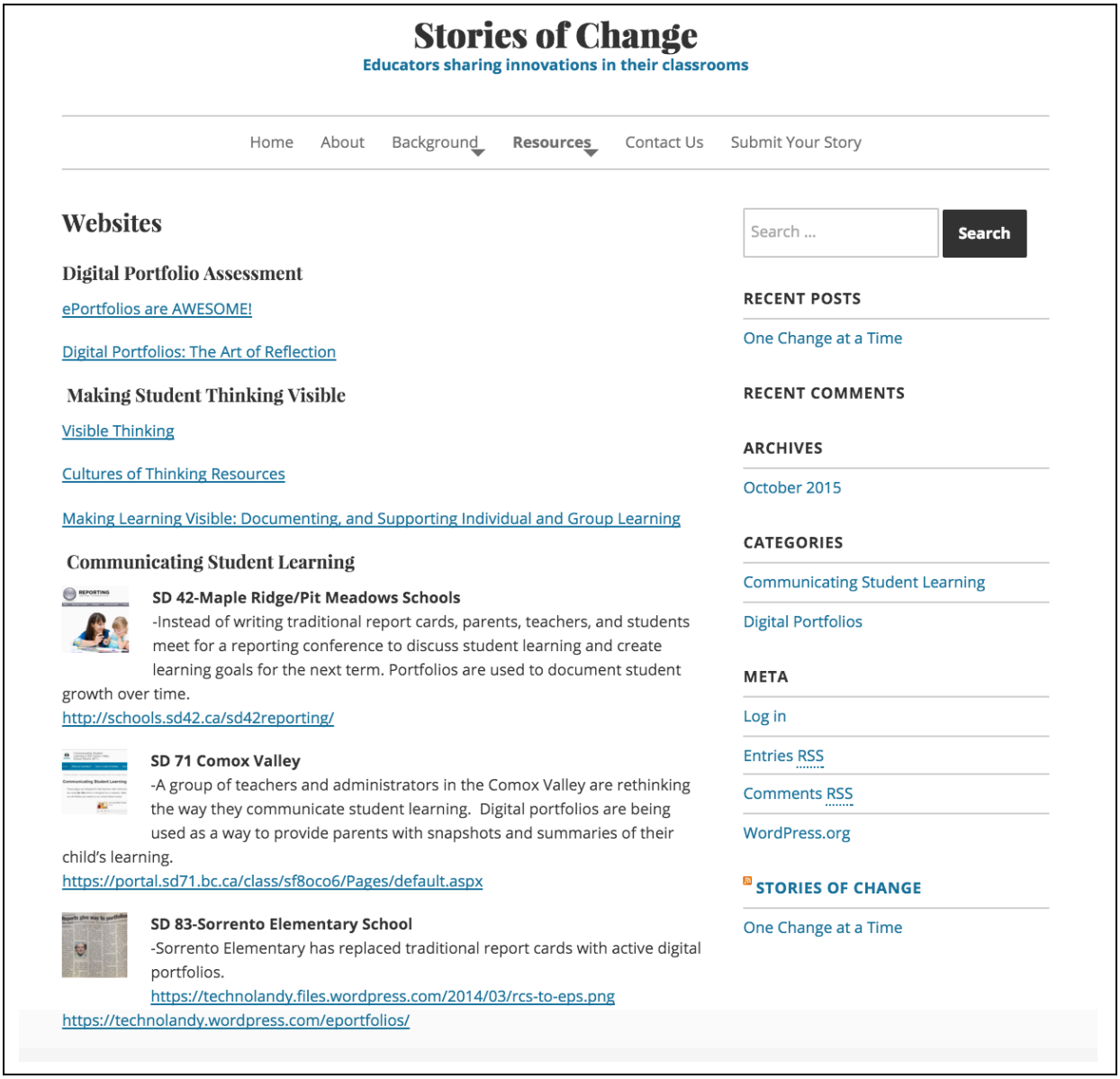

Figure 19. Websites page under Resources section. http://storiesofchange.ca/index.php/resources/websites/

Contact Us

Figure 20 provides a mechanism by which readers may contribute resources, links or any other information they think should be added to the website. The nature of this project is to support open communication and sharing between educators through an online forum.

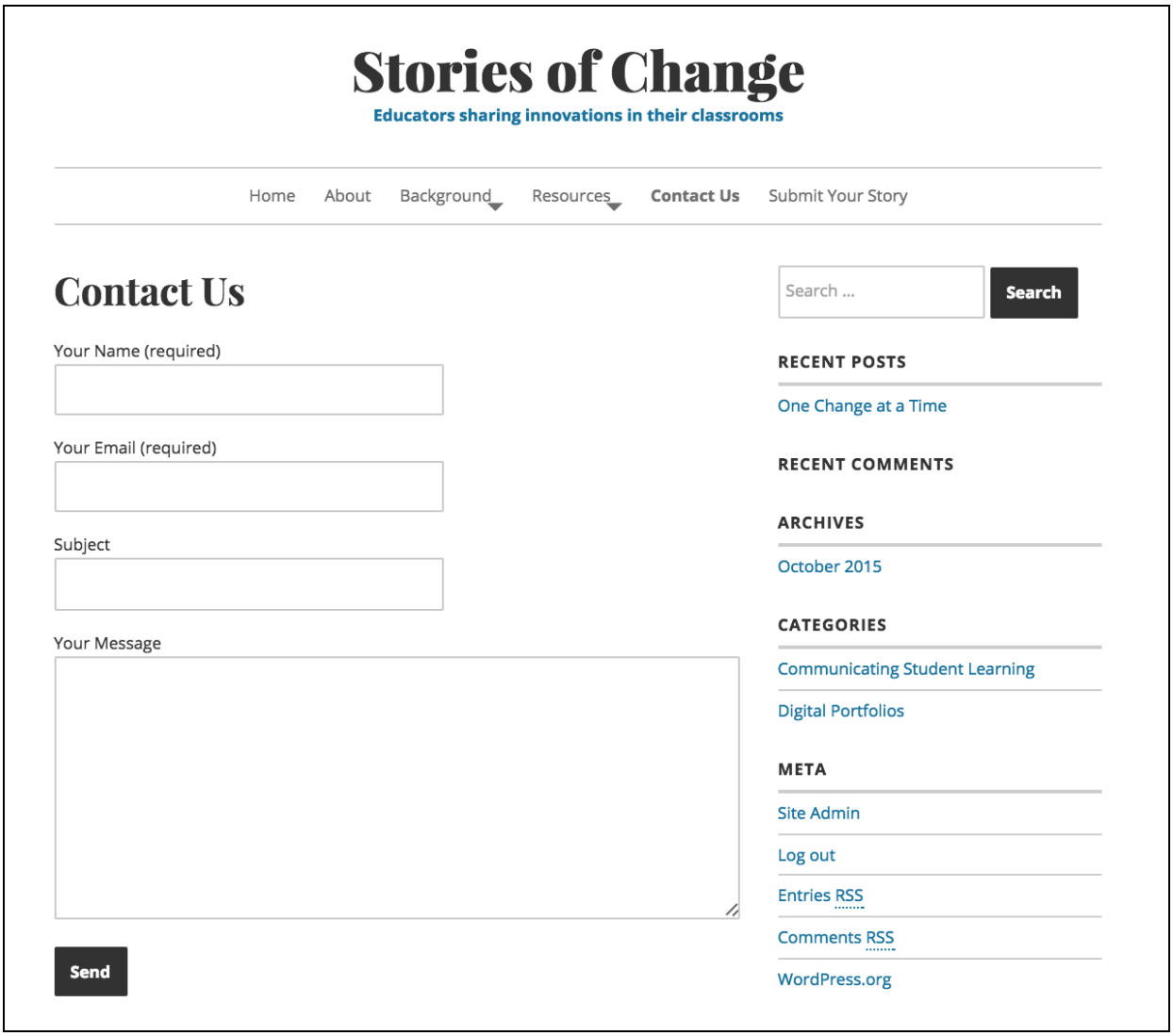

Figure 20. Contact Us fillable form.
http://storiesofchange.ca/index.php/contact-information/

Submit Your Story

Figure 21 shows the plug-in which enables other educators to share stories of innovation in their classrooms. This page sets the guidelines for these stories and invites authors to have a voice in this collaborative project.

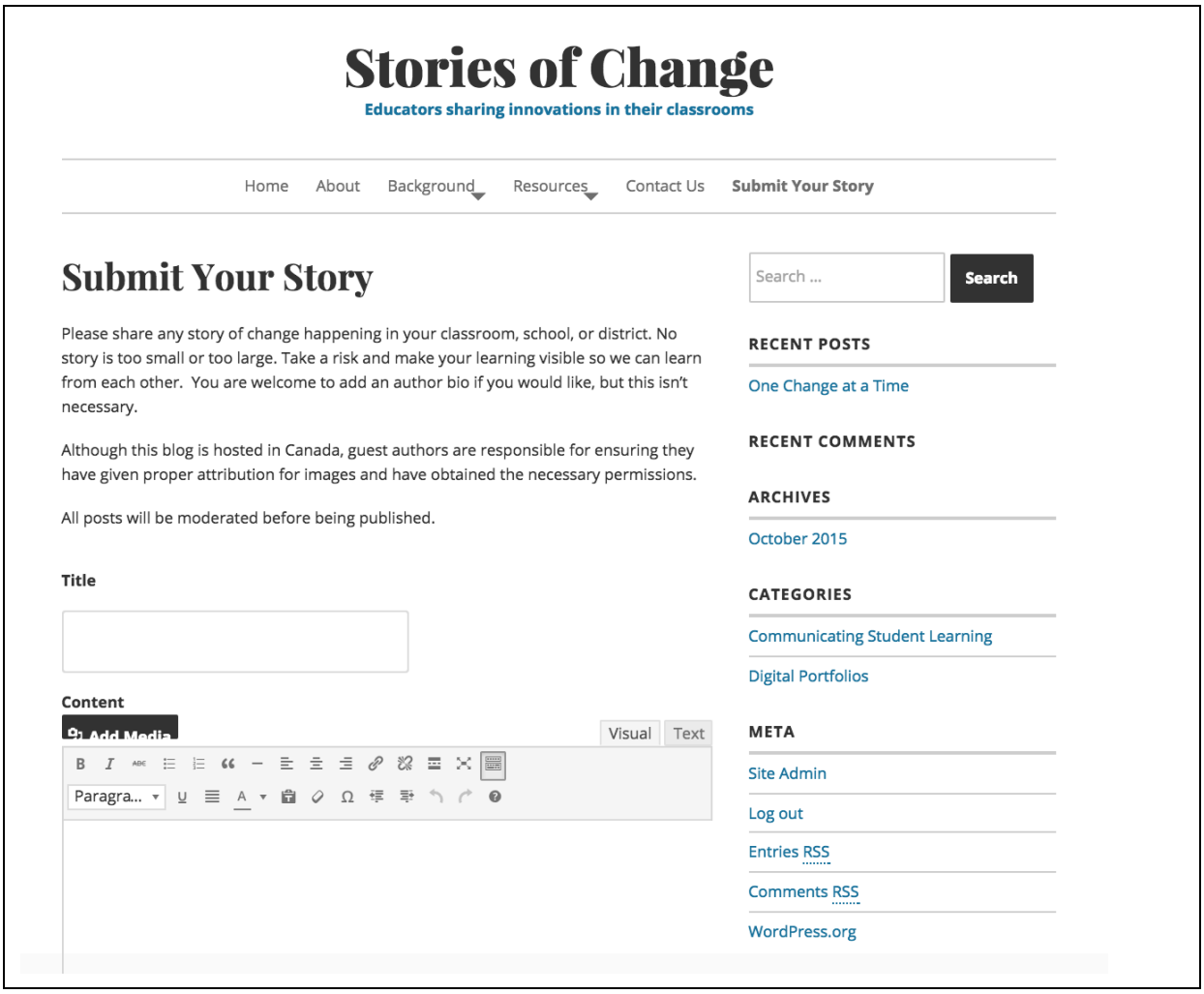

Figure 21. Submit Your Story fillable form for blog post submissions. http://storiesofchange.ca/index.php/submit-your-story/

Conclusion

In this chapter, we documented the thought processes behind the creation of storiesofchange.ca, and described the content of the website. Screen captures were included for each page as well as annotations to explain the rationale for their inclusion. These annotations also outlined the design structure and organization of the website.

We envision this website functioning as both a forum for educators to share their stories of innovation, and as a resource for those seeking to make similar changes. Contributors will be identified through our personal learning networks, as well as through the open invitation on our website. Storiesofchange.ca will be an ongoing curation project. We will maintain curator status for content and story submissions, but in time the intention is to include additional educators as curators.

Chapter 4: Reflections

Project Decision

The process of deciding on a project idea was detailed and thorough. After searching through the University of Victoria's DSpace http://dspace.library.uvic.ca, and reading many examples, I found myself leaning toward creating a professional workshop series; incorporating face to face discussion and dialogue with colleagues. Initially, this model appealed to me as historically I have always shared and delivered professional development sessions in this format. It felt familiar, somewhat comfortable and manageable. Admittedly, the familiarity of the platform was appealing but not exciting for my own learning and growth.

After a series of conversations with my advisors, Valerie Irvine and Tim Pelton, and my fellow graduate colleague, Melody Watson, Melody and I made the decision to work collaboratively on our project. Digital portfolios, the changing landscape of assessment and the move to make learners' thinking visible were the focus areas included in both of our literature reviews. We had gained similar insights into the work being done around innovation in assessment, digital portfolio assessment being one example of this. This decision to work together to create an online portfolio or blog, to capture stories of change and innovation in assessment in British Columbia was anything but familiar; it was however, motivating and exciting to think about creating something purposeful and meaningful which transcended beyond my school and colleagues. The opportunity to connect with educators around the province and beyond, to create a meta-portfolio, and to work with Melody Watson were the driving forces behind this decision.

Project Summary

This capstone project, stimulated by reviewed literature about educational reform and innovative practices in education, reflected the impact of digital portfolio assessment on student

learning and the role of making student thinking visible. For our explorations, we used the theoretical framework of constructivism. Through the research process, we considered how our students were not just receivers of knowledge, they needed to be given the opportunity to understand, think and inquire in order to learn. In a constructivist learning environment our students generated questions for themselves, shared their learning visibly and reflected on that learning. These notions cemented our beliefs in engaging in practices using innovative strategies to communicate student learning.

With the majority of our research focusing on using digital portfolios as a tool for student learning, it was a natural connection to focus this attention in our project. Upon further reflection, feedback, and discussion with one another and other colleagues, Melody and I felt strongly that we wanted the project to go beyond the digital portfolio. As practitioners, we recognized that the pockets of innovation which were happening in the area of formative assessment were diverse. Many changes occurring in classrooms around the province were being administered and supported at the district level; however, many innovations were simple strategies happening daily in classrooms initiated by individual educators. All these examples of change can be looked upon as narratives; stories worth sharing. These stories of change can help to inform other teachers of alternatives. In order to serve other educators, and to support risk-taking and sharing, we made the decision to to centre our project on all stories, big and small, which illustrate innovation in classroom practice and assessment.

We created a website, Stories of Change, designed to share these stories of innovation in the areas of assessment and communicating student learning. This website served a number of purposes. Initially, we approached this project to provide a platform for other educators to share their stories on a blog. This blog would be housed in Canada and have the ability to include guest

authors who could individually share their innovation practices. It would act as a repository of sorts to share the work of many. This website was planned to open the lines of communication so that educators could network with one another. Learning from other educators' risks, innovations and reflections allows us all to move in new directions.

Another goal of our website, Storiesofchange.ca, was for this site to be a resource for others interested in learning more about current trends in education. We focused the background section of our website resource using the headings Digital Portfolios, Making Student Thinking Visible, and Communicating Student Learning. These pages on our website were built with the knowledge and understanding we gained through our collective research from Chapter 2 of this project. In addition, the resource pages provide current websites, professional development opportunities, and literature which align with the content and direction of this site. Again we hope to continue to build these sections in an open way, soliciting information from visitors to the site.

Finally, our project also serves as a meta-portfolio for our own growth and development, providing a place for us to reflect individually and collaboratively on our own learning. The metacognitive piece that this portfolio provides affirms my belief in the use of portfolio assessment in the classroom.

It is our hope that in creating this website, we have provided both a resource for other educators and a platform for sharing innovations and changes happening in classrooms around the province and globe.

Professional Thinking

Over the last two and a half years, while working towards attaining my Master of Education degree, I have transformed both my practice and my thinking around education. The combination of coursework, the collaborative capstone project and my interaction with my

TIEGrad cohort has opened my eyes to new ways of approaching teaching and learning. While the challenges of trying to find the time and energy to complete assignments and to think deeply and clearly were real; the personal and professional growth which resulted from these tests has been profound and will impact me for the rest of my life.

The opportunity to work with Melody on our final project was a powerful aspect of my work. This collaboration which flourished between us, did so over great distances unifying two educators with distinct differences in learning environments, challenges and experiences. Yet, the power of our mutual belief to learn together, share openly and support each other in taking risks was transformative. Working with others continues to be a game-changer for me. Listening, considering different viewpoints, and having common goals drove me to new heights in my learning. I believe this particular Master of Education program to be unique. The willingness of Valerie Irvine and Tim Pelton to be flexible and supportive of our collaborative proposal to complete our project together further contributed to my growth as an educator. If this particular scenario, Melody and I working together, was made possible in our higher learning institute, then I believe I can bring my own rewards and experience when considering future requests from my own students to collaborate. The strength of collaboration has been epitomized by my experiences with the capstone project.

Through my research and project, I have have become more knowledgeable about the role and importance of different forms of formative assessment. In addition, using methods such as portfolio assessment I have experienced the impact of communicating student learning using a variety of methods. As an educator, I am looking for ways to promote deeper thinking and understanding. In my own classroom, through the use of thinking routines and pedagogical documentation, I have learned the importance of making student thinking visible and capturing

learning as means of assessment to inform future practice and communicate student learning. As teachers working in an educational landscape which is constantly changing, focused on creativity, collaboration and critical thinking, and where new innovations are appearing regularly, we owe it to our students to access and document learning in multiple ways. We need to be open and flexible to what is possible.

My experience in this program has also led me to have more insight into personalized learning as a valuable approach for both adults and children. I recall the discomfort I felt in my first class with Valerie Irvine when I was essentially offered the opportunity to set my own personal learning plan and have choice in how I would demonstrate my understanding. I remember clearly wanting strict guidelines, "Tell me what to learn and how to learn it," I thought to myself. I could have been successful with a traditional learning model, but in hindsight the growth and depth of the experience of my own integral learning journey was far richer than it would have been if I had not had this opportunity. I create from this a renewed definition of my role as teacher. I recognize the need to guide my students, often facilitating their learning and supporting them through discomfort to reach a higher level of understanding, something that is long lasting and meaningful.

This Master of Education program has proven transformative for both my teaching and my approach to communicating student learning.

Professional Career

My studies over these years has already influenced and will continue to affect, my career professionally. These experiences have given me inspiration to further my work in the classroom, they have given me the confidence to seek new ways to share more openly, and they have given me new job opportunities.

My work in the classroom is my passion. I am deeply connected to the work I do as an educator first and foremost. My graduate work has raised the bar for me to push myself to create a culture of thinking in my classroom. Designing activities which promote a deeper understanding of the curriculum, providing opportunities for formative assessment and feedback through the use of tools such as digital portfolios are practices where I will more intentionally focus on making improvements. As a practitioner, my own development directly affects the students I work with, and the learning that is happening.

One of the greatest effects of my studies on my professional career is my newly adopted openness to sharing. Through a variety of experiences, I now realize that my own innovations and shifts in thinking are worthy of sharing. I feel my work is deeply rooted in a pedagogical understanding of what the future of education might look like. I find myself feeling confident in how I interpret the new curriculum, willing and open to share with colleagues in support of moving forward. Seeking new ways of sharing my opinions is an important area of focus for me in the future. In addition to sharing my opinions, I am also planning to share my knowledge and stories of change in a deliberate way. I would like to seek out opportunities to share not only at professional development opportunities within my school, but also to larger audiences. To do this, I plan to connect with my learning network more intentionally asking for guidance in how to meet my goals and also to improve in certain areas including creating online presentations and in the delivery of these workshops. This aspect of my career excites me and can be directly related to my graduate school involvement.

Finally, in September of 2015, I had the opportunity to change jobs. I am appreciating a change in the grade level of the students I teach, but what excites me most is integrating technology into my job description. I coordinate with a team of technology integration teachers

to provide support to students and teachers in different areas of my school. This work is challenging and rewarding and I feel my understanding of changes in the educational landscape makes me a support to others. This position was offered to me in part because of my commitment to my graduate work.

Recommendations for Educators

1. Take risks, share your experiences and reflect on your practice: We are aware of the growth and learning which our students experience when pushing themselves outside of their comfort zones. This can also be a part of our own experience as educators. If we adopt a growth mindset, explore new ways of practicing, share our efforts openly with colleagues and professional learning networks, and then engage in reflective thinking we can learn with and from one another in a supportive environment. Making our own thinking visible to others can help us develop a deeper understanding of the changes we are trying to make. This approach to education can help to develop learning environments which support best practices and promote student learning.

2. Understand the curriculum: With the students at the center of the development of new curriculum and educational reform, it is important for us to understand and evolve with the curriculum. As the British Columbia provincial curriculum is being redesigned, we have a great opportunity to embrace the new curriculum and assessment, and re-evaluate our practice by exploring innovative ways to support our students.

3. Explore and engage in innovative ways of communicating student learning: As the teaching and learning that occurs in the classroom transforms, so does our need to communicate student learning. There are many different approaches to showcase student achievement and clearly demonstrate student learning as it relates to the curriculum standards. Having a goal to challenge and support each student, it will be important to work closely with parents, others

teachers and administration, guardians, and students to communicate this. As educators we should look to explore and experiment with different assessment practices including the use of digital portfolio assessment. There are a range of platforms available to educators, schools, and districts to meet the diverse needs of users. However one chooses to engage in portfolio assessment, seek out the support of colleagues and be willing to try something new.

Through discovery and observation, I truly understand and believe in the strength of being open with my learning as an educator. What seemingly may be an insignificant change or innovation to you may be just the story that is needed to encourage another educator, unknown to you, to take a risk and embark on their own journey.

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