# Digital Storytelling in a Knowledge Building Community – An Emerging Model

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**Abstract:** Digital Storytelling (DS) has a history of being applied in education as a learning practice that has many documented benefits for teaching and learning across a wide variety of subjects and education levels. With a heavy focus on the use of digital devices to create short multimedia narratives that capture both the unique perspective of students as well as a synthesis of their subject matter learning. This paper will discuss an emerging model in which digital storytelling was applied to a Grade 2 laboratory school class investigating the growth and migration of salmon within their science curriculum.

## Introduction

Digital storytelling (DS) is the practice of using digital devices to combine multimedia elements into a short narrative that often brings a personal element to a specific domain of knowledge. It was first introduced in an arts community in Berkeley (Lambert, 2013) in which creators of digital stories conveyed powerful messages through short videos. With social media become an influential and pervasive part of our lives, and the inevitable rise of the influencers and creators has shifted how we consume, produce and perceive knowledge (Brown, Czerniewicz, & Noakes, 2016). Digital stories have become a central component across Web 2.0 sites, with many amateurs and professionals alike turning to the likes of YouTube, Instagram and Twitter as platforms for sharing and consuming stories. When applied to education, DS has yielded many positive results ranging from increased motivation and engagement (Sadik, 2008; Van Gils, 2005), to enhanced critical thinking (Yang & Wu, 2011), creativity (Schmoelz, 2018) and even science literacy (Tan, Lee & Hung, 2013).

Despite the ubiquity of digital stories, their longevity as an artifact for teaching and learning is questionable. As such, there is potential for utilizing Knowledge Building as a framework in which the practice of digital storytelling could be embedded within. This is a result of the principles-based approach Knowledge Building takes in trying to build the necessary capacity that can sustain creative work with ideas for a community. Some of these principles include *epistemic agency, democratizing knowledge, idea diversity* and *real ideas, authentic problems* (Scardamalia, 2002). Arguably, by increasing the *epistemic agency* that students have in their own learning in the face of authentic problems you can draw upon a community's collective knowledge and input in creatively working with ideas to develop solutions. At the core, Knowledge Building asks a community to actively question, challenge and reconstruct knowledge to build new knowledge as a group. By combining the practice of digital storytelling and the principles behind their creation to a Knowledge Building community there is potential to complement and enhance the goals of Knowledge Building pedagogy. Therefore, this study aims to answer the following questions:

(1) How can DS practices aid students in sustaining creative work with ideas?
(2) How can DS be appropriately combined with Knowledge Building theory to enhance student learning?

## Methodology

### Research Context and Subjects

A design-based research (Brown, 1992; Collins, 1992) methodology was used to collect and analyze the data. The setting for the study was an independent urban school in a large diverse city in Canada. Twenty-two students in grade two (age 7 -8), their teacher, and two teaching assistants participated in the study. The students were representative of the city in terms of ethnicity, economic background and gender. The teacher and teaching assistants were new to Knowledge Building, digital storytelling, and the Knowledge Forum® software. The students had some experience with Knowledge Building but limited exposure to using computers and the Knowledge Forum software in school. The focus of the inquiry science portion of their curriculum was to study salmon in order to understand their entire life cycle as well as their habitat. This was in context of helping preserve salmon habitats in Canada. The class had a salmon tank that allowed them to observe salmon go through the first few stages of life before they could release them into the wild. To support student inquiry into salmon, they participated in offline Knowledge Building Circle discussions, textual and drawing idea input in Knowledge Forum, clay modeling of salmon stages, journal writing and sharing, and digital stories within Seesaw.

Knowledge Building sessions occurred twice a week for approximately 45 minutes each time. The study lasted 9 weeks. In the first- and second-week students were introduced to Knowledge Forum (KF) due to having little prior exposure. Also, in the second week a salmon eggs were brought into the class and put into the salmon tank. Third week introduced the students to KF's drawing tool so they could be familiar with using it to express their ideas beyond text. In the fourth week the students continued inserting notes regarding their understanding of the salmon life cycle with the goal of building on each other notes. In the fifth and sixth weeks, students began creating clay models that personified their understanding of salmon. Week seven and eight, students began salmon journals that sought to capture the knowledge they learned up to that point and their personal thoughts regarding the past few weeks of learning. These journals were meant to collect student understandings of their learnings over the past several weeks in order to produce a digital story in future weeks. It also gave them an opportunity to express their metacognitive thoughts regarding the various weekly learning activities. This would serve as a crucial step as it mimics script writing that is essential for digital stories. The last week of the study saw a complete switch of platforms due to the pandemic faced globally, resulting in all students, teachers and researchers having to work remotely together through the video conferencing software, Zoom® and online learning platform, Seesaw®. To consolidate all that had occurred in previous weeks, week nine saw all clay models captured and shared on Seesaw for students to create short audio notes on top of the image.

### Data Analysis

There were a number of data types collected from this study in order answer the two research questions. Observations were collected each week, video and audio recordings from various Knowledge Building Circle and clay modelling sessions, analytical data from Seesaw and Knowledge Forum and lastly meeting and interview notes with the teacher. All videos and audio recordings were transcribed verbatim with grammar corrected. Analytical data collected from Knowledge Forum was used to compare various Knowledge Building session to observe potential improvements. Meetings and interview recordings and notes were transcribed verbatim to determine the success, shortcomings and areas of improvement for the integration of DS into Knowledge Building. In combination, all data were analyzed for common themes with the two research questions acting as guides.

## Findings

After nine weeks of investigating the integration of DS practice into Knowledge Building a few key themes emerged based on weekly iterations to the lesson plan and activities. Through thematic analysis the following themes emerged: *multiple points of entry*, *authenticity of learning*, and *sharing leads to constant reflections*. Each of these emergent themes can be considered essential elements for enhancing student learning in Knowledge Building and beyond.

### Multiple points of entry

From week-to-week, students moved from KB circles, to note writing in Knowledge Forum, using the drawing tool, and building clay models of salmon stages, journal writing and sharing and finally creating short digital stories in Seesaw. Each stage allowed for students to engage with their understanding of salmon in different ways as the medium shifted. Some stages were less productive than others due to the lack of points of entry for the student. In particular use of software that focuses largely on textual input or writing can limit a student's ability to express themselves. As an example, it was observed that students, although engaged and motivate by using a computer for learning, did not necessarily convey all they knew about the early stages of a salmon lifecycle. Most of their notes were simple and used a limited set of vocabulary. Conversely, the use of clay allowed students to physically manifest the depths of their understanding, beyond what they could articulate through words alone. Many students included fine details such as eyes on their salmon eggs as they saw them physically on the salmon eggs in their salmon tank or they gleaned the information from the variety salmon books in the classroom. One student for example when constructing the fry stage of a salmon also included an adult salmon for scale and reference.

In discussing the accessibility of DS, the teacher (personal communication, April 24, 2020) states that "the disconnect between generating and idea and having it come out as proper language on paper, it isn't fair for the kids as the purpose of inquiry is to develop their understanding, building and sharing knowledge". By limiting the means in which students are able to express what they know especially in the early stages of their development hinders not only their ability to share the entirety of what they know but also their motivation to participate. It was very apparent when the students started the journal writing activity they often rushed to finish

and mostly through the copying of information from salmon textbooks. Many of the students subsequently did not want to share their journal entries. Comparatively, this speaks to how DS offers the flexibility of multimedia student input on any given subject. It allows students, teachers and researchers the ability to convey and capture a wider gamut of student subject knowledge and understanding.

### Authenticity of learning

Although students were generally excited about studying salmon, especially with a live salmon to observe in the classroom, authentic or the genuine desire to learn was not always present. When there was a heavy emphasis on answering the question, such as during a few of the journal writing sessions contrived learning seemed to occur. Students ran back and forth between their notebooks and textbooks to gather information to complete the task. During times of clay modeling or recording audio notes in Seesaw a certain level of authenticity toward learning was apparent. For example, Student A remarked that they particularly enjoyed using clay to learn about salmon because "I had fun getting my hands all dirty". Clay modeling was often accompanied by metadiscourse amongst students about their learning, and intentions as they were building. "You are learning not because you are told too, but because you are engaged" (D. Osorio, personal communication, April 24, 2020). This engagement with various mediums resulted in students being able to showcase the depth of their understanding. Student A was able to describe in detail stages of salmon growth and standout characteristics of the stages in his digital story. These stories about the creation of artifacts in clay, digital or otherwise leads to more authentic and engaged students as there is less emphasis on comparing if your theory is better than someone else's.

In addition, it was very apparent the activities that engaged the students versus those that did not. Excited students had more metadiscourse or what I would call *creative exposition* regarding their work while unengaged students had minimal to say regarding what they were doing. *Creative exposition* is the act of talking through what you are thinking or doing with others while you are actively engaged in a creative endeavour. Authenticity was present in varying degrees over the weeks, however the most authentic moments of learning occurred where students were given a greater degree of *epistemological agency* and creativity to construct their understanding. As successful as Knowledge Building is at setting the stage for community-first and student led creative work with ideas this study found the addition of digital storytelling elements produced larger amounts of genuine interest in learning.

### Sharing leads to constant reflections

Tsoukas' (2009) states that new knowledge is created through a dialogical approach. Essentially through dialogue individuals go through a series of *conceptual combination, expansion* and *reframing* that leads to new knowledge being built and entered into the community's lexicon of understanding toward a subject (Tsoukas, 2009). As students engaged in *Knowledge Building discourse*, it actively clarified concepts from a personal and community point of view. When sharing their journal entries with the class it highlighted a student's unique learning journey but also caused others within the community to reflect on their own individual journeys. The conflict between what a student experienced and what they were hearing can lead to a deeper level of understanding of both the subject and their own learning.

An important distinction was made by the teacher and through observations of dialogical approach to Knowledge Building in the class and online. Sharing for the simple task of completing an assignment did not create genuine opportunities for deeper conversations or further genuine reflections by students. What motivated, engaged and excited students was the sharing of personal stories and perspectives. For example, one student shared their trials and tribulations with working on clay models of a salmon redd leading to something that resembled a shoe, which was met with joy, support and agreement. Even during the early weeks of the study where the focus was on writing notes in Knowledge Forum, many students would share their own micro stories about what they were doing which resulted in seemingly greater levels of discussions about the subject itself.

## Discussions

The data suggests that in the incorporation of digital storytelling practices in a Knowledge Building framework can lead to consistent and frequent reflections regarding a student's learning journey. The constant cycle of sharing and reflections can lead to both the deepening of knowledge and further sharing of personal stories as the students seek to validate their understanding in relation to others. When many students begin sharing and trying to co-construct meaning a dialogical approach (Tsoukas, 2009), they begin sustaining creative work with ideas (Scardamalia, 2002) in an authentic manner.

Furthermore, by working through a number of activities related to digital storytelling such as the building of artifacts that could fit into a final story, students often have *creative expositions*. These expositions are free flowing discussions that suggest student engagement with a particular learning activity. These discussions can be linked to Glaveanu (2018) concept of *creativity as a craft*, in which creative activities do not happen within a vacuum, but rather in the midst of a community; simultaneously influencing and being influenced by those around you. With increased interaction through sharing, students are able to build knowledge together rapidly and in a manner that is natural rather than contrived. Again, the observations highlight the potential for digital stories as the catalyst for heightening a student's motivation to learn, participate and become a valued member of a community.

In order to get students to a point in which they are ready to express themselves productively there needs to be multiple points of entry into the discourse. The study demonstrated a correlation between different types entries and their overall impact on a student's learning demeanour. Particularly at the grade two level, students were drawn toward creative activities in comparison to once that felt staged or explicitly required them to develop skills rather than engage with the subject matter.

Overall, the results indicate that when digital storytelling practices and activities are included as part of Knowledge Building, students are able to showcase the incredible depth of their subject matter understanding through different mediums. This is important as it highlights the need for different approaches to teaching and learning as well as the Knowledge Building pedagogy as it stands. Engaging students at a fundamental level in which they are willing to share in an uninhibited manner due to their excitement for a series of activities leads to greater sustained creative work ideas. Furthermore, it aids students in consistently sharing their insights, experiences and work which is beneficial for themselves and their peers. Below (see figure 1) I have illustrated a concept model for the integration of digital story practices in Knowledge Building.

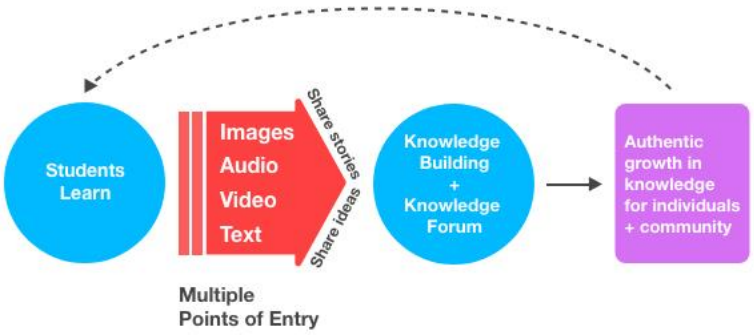


Figure 1: Emergent model of digital storytelling integration with Knowledge Building

## Conclusion

This study aimed to investigate the integration of digital storytelling practice within a Knowledge Building pedagogical framework and determine its feasibility in sustaining creative work with ideas. Based on the analysis of qualitative data digital storytelling has a positive and lasting impact on students as it provided multiple ways for students to engage with the subject and more importantly the community. In addition, it highlighted the need to expand and develop tools within Knowledge Forum to enable digital storytelling activities. While these results positively position digital storytelling as a means to draw upon and sustain student creativity it also raises questions regarding the long-term effects on the development of skills necessary at a particular grade level as well as the potential it may have on the teachers pedagogical planning. Further research is needed in both areas to determine how storytelling can be included in Knowledge Building so that it is a seamless integral component of the pedagogy rather than an addendum. Lastly, it would be beneficial to attempt this study again with more than one class over a longer period of time to compare and contrast the results.

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