# New Strategies for New Literacies - Digital Strategy Backpack Samplers

**Nance Wilson, PhD**
Associate Professor of Literacy
Cornish Hall, Room 1318
Literacy Department
State University of New York at Cortland
Cortland, NY 13045, USA

**Shufang Strause, PhD**
Associate Professor of Instructional Technology
Childhood/Early Childhood Education Department
Education Building 1241
State University of New York at Cortland
Cortland, NY 13045, USA

## Abstract

*The skills and strategies of effective communication are at the heart of literacy teaching and learning; engaging with digital technologies to communicate puts new demands on teachers and students. The communication tools of the 21st century require a rethinking of our 19th century educational approach to fully integrate digital tools into the classroom. We must help pre-service teachers learn how to leverage technology to build students' communication skills across the curriculum. The authors describe two different Digital Strategy Backpacks that were integrated into a pre-service teacher education instructional technology class. The backpacks illustrate how learners apply communication skills and strategies with a range of technologies. The authors acknowledge that the Digital Strategy Backpacks are just a taste of this technique, however, we contend that they demonstrate how teachers and teacher educators can put communication goals at the front and center of teaching with technology.*

***Keywords:*** New Literacy; Strategies; Technology; Digital Strategy Backpack

## *1. The Role of Technology in 21st Century Life and Learning*

Effective communication requires that all parties (readers, writers, speakers, and listeners) carefully craft, evaluate, and/or respond to messages. When communication is efficient, the process occurs with little interruption or misunderstanding of the intended message. The skills and strategies of effective communication are at the heart of literacy teaching and learning. With the tools of digital communication, literacy is no longer static. Engaging with digital technologies to communicate puts new demands on teachers and students because "the world has changed so fundamentally in the last few decades that the roles of learning and education in day-to-day living have also changed forever." (Trilling & Fadel, 2009, p. xxiii).

The communication tools of the 21st century require a rethinking of our 19th century approach to education, not in terms of marginal fixes, but from first principles (Prensky, 2016). Education needs to transform to fully integrate digital tools into the classroom. We must prepare pre-service teachers to leverage technology to build students' communication skills across the curriculum. However, this task is not a simple one. Researchers have found that despite recognizing the need to teach with digital tools, American teachers feel they are inadequately prepared for the challenges of applying new and unfamiliar technology to existing curricula and using technology in their classrooms as part of their daily practices (Cuban, 2001; Brookfield, 2015). Thus, it is key that we work to override the challenges that affect teachers' adoption of technology and innovative teaching practices by providing future teachers with the skills and strategies necessary to teach K-6 students 21st century communication skills (Johnson, Adams Becker, Estrada & Freeman, 2015; New Media Consortium, 2014).

The first step to dealing with the challenges of teachers' adoption of technology is to rethink how we conceptualize technology. Many teachers see digital tools as an add-on to existing classroom tools. That vision may come from our use of the word tool.

When describing tools, we visualize a tool belt with specific items to accomplish particular tasks. In the digital world, there are many technological "tools" that can accomplish similar tasks and these "tools" keep changing as technology advances. Therefore, as suggested by Bruce and Levin (1997), it may be better to shift to the term "media". The use of the term "media" suggests the mediational function of technologies, which link the student to other learners, teachers, other technologies, ideas, and the physical world. The change from "tool" to "media" shifts the focus from a specific App or program to digital learning. When using the idea of tools, we focus on the technology as the centerpiece to accomplishing a task. However, when reframing our thinking to "media," the task is at the center and the user can choose any one of many possible media to accomplish the task. The approach shifts to the way in which the technology links the user to other learners, teachers, other technologies, ideas, and the physical world. Moreover, as technologies become embedded in social practices, they tend to become invisible; users focus less on the fact that a technology may be consciously employed as a tool to do a task, and come to see the task itself as central, with the technology as substrate (Bruce & Levin, 1997). The focus shifts to the learning and the learner instead of the technology.

This shift of focus from the technology to the learner requires an examination of learner-centered educational goals for the use of technology. Four goals, as described by Bruce and Levin (1997, 2003), align with the skills and strategies recognized by the Common Core Learning Standards (NGA Center & CCSSO, 2010) (CCSS) for literacy in a technological society. The first goal, media for inquiry, aligns with the CCSS for reading. Specifically, Anchor Strand Seven states that students need to "integrate and evaluate content presented in diverse formats, including visually and quantitatively, as well as in words" (NGA Center & CCSSO, 2010, p. 35), thus acknowledging the range of texts that students will encounter in conducting research.

The second goal of Bruce and Levin (1997, 2003), media for communication aligns with both the CCSS for speaking and listening and for writing. In Anchor Standard Five for the Speaking and Listening, students are asked to "make strategic use of digital media and digital displays of data to express information and enhance understanding of presentations" (NGA Center & CCSSO, 2010, p. 48). Students must communicate using digital media and displays. This standard includes the use of 'traditional' digital tools such as PowerPoint or Keynote as well as emerging media such as Educreations, iMovie, etc. The writing standards continue the theme of using technology to communicate; Anchor Standard Six, states "use technology, including the Internet, to produce and publish writing and to interact and collaborate with others" (NGA Center & CCSSO, 2010, p. 41). In both the writing and speaking and listening standards, media is being used for communication.

The third goal, media for construction, provides platforms for building new knowledge. The CCSS for reading and writing are addressed. Writing Anchor Strand 8 asks that students be able to "gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism" (NGA Center & CCSSO, 2010, p. 41). Aligned with this goal Reading Anchor Strands Seven, Eight, and Nine ask for students to build knowledge:

- CCSS.ELA-Literacy.CCRA.R.7
  Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
- CCSS.ELA-Literacy.CCRA.R.8
  Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
- CCSS.ELA-Literacy.CCRA.R.9
  Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take, thus, illustrating the role technology plays in helping the learner to be literate in a technological world.

The final goal, media for expression, combines construction and communication and includes the use of interactive videos, drawing, creation of hypermedia, etc. This goal also is addressed by CCSS for Speaking and Listening Anchor Strand Five as well as Strand Six "Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate."

The multiple contexts for the use of language while focusing on how students can demonstrate knowledge using technology is another example of how media supports learning. The focus on the standards is key to creating buy-in for pre-service teachers utilizing technology for improving student learning. In preparing teachers to build 21st century communication, it is important to understand more about the literacies required for success in the digital age.

Researchers have labeled these expanding conceptions of literacy as "new literacies" (Coiro, 2011; Keene, 2010; Leu, Kinzer, Coiro, Castek & Henry, 2013; Leu, & Maykel, 2016). "New literacies" is a theoretical perspective that addresses the technological changes that are redefining literacy, by recognizing the complex and multimodal tasks that are required to be literate today (Afflerbach, Pearson, & Paris, 2008; Castek & Coiro, 2015; Kuiper & Volman, 2008; Lin, 2001). Coiro, Knobel, Lankshear, and Leu (2008) have identified three characteristics that shape our understanding of the range of foci that are key to the study of new literacies. First, engaging in the practices required by new literacies include a need for new skills, strategies and dispositions around acquiring and communicating information. Second, the global community requires communication using new literacies. New literacies change as the tools of technology and the social practices around those tools change. Finally, new literacies are multifaceted, including multiple modalities and points of view. By uncovering the scope of issues around how technology has changed the ways in which we communicate, new literacies move our understanding of what it means to be literate from static to multi-modal. "Literacy is no longer bound to print-based mediums but instead extends to digital multimodal experiences where the combination of sounds, images, and text all contribute to meaning making." (Boche & Henning, 2015, p. 579).

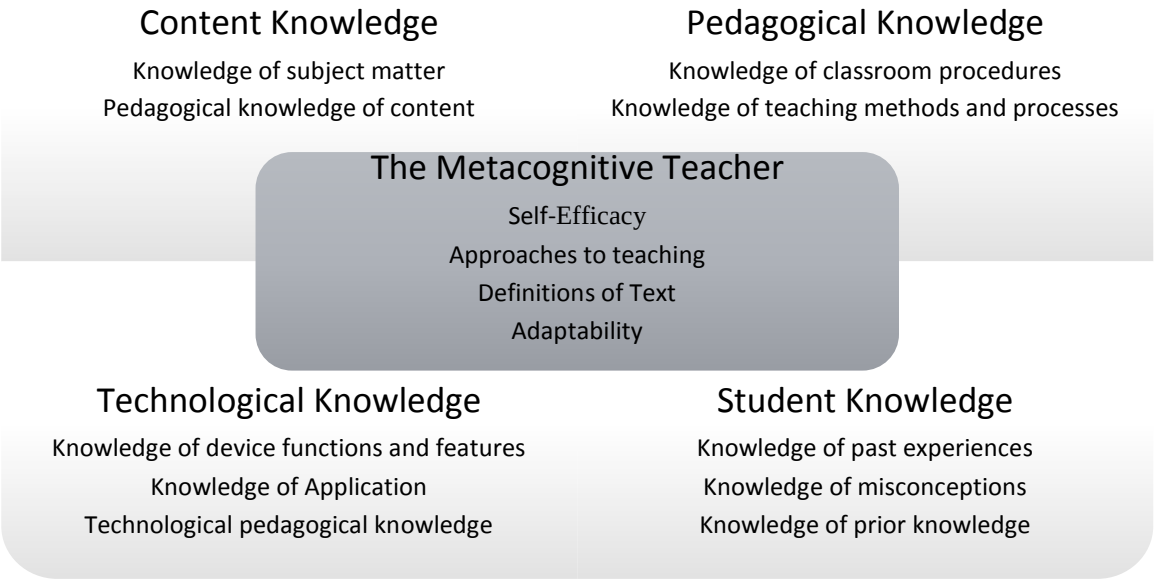
As we shift our definition of literacy, we must also shift our teaching of literacy to reflect the view of technology as a media to accomplish educational goals that prepare students to be literate individuals. We must assure that we teach students not just about the tools and how to use them; but to help them understand that the tools themselves provide students with "new learning opportunities and contexts." (Hutchison & Colwell, 2014, 148). It is within this framework that we must help students to see that technology can help them accomplish tasks in new ways and to do so requires specific strategies. Therefore, our classroom instruction needs to view technology not only as a tool to accomplish a task but asa literacy skill or strategy that must be explicitly taught to assure that students can utilize it with new technologies.

Preparing pre-service teachers to design instruction that utilizes technology appropriately requires university educators design courseworkto help them develop a strong pedagogical framework. Through the identification of knowledge, skills and dispositions, a pedagogical framework provides a structure for explaining the teaching that occurs in the classroom. This framework is developed from a teacher's pedagogical content knowledge. Originally coined by Shulman (1987),pedagogical content knowledge refers to a teacher's interrelated knowledge of students, content, curricular goals, and context. The context of teaching is so greatly altered by the use of technology that Koehler & Mishra (2009) developed the Technological Pedagogical Content Knowledge framework (TPACK). This framework highlights the teacher's interacting knowledge of technology, pedagogy and content. The traditional framework of teachers' pedagogical content requires that teachers use both their pedagogical and content knowledge to build student learning. When utilizing knowledge of technology and pedagogy, Technological Pedagogical Knowledge (TPK), a teacher moves beyond simply knowing the technology that is available and how it works, to understanding how to utilize technology to further student learning. Teachers engage in Technological Content Knowledge (TCK), when they use both their knowledge of content and technology to engage students in learning. When the teacher integrates all of their knowledge they are enacting their Technological Pedagogical Content Knowledge (TPACK) within a particular context. Despite the fact that the context of learning has always been a key aspect of TPACK, it was only included in 36% of the 193 studies about TPACK (Rosenberg & Koehler, 2015). The lack of focus on context is problematic because it is unclear under which conditions, such as design of the learning environment and school characteristics (Kelly, 2008), teachers apply TPACK. Context however, is not the only aspect that is often not considered in research on TPACK. The dispositions of the teacher, like context, can change the implementation of a teacher's TPACK. Dispositions refer to a teacher's attitudes, perceptions, and personal characteristics that form the justifications for the teacher's behaviors (Damon, 2005). Due to the nature of technology, implementation in the classroom often resembles ill structured problems. These ill structured problems encountered by teachers result in dispositions playing a major role in the choices teachers make during instruction (Nespor, 1987). A teacher who makes choices to adapt their teaching during instruction, is metacognitive.

The metacognitive teacher utilizes her knowledge and dispositions to respond to unanticipated situations that occur during teaching by making conscious and deliberate decisions to improve instruction (Duffy, et. al., 2009; Lin Schwartz & Hatano, 2005). When the met cognitive teacher is added to the TPACK framework, they act as the center where all knowledge intersects.

When placing the teacher at the center of the TPACK framework, the framework transforms to the Metacognitive Technological Pedagogical Content Knowledge (M-TPACK) (Wilson, Zygouris-Coe, Cardullo, Fong, 2013).
The M-TPACK framework (see figure 1) further addresses the need to understand the components that transact to assure effective teaching of new literacies going beyond previous conceptions of what it means to teach using technology to add the dimension of knowledge of students and placing the mindset of the teacher at the center of the framework. Another, factor that differentiates the M-TPACK framework from TPACK is the addition of students. Like context and teacher dispositions, knowledge of students is not a clearly defined construct. It is affected by a student's prior experiences, misconceptions, and learning styles (Wilson, Zygouris-Coe, Cardullo, Fong, 2013; Wilson, Zygouris-Coe, Cardullo, 2015). The addition of knowledge of students to the framework is essential because the pedagogical approaches and the technological tools chosen by the teacher must consider the capabilities of his/her students. The positioning of the teacher at the center of the framework highlights the fact that the unique transactions among areas of knowledge are affected by the teacher's disposition to use technology and the teacher's ability to be adaptive before, during and after teaching with technology. In other words, in order for the transaction between knowledge to occur successfully the teacher must have the right mindset for teaching with technology. The M-TPACK model for technology instruction is key when addressing the needs of students as they acquire new literacies.

**Figure 1: Metacognitive Technological Pedagogical Content Knowledge model for technology instruction**




Teachers must focus "on helping students develop and expand on multiliterate ways of approaching academic subject matter." (Boche & Henning, 2015, p. 579). Thus, the teacher must not only teach students the tools of engaging in online literacy but also the strategies and skills needed to do so. Teachers must mediate their knowledge of students, technology, pedagogy and content to develop instruction that is adaptive and assures that students are able to move beyond the tool they are using at the moment to develop strategies as new tools are created. As teacher educators, we need to keep up with the types of instructional materials and tools being developed and how these new materials might be useful to teachers. We need to help teachers to understand the bigger picture of how technology can facilitate learning and better education. "Just teaching teachers how to use the technology will lead to enhancing a knowledge-level educational system.

Teaching them the real potentials of technology will lead to promoting higher-level thinking, independent learning, and life-long learning." (Mackey & Jacobson, 2010, P.75). For teacher education programs, preparing teachers to effectively integrate technology into classroom instruction has been a long-standing challenge.

There is rich literature in models and strategies in preparing teachers to teach with technology (Kim, Kim, Lee, Spector, &DeMeester, 2013; Manning & Johnson, 2011;Voogt, & McKenney, 2017). These models illustrate the complex nature of technology integration and the in-depth training required to successfully integrate technology. What we share here are good teaching practices we call Digital Strategy Backpacks. Digital Strategy Backpacks differ from other suggestions for integrating technology; instead of tool-oriented approaches, the approaches we take are "task-oriented approaches." (Hammond, 2007).

"In such approaches, instruction focuses on common classroom activities of teachers and students, such as collaboration, research, presentation, and composition" (Hammond, 2007, p. 153). Meanwhile, the Digital Strategy Backpacks focus on the goals for media as suggested by Bruce and Levin (1997, 2003): inquiry, communication, construction, and expression. In this article, we offer two samples of the Digital Strategy Backpacks. An overview of the digital strategy backpack is offered, followed by the presentation of the digital strategy backpack that contains instructional procedures and activities, illustrated with classroom use examples. The theoretical frameworks are applied for the analyses of the design and the use of the Digital Strategy Backpacks.

## *2. Digital Strategy Backpack Sampler One: Blogging to Build Knowledge and Metacognitive Teaching*

### 2.1 Overview

This Digital Strategy Backpack focuses on teaching strategies adapted for blogging tools to illustrate how students in teacher preparation programs understand and apply content and how they communicate and collaborate to make meaning of content through working on team assignments. To design this digital strategy backpack, we examined what types of materials are available, how to use them, why they should be used, when they should be used, and how to integrate them into the teaching and learning environment in order to meet the needs of our students. We also took into serious consideration how these newer materials may affect what and how our students learn in the hope that they move beyond the current media to develop strategies to use as new tools come into being.

### 2.2 The Digital Strategy Backpack

Blogs are versatile in purpose: students may share discoveries of new technical tools and skills, discuss and process course readings, reflect on field experience, and more. The author of a blog can be an individual,a group or a class. The learning activities here are designed with authentic purposes and real audiences in mind. Blogs provide a place for students to integrate content (CCRA. R.7), to delineate and evaluate arguments using evidence from text (CCRA. R.8), and to compare approaches authors take (CCRA. R.9). Additionally, blogs require students to produce writing (CCRA.W.4) and use technology to produce and publish writing as students interact and collaborate with others (CCRA.W.6).

In our example blog activities, groups of four or five students interacted with each other, sharing discoveries of new technical tools and skills, discussing and processing course reading, reflecting on field experience, and more. The goal of these blogging activities (in a new media environment) is for the information literate individuals to be able to determine, access, evaluate, incorporate, use, and understand information as integral to related literacy formats. These formats included print, web pages, multimedia files, learning objects, and collaborative documents. Another goal of these activities is for information literate individuals to be able to produce and share information in social media environments and online communities. While the type of information may change from one format to another, the abilities to determine, access, evaluate, incorporate, use, understand, produce, collaborate, and share information are common considerations. Information itself is constantly variable, and to fully gain knowledge about interacting with it as something dynamic and collaboratively produced requires the ability to adapt to a range of shifting media formats. These resources also combine text, image, video, and meta-information through the medium itself, creating multipurpose information types that require a critical analysis of the integrated format (Mackey & Jacobson, 2010, P.71). A brief version of Digital Strategy Backpack Sampler One Blogging to Build Knowledge and Metacognitive Teaching is provided in Text Box 1. Insert Text Box 1: Digital Strategy Backpack Sampler One: Blogging to Build Knowledge and Metacognitive Teaching

### 2.3 Blogging Builds Knowledge and Metacognitive Pre-service Teachers

Students used blogging for a variety of purposes including to discuss technology discoveries, to reflect on weekly readings, and to reflect on learning through field experience.

The blogs regarding technology discoveries focused on sharing ideas using new media to support K-6 classroom learning. In the second author's technology integration courses, technology learning is achieved by emphasizing two complementary proficiencies: theoretical and conceptual understanding of instructional technology; and concrete hands-on technical competence. Through collaboration with class readings and around technology discoveries students clarified their understanding of technology and its role in teaching as well as their understanding of the theories and philosophies of teaching and learning with technology.

These blogs illustrate growth in content knowledge, pedagogical knowledge, and technological knowledge. Additionally, the reflection allowed students to develop as metacognitive teachers because their experiences with the technology will affect their future implementation.

**2.4 New Strategies for New Literacies – The Mediational Functions of Technology**

The goal of these blogging activities is for pre-service teachers to understand and apply content, to make meaning of content through communicating and collaborating, and to develop teaching strategies. Technologies are embedded in the class communications and collaborations, focusing less on the technology employed as the toolfor a task, and more on the task itself , with the technology as media. The mediational function of technology – blogs and other tools such as Doodle Buddy, Drawzit, iFake Text, and Google Drive link students to other learners, teachers, other technologies, ideas, and the physical world, thus providing the pre-service teachers with experiences to build the skills and strategies of literacy that they will need to apply in their K-6 classrooms.

The design of this digital backpack addresses the learner-centered educational goals and the mediational functions of technology as suggested by Bruce and Levin (1997, 2003). The 1st learning activity - Blogging Activities for Tech Discovery – combines construction and communication. When the student posted an iPad App "Doodle Buddy" she had discovered (Blog Example 1.1), she made a screenshot to show how she used this App. The new literacy skills this student needs to pick up include using an App to draw and illustrate, creating multimedia, and employing strategies to teach math concepts to elementary school children. These new literacy skills enable her to explore, to discover, to construct and then to communicate with other learners. By engaging in these backpack activities, students move beyond the tool they are using at the moment but develop strategies to use as new tools are created.

The second learning activity – Blogging for Weekly Reading - addressed Bruce and Levin's media for inquiry and construction (Bruce & Levin, 1997, 2003). As previously described, both concrete hands-on technical competence and course readings examining the theoretical and conceptual understanding of technology integration are critical to the course. The weekly readings cover a variety of materials: print or PDF files, online presentations like Slideshare, Prezi, Apple's Keynote Presentation demonstrated on YouTube, digital storytelling using VoiceThread, audio files and/or Podcasts. The basis for learning being what John Dewey (1943) identified as the greatest educational resource - the natural impulses to inquire or to find out things (Bruce & Levin, 1997), the class was tasked with processing the weekly reading materials and creating meaningful debate and discussion through the class blog. Employing the mediational function of technology for inquiry and construction, students achieved a deeper understanding of concepts and frameworks.

The third learning activity – Blogging for Field Experience – combined media for inquiry, communication, construction and expression. Field experience provided students opportunities to see how technology is applied and integrated in the classroom. The students processed their observations and gain a deeper understanding of the reality, new literacy skills that are needed to inquire, to evaluate, to analyze and to synthesize. For instance, one student, Mary, talked about a live webcast with live audience that was broadcast to schools from all across the country. Mary suggested that Skype be introduced to children to allow them to talk to other classrooms across the country. The opportunity to blog and share the experiences of what they observed in the classroom further helped the pre-service teachers to build content knowledge, pedagogical knowledge and technological knowledge.

The ability to interact with integrated media demand that teachers be metacognitive. Teaching students in the digital age requires that teachers have knowledge about technology to integrate with their knowledge of content, pedagogy, and students. The teacher's knowledge integration is shaped by his/her disposition as a metacognitive teacher. Successful technology integration requires that teachers develop a deep knowledge of technology, tools and strategies, their content, and teaching strategies for the classroom learning.

## *3. Digital Strategy Backpack Sampler Two: Managing Comprehensive Content with the Right Tools*

### 3.1 Overview

This digital strategy backpack focuses on strategies and processes for training pre-service teachers to integrate mobile learning and Web 2.0 technologies into elementary school curricula. A major theme of this technology integration course has been mobile learning. The goal of these activities is for pre-service teachers to share and discuss innovative ways of integrating mobile learning devices, Apps and Web 2.0 technologies in different content areas in K-6 classrooms. The ability to manage comprehensive content using the right tools assures that media in the classroom truly redefines the educational experience.

### 3.2 The Digital Strategy Backpack

This digital strategy backpack covers a variety of technologies. Edmodo is used as a learning management system (LMS), complemented with other tools such as document-related tools like Google Drive and Wikispaces, curation tools like Evernote, Diigo; presentation tools like Prezi and SlideShare; and the ePortfolio tools like Weebly, Google Sites, and TaskStream.

The digital backpack focuses on five instructional activities: Daily Posts, Mini-teaching, Self-Assessment through Learning Log, Top Apps, Presentation, and Design Your Own Edmodo Class. A brief version of Digital Strategy Backpack Sampler Two is provided in Text Box 2.

Insert Text Box 2: Digital Strategy Backpack Sampler Two: Managing Comprehensive Content with the Right Tools

### 3.3 Managing Comprehensive Content with the Right Tools to Build Knowledge and Metacognitive Pre-service Teachers

A variety of media allowed students to accomplish specific tasks related to their teaching and learning. In one experience, they used Edmodo to discuss mobile learning in small groups and then to present to the larger learning community. Students experienced how Evernote can support learning through the instructor's use of the media to share tools and resources and then to generate conversations in Edmodo. Students were encouraged to record and organize their mobile learning resources in their own Evernote. In order to demonstrate proficiency in understanding the role of Edmodo in teaching, students create their own Edmodo classes.

The pre-service teachers also learned how to manage multiple media to assure that lessons could be shared with future students in an engaging and informative manner. They worked in small groups to identify and then present a lesson integrating an App. They show how the App works and provide opportunities for practice with the App while leading a discussion on its different aspects, functions, and uses . Once the class has had an opportunity to learn the App, they design and present a K-6 appropriate learning activity integrating the App. This activity leads to a brainstorming session on different designs of learning activities using the same App. The lesson closes with a feedback session focusing on not just the particular teaching practice of the moment, but also future classroom teaching applications. Finally, each candidate writes a reflective piece in his/her ePortfolio addressing their own learning.

Throughout the experience of using a variety of tools, students were asked to manage their own learning and to evaluate each media and its applicability for use in the K-6 classroom. Through various reflections, lists, and creation of media recommendations through Google Docs, students learned how different media provided unique opportunities for learning with technology. Students shared their learning through the use of Prezi and Slideshare, thus helping them to see that technology is part of the learning process as well as a way to demonstrate learning.

### 3.4 New Strategies for New Literacies - Metacognitive Teachers

The instructional activities in this digital strategy backpack include making posts regularly through Edmodo; practicing teaching new tools; making self-assessment through keeping learning logs; selecting and sharing top Apps that they deem work well in classrooms; picking up presentation tools and skills and making presentations; and designing their own mock Edmodo classrooms. Using hands-on and learning-by-doing, we explicitly taught literacy skills and strategies in the hope that students can transfer the practices they are learning to emerging technologies. These activities cultivate metacognitive teachers who "are aware of what they know regarding content, pedagogy, students, and technology and use this knowledge to adapt their teaching to assure that students meet curricular goals." (Wilson, Zygouris-Coe, Cardullo, & Fong, 2013, p. 7). Through these different approaches, pre-service teachers have opportunities to collaborate with peers as well as experts; to reflect, discuss,

and practice problem-solving instructional, pedagogical, technological, or student learning challenges (Ertmer, Ottenbreit-Leftwich, & York, 2006). While pre-service teachers learned to apply the use of a wide array of tools, they were encouraged to consider a series of questions around developing knowledge prior to adopting the applications as digital tools in their future classrooms. These questions help to build a teacher's disposition as a metacognitive teacher. Below are some sample questions.

1. What are the major functions of the tools and how can using these tools help meet my curricular goals? (Content Knowledge)
2. How can integrating these tools build my students' deep understanding of content? (Content Knowledge)
3. For which purpose will I use a tool or an array of tools, when, and how often? (Pedagogical Knowledge)
4. What protocols do I need to create for using these tools? (Pedagogical Knowledge)
5. Before implementation, how will I examine my students' prior knowledge of these tools? (Student Knowledge)
6. How much practice (and when will I allow for it) will my students need before they become familiar with these tools? (Pedagogical Knowledge)
7. What do I need to consider about these tools and ways in which we will use them in my classroom? (Pedagogical Knowledge)
8. What evidence will I collect to ensure that my students are using these tools to improve learning? (Student Knowledge and Pedagogical Knowledge). (Wilson, Zygouris-Coe, &Cardullo, 2014).

Providing teachers with time and support for learning about technology prior to and during integration, builds their metacognitive awareness by supporting the development of questions such as the ones above. The mediational function of the media used in the backpack links the students to other learners, teachers, ideas, and the physical world (Bruce & Levin, 1997). The task rather than the tools is at the center and the user can choose anyone of many possible media to accomplish the task. Media is used for communication. Through the instructional activities of this digital strategy backpack, students communicate with other students, teachers, experts and people around the world through Edmodo, Google Docs, Prezi, Evernote, Weebly, and more. These tools function as meditation for making sense of content and for learning to be a teacher. Media is also used for inquiry. Through the instructional activities of the digital strategy backpack, students access data, connecting to the world of texts, audio and video; they collect data using tools such as Evernote, Edmodo, Google Drive to extend the senses; they analyze data using mobile Apps to make tables and graphs. Media functions for construction through the instructional activities of the digital backpack, students use mobile Apps to construct graphics, animated shows, and short movies. Combining construction and communication, media also functions for expression.

### *4. Caveats and Recommendations*

New literacies and Common Core Standards demand the integral foundation for additional literacy types, identifying social media environments as active collaborative spaces for accessing and sharing one's findings. This approach requires us to move beyond skills development to an understanding of information as dynamically produced and shared online through emerging technologies for actively engaging students with new media (Mackey & Jacobson, 2010). Web 2.0 and mobile learning has made it easy to communicate information and ideas with people worldwide in different forms, including graphics, video, blogs, wiki contributions, social networking posts or comments. While some formats may rely only on the participants' examination and knowledge of a topic and expression of ideas through text in Google Docs, others may require the capacity to generate graphics, video, audio and multimedia. Common Core Standards and new literacies challenge the traditional definitions of the literacy in response to the innovations of social media and online communities. In these new learning environments, information production and sharing is central to participation in these collaborative environments. The intuitiveness of Web 2.0 offer learners an entry point to Web-based 'participatory culture' that has 'low barriers' to self or collective expression and engagement, solid support for making and sharing one's digital productions, a feeling of social association or at least caring about what one has created and belief that contributions matter (Greenhow, Robelia& Hughes, 2009).

The participatory culture encouraged and formed through the instructional activities as part of these Digital Strategy Backpacks might take the form of 'affiliations,' such as teams formed in Edmodo, creative self or collective 'expressions' (e.g. Prezi and video making), 'collaborative problem-solving' (e.g. Edmodo), and 'circulations' (e.g. Google Docs and blogging). "Such opportunities might promote potentially richer opportunities to make learning more personally meaningful, collaborative, and socially relevant." (Greenhow, Robelia & Hughes, 2009).

In the more dynamic environment of new literacies, learners are trained to determine when information is needed, to access information using a variety of tools, to evaluate the information through critical thinking and analysis, and to incorporate information into something new through a synthesis of materials. These competencies require individuals to understand and use information based on critical reading and writing skills. While media and technology formats continue to change, the comprehensive nature of new literacies requires individuals to adapt to shifting information environments. This is a process of learning how to learn.

While engaged in the learning activities of the Digital Strategy Backpacks, students apply information and knowledge gained from a wide range of technologies and refine their skills over time. This approach shifts emphasis from discrete skills to collaborative production and sharing of information using participatory interactive technologies. Through the instructional activities of the Digital Strategy Backpacks, pre-service teachers acquire the ability to use media for inquiry, for communication, for construction and for expression (Bruce & Levin, 1997, 2003).

## *Acknowledgement*

The grant was sponsored by SUNY IITG - State University of New York Innovative Instructional Technology Grant, 2012-2013. .

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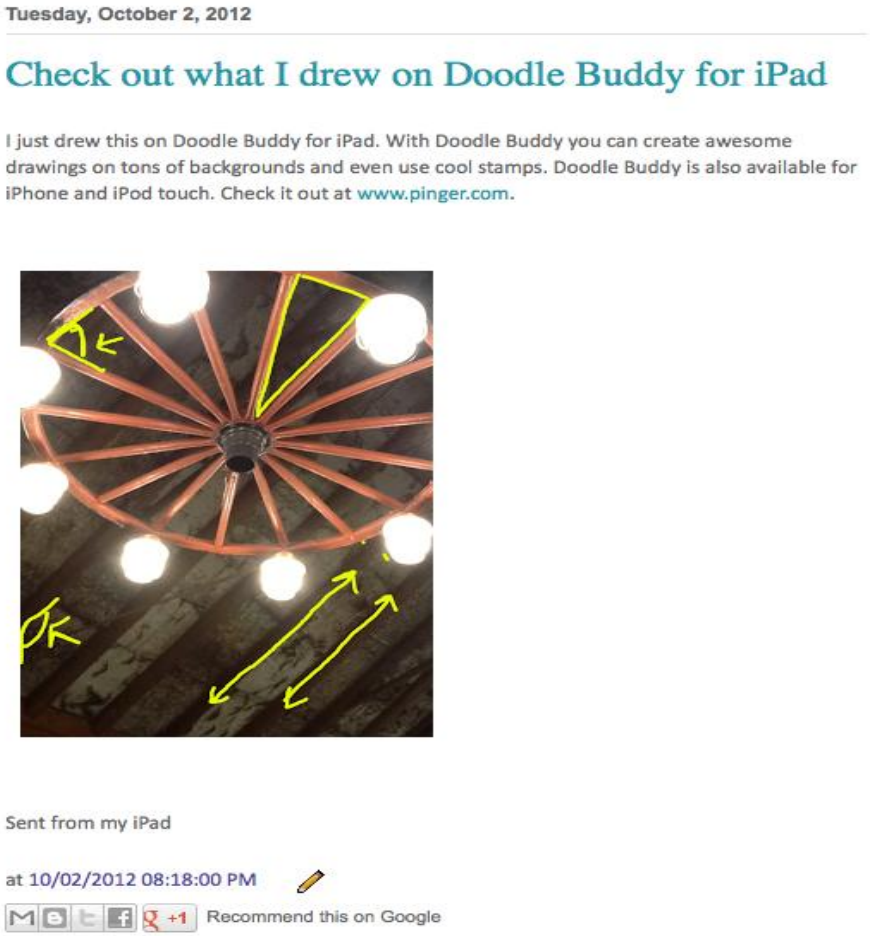
Text Box 1: Digital Strategy Backpack Sampler One: Blogging to Build Knowledge and Metacognitive Teaching

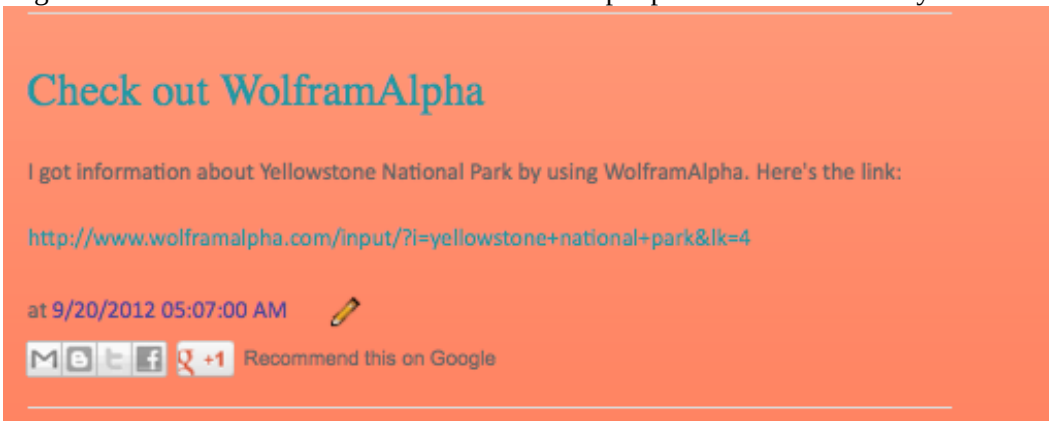
Blog Example 1.1: One Blog was focused on having students share their developing understandings of technology. This multi-class blog served as an informal class forum for students to share discoveries of their new devices both in and out of class from the very beginning of the semester. The purpose of the entire activity is to foster student's independent learning and development through sharing, dialogue and discussion.

Blog Example 1.2: A student posted an iPad App she had discovered, Doodle Buddy, with a screenshot to show what she used this App for. She used an image she took during the class outdoor education experience in Adirondack Park (the class is familiar with these images of the Adirondack architecture) and used the App to teach 4-5 graders math - angels, shapes, and parallel lines.




Blog Example 1.3: A student tried a mobile App, namely iFake Text she had just discovered; she then posted a screenshot of a simple dialogue she made using iFake Text. In the 5-minute tech discovery sharing - "Did you find anything interesting from this week's class blog?", this post was noticed and highlighted by a few other students. Taking this teachable moment, the instructor led an exploring session of this App. A heated discussion about the pros and cons of this App occurred during class, followed by high volume posts on why, what, and how of this App. The class even compiled a page of resources on iFake Text in the course website using Wikispaces.

Blog Example 1.4: A students shared a link of resources she had discovered out of class. This kind of simple and informal sharing contrasts with the more serious and more in-depth posts in a welcome way.

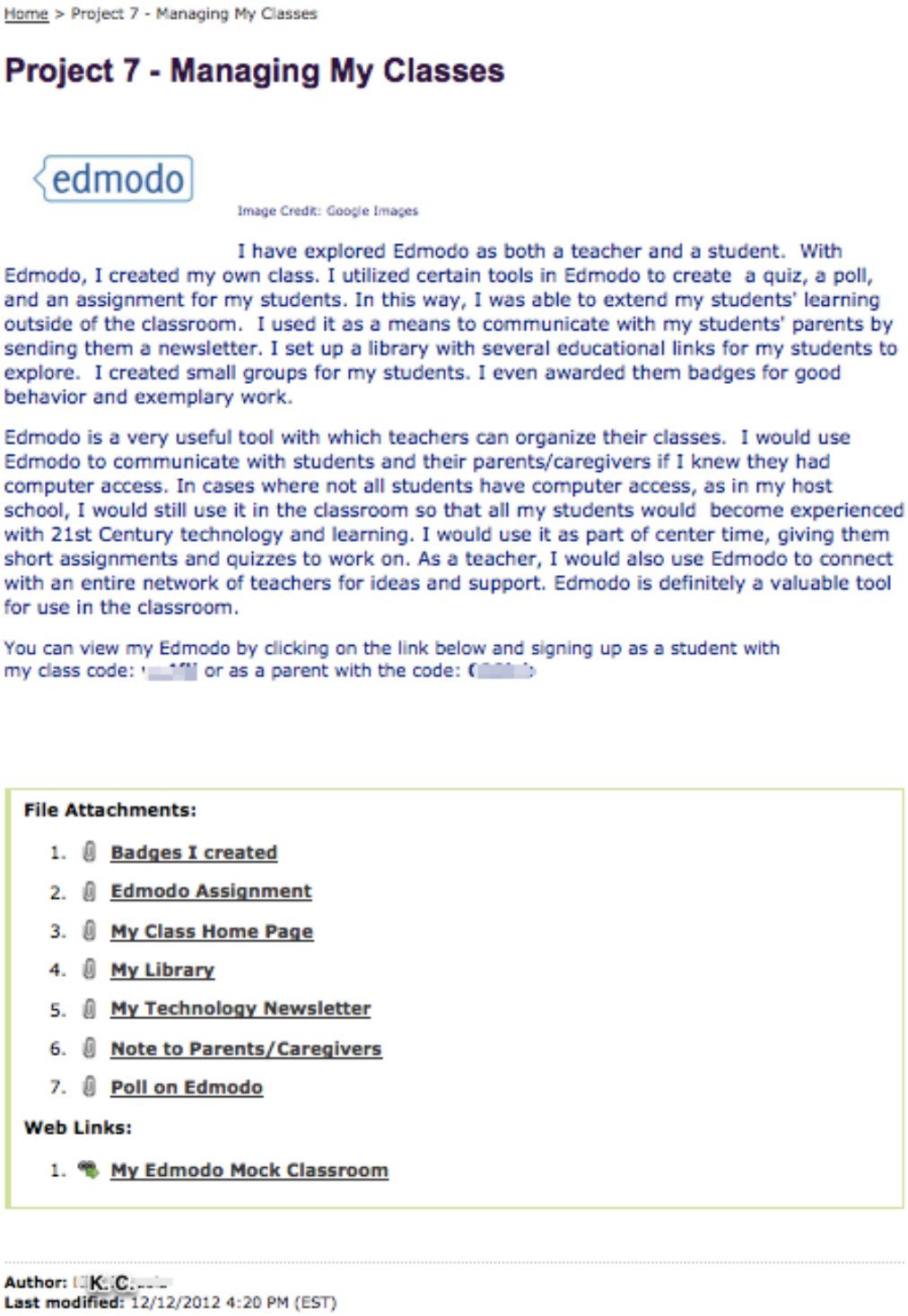


Blog Example 1.5: A student shared a very simple drawing using the App Drawzit
Another student said during the 5-minute presentation that this post of a simple drawing led her to create many drawings using the App. She then showed the class what she had drawn and the class had a blast with this App. The class continued to brainstorm teaching ideas for K-6 classrooms.

Text Box 2: Digital Strategy Backpack Sampler Two: Managing Comprehensive Content with the Right Tools

**Example 1. Daily Posts**

Edmodo Example 1.1 shows that a student posted a weekly summary of her group's posts and shared her own daily post with her group, her class and the course leaning community.



Home > Project 7 - Managing My Classes

## Project 7 - Managing My Classes

edmodo

Image Credit: Google Images

I have explored Edmodo as both a teacher and a student. With Edmodo, I created my own class. I utilized certain tools in Edmodo to create a quiz, a poll, and an assignment for my students. In this way, I was able to extend my students' learning outside of the classroom. I used it as a means to communicate with my students' parents by sending them a newsletter. I set up a library with several educational links for my students to explore. I created small groups for my students. I even awarded them badges for good behavior and exemplary work.

Edmodo is a very useful tool with which teachers can organize their classes. I would use Edmodo to communicate with students and their parents/caregivers if I knew they had computer access. In cases where not all students have computer access, as in my host school, I would still use it in the classroom so that all my students would become experienced with 21st Century technology and learning. I would use it as part of center time, giving them short assignments and quizzes to work on. As a teacher, I would also use Edmodo to connect with an entire network of teachers for ideas and support. Edmodo is definitely a valuable tool for use in the classroom.

You can view my Edmodo by clicking on the link below and signing up as a student with my class code: [redacted] or as a parent with the code: [redacted]

**File Attachments:**

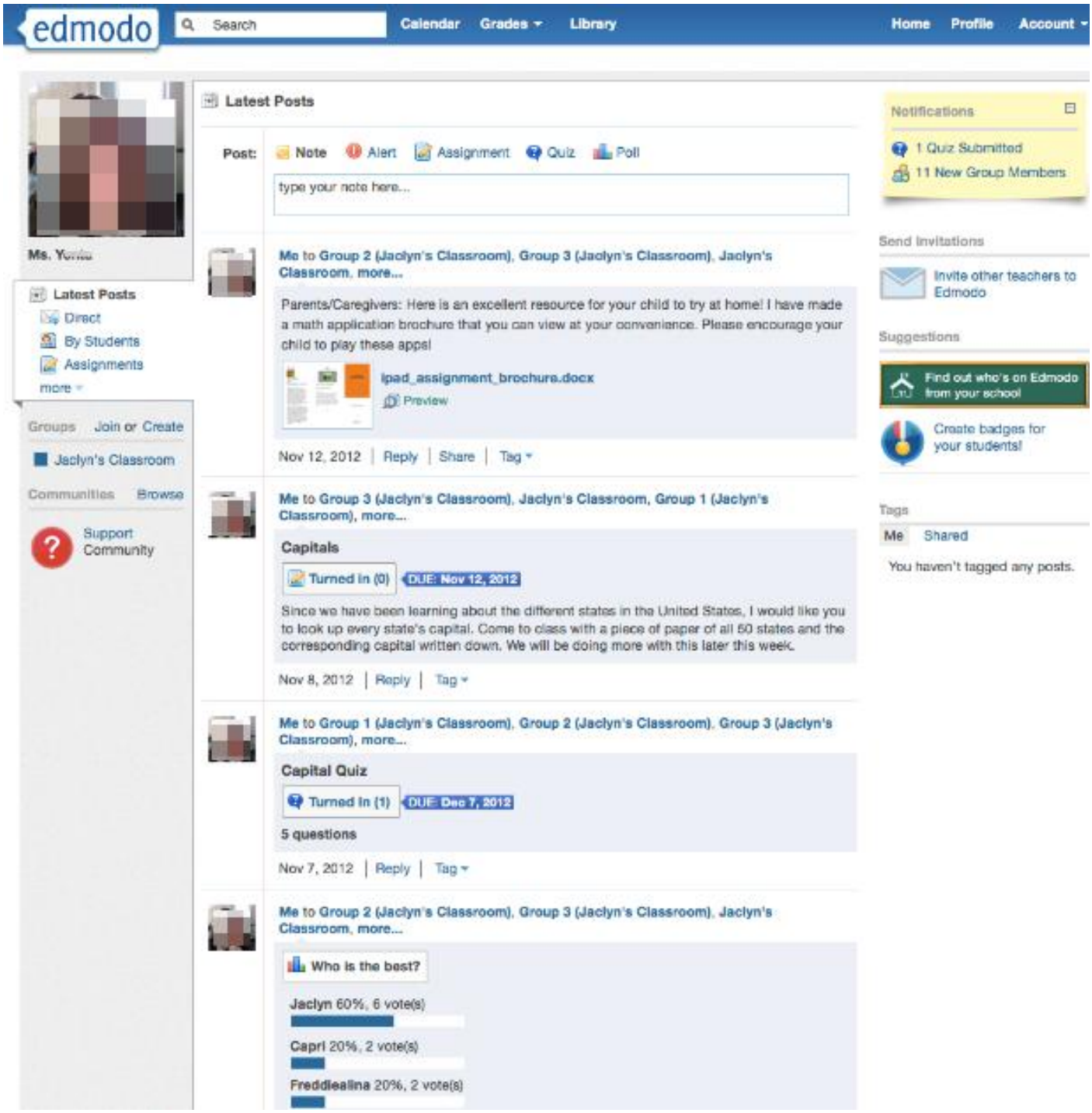
1. Badges I created
2. Edmodo Assignment
3. My Class Home Page
4. My Library
5. My Technology Newsletter
6. Note to Parents/Caregivers
7. Poll on Edmodo

**Web Links:**

1. My Edmodo Mock Classroom

**Author:** [redacted]
**Last modified:** 12/12/2012 4:20 PM (EST)

Edmodo Example 1.2 shows that another student posted a weekly summary of her group's daily posts. Still another student made his post to his group, his class and the course learning community sharing an App.




**Example 2. Mini-teaching**

Edmodo Example 2.1 shows a student's reflection on her group's Mini-teaching activity.

Insert figure here (from the Google Doc) Edmodo Example 2.2 shows another student's reflection on her group's Mini-teaching activity. The feedback she has shared here is also recorded in Wikispaces (where the course website is hosted) by the group members synchronously while the class gives feedback to their group Mini-teaching immediately after the teaching practice.

**Example 3. Learning Log/Self-Assessment**

Edmodo Example 3.1 shows a learning log by one student in her Task Streame Portfolio. Students take turns to do weekly summary of their group discoveries of Apps while highlighting their own individual contributions.

Edmodo Example 3.2 Learning log by another student in her TaskStreamePortfolio.

**Week 8:**

1. Symmetry (math)- Stephanie
2. Motion Math (math)- Kayla
3. FlowPlus(math)-Lindsy
4. Autism app(Education)-Lindsy
5. Tell Time Lite(math)-Hannah

**Week 9:**

1.) A+ FlashCards Pro (ELA) - Lindsy
2.) ShowMe Interactive Whiteboard (Education) - Hannah
3.) Site Words Games and Flashcards (ELA) - Stephanie
4.) Word Ball Free (ELA) - Kayla
5.) Stack the States (Geography) - Kayla

**Week 10:**

1. MyFood (health)- Lindsy
2. Math Marbles (math)- Stephanie
3. Math Graphics (math)- Hannah
4. Electoral Map 2012 (social studies)- Hannah
5. Booksy: Learn to Read Platform for K-2 (ELA) - Kayla

**Week 11:**

1.) Letters with Pooh (ELA) - Lindsy
2.) eClicker (General) - Kayla
3.) Project Noah (Science) - Stephanie
4.) Common Core (General) - Stephanie
5.) Easybib (ELA) - Hannah Piron

**Week 12:**

1. Math fact master- Hannah
2. PrestoBingo Shapes- Stephanie
3. Attendance-Kayla
4. Dinosaur Train Mesozoic Math Adventures-Lindsy
5. Dr. Seuss's the cat in the Hat Color & Create-Lindsy

**Example 4. Top Apps**

Edmodo Example 4.1 A brief recap of the Top Apps group activity by one student. She reflects what the group has done and how her group has presented what they have done in different formats: in Google Doc, in MS word, and in PDF through attachment in her Task Streame Portofolio.

K. C. Fall 2012

- Home
- Professionalism
- Project 1 - Come to the Edge
- Project 2 - ePortfolio
- Project 3 - MLearning
  - Daily Posts in Edmodo
  - Mini-Teaching
  - Learning Log/Self-Assessment
  - **Top Apps**
  - Presentation
- Project 4 - Standards
- Project 5 - Audio-Video Production
- Project 6 - SMARTBoard
- Project 7 - Managing My Classes
- Final Presentation

Home > Project 3 - MLearning > Top Apps

## Top Apps

As part of our research assignment on finding appropriate apps for classroom use, our group came up with our top twelve apps; the apps we feel are great additions to the classroom, as well as for student use at home. There are so many great iPad apps available that it is hard to choose which ones are the most beneficial to students and teachers. Searching for apps, while time-consuming, was an vital part of my mobile learning experience. Simple drawing apps, like Doodle Buddy, can easily be adapted for educational use across content areas. Other apps have more limited uses, however, they still can be valuable learning tools for student use.

When deciding on the an app's worth, it is important to understand with what Core Curriculum State Standards it can be aligned. By researching the apps, thinking of their uses in the classroom, and then applying those uses to the CCSS, I was able to determine the real educational value of my apps. With all that in mind, my group chose the following as our Top 12 Apps.

View our Top12 Apps by the 4 Stars in Google Docs/Drive here

The **Top 12 Apps the 4 Stars** is also attached below in .docx and in .pdf.

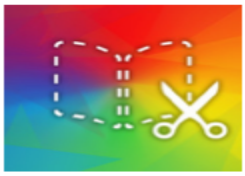
**File Attachments:**

1. Top 12 Apps by 4 Stars.docx
2. Top12Appsby4Stars.pdf

**Author:** K. C.
**Last modified:** 12/12/2012 4:20 PM (EST)

Edmodo Example 4.2 A sample annotation to one of the group's "Top 12 Apps" by one group member in Google Drive/Doc.

**Top 12 Apps by: USS Yonta**



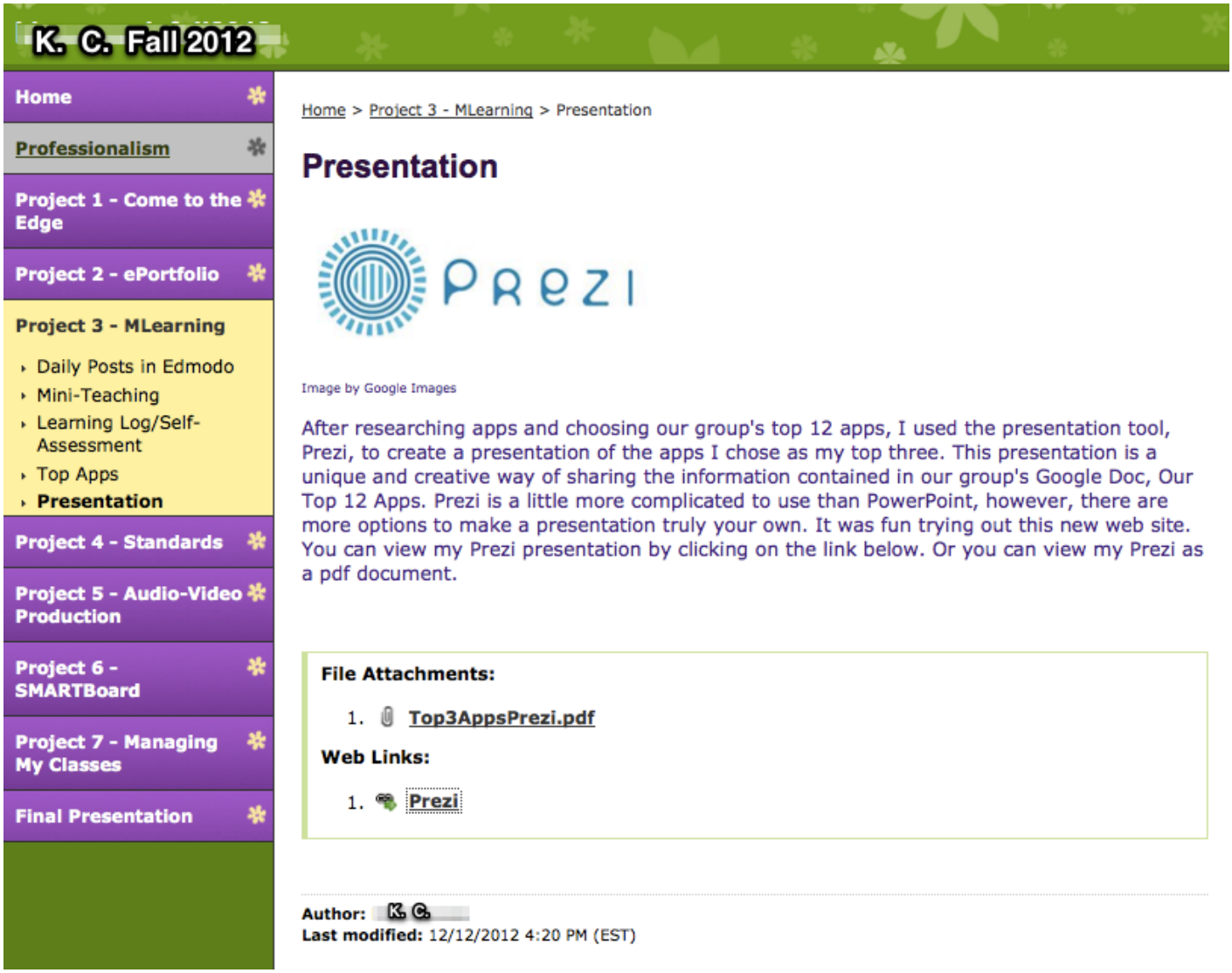
**Book Creator** 3) General Practical Uses of MLD in daily life
**1. Synopsis-** Book Creator is an application that makes books using text, pictures, and audio. Book Creator is used on the iPad, but can be uploaded as a pdf to view on the computer. However, when viewed as a pdf, the sound does not work. Also, the setup is a little different as to fit the text of a pdf file. Book Creator can be used for ELA, science, or social studies. It really can be used for any purpose in school. It can be used for any grade, too. However, it is a little pricy at $4.99, but it is definitely worth every penny.
**2. Review-** Book Creator is thought to be easy and simple to use by other users. Emily, from the website Pad Gadget, found book creator to be very straightforward. She really enjoyed the application and ease of its use; Book Creator Review is where she explains her likes and dislikes of the application. Since the completed book can be saved in iBooks, she thought the idea of having your own book 'published' was very neat and exciting.

Pad Gadget. (2011, September 4). *Publish iBooks With Book Creator for iPad- iPad App Review.* Retrieved from http://www.padgadget.com/2011/09/20/publish-ibooks-with-book-creator-for-ipad-ipad-app-review/.

As a group we found the app to be very easy to use and classroom friendly. We found Book Creator to be very useful. However, it is only viewable on an iPad in its entirety, which we found to be a little disappointing. You can upload it as a pdf file, but the audio does not work, and the format is different. On the flip side, we appreciate the fact that the book can be viewed on as a pdf file, so others who do not have iPads can view it, too.
**3. Classroom/Teacher Use-** Book Creator can be used in many different ways in the classroom. Book Creator allows students to write their own stories. The text is easy to read, and easy to use and edit. Then, the student can create how he or she would like their book to look. They can take pictures or use different colors for the pages. They can add music to the book as well. However, the music will only be played on the iPad. The book is saved to iBooks where it is accessible to view as a book form. It would be very easy to integrate this app into the

**Example 5. Presentation**

Edmodo Example 5.1 A brief introduction to the Presentation of Top Apps by one student in her TaskStreamePortfolio.




Edmodo Example 5.2 An example of the Prezi presentation by one student. She presents her Top 3 Apps using Prezi.

**Example 6. Create Your Own Edmodo Class**

Edmodo Example 6.1 A brief introduction by one student to "My Edmodo, My Class" project where she has created her own Edmodo class.

Home > Project 7 - Managing My Classes

## Project 7 - Managing My Classes

Image Credit: Google Images

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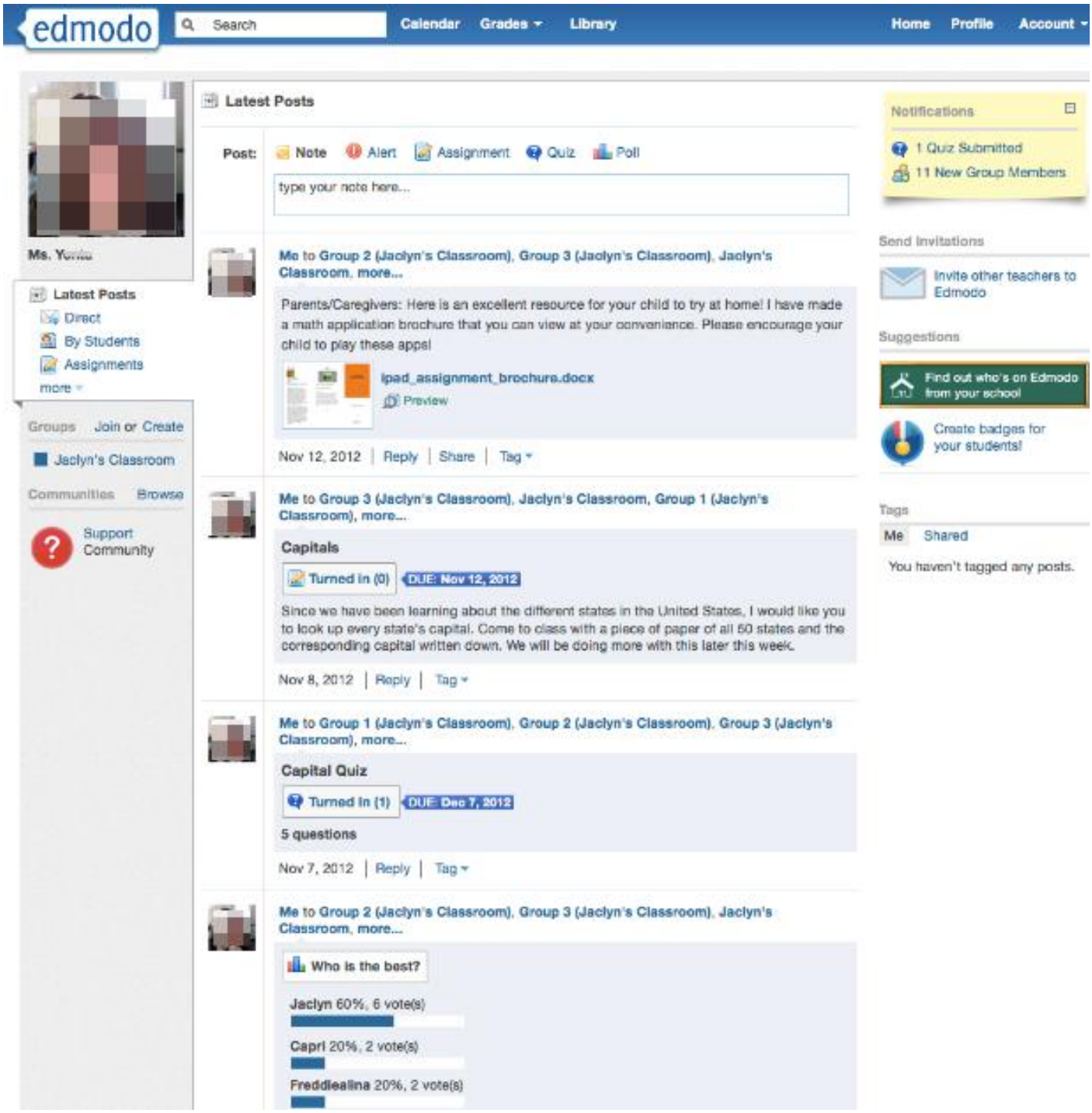
7. Poll on Edmodo

**Web Links:**

1. My Edmodo Mock Classroom

**Author:** K. C.
**Last modified:** 12/12/2012 4:20 PM (EST)

Edmodo Example 6.2 Students have created assignments, quizzes, and polls, in Edmodo.




Note 1: The 4C-CITI Project was funded by State University of New York. The project was awarded an Innovative Instructional Technology Grant (IITG) of $20, 000 in 2012.