

Chapter 16

Online Content Construction: Empowering Students as Readers and Writers of Online Information

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ABSTRACT

It is increasingly clear that this generation of adolescents is almost always connected to online information (Horrigan, 2010; Pew Research Center, 2010). Indeed, the Internet has quickly become this generation’s defining technology for literacy, in part due to facilitating access to an unlimited amount of online information and media (Rideout, Foehr, & Roberts, 2010). Yet it is a paradox that history’s first generation of “always connected” individuals (Pew Research Center, 2010) is not taught how to effectively and authentically use the digital texts and tools that permeate society. As society has incorporated dynamic and new media in everyday life, educators are required to expand traditional understandings of text and literacy that have replaced many of the ways that we communicate, create, and socialize (Sutherland-Smith, 2002; Alvermann, 2002). Put simply, there is a need to value and construct different kinds of texts, learning, and interactions within the classroom (Beach & Myers, 2001). To achieve this goal, this chapter presents a synthesis of theoretical perspectives and research into a new instructional model known as Online Content Construction (OCC). OCC is defined as the skills, strategies, and dispositions necessary as students construct, redesign, or reinvent online texts by actively encoding and decoding meaning through the use of digital texts and tools.

INTRODUCTION

A 21st century educational system must educate all students in the effective and authentic use of the digital texts and tools that permeate society. In the past, our educational system emphasized the use of traditional tools such as textbooks, chalkboards, overhead projectors, and composition books. Now, however, society has incorporated dynamic and

new media in everyday life. Educators are required to expand traditional understandings of text and literacy as technology-driven tools and systems have replaced many of the ways that we communicate, create, and socialize (Sutherland-Smith, 2002; Alvermann, 2002). More importantly, there is a need to value and construct different kinds of texts, learning, and interactions within the classroom (Beach & Myers, 2001). To achieve this goal, a synthesis of theoretical perspectives and research into a new instructional model known as

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Online Content Construction (OCC) is necessary. OCC is defined as the skills, strategies and dispositions necessary as students construct, redesign, or reinvent online texts by actively encoding and decoding meaning through the use of digital texts and tools.

In this chapter, I will examine the changes that are occurring to expository or argumentative writing as a result of technology, and indicate the instructional model of OCC as one possible way to reflect these changes in instruction. I will then further define OCC and the theoretical perspectives used to this new work. These perspectives include research from multimodal design, new literacies, and cognitive apprenticeship. Following this examination of OCC, I will then detail the instructional model that was tested in two research studies that provides opportunities for students and teachers to construct online content in all disciplines. Finally, I will discuss implications of conducting work such as this in the traditional classroom.

WHAT IS ONLINE CONTENT CONSTRUCTION?

The writing process (Murray, 1972, 1999; Hairston, 1982) has been defined as including prewriting, drafting, revising, editing, and publishing. As the writing process moves from print to pixel many of these skills are employed as students construct online content. As student writing moves from page to screen the key difference between the traditional writing process and OCC is that teachers and students need to consider other elements that are particular to working with online informational text (e.g., semiotics, visual literacy, multimodal design). This framing of OCC moves the field of literacy research, and writing instruction further by providing opportunities to discuss and include this work in teaching and learning activities in the classroom, while remaining flexible as changes in technology warrant.

Authentically and effectively integrating the Internet and other communication technologies (ICTs) into the classroom is a social imperative given the ability to empower students in the reader/writer nature inherent in the online informational space. In computer science, read/write is defined as media that is capable of being displayed (read) and modified (write). In a literacy context, the reader/writer nature of online information could be viewed as a means to allow individuals to quickly and efficiently comprehend and construct online information. An easy way to understand this is the work associated with listening to, sharing, and revising audio files. Consider the use of records and LPs, and then cassette tapes, and finally now MP3 files and streaming online information. With records, it was very difficult to create, and remix music given these tools. Cassette tapes made it a little easier to create and share audio information, as long as the little plastic tab was not broken off. With MP3 and other audio file formats, it is very easy to create, remix, or mash-up and finally share audio content. This increasing ease in the creation, remixing, and sharing of audio information I believe extends to involve all forms of online, multimodal content. It is the duty of educators to empower their students in ways that they can have a voice and create content for the reader/writer Internet. There are two challenges associated with this. The first is a keen understanding of the literacies necessary (e.g., critical literacy, new literacy, multiliteracies) to thoughtfully comprehend and construct online content. The second aspect that needs to be understood by teachers and students is the acquisition of the knowledge, skills, and dispositions needed to skillfully encode and decode meaning online. For these two reasons OCC has been developed and tested for use in the classroom.

As students write and compose online content, the knowledge, skills, and dispositions change as a result of the affordances of the online space (Leu et al., 2005; Swenson, Young, McGrail, Rozema, & Whitin, 2006). This process grows more complex as students must consider the effect of multimodal

content such as images, video and audio and the effect this has on their work product (Duncum, 2004; Sheppard, 2009). Students may consider visual aesthetics, elements of graphic design, and semiotic elements that may affect how the audience perceives their work (Serafini, 2011). Students may also consider aspects of critical literacy and sensitively prepare and present their thinking in their digital work product (Yelland, 1999). Work such as this is necessary given the increasing reliance of the Internet as a space for individuals to communicate, socialize, and learn (Shapiro, 2000; Oblinger, 2006). Online reading and writing has been described as a more social and interactive act than traditional communication because it focuses on both the process and the purpose of the participation of many, rather than the private act of an individual (Leu et al., 2009). The instructional model of OCC explores one method of preparing students to examine and employ the processes needed to critically read and write online information, both individually and collaboratively.

Numerous skills and strategies are needed in both the procedural and strategic use of digital texts and tools in writing. Given the deictic nature of literacy (Leu, 2000), viewing creation of content using ICT tools as belonging to only one skill set is problematic. Consider the multitude of tools and formats available to writers, or constructors of online information: (a) blogging, (b) wikis, (c) e-mail, (d) social networks, and (e) word processing. A broad spectrum of combined skills and tools is emerging in order to capture the aptitudes and attitudes necessary for students to construct online content. To that end, OCC was developed to define the abilities necessary to communicate the information assembled while searching, sifting, and synthesizing knowledge gained during the online inquiry process (Leu et al., 2004, 2008).

Knowledge, Skills, and Dispositions Involved as Students Construct Content

The goal of the OCC model is to provide teachers with pedagogical opportunities to move students from content consumers, to content curators, and finally constructors of online content. Content curation in this context refers to a meaning-making activity in which students collect, aggregate, and distill links of online information sources through the use of tools such as Pinterest. The knowledge, skills, and dispositions involved in this communication process are informed by previous research in writing instruction (Hayes & Flower, 1980, 1986; Collins & Gentner, 1980; Scardamalia, Bereiter, & Steinbach, 1984; Graves, 1994) and envisioned as a combination of skills students may employ as they construct online content. The five skills involved in OCC are planning, generating, organizing, composing, and revising. *Planning* is defined as a student creating internal and external representations of the content they intend to build and ensuring that it is logically appropriate for the task (Flower & Hayes, 1981). These representations may include paper sketches, graphic organizers, or original designs of future works planned. *Generating* is defined as the process in which a student creates or translates initial elements of the digital product based on their memory and organizers (Hayes & Flower, 1986; Collins & Gentner, 1980). These initial drafts and graphic organizers act as elements of the work completed to allow the student to begin reviewing and organizing materials. *Organizing* is defined as the process in which a student creates or manipulates the hierarchical or relational structure of their work product (Flower & Hayes, 1981). In this process, students maneuver content and categories of content to ensure they meet the

goals of the inquiry and purpose of the content. Additionally, as students organize, they may attend to aesthetic decisions about the presentation and ordering of elements of the content (Carey, Flower, Hayes, Schriver, & Haas, 1989). *Composing* is defined as the process in which a student constructs the online content while weaving elements from the previous three phases into a cohesive composition that is representative of the goals of the inquiry process. *Revising* is defined as the process in which a student dedicates time to systematically review and examine with the intent of improving the overall work product (Hayes & Flower, 1980). The process of reviewing and revising may occur across all stages of the model, however this final step is one in which students consciously examine and evaluate constructed content before finishing the work process. Once again, many of these skills and strategies have been identified in traditional writing instruction, the key element that differentiates this from the online environment is the inclusion of the visual, digital, and multimodal design choices that must be made by students as they work.

Student Review of Work Process Embedded in the Instructional Model

Embedded within each one of these five skills is a recursive, metacognitive review process in which students retrospectively consider their ideas, evaluate this work in relation to task or purpose, and possibly share with others to obtain another perspective on their work. Much of this review process is informed by the complex pattern of goal setting, problem solving, and reflection known as “knowledge transformation” (Scardamalia & Bereiter, 1985). Embedded in OCC is an examination of the differences between “knowledge-telling” and “knowledge-transformation” strategies (Bereiter & Scardamalia, 1987). Knowledge-telling strategies were defined as the retrieval from long-term memory of ideas related to a rhetorical goal and their resultant transference into text (Bereiter

& Scardamalia, 1987). Knowledge-transformation strategies were defined as those ideas that were transformed in an effort to resolve a conflict between the original ideas and the intended rhetorical goal (Bereiter & Scardamalia, 1987). This review process has the potential to result in the generation of new knowledge and a deeper understanding of the student’s content knowledge (Bereiter & Scardamalia, 1987; Collins, Brown, & Holum, 1991). This synthesis of discourse and content as students construct content has the potential to change incrementally as individual images, videos, and text are added, removed, or repositioned within a work product.

In terms of fully understanding the complexity of this metacognitive review process, it is also important to understand how the knowledge-telling and knowledge-transformation strategies espoused by Bereiter and Scardamalia have been revised. Galbraith (1998) identified “knowledge-constituting” as involving a “dialectic” between dispositional aspects of students as they attempted to make sense of their thinking as they constructed knowledge (Galbraith, 1996, 1998). This dialectic involves the student engaging in the processes detailed by Scardamalia and Bereiter (1987), but modifying it with each additional element of text that was constructed (Galbraith, 1996, 1998). This review process informs the work conducted in OCC by involving a cycle in which the students construct knowledge in the form of text and then consider if this idea is satisfactory or not (Galbraith, 1996, 1998). It is this metacognitive review process that assists instructors and students as they redesign, reinvent, or remix online texts.

Previous Work Similar to the Instructional Model

In many ways the OCC model is likened to the work on writing tasks that are ill-defined or ill-structured problems in which students do not have a ready-made procedure to produce and review content (Reitman, 1964; Simon, 1973). As opposed

to traditional writing, OCC situates this cognitive process in a multimodal learning environment in which students operate as “designers” and try to “apply critiqued knowledge of the subject or topic synthesized from multimodal sources” during online inquiry (Kimber & Wyatt-Smith, 2006, p. 26). Fundamentally, OCC has students construct “representations of new knowledge” and communicate this knowledge to others with the intention of engaging their audience (Kimber & Wyatt-Smith, 2006, p. 26). Pedagogically, this multimodal design activity combines the “process and product” involved as students combine knowledge gained through online collaborative inquiry (New London Group, 2000).

Examples of this work have also been seen in the instructional design model known as “writing-to-learn” (Britton, 1970, 1972). Specifically, the “writing-to-learn” model can be used to engage students in writing activities using ICT tools. Students expressed learning through the use and creation of socially expressive digital media (Murray, 1999; Tewissen, Lingnau, Hoppe, Mannhaupt, & Nischk, 2001). In the “writing-to-learn” instructional model, students used computer-integrated classrooms to focus on individual learning and development of tools to enhance social and collaborative learning. As an instructional model, OCC expands upon this work by integrating a focus on new literacies and multimodal design research and practice.

Elements of this type of research have also been found in the work on Computer Supported Collaborative Learning (CSCL). CSCL focuses on elements included in the “writing-to-learn” research, but it also incorporates more writing of shorter pieces of text across various genres of online information and style (Romano, 2000). The goal of both of these research interests was to “restructure learning environments” (Flower & Hayes, 1994; Erkens, Kanselaar, Prangma, & Jaspers, 2003) in an attempt to move student learning from knowledge transformation into knowledge constitution (Galbraith, 1999). A broader use of

these skills and learning environments has been applied to the work on Computer-Supported Intentional Learning Environments (CSILE) (Scardamalia & Bereiter, 1994). Similar to the work defined by OCC, CSILE builds on elements of cognitive apprenticeship and includes ICT use while students reflect on learning in the classroom.

It is important to note that OCC can occur concurrently and iteratively as students work individually or collaboratively in the online reading comprehension or online collaborative inquiry processes. As a result, students are asked to act as critical readers and writers of online information while applying knowledge learned from online and traditional information sources.

THEORETICAL PERSPECTIVES

The combination of the skills referred to as OCC integrates multiple lines of research from many fields (i.e., multiliteracies, new media, digital storytelling, digital literacy, gaming, and others). This integration of skills originates from content creation as defined by Livingstone (2004) in her theoretical definition of media literacy and the possibilities ICTs present in research and instructional practice. She maintained that to “identify, in textual terms, how the Internet mediates the representation of knowledge, the framing of entertainment, and the conduct of communication” the construct must be broad enough to allow for change in the future (p. 9). Thus, this reality dictates integration of these multiple lines of research within OCC.

Additionally, this model of content construction is made even more complex because of the evolution of ICT tools in conjunction with the expansion of various fields of multimodal design, visual literacy, and others (Doneman, 1997). As these technologies converge, some experts believe the tools associated with various Internet and communication technologies will merge as well (Fox, Anderson, & Rainie, 2005; Anderson & Rainie, 2008; Greenhow, Robelia, & Hughes,

2009). Thus, a broad spectrum of combined skills and tools has been emerging. This convergence affects the knowledge, skills, and dispositions teachers will need when empowering students as readers and writers of online information. To fully understand and implement these strategies, I used a multiple theoretical perspective approach (Labbo & Reinking, 1999) that integrated elements of multimodal design, new literacies, and cognitive apprenticeship. These three perspectives were reviewed to identify the instructional model of OCC and inform research in which students were encouraged to construct online content.

Multimodal Design

Multimodal design identifies the interchange between linguistic, visual, audio, gestural, spatial, and multimodal elements (New London Group, 2000; Kress & van Leeuwen, 2001; Jewitt, 2008). Information created using elements of multimodal design must consider the mode and media chosen by the student as a crucial concept in constructing meaning (Doneman, 1997). Research has found that “the ways in which something is represented shape both *what* is to be learned, that is, the curriculum content, and *how* it is to be learned” (Jewitt, 2008, p. 241). This section will define multimodal design as it informs the instructional opportunities informed by OCC. Additionally, this section will detail the use of multimodal design and multiliteracies as a means to empower students as they design applied knowledge.

Defining Multimodal Design

As an educational theory, multimodal design refers to the use of different “modes” to recontextualize a body of knowledge for a specific audience (Kress, 2003; Jewitt, 2008). The term “design” holds particular significance because it includes a sense of academic composition by students in which they skillfully construct the multimodal elements while considering the systematic and social conventions

of the work they are constructing (Bezemer & Kress, 2008; Jewitt, Bezemer, Jones, & Kress, 2009). Conceptualized as a “domain of inquiry” (Kress, 2009, p. 54), multimodality encourages students to include elements of social semiotics (Kress & Van Leeuwen, 2001; Kress, 2010) to construct meaning through multiple representational, communicational, and situational resources. As opposed to traditional writing, when students construct online content they are asked to design multimodal representations of their work product, which convey not only the knowledge they learned during the work process, but also reflective of the conventions and critiques of the genre of the online information space they used in the design (Romano, 2000; Fletcher & Portalupi, 2001).

Designers of Applied Knowledge

As applied in OCC-based instruction, students are encouraged to operate as “designers” and try to “apply critiqued knowledge of the subject or topic synthesized from multimodal sources” (Kimber & Wyatt-Smith, 2006, p. 26). Students have the potential to construct “representations of new knowledge” and communicate this knowledge to others with the intention of engaging their audience (Kimber & Wyatt-Smith, 2006, p. 26). As a pedagogical tool, design combines the “process and product” (New London Group, 2000) and allows students to consider how literacy practices were used to understand and uncover truth (Street, 1984; Alvermann & Hagood, 2000).

The use of elements of multimodal design in OCC allows for the effective integration of student values, identity, power, and design in their work process and product. This allows instructors and students to dynamically construct identity in the classroom by examining the “ongoing design and redesign of identities across the social and cultural practices of meaning making” (Jewitt, 2008, p. 260). This instructional model situates instructors and students firmly within the various informational, technological, and sociological

forces that impact society while providing learners with a tool to become “active participants” (Cope & Kalantzis, 2000). Based on elements of critical literacy, new literacies, and multiliteracies, this perspective is built on a pedagogical agenda of social change and empowerment of students as “active designers of social futures” (Cope & Kalantzis, 2000). Multiliteracies include critical literacy tenets of having students “reading the word and reading the world” (Friere & Macedo, 1987), while integrating the teaching of writing (Graves, 1994; Cope & Kalantzis, 2000) and ICTs. In effect, work such as this helps build aspects of critical engagement between students and text to promote social justice through process and product.

New Literacies

Student construction of online content is also informed by both the larger definition of New Literacies, as well as the more specific definition of new literacies, as it applies to online reading comprehension (Leu, O’Byrne, Zawilinski, McVerry, & Everett-Cacopardo, 2009). The larger definition of New Literacies broadly examines the changing nature of literacy and language as new technologies emerge and rapidly and repeatedly redefine what it means to be able to read, write, and communicate effectively (Leu et al., 2011). The more specific definition of new literacies as it applies to online reading comprehension examines the knowledge, skills, and dispositions students’ use as they question, locate, evaluate, synthesize, and communicate online information (Leu et al., 2011). The work involved in OCC includes expository, persuasive, or argumentative texts formed by students while they are engaged in the online inquiry process.

Defining New Literacies

The nature of literacy is rapidly evolving as the Internet and other Information and Communication Technologies (ICTs) emerge (Coiro, Knobel,

Lankshear, & Leu, 2008). Developing the skills students needed to participate fully in a globalized community, the work defined by OCC is based on New Literacies theory. This perspective of the learning experience requires a continual examination of the knowledge, skills, and dispositions that impact students and instructors as they work together (Warschauer, 2000; Grimes & Warschauer, 2008). By encouraging students to construct online content as opposed to the traditional writing process, they are enabled to “communicate with one another using the codes and conventions of society” (Robinson & Robinson, 2003).

New literacies theory (Leu et al., 2009, 2011) works on two levels: uppercase (New Literacies) and lowercase (new literacies). Common findings and applications developed across the multiple perspectives of new literacies are then included in the broader concept of New Literacies.

The New Literacies of Online Reading Comprehension

The new literacies of online reading comprehension (Leu et al., 2009) frames the problem-based inquiry process that involves the new skills, strategies, dispositions, and social practices that take place when the Internet is used to solve problems and answer questions. At least five processing practices occur during online reading comprehension: (a) reading to identify important questions, (b) reading to locate information, (c) reading to evaluate information critically, (d) reading to synthesize information, and (e) reading and writing to communicate information. The skills, strategies, and dispositions that are distinctive to online reading comprehension, as well as others that are also important for offline reading comprehension, reside within these five areas. The previous research involving OCC used the online reading comprehension skills and inquiry process as a means to first have students work with online content before they constructed content (Author, 2009, 2012)

Cognitive Apprenticeship

Cognitive apprenticeship has been defined as an instructional theory in which a knowledgeable instructor imparts knowledge to apprentices in a structured, “scaffolded” process (Brown, Collins, & Duguid, 1989). Scaffolding is defined as a series of instructional supports provided for the student during the learning process which is tailored to the needs of learners to allow them to achieve their learning goals (Sawyer, 2006). There are usually four dimensions considered in cognitive apprenticeship (e.g., content, methods, sequence, sociology) when embedding learning in activity using a classroom’s social and physical contexts (Brown, Collins, & Duguid, 1989; Collins, Brown, & Newman, 1989). These dimensions and the scaffolding associated with cognitive apprenticeship are important in instruction of OCC given the complex and deictic nature of online information.

Instructional practice informed by OCC includes the enculturation of students into authentic practices through activity and social interaction in an online environment (Hennessey, 1993) in an attempt to embed learning in activity (Brem, Russell, & Weems, 2001; Kiili, Laurinen, & Marttunen, 2008). This section defines cognitive apprenticeship as it has been used to frame OCC. Additionally, this section considers three ways in which cognitive apprenticeship impact the teaching and learning of OCC in the classroom: (a) by defining the sequencing of modeling, coaching, and fading of instruction; and (b) by outlining reflection on strategies used by students.

Defining Cognitive Apprenticeship

Embedded within a situated activity, cognitive apprenticeship describes conceptual knowledge as a set of tools (Brown, Collins, & Duguid, 1989), which can only be understood through their use. The student must understand this view of the world and accept the belief system of the culture in which the tools are used (Collins, Brown, & New-

man, 1989). During the online inquiry process, students have the opportunity to engage in several of its practices: (a) collectively solving problems, (b) displaying multiple roles, (c) confronting ineffective strategies and misconceptions, and (d) providing collaborative work skills (Brown, Collins, & Duguid, 1989).

Cognitive apprenticeship provides significant insight into learning and the way it is used to teach students the behaviors and belief systems that are important within social groups. Brown, Collins, and Duguid point out that students “pick up relevant jargon, imitate behavior, and gradually start to act in accordance with its norms” (1989, p. 34). This indoctrination into culture, including the accompanying tools and their value within society, not only raises the level of “participation” that students have within the social group, but also the value students place on the learning process (Herrington & Oliver, 2000; Hendricks, 2001). As a result, teaching and learning using elements of OCC affords opportunities for students to not only participate in global conversations, but also in some cases empower them for their future as literate individuals.

Fundamental in cognitive apprenticeship is a consideration and examination of learning experiences that are authentic and those that are not (inauthentic). Brown, Collins, and Duguid view authentic learning as activities that are “coherent, meaningful, and purposeful” while inauthentic learning activities are seen as “tasks” (1989). Put simply, having students comprehend and construct online content engages them in authentic learning activities that are defined as “ordinary practices of the culture” (Brown, Collins, & Duguid, 1989).

Modeling, Coaching, and Fading of Instruction

The instructional model used to enable OCC in the classroom contained phases of instruction guided by the modeling, coaching and fading steps cognitive apprenticeship theory detailed

(Collins, Brown, & Newman, 1989). These elements guided the comprehension-fostering and comprehension-monitoring strategies (Palincsar & Brown, 1984) students' employ as they learn how to be critical readers and writers of online information. Guided by the tenets of cognitive apprenticeship, this approach yields guidance on the skills and strategies instructors may use: (a) modeling, (b) coaching, (c) scaffolding, and (d) empowering students to acquire a role as a self-motivated learner (Scardamalia & Bereiter, 1985; Scardamalia, Bereiter, & Steinbach, 1984).

Reflection on Strategies Used

The second element of cognitive apprenticeship that influences teaching, learning, and assessment in the instruction of OCC includes the reflection strategies of students. Students should be encouraged to reflect on novice and expert perspectives in a problem-solving context to emulate aspects of an expert performance and make adjustments to improve their own performance (Collins & Brown, 1988; Collins, Brown, & Newman, 1989). The implicit goal of this process is to provide students with the knowledge and skills needed to move from a novice level to an expert level (Collins, 1991). This process of modeling, coaching, and then fading of instruction involves five important processes: (a) modeling an expert's performance; (b) understanding of the internal/external processes; (c) encouraging students to think and work like experts; (d) application of knowledge in different contexts; and (e) demonstrating how to cope with difficulties (Rogoff, 1990). Thus, while under the supervision and guidance of the instructor, this function of reflection can include "co-investigation" and/or abstracted replay by students (Scardamalia & Bereiter, 1983; Collins & Brown, 1988). In this context, abstracted replay is defined as a comparative metacognitive activity in which students reflected on strategies employed during the work process and how these related to those employed by an expert (Collins, Brown,

& Newman, 1989). In this process, students are encouraged to reflect on the critical decisions and thought processes used while constructing their work product. Through this reflection, they may be able to better understand the complexities of the strategies used while working individually and as a group. These reflective strategies labeled as "abstracted replay" refer to the students' "post-mortem" analyses in which they may analyze the knowledge, skills, and strategies employed during OCC and then compare them to those that would be utilized by an expert (Collins, Brown, & Newman, 1989). This reflective process enables students to consider their own working process and skills and the abilities they would need to advance to a higher skill level.

Cognitive apprenticeship theory (Brown, Collins, & Duguid, 1989; Collins, Brown, & Newman, 1989) suggests that by engaging students as "co-investigators" (Scardamalia & Bereiter, 1983) educators encourage them to reflect on strategies they have or may need. OCC utilizes elements of cognitive apprenticeship to engage students as "co-investigators" (Scardamalia & Bereiter, 1983) and guide student learning while reflecting on the process and product of their work. The sequencing of methods and reflective strategies used while students construct online content works in concert to expand knowledge of the ways in which students work to tell, transform, and re-constitute information learned in an online informational space.

INSTRUCTIONAL MODEL TO SUPPORT STUDENT CONSTRUCTION OF ONLINE CONTENT

The preceding sections of this chapter provided the rationale, definition, and theoretical framing that were used to define and instruct knowledge, skills, and dispositions necessary when having students construct online content. This section will detail

the instructional model that has been developed for and proven effective in empowering students to construct online content (O'Byrne, 2009, 2012). The previous research studies (O'Byrne, 2009; 2012) represent two different quasi-experimental, mixed-method studies developed to investigate the use of the OCC model in improving the critical evaluation skills of adolescents required while reading online. These studies investigated the extent to which critical evaluation skills required during online reading comprehension could be improved in which the OCC model was used to empower adolescents as creators of online information. As appropriate, this section will include examples and screenshots from student work to detail the work and findings of the two studies that have tested the OCC model.

The first study (O'Byrne, 2009) was a pilot study conducted with forty seventh grade students from an economically challenged school district in the northeast United States. Although the findings from the pilot study helped identify the patterns and themes that exist as students evaluate and construct online content, more work was needed to develop an instrument to measure whether the OCC model was effective in building skills needed as students are involved in an inquiry-based task.

The most recent study (O'Byrne, 2012) includes a full examination of 197 seventh grade students from the same school used in the pilot study. Quantitative results from this study indicate that students' ability to recognize and construct surface level elements of online information can be improved using the OCC model (O'Byrne, 2012). Results also indicate that certain dispositions required for successful online reading comprehension by adolescents may be improved by having them synthesize discourse during the OCC model. Qualitative findings from the most recent study indicate that students working in groups effectively during the OCC model effectively demonstrated the knowledge, skills, and dispositions needed to recognize and construct elements needed to effectively critically evaluate online information

(O'Byrne, 2012). Results also indicate that student groups effectively supported each other during the work process by utilizing and sharing strategies and dispositions needed while constructing online content (e.g., critical stance, healthy skepticism, collaboration, flexibility).

The OCC model provides guidance on elements of cognitive apprenticeship, writing research and the use of ICTs as a tool to allow students to express learning and experience to themselves and others (Klein, 1999). The resultant instructional model provides students with an opportunity to express learning through the use and creation of socially expressive digital media (Tewissen, Lingnau, Hoppe, Mannhaupt, & Nischk, 2001). As a result, students use computer-integrated classrooms to focus on individual learning and develop skills to enhance social and collaborative learning. Ultimately, the goal of the OCC instructional model is an attempt to use digital texts and tools to restructure learning environments (Flower & Hayes, 1994; Erkens, Kanselaar, Prangma, & Jaspers, 2003) and move student learning from knowledge transformation into knowledge constitution (Galbraith, 1999). The OCC instructional model relied on three phases in order to scaffold and support students as they work individually or collaboratively.

Phase 1 of the Instructional Model

The first phase of the instructional model involved elements of the online reading comprehension process and online collaborative inquiry process. In Phase 1, students reviewed examples of online information (Websites, blogs, video, photos) on the topic of inquiry or student research. In the research (O'Byrne, 2009, 2012) conducted that tested the OCC model, students were asked to review a series of Websites they normally would encounter during an online inquiry project. During this review process they were often provided hoax Websites to review in an attempt to assess students ability to effectively evaluate online information. An example

of this type of information is the Website for “The Dog Island” (see Figure 1). A hoax Website is an online informational source which has been created for entertainment purposes, usually invoking the absurd, but maintained a “superficial appearance of scientific professionalism” (Brem, Russell, & Weems, 2001, p. 198). In the case of the Website for The Dog Island, the Website looks professional and contains cues that would lead a student to believe the information being presented. Students were encouraged to annotate these Websites and document the elements of Web design that they noticed (e.g., images, video, audio, text) and how this affected how they considered the information being presented.

During this phase of the model students reflect on what they have learned from this online information and the totality of information in relation to other sources on the same topic (see Figure 2). This process encourages students to review the information presented, determine the purpose, audience, and design aesthetics of this information. The questions and processes that guide the teacher and students online collaborative inquiry process can vary depending of the grade level, purpose, and student learning objectives.

In working with students to evaluate online information, students were encouraged to review

Figure 2. Example of a criteria chart completed during class review of online information

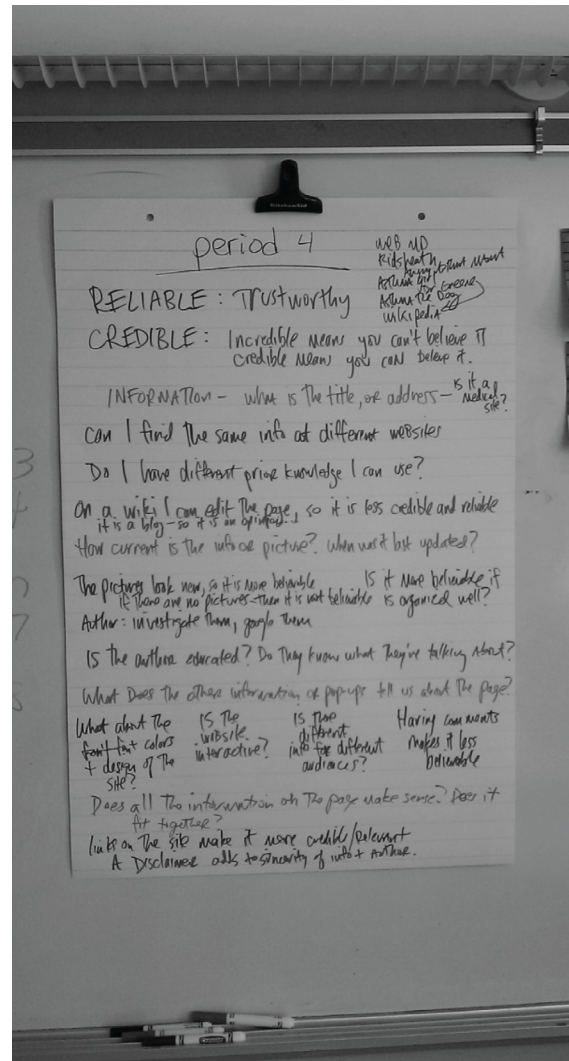
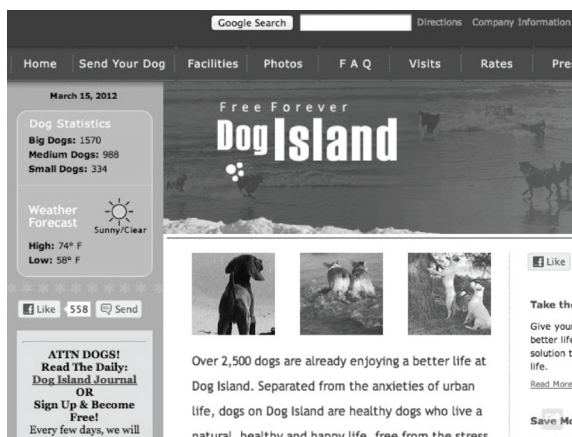


Figure 1. Screenshot of “The Dog Island” hoax website



questions that identified the credibility and relevancy of a Website. How much have they learned from this Website? Why did the author publish this information? What did the author include, or leave out in the process? What textual and multimodal design choices did the author use to create this content? Classroom discussions focused on individual design elements and aesthetics of a Website in an attempt to understand how mood, tone, and meaning can be affected by the inclusion

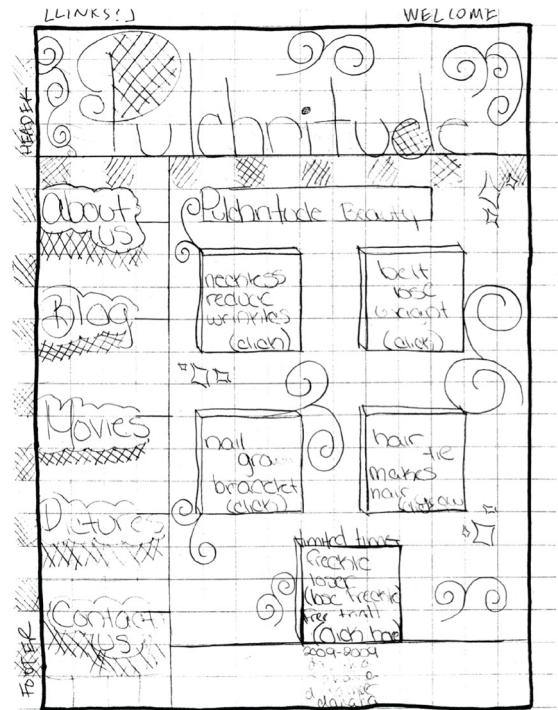
of text and images in a testimonial of a product (see Figure 3).

In Phase 1, students plan out the content they would like to construct using paper and graphic organizers to create detailed “mock-ups” of their work (see Figure 4). It is best to have them plan this out first with students on paper to assist them in identifying multimodal and textual elements they’ll need to construct, and the design aesthetics that affect their work. These details and markers of online information should be collected and displayed in the class. This document can be used to guide students as they construct online content, it also can be used by the classroom teacher to develop rubrics for assessment of work produced by students. This integration of technology into writing in this planning stage requires teachers and students to work flexibly and think creatively about the construction process. Students need to be encouraged to have dialogue with the teacher and peers about the work process and how their planning and scaffolding tools inform the ultimate product. This work may be complex and

Figure 3. Example of “testimonials” page from student constructed online content



Figure 4. Example of student “mock-up” of webpage



challenging as teachers and students may not fully envision the use tools and scope of the completed work product while planning.

Phase 2 of the Instructional Model

The second phase of the OCC model encourages students to use computers and ICT tools to construct the online content they have planned out on paper. Since the resultant content that students construct could take many forms (Websites, videos, photos, podcasts, blogs, wikis) the tools used in this process will vary. The important part is to have the students plan out their work ahead of time on paper. This allows them to return to the paper organizers if they have trouble during the process of constructing content.

During this phase of the OCC model, students work in groups in a one-to-one laptop environment using a variety of digital media editing software

(see Table 1). It should be noted that even though these tools were used successfully during the two studies, current work being conducted in OCC focuses on having teachers use free online tools to have students collaboratively construct content. Table 1 indicates the original tools used in OCC, but also the current tools being used online in a device agnostic policy. Device agnostic policy means that we provide multiple opportunities for teachers and students to work with whatever technological device is available. This may include a computer, tablet, or mobile device, but do not require a specific brand or operating system.

Please also keep in mind that some students may have experience with the varied ICT tools, while others might not have any background. To allay this concern, it is important to provide opportunities for students to work with the ICT tools and construct content throughout the school year without assessment, or grades associated with it. The major focus of assessment, at least during the initial times working in the OCC process should focus on the content, and knowledge transformation process, as opposed to quality or quantity of content produced.

During Phase 2, the classroom teacher is to work as a facilitator in the classroom and allow

students to work the majority of the time on the construction of online content. Teachers may start a classroom period with a “mini-lesson” (Atwell, 1998) to provide the entire class with instruction that is of importance to all members of the class. These mini-lessons may detail elements of ICT tool use, or excellent work by a student, or lessons learned while constructing content. The majority of instruction and scaffolding should be conducted while the teacher rotates through the groups as they work on their online content (see Figure 5).

Phase 3 of the Instructional Model

The third phase of the OCC instructional model begins as students are wrapping up their work building content on the computers. In this phase, the teacher provides students with real examples of online information that students can use to compare their work product to. Students are encouraged to review this exemplar material and review the work in relation to their own process and product completed to this point. The materials selected by the teacher are to be the same type (Website, video, image, text) as the work being constructed by the students. The work should also focus on the same theme that the student work product was focusing on. For example, a teacher would discuss and evaluate a Website for a beauty or hair care products with a group of students constructing a

Table 1. Online content construction tools used in previous studies

Tool Purpose	Tool Name	Revised Tool Name
Website Construction	iWeb	Google Sites, Mockingbird (Chrome extension)
Photo editing	Aviary (add-on for Firefox)	Pixlr Editor, Pixlr Express (Chrome extension)
Audio editing	Audible	Audible, Soundcloud
Video capture & editing	iMovie, Flip video cameras	WeVideo, mobile/tablet cameras/Webcams
Text editing	Microsoft Word, Evernote	Google Apps, Evernote

Figure 5. Teacher meeting with students during a “mini-lesson” to discuss group work



hoax Website about a new product line of “scratch and sniff” hair coloring products (see Figure 6).

Students are to review this exemplar material and identify elements of their own work process or product that they would like to change after their review (See Figure 7). This examination may identify that the author of the exemplar materials provided an “About Us” page, or included a title in their YouTube video. Students are then provided an appropriate amount of time to complete these revisions to their work before completing the work.

Following the completion of work process and submission of the product to the teacher, students should individually or collaboratively present their work to each other. This presentation can take the form of a showcase in which students rotate through the classroom and share their work with several other students and answer questions about their work and the resultant product. Much of the focus in this assessment process should be on the

Figure 6. Example of student constructed online content



Figure 7. Students revising work product following the review process



process involved in the construction of online content as documented by the reflections of students. Assessment of student work may also consist of a review of the work using the collaboratively constructed rubric that students have assembled for this project if this has been previously built. Classroom teachers should also meet with student groups to discuss the work process and product in the review and assessment of student work (see Figure 8). This step is necessary as assessment and evaluation of the process and product involved in OCC is challenging and may not be reflective of the work involved in the process. Additionally, classroom teachers may not feel confident or knowledgeable in understanding, valuing, and assessing elements of work that contain multimodal, visual, or semiotic elements of work. Conferences between students and the

Figure 8. Teacher meeting with students to assess design choices in student work product



teacher provide an opportunity to discuss the learning experience, and ways to possibly improve upon the process and ultimate product completed in future endeavors.

At the completion of the OCC instructional model, the work product of students was published online. These hoax Websites developed by students could now be shared with family, friends, and peers both in and out of the classroom. Student used this as an opportunity to showcase some of the new and exciting work they had completed in school. In this specific school the teachers and library media specialist used the project materials, and associated hoax Websites as a tool to teach strategies for evaluation of online information to staff and students. A listing of these initial hoax Websites created by students during the pilot study is available below.

Pulchritude

(<http://newliteracies.uconn.edu/projects/hoax-sites/pulchritude/Site/Welcome.html>): This Website was created by two students and the audience was identified by the students as “middle aged women”. The purpose of the site was to sell jewelry that offered supposed health benefits to the individual that wore it.

Tikistar Island

(<http://newliteracies.uconn.edu/projects/hoax-sites/tikistar/Site/Welcome.html>): This Website was constructed by two students and the targeted audience was identified as “anyone that wanted to purchase an exotic animal”. The purpose of the site was to sell exotic fish and pets from an island identified as Tikistar Island.

Toething

(http://newliteracies.uconn.edu/projects/hoax-sites/toething/Site/_welcome.html): This Website was constructed by three students and the targeted

audience was any one that wanted to purchase their product. The purpose of the site was to market and sell toething, or “clothes for your toes.”

DAT-a-Way

(<http://newliteracies.uconn.edu/projects/hoax-sites/dat%20a%20way/Site/Welcome.htmh>): This site was constructed by two students and the identified audience was described as “teenagers with acne problems”. The purpose of the site was to market their product, an acne treatment formula that was made from the cleanest substance on the face of the earth, dog saliva.

Pillow3

(<http://newliteracies.uconn.edu/projects/hoax-sites/Pillow3/Site/Home.html>): This site was constructed by three students and the targeted audience was identified as “teenage boys”. The purpose of the site was to market the newest installment of the Pillow game series, a videogame in which not only the game characters went to sleep, but many times the game players slept as well. The major advance of Pillow3 was that it was now a massive, multiplayer online game.

Fruitilicious

(<http://newliteracies.uconn.edu/projects/hoax-sites/fruitilicious/Site/VVelcome.html>): This site was constructed by two students. The targeted audience was identified as “women of all ages.” The purpose was to market a new hair color product that loosely was marketed as “scratch and sniff hair.”

CLASSROOM DYNAMICS AND IMPLICATIONS

When students construct online content in the classroom, teachers are able to bring the knowl-

edge, skills, and dispositions of these new and digital literacy practices into instruction. In this process of “doing” literacy, students construct online content and are empowered to not only understand, but also reframe “what counts as literacy” (Unsworth, 2001). Having students construct online content allows schools to more adequately represent the changes occurring to literacy as a result of technology while incorporating multiple forms and modes of text in the classroom (Alvermann, 2002; Gee, 2004; Leander, 2007).

Given the potential challenges that could occur while introducing these new literacies into instruction, classroom dynamics may need to change. The instructor must adopt a flexible disposition and an appreciation for the complexities, advantages, and limitations inherent in the online information space (Huffaker, 2004). Work such as detailed in this chapter engenders a degree of risk and trust amongst instructors and the students as they focus on productively accomplishing the necessary steps for comprehending and constructing online content (Alvermann, 2002; Livingstone, 2004). Implications of this work for pre-service and teacher preparation programs involve a need to have educators work with, and in some cases “play” with digital content. In this manner teachers are able to build some of the knowledge, skills, and dispositions necessary to authentically include online informational sources in instruction.

Researchers must constantly consider these changes to permit new concepts, processes, and approaches of information delivery to continue developing in society (Tyner, 1998; Sutherland-Smith, 2002). The OCC instructional model defined herein empowers instructors and students to work collaboratively together to define continually what it meant to be able to read, write, and communicate using online informational sources. Working within this context, instructors and students have to consider, and in some cases adapt, their roles to participate effectively in the learning experience (Luke 1994, 2000; Alvermann & Hagood, 2000; Mishra & Koehler, 2006). Re-

search needs to investigate the dynamics that exist between teacher and student, but also student and student as they work to construct online content in the classroom. Furthermore, research needs to be conducted to identify the opportunities and challenges that occur as students work individually and collaboratively in a learning environment such as the one detailed in this chapter.

Students also have an equal responsibility to undertake the discipline, responsibility, and flexibility required to work as an active participant in the ICT infused classroom (Greenhow, Robelia, & Hughes, 2009). Consequently, students need to reconsider the concept of “school” as they assume an active role in the learning process (Alvermann, 2002; Mishra & Koehler, 2006). In this instructional model, students are not only guided through online learning activities by the instructor, but in some cases they may take a leadership role in the development and application of learning (Ward, Peters, & Shelley, 2010). Students may have challenges in working with digital tools and content, or simply struggle with the changing dynamics of the classroom as detailed herein.

As these concepts evolve, educators must reflect on these changes and practices in our classrooms and also remain flexible to new developments. Bringing in the multiple perspectives and frameworks as identified in OCC allows educators and researchers to continue to examine these changes. The development of OCC as an instructional model is necessary as it allows educators to discuss this work in a classroom context in a language easy for practitioners to employ. This provides a common, approachable discourse in which educators and students can discuss this work and the work process and product that is included. In many ways this work expands upon work in traditional writing instruction to while identifying the complexity that occurs while including digital content in the construction process.

Literacy researchers are also provided an ample foothold in the changing landscape to allow for an informed examination and review of

best practices associated with this work and the associated instructional model. The use of the dual-level new literacies theory allows OCC to be informed by, but also guide and further describe the complexity of New Literacies research. This instructional model allows for research including that previously described, but it also embeds elements of semiotics, visual literacies, and other elements of the contemporary social and technological backdrop. Cultivating the various theoretical boundaries and perspectives is an attempt to clarify the blurred distinctions that now exist between these “new and unsettled genres” (Romano, 2000; Jewitt, 2008). This compilation of research and perspectives integrated into the OCC model offer an opportunity to “build connections across discourses of specialized knowledges and everyday knowledges” (Jewitt, 2008; Zammit, 2011) that exist in our classrooms.

Of most importance in considering the inclusion of OCC in the classroom is the fact that it has the potential to empower students as “co-investigators” (Scardamalia & Bereiter, 1983) in the classroom. Students are empowered and encouraged to reflect on strategies they have or may need. This requires a potential shift in classroom power dynamics to provide opportunities for teachers and students to collaboratively reflect on the knowledge, skills, and dispositions needed to work with this content. The hope is that this structure of the instructional model provides fertile ground for teachers and students to exchange strategies and not be concerned that they do not know everything needed to conduct this work in the classroom. The goal would be on building the understanding and respect that they are working together to comprehend and construct content in an attempt to create their voice in the online informational space.

This consolidation of theory and research as detailed in OCC should be viewed as a starting point to identify possibilities for having students and teachers work on the process and product

associated with construction of digital media. Instructional models such as this provide opportunities to empower students as they skillfully encode and decode meaning as a member of the reader/writer online informational space. Considering the increasing importance of online information, teaching effective ways to comprehend and construct online information to students is imperative to their future success as Internet users. As students increasingly use the Internet for social, academic and personal tasks, instruction in critical and thoughtful construction of online content will be essential.

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