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Digital Curation and Complex Decision Making: A School District's Literacy Initiative

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DIGITAL CURATION AND COMPLEX DECISION MAKING

Digital Curation and Complex Decision Making: A School District's Literacy Initiative

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Introduction

The Internet has had a significant impact on curriculum, instructional design, and the work of professional learning communities (PLCs; DuFour, 2004) that cooperatively work together to make instructional sense while incorporating these new learning options within their discipline. This increase in opportunities can be problematic for educators, as the existence of so many options requires them to make complex instructional decisions, often far from those made during lessons driven by textbooks or program lectures. Educators need to be judicious in their selection of instructional resources to meet the curriculum standards. To be most effective, teachers should make their instructional decisions as part of their work with colleagues engaged within PLCs.

Personal transformation is at the root of pedagogical change in classroom practice (Kuss, 2020). These new technologies have resulted in an increase in the amount of curricular content available for teaching and instruction and in the platforms to present the information in novel ways (Jacobson et al., 2003). The incorporation of increased information content and the communication technologies available for the utilization and management of that content requires staff to work cooperatively to investigate the most efficient ways to make sense of these new teaching and learning opportunities.

In this study, we attempted to better understand the experiences of educators in the K–12 English Language Arts Committee charged with developing and implementing the district’s literacy initiative using digitally curated content.

Digital Curation Defined

Digital curation is “perceived differently by different individuals and disciplines” (Beagrie, 2008, p. 4). Our perspective of digital curation allows individuals or groups to establish

and manage assembled digitized materials to “add value to and maintain these digital assets over time for current and future generations of users” (Beagrie, 2008, p. 3). Thus we define digital curation “as the intentional process of mindfully mining, organizing, and archiving digital resources” (Authors, 2015). In order to increase the instructional effectiveness of curated artifacts, PLCs bring disparate perspectives together to construct a cohesive communal voice, thus enhancing the impact of the curation process (Authors, 2015, 2016; Preston, Younie, & Hramiak, 2021).

Digital Curation: Communal Constructivism

Digital curation (Authors, 2015; Authors, 2016) encourages a constructivist social process whereby individual teachers have an opportunity to coalesce around sound instructional development and design to meet differentiated curricular needs. This collegial social emphasis allows educators to “test drive” their individual orientations about what is necessary and appropriate. Communal constructivism (Leask & Younie, 2001) allows participants to collaboratively co-construct and to create shared visions and knowledge within their work groups (Preston, Younie, & Hramiak, 2021). Clarke and Watts-Taffe (2013) found that the social constructivist philosophy of teams is especially important in literacy education. When professionals collaborate in communities and share their knowledge powerful learning occurs (Preston, Younie, & Hramiak, 2021), and this forms the basis for effective PLCs. These constructivist experiences elicit novel insights and increased productivity as a response to and a result of communal activities and discussions (Preston, Younie, & Hramiak, 2021).

Digital Curation: Professional Learning Communities

In schools, educators can utilize information and communications technology not only to sustain learning communities (DuFour, 2004; Dunne et al., 2000; Sherer et al., 2003) but also to

provide the social scaffolds necessary for professionals to better identify, augment, and hone materials that are most effective in meeting their instructional needs (Preston, Younie, & Hramiak, 2021). The PLC also supports the instructional needs of the greater school community by allowing members to draw on the dynamism of the social environment (DuFour, 2004). Technology enhancements utilized by PLCs provide a means for teachers to share and reflect on pedagogy and to scale their literacy initiatives by removing limitations brought about by time, space, and pace issues (Blitz, 2013; Authors, 2015; Authors, 2016).

Review of the Literature

Due to the integration of information and communication web-based tools, the utilization of digital curation in academic settings is a growing phenomenon, and it is now possible for educators to be both the composer and the curator of instructional and education materials (Authors, 2016). As such, educators perform multiple roles, both as content collectors of artifacts related to their academic discipline and as transmitters of their academic work utilized by current and future generations.

Digital Curation: The Five C's of Digital Curation

The framework for digital curation (Authors, 2015; Authors, 2016) provides educators with a guide that supports opportunities to collect, categorize, critique, conceptualize, and circulate artifacts related to curriculum, processes, organizational memory, culture, workplace, and climate. This framework can guide and be applied to any other processes in organizations, whereby members intentionally showcase their work through some form of presentation or work product beyond print (Gee, 2010). Within this framework, professionals can extend the utility of their work beyond the current setting or focus of their efforts, often having an impact on individuals or groups that utilize the curated product (Preston, Younie, & Hramiak, 2021).

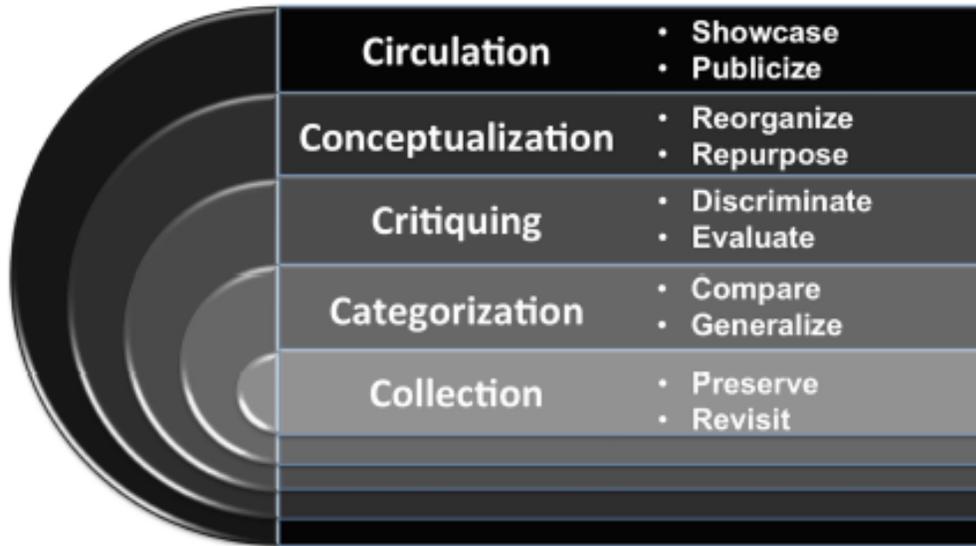
To simply amass a collection of instructional materials is not enough. Acquisition and selection of content requires value judgments, as individuals and groups reflect on the salience or appropriateness of the materials utilized within the Five Cs of the Digital Curation framework. Amassed materials can be actively transformed into a curation, based on critical reflection and value judgments.

The Five C's of Digital Curation (Authors, 2015, 2016) are as follows. First, a collection is assembled. The artifacts are strategically preserved through digitization for ease of use and retrieval, either immediately or in the future. Secondly, the artifacts are categorized. They are separated into logical categories through generalization of variables or comparisons across the attributes. Critique is the third stage of the digital curation process. Salient aspects of each artifact are identified to determine its representational value of the variable. During the fourth stage of conceptualization, individual users intentionally transform one resource or intent to another through reorganization and/or repurpose. Circulation is the fifth phase in the process that showcases the artifact for public view.

Through the process of collecting, categorizing, critiquing, conceptualizing, and curating, the Five Cs support individuals and groups through the careful management and assembly of materials and resources to meet current and future teaching and learning demands. See Figure 1.

Figure 1

Digital Curation Framework



Note. From “The Five Cs of Digital Curation: Supporting Twenty-First-Century Teaching and Learning,” by Authors, 2015, *InSight: A Journal of Scholarly Teaching* 10: 21. Copyright 2015 by the Center for Excellence in Teaching and Learning, Park University. Reprinted with permission.

The development of instructional resources “reflects the orientation, advocacy, and perspectives of not only the creator’s local sphere of influence but also that of their larger scholarly community” (Authors, 2015, p. 21). Recent advances in an individual’s or organization’s ability to transmit content and resources via the Internet through blogs, web pages, newsletters, emails, social media, or cloud storage as well as the existence of larger audiences outside that of the content creator’s immediate environment potentially increase the degree of impact that the assembled resources have across communities.

This increased capacity to access content, materials, information, and resources provides new mechanisms for organizations to enhance their social structures, organizational cultures, knowledge management, and problem-solving processes across their enterprise. Information technologies support and facilitate overall changes in the ways that communities of practice interact and share content development around pedagogical interest. Yakel et al. (2011) state:

Digital information is all around us. More and more information is either born digital or digitally reformatted. A new generation of professionals is needed who are comfortable working in hybrid (digital and analog) environments and capable of managing media-neutral information throughout its life cycle. (p. 23)

Educators have an opportunity to take digitized content, reformulate or structure it to meet current institutional needs, and maintain the content for future initiatives.

Digital Curation and Situated-Sociocultural Perspective

Digital curation has benefits for educators as both producers and consumers of the content. It allows each to incorporate materials that forward and validate their perspective and vision of the construct under consideration, thus driving academic, social, institutional, or cultural action. Therefore, educators who are interested in creating content that extends the varied situated-sociocultural perspectives of the learning community can create digital content that presents multiple social perspectives.

The use of the situated-sociocultural approach enables educators to collaboratively produce materials that serve as a vehicle to present content. Group interactions increase understanding and provide opportunities for people to elicit perspectives and challenge biases. As a result of these group interactions, educators can rethink the materials and methodologies used for instruction and gain an increased voice within the educational discourse, beyond the classroom (Preston, Younie, & Hramiak, 2021). Voice leads to agency, and digital tools change “the balance of production and consumption in media,” “the balance of participation and spectatorship,” “the nature of groups, social formations, and power,” and “how we learn and even become experts” programs (Gee, 2010, p. 174). Although Kirschner and Lai (2007) do not specifically address PLCs by name, we believe their focus on communities where individuals

form groups to address communal problems is instructive. They state “the people who participate in this process have a common interest in some subject or problem and are willing to collaborate with others having this same interest over an extended period (Kirschner & Lai, 2007, p. 128).

Digital Curation and New Literacy Studies (NLS)

The situated-sociocultural approach to literacy and technology (Gee, 2010) encompasses the tenets of New Literacy Studies (NLS). Digital curation embodies this approach and its tenets to literacy and provides a way for individuals to participate in a dialogue. There also are social, cultural, historical, and institutional aspects to what and how people become literate. We take the position that literacy provides a way for people to become active participants of a social group and that these interactions lead to reciprocating cultural achievements inherent within the organization. It capitalizes on the individual skill sets brought by each participant, thus enhancing the group’s capacity for instructional reach, impact, and effectiveness in multiple and simultaneous learning environments.

Gee (2010) states that, with the increased production capabilities of web-based tools, people have a new medium for both giving and receiving meaning much in the same way that language allows this. The meanings that are associated with the production and content of these resources are often reflective of a social, cultural, historical, or institutional orientation and of the traditions, cultures, and practices within different groups of individuals. The integration of information and communication technology tools are seen as a supplement to other traditional academic tools, such as oral and written language. These digital technologies, as understood through NLS, provide a way for individuals to act, interact, and construct their beliefs, knowledge, and values with others across traditional social structures.

Digital Curation and New Media Literacy Studies (NMLS)

New Media Literacy Studies (NMLS) focuses on the interaction of digital tools and media and how this interaction between the two helps to transform society and popular culture (Gee, 2010). Gee states that the use of digital tools allows more individuals to be active participants in the creation of media and content. With the advent of web-based tools, we have seen the potential for educational transformation. The traditional balance of production and consumption of instructional content has moved from a few powerful producers, such as textbook publishers, to traditionally less powerful teachers in classrooms. Through the incorporation of NMLS, educators have the potential to disrupt and transform existing organizational power structures that influence instructional content.

Methodology

Theoretical Framework

To better understand how the Five Cs of the Digital Curation framework (Authors, 2015; Authors, 2016) are reflected in the district's literacy initiatives, we investigated a district's literacy initiatives, as presented by their English Language Arts (ELA) Committee that we have operationalized as a PLC in their narrative and in the digitally curated artifacts showcased on the district website. This study was grounded in Leask and Younie's (2001) communal constructivism, and the social process of Kirschner and Lai (2007) conceptual frameworks.

Case Study Design

A qualitative case study design and methodology guided this study (Yin, 2014). In fall 2015, four focus group interviews were conducted with a convenience sample of 13 participants (2 males, 11 females) from a rural school district in the Midwest. Individuals who represented the district's ELA committee were asked to participate in one focus group. The focus groups (FG) membership was as follows: FG1 comprised one female and two male middle school

teachers, as well as one female literacy coach; FG2, two female high school teachers; FG3, four female elementary teachers and one female literacy coach; and FG4, two female middle school teachers. Focus group assignments were determined by the participant's school level. For example, lower and upper elementary, middle school and high school levels.

Participants

The participants for this study were selected by the authors because the participants' PLC practice centered around the utilization of artifacts that were digitally curated and publicly circulated. The Five Cs of the Digital Curation framework (Authors, 2015; Authors, 2016), presented in Figure 1, was utilized to explore and understand the processes that the group utilized for inclusion and selection of artifacts that they considered to be reflective of their shared work. The outcomes of their longitudinal work were publicly circulated via the district's website and became a repository of the ways that a literacy learning community digitally curates curriculum content and presents its work for consideration and utilization by their various community stakeholders.

These activities were precipitated by a need to respond to curricular mandates and the state's early literacy initiative (Michigan Association of Intermediate School Administrator General Education Leadership Network Early Literacy Task Force, 2016). To maximize the implementation of best practices in pedagogy aligned to these mandates and initiatives, the group decided to circulate exemplary materials and practices in hopes of inspiring rather than mandating new understandings and utilization of these best practices. The consensus of the group was that it is better to show than tell colleagues the possibilities that existed by the utilization of information and communication technologies.

Data Collection

This qualitative case study utilized multiple data sources: interview data collected from four different focus groups, with each group's meeting once; ELA artifacts curated such as examples of teachers instructional materials and student work on the district public website and observation field notes taken during site visit; and the ELA committee's curriculum-shared Google Doc (Yin, 2014). Participants were provided with written transcripts of the focus group session for the purpose of member checking. Field notes, the district website, and transcriptions of interviews were utilized as the primary sources of information for analysis.

Data Analysis

The data from the focus groups were analyzed in four phases: data organization, data reduction (Miles et al., 2014), coding and constant comparative analysis (Corbin & Strauss, 2015), and data triangulation (Denzin & Lincoln, 2003). First, focus group recordings were transcribed. All names were de-identified in the focus group data and replaced with random numbers. Pseudonyms for all participants were used for reporting purposes. Second, the data were analyzed, using a data reduction method suggested by Miles et al. (2014). The researchers used the Five Cs a priori codes to collect, categorize, critique, conceptualize, and circulate to reduce the data, gain a general familiarity with the processes used to digitally curate artifacts associated with the district literacy initiative, and generate additional codes for the next phase. Each author independently coded the data set, using these preset categories. Through discussion, the consensus was reached on any coding disparities during the data reduction phase. The inter-coder agreement was 83%.

Third, the focus group with the greatest number of Five Cs codes was chosen to validate emerging thematic clusters that were then utilized across the data set, using a constant comparative method (Corbin & Strauss, 2015), and confirmed through triangulation of the

district's literacy hub website (Denzin & Lincoln, 2003). The themes that emerged from the data helped to provide a better understanding of each ELA team member's experience in creating the district's website as a circulation vehicle.

The Digital Curation framework (Authors, 2015; Authors, 2016) provided a common language for understanding the nuances of the curated content for the Internet. This enabled the authors to interrogate the research questions for this study of whether (1) the Five Cs were reflected in the district's literacy initiatives. The understanding gained from this study can be used to support the process of group instructional decision making, curricular design, and development.

Findings and Discussion

Throughout this study, we attempted to better understand the instructional decision-making processes utilized by educators when integrating pedagogical content with information and communication technologies found on the web. The intent of their activities was to circulate their work, utilizing information and communication technologies to showcase their literacy initiatives across a school district. The individuals within the PLC were brought together to address the support and professional development needs of the educators within the district related to their extensive literacy activities. These activities were a response to the federally and state-mandated curricular instructional content and the practical need for increased literacy support (Michigan Association of Intermediate School Administrators General Education Leadership Network Early Literacy Task Force, 2016). Their activities resulted in a wide variety of support that was circulated on the district's website.

We were interested in determining whether the Five Cs of the Digital Curation framework (Authors, 2015; Authors, 2016) were reflected in the district's literacy initiatives.

These educators made an intentional decision to digitize literacy content and circulate that instructional content on the district website, utilizing information and communication technologies. We were pleased with a large amount of digital content that they had circulated, and we sought to better understand the professional actions and interactions of these educators in the development and selection of the literacy materials that they chose to highlight.

Data analysis provided evidence that the work of the literacy initiative contained categories found within all Five Cs (Authors, 2015; Authors, 2016). This was confirmed through an assessment of reliability during the data reduction phase of analysis: (1) collect (15 incidences), (2) categorize (32 incidences), (3) critique (68 incidences), (4) conceptualize (26 incidences), and (5) circulate (64 incidences). Table 1 presents coding descriptions.

Table 1

Data Reduction Coding Description

Category	Description	Incidence
Collect	Assemble, preserve, and store materials in digitized form so that they can be revisited and, perhaps, revised for a later review or preservation.	15
Categorize	Refine collected resources and artifacts into specific categories through generalization or comparison.	32
Critique	Identify salient aspects of the artifact to determine its representational value. Intentionally sort out and include and/or exclude information, using fine discrimination or evaluation.	68
Conceptualize	Transform one resource or intent to another through reorganization and/or repurpose.	26
Circulate	Present for instructional review by the larger public for showcase and publication.	64

Example of Codes

The category of *collect* was determined by participant reference to the assembly, preservation, and/or storage of materials in digitized form. Digitized materials can be revisited and, perhaps, revised for a later review or preservation. One participant described some of the things she digitizes as “all this stuff that we’re teaching the kids. . . . It is evidence you can justify . . . make a claim and then justify it with all this . . . and we do.”

The category of *categorize* was found in language that implied a refinement of collected resources and artifacts into specific categories through generalization or comparison. In one such example, a participant described the initial goal of the committee as “to align the district’s ELA from kindergarten all the way through high school.” This language indicated the targeted category of ELA curriculum.

The category of *critique* is the identification of salient aspects of the artifact to determine its representational value in which one intentionally sorts out and includes and/or excludes information, using fine discrimination or evaluation. Another participant shared that, due to the curated resources, she was able to question what information she was to include or exclude even when a colleague indicated otherwise. “Now, if I was able to go back to the teacher, which I’ve never been able to do before, in the third year of teaching, [I could] say, what am I really supposed to be teaching?”

The category of *conceptualize* is seen when a curated item is transformed from one resource or intent to another through reorganization and/or repurpose. When conceptualizing, one should always go back and review, as there may be another way to approach something. One participant stated, “I think that having that web document is really important because then it’s easily accessible not just to us, but eventually, hopefully, to others.”

The category of *circulate* is seen when curated items are present for instructional review by the larger public for showcase and publication. The district ELA committee decided to make their list of resources an “accessible document for everyone to be able to look and ponder and see.”

Based on the initial intent of our research, we found that the PLC did, indeed, incorporate all Five Cs of the Digital Curation within their group activities as well as within their work product. With this confirmation, we believe that the Five Cs (Authors, 2015; Authors, 2016) provides a supportive framework for individuals, groups, and programs that guides the development of instructional materials, utilizes available content, and incorporates web-based tools. It must be recognized, however, that these activities take time and that the teachers often were engaged in activities unfamiliar to them. Webb and Cox (2004) state that organizations that integrate information and communications technology into their programs:

require teachers to undertake more complex pedagogical reasoning than before in their planning and teaching that incorporates knowledge of specific affordances and how these relate to their subject-based teaching objectives as well as the knowledge they have always needed to plan for their students’ learning. (p. 235)

Themes

Two themes emerged from the data: (1) communal constructivism (Leask & Younie, 2001) communal constructivism and identity and (2) agency and voice. These themes confirm our theoretical orientations. Communal constructivism provides an opportunity to develop group identity. In this case, the PLCs’ shared identity provided a vehicle for enhanced agency and voice across multiple stakeholder groups. Agency and voice allow for the empowerment of an individual and or group through a shared perspective and have an impact on the larger social

structure within the educational setting or organization. Table 2 presents examples of each theme.

Table 2

Themes and Examples

Theme	Individual	Group
Communal Constructivism and Identity	I can speak to the private one [website] so far because it's not out yet. Um, we have developed a template through Google Docs just [for] the teachers on our committee, so I think there's probably 14 of us are trying to commit to each month providing something, whether it be a blog response, uh, a highlight from a classroom, um, student, student samples, technology tips.	<p>We could see what others were doing as malleable.</p> <p>When it came to designing links on our website, [we considered] how might it be done differently?</p> <p>And I think that collaboration and the networking that we do as teachers, when we created it, it is something, too, that we can [work] off of.</p> <p>Uh, maybe you felt the same way, but we were really allowing that specialist in that grade level to be the spokesperson for that information. And we trust it in that.</p>
Agency and Voice	<p>Has been really refreshing for us. Instead of having something mandated to us, we're the ones who get to say . . .</p> <p>We felt through what we want to do. And so, this has been really nice to spread out and see.</p> <p>You know, we're very open and receptive of . . . um. We do really respect each other's ideas. But I think as of right now, all that I know of that's on there for sure is the GoogleDocs that we've created with the, um, progression chart, and then I think our curriculum maps are linked in there as well.</p>	<p>But what a schmoozer to go to the board. You gave us the time to do this, and see what happens when you give us that development time, and you have hard workers that are willing to work?</p> <p>Maybe you felt the same way, but we were really allowing that specialist in that grade level to be the spokesperson for that information. And we trust it in that.</p> <p>People started noticing what we were doing. I mean, we got quite a lot of attention, not just from our administration, and other teachers, and other departments, but people from outside, looking in.</p>

I just feel like we finally got it right with this site. I can talk to parents and know what I'm teaching, and I can refer back to it, and I know now what they do in middle school.

You know, you see this hard work that you and your colleagues put in, and for the first time, really, I felt people started noticing what we were doing.

And I felt I feel justification, so I can look at my board when this was presented and say, we know what we're doing.

And I think, another thing, you know, to go back to what [she] said, you know, I actually kind of forgot about presenting it at the board, and showing them what we did, and I remember now the board president saying, "You met for three days this year, and you made . . . this?"

You know, like, they were so impressed . . . at that moment, we just felt so validated.

The district's literacy hub website serves as both a public and a private platform for information digitally curated by the district's ELA PLC. We treated the website as a collection. The school district home page indicates that the website provides an explanation for their literacy hub. They see it as a communal space for educators to share resources and ideas. Additionally, it provides an opportunity to celebrate awesome staff and student learning. The website provides a platform to empower teachers to use their voice with the web audience and contains a collection of nine tabs: home, bright ideas, agree/disagree/discuss, resources, overview charts, ELA tech stories, video visits, and "about this site" and "contact us," eight of which are public. Of the collection, two categories concern classroom highlights and calendar events. A password is required, however, for the agree/disagree/discuss tab, which provides a space for the teachers to share and discuss topics in private. Artifacts that demonstrate the socio-cultural interplay between teachers, processes, and students provide corroborating evidence of the theme of communal constructivism and identity. This theme is showcased in the posting of the Google Hangout professional development session; circulated overview charts that provide evidence of the ELA teachers' resolve to negotiate and select curriculum materials related to expectations for

each grade level; video presentations on writing that contain running dialogues of teachers who seek understanding of a given topic; and the website private section, which provides a space for teachers to dialogue on a topic.

The process of moving from individual insights to group action followed the progression of communal constructivism (Leask & Younie, 2001). Thus, the artifacts that circulated on the district's website were reflective of the newly formed group identity. Internal and external constituents' praise of the group identity associated with the artifacts resulted in the increased voice and agency of individual educators and the PLC.

The theme of voice and agency was identified in artifacts that showcased the amplification of the teacher's voice and teaching and learning effectiveness. Teacher contributions, student audio and video recordings, and outside stakeholder contributions related to voice and agency were identified among the artifacts. For example, the circulation of the overview charts is the most public display of voice available. Although the voice is strong, it is difficult to ascertain the impact or agency of their efforts, as no usage data is available. The Twitter feed also showcased outside stakeholder voice. By selecting a website designed with both public and private platforms, the ELA PLC was able to scale the district's literacy initiative by encouraging group communal constructivism; fostering perspective, identity and advocacy; and amplifying voice within a targeted audience to promote agency.

This website represents a collection of various products (resources and student work examples), processes, interactions, and perspectives that members of the literacy PLC utilized to showcase and document individual student, teacher, and program effectiveness. The website tabs are a representation of categories selected to circulate the literacy PLC's digitized artifacts. Circulated products can be a starting point for visitors to form their own initial collection as well

as a platform to assemble resources that enhance their instructional effectiveness and, ultimately, increase teacher agency. Circulated products also provide a starting point for new employees or for other organizational members not familiar with the district’s literacy program to be acculturated into the learning community’s literacy perspective, thereby increasing the likelihood of acceptance and adoption by others. Table 3 provides an overview of selected website content that reflects the district’s literacy initiatives, connections to the Five Cs (Authors, 2015; Authors, 2016), and the themes that emerged from the focus group interviews.

Table 3

Examples of District Literacy Websites

Five Cs	Theme	Website Artifact/Tab	Description
Circulate	Agency and Voice		Teacher showcases her students’ fluency. “I love listening to the children as they read their poems. . . . Click on any of the three audio links to hear them for yourself.”
Conceptualize/ Circulate	Agency and Voice		Teacher describes the instructional process she engaged her students in for their descriptive writing project.
Critique	Communal Constructivism		Private password-protected page.
Circulate			Recommended resources that included current topics, ELA best practices, and web tools for old and new literacies. Resources are annotated and signed by the recommending teacher. Stakeholders are invited to publish a recommended resource to the page.

Circulate	Agency and Voice		Screencast-O-matic was used to create a 3-minute video tour of three levels (K–3, 4–9, 8–12) of overview charts
Circulate	Agency and Voice		A showcase of students' newscast of books that they read and the app TouchCast used to write, direct, and record a newscast about books they are reading.
Circulate	Communal Constructivism		Use of Google Hangout; secondary teachers showcase a video of their professional development on Socratic Circles. Background on the website is provided, along with picture recognition of ELA and university collaborators. Contact information and how to get involved are displayed on the page.

Note. Of the Five Cs, those that are aligned to the themes are represented in the table. The organization of the “circulate” products is reflective of the literacy PLC discussion that is related to collection and categorization.

Communal Constructivism and Identity

The experiences of the ELA committee members were in keeping with the theme of Leask and Younie's (2001) communal constructivism and identity. The collective curriculum development process was fundamental to the process and was shared among all focus group participants as they moved from the creation of a website, using web-based tools such as Google Docs, to the building of an extended stakeholder literacy community that transcended self-imposed district boundaries. The ELA curriculum document under development became readily accessible to all and acted as a living document for the future. This is evident in Sarah's response “That connection [was] necessary with people in other buildings. We are quite spread out,

even geographically, kind of across the town, even. And, so, I really like how we get to come together for the collaboration, you know, personally, but then also the idea that it's so easily accessible. I think it is really important, too."

Sarah's response refers to the ways in which an education system creates opportunities for individuals to manufacture and share artifacts and to socially network beyond the immediate scope of their roles. Individuals come into shared group experiences with an identity and a level of understanding related to the topic at hand. These constructivist activities "involve a process of agreement on the definition and understanding of the problem and a collective attempt to define an adequate response" (Jefferies et al., 2007, p. 120). Once individuals engage in group activities, their concepts and identities are transformed through new understandings and experiences. These new understandings then have an impact on the identity of the group and their work as professionals (Leask & Younie, 2001). For example, during the ELA committee meetings, collected curricular artifacts and ideas were critiqued and conceptualized in ways that transformed the group's thinking and, ultimately, their professional identity. As one participant stated, "We could see what others were doing as malleable." Another participant stated, "When it came to designing links on our website, [we considered] how might it be done differently." Thus, the process was very much in alignment with the findings of Ryberg and Christiansen (2008) that "a collective solution arrived at in another context is re-appropriated, translated or transferred into the community" (p. 216).

Another participant made a comment that suggested that the public curation of work products enhances feelings of competency, which, in turn, validated further his identity as a competent professional. "You know, people were pretty blown away with the amount of work that we did." Stakeholders were able to observe the results of his professional interactions with

his students due to the group's interactions and circulation of their work. This is identity development in action. This is a novel concept for most teachers, as instruction often occurs in classroom silos, as expressed by another participant in terms of student expectation. "It was all this stuff that we're teaching the kids [when we ask], 'Can you [provide] evidence, justify [your answer or] make a claim?'"

The identities of individual participants, as well as the group, were enhanced through the transparency of the process that led to a conceptualized product that was refined and elaborated upon through the social interactions of the group. This resulted in participants' desire to circulate their work product, for both practical and professional reasons. Regardless of an individual's starting point, the utilization of social processes formed a "least common denominator" level of identity that was assumed by the group to guide the continuing work of the ELA committee.

Agency and Voice

The second theme that emerged from the data was agency and voice. The communal constructivism of the group was enhanced as curriculum artifacts were digitized and curated on the district website. Self-identity was enhanced as feedback related to the artifacts validated the curators' agency and voice. Leslie's comment captured this notion:

This [experience] has been really refreshing for us. Instead of having something mandated to us, we're the ones who get to say, "Wait a minute, we're in the classroom. Well, let us tell you what we're teaching and how we teach it, and what works."

Antoine stated, "We taught about tools, but it is really about the people." Another stated, "If you are focused on Web 2.0, you are focused on a tool or project, whereas, if you approach Education 3.0, it is about the process." The real power in curriculum development and presentation is the presence of the teacher's voice. Bill commented, "When you look at the

[group's] Google Docs, you can see evidence of our growth over time." Clearly, this participant felt that her experience amplified her voice and edified her agency as a teacher.

The Common Core State Standards (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) are viewed by many as a tool that diminishes the teacher voice and significantly reduces their professional agency. Within a PLC, however, curriculum development is more than just the circulation of a product. The power that results from the integration of web-based tools and collegial social processes lies within the opportunity for teachers to have a voice regarding the curriculum and to create a professional narrative through digitally curated artifacts that exemplify their perspective and voice. When their circulated artifacts are read, accepted, and validated by others, this enhances personal and group agency.

Implications

This research adds to the understanding of PLCs' communal constructivism and their utilization of the Five C's of digital curation for curricular initiatives. In this section, we discuss the implications of the Five Cs of the Digital Curation framework (Authors, 2015; Authors, 2016), including its potential impact on organizational initiatives and its influence on PLCs. Suggestions for future research related to group processes also are provided.

Organizational Impact and Potential

Our findings suggest that digital curation has the potential to increase organizational impact. For example, all of the elements of the Five Cs (collect, categorize, critique, conceptualize, and circulate; Authors, 2015; Authors, 2016) were embedded in the work of this study's PLC's literacy initiative. A website that showcases categorized collections of educational artifacts in and of itself is not enough even though it played a significant role in the district's

literacy initiative. However, what resonated in the themes that emerged from the stories shared was the impact of the PLC's communal constructivism on individual participants. Those extended opportunities for interpersonal interactions, with the support of the district, allowed the participants to find a voice and share with the community curricular insights often kept behind a closed classroom door.

The framework supports the professional development and standing of the PLC members as they present their individual and collective artifacts for critique and conceptualization by others before circulation occurs. When the PLC considers an individual's work product, considering that of the group's artifacts, group alignment of thought and sensemaking emerge. The enculturation of new members into the prevailing dominant culture can be accelerated through the utilization of the Five Cs (Authors, 2015; Authors, 2016). This process provides a vehicle for the acculturation and enculturation of new members into the organization, and an individual's identity becomes aligned with that of the larger group, and the perspective of the new member impacts the group.

When group identity was formed, and the group work product was circulated, the individuals within the group experienced an increase in their agency and voice, not only within the confines of their PLC group but also outside these social parameters and into the larger local educational community as a whole, particularly by their reaching out to other interested observers across the state. The PLC group members felt that the work that they had produced provided insight into not only the extensive curricular work and processes in which they engaged but also into the quality of work product that they were able to produce, both as individual teachers and as a collective PLC. The circulation of finalized work products amplified their

agency and voice well beyond the former sphere of influence that existed before the advent of the web and digital technology tools.

Limitations and Future Research

Even though our codes resulted in excellent inter-rater reliability, this study relied solely on the experience shared through narratives obtained from a limited number of focus groups as well as the artifacts and field notes collected from these groups. Future research should use more participants and artifacts, drawn from a larger number of schools.

This study fills a gap in the literature regarding the opportunities that digital curation presents when utilized with web-based tools in supportive social structures. Our research focused mainly on the impact of PLC's communal constructivism and the utilization of the Five Cs of the Digital Curation (Authors, 2015; Authors, 2016). Future research could examine the outcomes of specific items within the Five C Framework that have more significant impact on the facilitation of communal constructivism, both for teachers as well as students.

Conclusion

Those who wish to have an impact on the education organization might consider the utilization of the Five Cs of the Digital Curation framework as they plan, process, and produce curricular initiatives. PLCs that would like to increase their level of gravitas within their local environments and disrupt the traditional educational institutions that rely heavily on individual performance have an opportunity to have a large influence through circulated artifacts, thus increasing their influence as an educator. This impact can transcend geographic boundaries and social confines, and extend time in perpetuity (Authors, 2015; Authors, 2016).

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