Reflective inquiry and pre-service teachers’ conceptions of content area literacies
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The authors report on the results of a reflective inquiry project implemented during the first five weeks of a 15-week course on content literacy methods for secondary pre-service teachers. The goal of the project was to disrupt taken for granted and commonplace assumptions about literacy processes, particularly in relationship to professional and ethical responsibilities to educate all students. A description and analysis of Literacy History Project (LHP) components provides the basis for addressing the resistance teacher candidates often express with respect to the relevancy of the content literacy methods course for their own practice as future middle and high school teachers. Through a reflective examination of their prior experiences and present day practices, the authors found that pre-service teachers participating in the LHP gained insights into their own literate identities, made connections between their literate practices and the those of adolescent literacy learners, and demonstrated more complex understandings of the content literacy methods course content as it relates to the literacy development of their future students.

Introduction
As teachers of the content literacy methods course in a secondary credential program, we find ourselves routinely confronted by perceptions of literacy as no more than the ability to read and write, views of adolescents who struggle with literacy at the middle and high school levels as academic ‘failures’ and the consideration of teaching such students as an unwelcome imposition on the content area teacher. Through our action-based research on literate identity (authors, 2007, 2008, 2009), we have come to interpret this initial stance by our teacher candidates as a reflection of their belief in a dominant model of what counts as literacy and how individuals become literate, specifically what Street (1995) has labeled the ‘autonomous model’ of literacy. We find that our students tend to view literacy as a technical skill that one either possesses or does not possess, even when their own experiences of becoming literate might suggest otherwise. They also express this autonomous view of literacy when they describe it as a neutral, individual and often solitary act.

This view of literacy contrasts significantly with the conceptual foundation upon which we draw for the content literacy methods course we teach at state university in northern California. As reflected in our selection of course readings, our development of course activities and assignments and our methods of assessment, we view literacy and literacies from a socio-cultural perspective; we hold that literacies are social practices specific to and situated within contexts, such that literate practices can and do vary from one context to another. What counts as literacy and who is viewed as literate are the function of power relations, of how resources are distributed, and how institutions and individuals within institutions work to maintain the status quo of domination and dominated (Luke & Freebody, 1997). Given this contrast, a typical response on the part of our students is that of resistance to and in some cases, an outright rejection of, the perspective of literacy we promote as the conceptual basis for the course.

One of our primary goals for instruction is to expand and problematize our students’ prior understandings of literacy and literate processes in order to call into question this dominant model of how one becomes literate, what constitutes literacy, and how this relates to being a secondary content teacher. In order to address the goal of disrupting existing assumptions about literacy (Dewey, 1933; Freire & Macedo, 1987; Kamagai, 2010), we have incorporated a reflective inquiry project into our curriculum that focuses on the literacy development and practices of our students. The inquiry begins as the tracing of autobiographical events, with reflection upon the meanings of these events occurring individually, collaboratively in small groups, as a whole class, and then individually again. As Lyons (2002) notes:

Reflection is an intentional act engaging a person alone, but especially in collaboration.
with others – students, teachers, practitioners, other researchers or colleagues – in systematic inquiry, interrogating a situation of teaching or learning, usually one presenting some puzzle, to construct an understanding of some aspect of it. Such an act looks both backwards and to the future. It is in service of understanding and meaning that will shape action. (p. 99)

Therefore, The Literacy History Project (LHP) engages our students in a process of recalling, explicating and problematizing existing understandings of literacy through an examination of their past literacy experiences and current literacy practices. The purpose of this paper is to report on what we have learned from our students as a result of their participation in the LHP over the past five years of its development and implementation in our content literacy methods courses.

**Content literacy methods instruction**

For secondary credential candidates, the content literacy methods course is designed to support their ability to develop the content-specific literacies of their students. In our teaching of the content literacy methods course, we focus on three broad goals: developing our students’ ability to understand literacy as a meaning-making process, to recognize the socially-mediated construction of knowledge, and to take up their professional and ethical responsibility to teach the students most often marginalized by the institution of school, such as English language learners, students of color and students who live in poverty. Throughout the course, candidates learn instructional strategies for teaching students how to learn with texts and how to design content area lessons for students with a variety of levels of English proficiency. They are also prompted to explore the limitations of textbook-based pedagogy, such that they consider ways in which they can engage their own students in the interpretation and production of texts, broadly defined.

As described above, a key attribute of the course dynamic is the relatively unquestioned assumptions about literacy that a majority of students hold: that literacy is ‘merely’ the ability to read and write, that those in possession of such abilities are able to apply them effectively to any type of text for any type of purpose and that middle and high school students should be able to do so with ease. This aspect of the classroom dynamic – of students routinely possessing uncomplicated views of literacy, as well as possessing misgivings about the course (believing that it will require them to ‘teach reading and writing’ to their students or that the use of such methods will detract from a focus on the content) – contributes to the well documented difficulties and resistance that content literacy methods providers routinely encounter when teaching the course (e.g. deBeck & Feret, 2004; Marker & Browne, 2004; Swafford, Peters, & Lee, 1998).

As our students are among those who have been successful at school, they quite naturally assume that all schooled persons are capable of engaging with and comprehending complex texts (e.g. textbooks, journal articles, news reports, etc.) and thus take their ability to do so for granted. However, the comprehension and production of such texts is predicated on a complex set of practices that are typically associated with the classroom and must be modeled and explicitly taught if students in the middle and high school grades are to learn to do so effectively within the different disciplines. Therefore, in order to engage students in the type of reflection that might make visible the ways in which they developed as literate beings, we developed the Literacy History Project (LHP).

The LHP was originally a single activity implemented in the first two weeks of the course by the second author of this paper as a means for engaging students in a reflective inquiry of their own literacy experiences. The resulting student responses to this single inquiry assignment were surprisingly creative and highly complex in their representations of individual and cultural experiences of literacy. As such, these productions motivated both authors to develop the Literacy History Project as a series of assignments focusing on literate identity (Gee, 1992) with respect to both past experience and current practices. The goal of the project is to have candidates describe and reflect upon their own literate identity as a means for deepening and complicating their unquestioned assumptions about literacy.

**Rationale for the Literacy History Project**
The literature in teacher education is replete with the important role that reflection plays in enabling teachers to learn from their experiences in order to improve their practice and grow as professionals (e.g., Pedro, 2005; Schon, 1983), but relatively few studies have explored the role of reflection in literacy courses in teacher education (Bean & Stevens, 2002). As with other teacher educators, we believe that a teacher’s knowledge, assumptions and attitudes about literacy, in our case, are ‘the filters through which their practices, strategies, actions, interpretations, and decisions are made’ (Hollins & Guzman, cited in Wade, Fauske, & Thompson, 2008, p. 399).

At various points throughout the teacher preparation program, faculty engage candidates in different forms of reflective thinking common in teacher education, such as asking candidates to critically analyze, discuss and write about what they observe in the field and their own actions in student teaching. This pedagogical stance reflects a belief that pre-service teachers become agents of change if they have multiple opportunities to critically examine institutional structures and individual actions that perpetuate inequity and the many inhumane aspects that still characterize contemporary schooling (Zeichner & Liston, 1987). We also recognize that the goal of preparing teachers to be agents of social change in a two-semester postbaccalaureate program is difficult, but, nevertheless, believe it is worth our continued and collective efforts.

Toward this end, candidates are asked to describe and reflect upon the experiences, places, institutions and individuals that have shaped their perspectives on literacy in their accomplishment of the four assignments that comprise the LHP. This process, which Schon (1983) refers to as reflection-on-action, enables pre-service teachers to consider the meanings of particular literacy practices, both in and out of school, to begin to label the theories being enacted, and to raise questions about why their experiences are so varied.

The research literature on using reflection in teacher education also includes cautionary tales about the limitations of reflective writing in promoting conceptual change (see Risko, Vukelich, & Roskos, 2002). In deciding how to facilitate more substantive autobiographical reflection and the possibility of expanding students’ understanding of literacy and literacies, we drew from work in the classroom use of transmediation (e.g., Short, Harste, & Burke, 1996). Siegel (1995) notes that ‘transmediation, the act of translating meanings from one sign system to another, increases students’ opportunities to engage in generative and reflective thinking because learners must invent a connection between the two sign systems as the connection does not exist a priori’ (p. 455). Indeed, as Siegel goes on to state, we believe that, ‘learners need more than words to engage in such thinking’ (p. 456). While the production of multi-modal texts is not a new pedagogical activity in today’s world of digital media literacies, it was our goal to examine how such texts functioned as tools for new insights and understandings.

The Literacy History Project
The LHP consists of four complementary project components that were accomplished over the first five weeks of the course: (1) a physical representation of their individual literacy development in the form of a timeline (due in week two of the semester); (2) a written narrative to accompany the timeline (due either weeks two or three of the semester); (3) a log of their literacy practices over a 5–7 day period of time (accomplished during week four of the semester); and (4) a reflective summary of their understandings of literacy as drawn from their project activities (due in week five). The purpose of the project is to engage students in a process of describing and reflecting upon their experience and practice of literacy.

For the first component (the physical timeline), students are given only one parameter – to creatively represent their literacy history as an event-based timeline using a positive and negative dimensional focus. They are asked to focus on key events throughout their childhood, adolescence and adulthood that contributed either positively or negatively to the development of their literacy (Rief, 1991; Bobbi Mason, personal communication, 1998). When the LHP is assigned (week one of the semester), students and the instructor engage in class discussions of the assignment to encourage them to think about literacy as it relates to their lives (both past and present) and of the term ‘literacy’ as they themselves would define it. Timelines are developed over the course of the following week and are shared in small groups at the next class meeting. The
sharing of timelines among students juxtaposes multiple representations of literacy development and makes visible the various pathways to becoming literate that students have experienced (Minott, 2011).

The second component of the LH project is a written narrative of the literacy history to accompany the timeline. For the third component of the LHP students keep a 5–7 day log of their literate practices. We ask them to note all of the instances in which they find themselves using literacy in their daily routines. This literacy log can take the form of daily journal entries, bullet summaries of activities, or a simple list and is a required element of the LHP, but it is meant as a source for essay development and is not graded per se.

The fourth and final component of the LHP is the composition of an essay that asks students to reflect on their project experiences to-date: the re-envisioning their own formative literacy experiences, the sharing of the literate histories of their fellow students and the process of noting what they considered their own literate practices now. We ask them to address the ideas of personal and professional identities, their status in the larger society and how their own experiences might compare with those of the students with whom they are working in their school placement site.

Representations of literate identities
As a whole, each candidate’s Literacy History Project is representation of key aspects of their literate identity: their past experiences learning literacy in the home and school settings, their present lived experience of literate practice and their stance towards literacy as an individual, a student and a pre-service teacher candidate. Over the five years in which the LHP has been implemented, literacy history timelines have ranged from the simple (stick figure drawings) to the complex (a globe re-purposed to represent one student’s literacy journey). However, the level of complexity with respect to the representation of literate identity in timeline form does not necessarily connote a less complicated view of the concept of literacy on the part of the candidate. In fact, although the three examples of timelines selected for presentation here demonstrate this range in visual representation (simple to complex), in each case, the concepts of literacy represented were varied, complex and sometimes contradictory.

Literacy as a double-edged sword
Although the task appears deceptively simple, the process of developing the literacy timeline created varying degrees of cognitive dissonance for many of the students as they grappled with formerly unquestioned beliefs and assumptions about literacy and examined their own development. Of his experience developing the timeline, Sam (a pre-service teacher of English) wrote, ‘Literacy, even narrowly defined, is too big a topic and too intertwined with language, thought etc. to allow, (in my opinion at least), a comprehensive and specific approach’. Yet in developing his timeline, Sam limits himself to a focus on the written word, even though he acknowledges that it is only ‘half of a narrow definition of literacy’.

Having made the decision to focus on literacy as reading the printed word, he chose the single word ‘vacancy’ because it was a word he would have seen from the car window on family trips and it was ‘relatively neutral’. To have chosen the words ‘mom’ or ‘dad’ would have been (he admits) too complex with respect to their associated connotations to render visually. The resulting timeline consists of four PowerPoint slides with the word ‘vacancy’, with brief descriptions of how his sense of the word demonstrated his literacy as it changed over time (see Figure 1). His view of literacy proceeds from code-breaking to meaning making (Luke & Freebody, 1998).

He describes the process as not being able to recognize the word as a word, to understanding one literal definition of the word as ‘rooms available’ to ultimately being able to make inferences about the quality of a hotel when it still has ‘Vacancy’ posted on a holiday weekend. As such, he characterizes his literacy development as movement from word recognition to meaning making:

My literacy development is the process of extracting an increasing amount of meaning from the written word. It is not a series of switches thrown on throughout my life. It isn’t separable from my mental and physical development.
In his written narrative, Sam’s justifies his response to the timeline assignment (four iterations of the word ‘vacancy’) by writing that he ‘couldn’t reconcile my understanding of my own literacy development within the exact framework of the assignment’. This statement suggests that his understanding of literacy is already too complex to be adequately represented. His reflective essay at the end of the project suggests a pedagogical stance toward adolescent literacy development that is broader than the technical, autonomous skills typically associated with literacy in schools:

- I don’t think that my literacy log reflects the importance of literacy in my current life.
- For example, the seeming simple act of surfing the web engages multiple sophisticated literacies functioning simultaneously ... This ability to function in a multi-sensory environment is, for better or worse, a requisite of modern life. ... The first crucial aspect of modern literacy is the filtering of information.

Yet, at the time of project culmination, Sam persisted in the view that the multiplicity of literacies in which students engage provide a challenge – not a pedagogical resource – to what he hopes to ‘impart as a teacher’. His disciplinary identity as an English teacher, with unquestioned notions of what English teachers should do, overrides what he knows about literacy in his own life:

- My burden is to keep this in mind [clear goals for what to impart as a teacher] as I include other goals, such as mastery of content standards, to my pedagogy. In any case, it will be crucial for me to remember that my relationship to literacy is greatly different from my students’ and if I don’t consciously work to bridge the gaps, I have no right to expect them to reach the goals I have set for them.

Figures 1. From word recognition to meaning making.

Sam’s perceived difficulty of inculcating an appreciation for literature in his future students, in a context where his teaching will compete with the influences of popular culture and their ready
access to multi-media, constrains his ability to apply his insights about literacy development and experience to his teaching.

**Literacy is a journey**

The processes by which students compose the physical timelines projects they shared with classmates are various. When the second author of this article commented on the inventiveness of Richard’s timeline (see Figure 2), he responded that it started with a visit he and his girlfriend made to a teacher supply store. He reported that he had struggled with the task of visually representing his literacy history until he spied the interlocking wooden monkeys in the art section of the store. Something in his mind ‘just clicked’ and in discussion with his girlfriend, the two of them came up with the idea of representing literacy as a ‘treacherous’ journey.

In Richard’s representation of literacy, wooden monkeys cross a popsicle stick bridge to get across the river of literacy, where toothpick spikes traverse the riverbed. Each significant event in Richard’s history is written in black ink on a wooden monkey. As he wrote in his timeline narrative, he chose:

- ten events from the day I was born to the beginning of college. These are the moments that stick out in my mind as small pieces of the literacy puzzle I have put together over the span of my life.

Events that were positive in his literacy development are represented as monkeys posed on top of the bridge; Negative events were represented as monkeys literally hanging on for dear life.

Richard wrote that the bridge, ‘which crosses high over a valley of spikes and has many broken planks’ serves as a metaphor for the literacy journey:

Standing on the one side and looking across can make literacy look very frightening. I think that many people, especially English language learners, must feel overwhelmed and scared when they first start learning to read and write English. What makes it so scary is that many obstacles can be seen from the beginning, but how to tackle them
will be unclear until they are reached, and by then it is too late to turn back.

Given this physical representation, one would expect that his path to literacy was one that was fraught with pitfalls, failures and obstacles. On the contrary, Richard wrote ‘To be honest I really didn’t have any huge problems with literacy . . .’. His descriptions of the literacy events of his childhood recount memories of learning to read early in life and with ease, which he attributes to the fact that his both his parents read to him routinely as a child and that his twin sister served as his ‘partner and teammate’ in the literacy learning process. He states that his early literacy success was further encouraged in elementary school and through his identification as a gifted student and the various literacy-based activities that were associated with placement in gifted and honors classes.

This juxtaposition of contradictory characterizations of literacy learning – his own experience of learning literacy with ease versus his acknowledgement of experiences of learning literacy with difficulty that is experienced by others, namely English language learner students – is representative of the types of dissonances that are routinely experienced and articulated by our students as they engage in the development of project activities. As students work through the complementary activities of the project (the timeline, the written narrative, the literacy log and project reflection), such contradictions can become the basis for reflection on their own responsibilities for teaching all students. Richard’s reflection on his literacy log conveys his amazement at discovering that he is immersed in variety of literacy-based interactions throughout his day. He writes: ‘After a couple of days of trying to keep track of all reading and writing I realized that I often read and write without even realizing it’. This insight has implications for recognizing adolescents’ literate behaviors that might otherwise go unnoticed:

I think that these moments of unnoticed reading and writing are what we as future teachers really need to focus on. It is simple to think about a student’s literacy development when they are doing a reading assignment or listening to instruction, but reading happens all the time! That is what I learned by participating in this literacy log activity.

His recognition of the multiplicity of literate activities in which he engaged as reported in his log (reading and writing for his job as a waiter, reading automotive magazines for pleasure, reading for his credential classes, writing observations of his field placement) led to a further insight, one that also has important implications for his teaching:

At the end of my literacy timeline I believe I mentioned that I know reading was a privilege, but maybe I was thinking more about just education than actual reading. This reading log made me realize that I was still looking at reading as a chore. I also see this in my High School classrooms that I observe. Maybe students would like reading better if teachers spent time to find interesting things for them to read, or presented the reading in language that could be understood.

In contrast with Sam’s culminating reflections, Richard is capable of using his experiences of engaging in the LHP to make connections among his insights regarding literacy development and his content area teaching.

A forgotten literacy learner
In the development of the LHP, many students make connections between the familial support of literacy learning and their subsequent success and/or failure with academic literacy. Samantha, an art credential candidate, puts this succinctly and articulately:

Thinking about the timeline, and putting events in order, I discovered in black and white the importance of parental involvement in literacy development. I say this because of my early success in academics and then the abrupt interruption of that strong development when my family situation became extremely negative.
As a result of this negative family situation, Samantha wrote that she lost interest in school, stopped reading books for pleasure, read only ‘begrudgingly’ what was assigned in school, eventually leaving home by the age of 16 and failing to finish high school.

Samantha’s early literacy success became the basis for learning ‘how to survive’ on her own, for thriving in the various positions she occupied as an adult (legal secretary), for developing her own knowledge base in beekeeping and cooking and for providing her with the ability to gain her pilot’s license. She wrote:

The most positive development of my literacy occurred as an adult after I had my children. I thought about their literacy development and I think my own reading increased with theirs.

When her children were old enough to be on their own, she returned to school and received a bachelor’s degree in art. Samantha stated that her experience as a ‘forgotten literacy learner’ is what provided the motivation to seek a teaching credential ‘to try to prevent the loss of an eager mind’.

An art credential candidate, Samantha brought to bear much of her artistic talent in developing her timeline project (see Figures 3 and 4). Using a variety of source materials (cardboard, family photographs, pens, specialty paper, ink stamps and pages from a dictionary), Samantha constructed an original book that tells the story of her literacy development from birth to her completion of the Bachelor’s degree at the age of 47. Artfully chosen to represent the book cover is page 125 from her source dictionary, from the section for words beginning with the letter ‘e’. In the upper right hand corner are the headings ‘eat out of one’s hand’ and ‘education’ as the indices of the alphabetical order for that section. The alphabet, stamped in upper case letters, adorns the page as one layer up from the text of the dictionary page.

Figure 3. Direct and indirect literacies.
Samantha reproduced this technique of layering of images and text on each page of the book, using the different source materials to produce both the historical events – positive and negative – of her literacy development as well as her interpretations of them. On each page of the book, the first layer comprises a page from the dictionary with headings that indicate the general emotional tone of that period in her life that is being represented. The next layer comprises arcs of hand drawn lines in dark pen upon which are written what she has termed ‘indirect literacies’, those that influenced her development of literacy, but which occurred through participation in informal (non-school based) literacy-related activities. These arced lines are contrasted with a single dark horizontal line three-quarters of the way down the first page of the book that continues on unbroken across each page and that represents ‘direct reading literacy’ – that which she describes in her written narrative as formal, schooled and explicit.

The layering of literacies in her timeline, into a varied and intersecting web of formal and informal literate practices, is the basis for her discovering (as she wrote in her reflection on Day 1 of her literacy log) that ‘everything I did that day had a form of literacy involved in it’. As she comes to understand it, literacy is normative and cultural; it involves a set of unconscious behaviors that allow one to navigate one’s world successfully. In describing how she would accomplish the activities that comprise her day, she wrote:

I will drive my car, knowing how it functions, following all the rules of the road dictated by my society, and end up in the place where I can be assured a hot cup of really tasty coffee. All of these functions are a result of the cultural influences I have experienced and then built upon to gain more and more understanding. I know my society’s norms and I understand its expectations of me. I have a fine-tuned level of cultural literacy that has been learned.

In addition to the socio-cultural aspects of literacy, Samantha’s conception of literacy also encompasses the ways in which her ‘reading and writing literacies’ impact on her as an individual by providing pathways to understanding herself and her thoughts:

Sometimes I don’t really know what I think about a work of art or a piece of literature
until I write about it. Then I can find just what it is that I like, or dislike, or what moves me. The importance of written language literacy for me is immeasurable as a result.

Discussion

Over the course of the five years we have implemented the LHP, we have found that the project activities provide us with insights into our own students’ educational histories and understandings of literacy such that we are able to make connections between those experiences and the content of the course. We have also found evidence through our analysis of the artifacts that the project does enable some pre-service teachers to question their assumptions about literacy in general, the role(s) literacy has played in candidates’ identity development and the implications this knowledge has for their roles and responsibilities as teachers. This disruption of our students’ preconceived notions about literacy restarts the process of engaged, emergent, more complex thinking about their own literacies and the literacies of their future students (Dewey, 1933; Kamagai, 2010).

In Richard’s transmediation, he was able to imagine the process of becoming literate as a potential struggle for some, even though that was not his experience. He appreciated that everyone’s journey to becoming literate is not the same and that possible difficulties are due to factors and circumstances outside of the individual. Given the well-documented issues of preparing middle class, European American pre-service teachers for working with diverse students (e.g. Darling-Hammond & Garcia-Lopez, 2002), Richard’s developing understandings provide hope for what can be accomplished in a content literacy course. His stance toward teaching as represented in the artifacts of the Literate History Project show a pre-service teacher who was challenging taken some of the taken for granted notions about literacy. Through participation in the project, Richard came to see literacy as multifaceted, as part and parcel of everyday life; he recognized that literacies vary across contexts, and that when schools frame reading as a ‘chore’, it becomes one.

Bean and Stevens (2002) call for continued research into how various formats for reflection might help pre-service teachers challenge dominant discourses about adolescents, literacy, and schooling. For Richard and other students we have had, it appears that the LHP may provide such a scaffold. As another teacher candidate (in mathematics) noted toward the end of the semester:

As I look back over the semester I realized how much I didn’t know about literacy. As someone who will be a math teacher, I was one of those people who thought that literacy was mainly taught in English classes. However, I have learned the literacy is much more than reading and writing . . . The literacy timeline is a concept I have come back to a few times this semester. As a teacher I need to remember that each student is unique and will experience different ups and downs pertaining to literacy. It is my job to adapt, to create as many positive literacy experiences as possible.

In contrast, some candidates are not able to resolve the contradictions represented by their project components. In Sam’s case, he was not able to find a way to address the complexities of literacy development and practice within the confines of the LHP. Rather, at this point in the semester, the project raised more complex notions of literacy than he was capable of dealing with and resulted in a stronger stance towards his disciplinary identity as an English teacher. Sam was not yet ready to call into question the dominant ideologies of the teacher as one transmitting knowledge and battling the ‘mind parasites’ in the world that infect adolescents. As he viewed it, his role as a teacher at this point in his professional development was to bring students into the rarified world of the literary arts.

Samantha’s LHP represents the levels of depth and complexity that many students in our courses are capable of achieving in their LHP’s. As a second career credential candidate, Samantha had a well-developed sense of her identity as a student, mother, teacher and artist. Thus, her project components represented multiple yet cohesive literacies that mutually informed one another and provided the basis for a fully enculturated literate individual. Her work demonstrated how this project enabled candidates to make transparent the socio-cultural and ideological forces that enable and constrain literate development.
As a pedagogical tool, the LHP has the potential to promote credential candidates’ learning in ways that address their resistance to many of the goals of the content literacy course. It functions to broaden pre-service teachers’ definitions of literacy and the role that it will play in their respective classrooms. As another math credential candidate from a recent semester wrote in a debrief of the project:

As a recent teacher candidate in mathematics noted, . . . in this class I have broadened my view [of literacy] from the beginning of the semester. The dictionary definition of the word – able to read and write, having knowledge of literature, writing, etc. and having an education does not describe the word enough.

Note
1. All names are pseudonyms.

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References
