

The Role of Identities in the Process of Knowledge Construction in CSCL settings

Murat Oztok, OISE / University of Toronto, 252 Bloor Street West, Toronto, Canada,
murat.oztok@utoronto.ca

Abstract: The learning scientists have argued that knowledge construction is a process of collective thinking within a learning community. Thus, knowledge construction is simultaneously an individual and social process that requires group cognition and situated meanings. However, while the CSCL researchers have investigated the situated knowledge in the process of collective thinking, little work has been done to fully understand how different identity categories play a role in sense-making and knowledge construction. This research, therefore, explored in detail how individuals utilize their different identity categories to make situated meanings when they collaborate with each other in the process of knowledge construction in online learning environments. Results demonstrated that individuals do not experience online learning through only one aspect of their identity but rather that learning experiences evoke different elements of their identities that are used continuously and simultaneously when they collaborate with each other at the every phase of knowledge construction.

Introduction

The learning sciences literature has long argued that learning is simultaneously an individual, social, and cultural process that involves collaboration and active participation in learning communities (Brown, Collins, & Duguid, 1989). Exploring active participation in online learning communities, CSCL literature suggests that there is a close relationship between collaboration and identity development (Ke, Chávez, Causarano, & Causarano, 2011). Socio-cultural learning theories explains this link by arguing that learning is about practices and activities in cultural worlds (Holland, Lachicotte Jr, Skinner, & Cain, 2001), where identities are central for participation (Gutiérrez & Rogoff, 2003). Analyzing relationships among practice, identity, and learning, scholars have conceptualized learning as an aspect of practice-based identity and defined identity as a result of learning through practice (Lave & Wenger, 1991). Such an understanding is particularly important since it “reconceptualizes learning from an in-the-head phenomenon to a matter of engagement, participation, and membership in a community” (Nasir & Cooks, 2009 p. 42). Thus, building upon socio-cultural learning theories, learning scientists have argued that learning is tied to the context (Cole, 1996) and that identity is one concept through which individuals make sense of their context (Wenger, 1998).

However, while CSCL research has deemed identity as an important concept in understanding how students engage with each other (Oztok, 2012), little work has been done to fully understand how different identity categories (e.g., race, gender, class, profession, or ethnicity) play a role in sense-making and knowledge construction. Previous research has understudied how students make sense of the subject-matter in relation to how they perceive themselves and their peers as they involve in the process of knowledge construction. Specifically, understanding the role of identities in the process of knowledge construction is still a major challenge for the learning sciences (Nasir & Hand, 2008) and CSCL research (Ke et al., 2011). This research, therefore, explores how individuals utilize their different identity categories to make situated meanings when they collaborate with each other in the process of knowledge construction in online learning environments.

Background and Rationale

Since knowledge construction is not a mere exchange of information but requires coherence and convergence among participants (Suthers, 2006), individuals need to make situated meanings in collaborative learning practices (Stahl, 2010). Considering the importance of sense-making for collaboration (Scardamalia & Bereiter, 1994) and knowledge construction (Stahl & Hesse, 2009), I argue that by exploring how identities are manifested in threads and how students utilize their identities to cultivate, share, discuss, and negotiate meanings, CSCL research can understand the processes by which individuals make situated meanings and construct knowledge in online learning environments. Indeed, employing the concept of identity for exploring how individuals make sense of the context invites a discussion about the meaning of the concept and its appropriateness as a theoretical framework to explore knowledge construction.

The concept of identity has always been at the center for many political, philosophical, economic, or academic debates. Academically, it has been deemed vital by many disciplines; yet, identity means different things to different scholars from different disciplines. Indeed, notions of identity are as diverse as the bodies of literature that have taken up the concept. Fields as diverse as psychology, sociology, humanities, and philosophy offer discipline-specific conceptualizations and definitions of identity. While other definitions exist, the field of

education is mostly influenced by psychological and sociological conceptualizations and much of the debate around identity in educational research derives from the tensions between these two perspectives (Buckingham, 2008). Psychological perspectives are built upon the idea that identity is a single state that one achieves over time and development (Erikson, 1968). According to this perspective, individuals have a coherent and authentic self that is internally consistent and inexorable. Currently, socio-culturally informed learning scientists have begun to move from this normative perspective and have suggested that identity is a complex and continuously shifting phenomenon and that it is context-based and linked to the learning practices (Esmonde, 2009).

Socio-cultural learning theories conceptualize identities as enactments within figured worlds (Holland et al., 2001), where individuals' practices are constrained or enabled through sets of norms (Nasir & Cooks, 2009): "[w]ithin these figured worlds, identity is constructed as individuals both act with agency in authoring themselves and are acted upon by social others as they are positioned ..." (p. 41). In this sense, identities are subject positions readily available for individuals and these identities are performed or enacted as individuals engage with each other. That is, identity is something people perform or practice in collaborative learning situations, as opposed to something people have. However, identity enactments are not neutral or straightforward; rather, they are guided through social, cultural, political, or historical symbols (Jenkins, 2008): "[identity do] not, and cannot, make people do anything; it is, rather, people who make and do identity, for their own reasons and purposes" (p.9). Thus, identity is conceptualized as simultaneously an individual and a social practice.

Employing the concept of identity as a theoretical lens to analyze threaded discussions can provide means for understanding how individuals perceive themselves in relation to others when they engage in collaborative learning practices. Particularly, depending on the context in which individuals collaborate, they choose to saliently use different identities (Wenger, 1998), through which they analyze their previous experiences (Holland et al., 2001) while they make sense of the present subject-matter (Nasir & Cooks, 2009). Individuals' identities, in this sense, reflect sets of meanings derived from negotiations, agreements, or disagreements that occur in the process of collaboration (Gutiérrez & Rogoff, 2003). Indeed, the CSCL research has already shown that students engage in shared knowledge-building discussions when they share their experiences with one other and build on each others' thoughts to interpret the learning materials (Arvaja, 2012). Therefore, by analyzing how individuals enact their identities in threaded discussions, one can understand the cognitive processes by which collaboration enables knowledge construction, meaning-making (Stahl, 2010) and shared understanding (Suthers, 2006). Thus, CSCL research should explore how identities play a role in cultivation, distribution, and construction of knowledge.

Current Research

This study explores how individuals manifest and utilize different aspects of their identities (i.e. gender, profession, or ethnicity) in the process of knowledge construction through multiple case studies (Creswell, 2006). In order to purposefully select cases, we (the author and his colleagues) analyzed the participants' biography pages (or profile pages, which allow students to create their identities and their online existence by introducing themselves with their own words along with their picture or avatar) and identified two individuals who can maximize the exploration of the phenomenon. For deciding the cases, we paid considerable attention to choosing individuals who utilize a number of identities. For each of the two case studies, we created an online persona by analyzing their profile pages and examined how these online personas are enacted when individuals engage with each other in a collaborative knowledge construction process.

Data is collected from a fully online graduate education course (N=13) offered at a large North-American research university that took place in Winter 2012. The course comprised twelve modules, each corresponding to one week, in which students discussed weekly readings. Each week, one or two students acted as moderators. They facilitated discussion throughout the week, kept discussions on track, and finally offered a summary of the week's issues, providing opportunities for sustained discourse, increased interaction, and rich discussions.

Analyzing Knowledge Construction and Identity Manifestations

In order to understand how individuals make sense of themselves, of their peers, and of the subject matter through their identities, we (the author and his colleagues) examined the online discussions through "interaction analysis model" (inter-rater consistency is .82), identified threads with knowledge construction, and analyzed identity manifestations in those threads in relation to knowledge construction. For this research, threads are analyzed semantically since semantic analysis "more accurately represents each groups' development of ideas over time" (Wise & Chiu, 2011, p. 458).

Interaction analysis model (Gunawardena, Lowe, & Anderson, 1997) is employed for examining the process of knowledge construction. It is based on the socio-cultural learning theories, theoretically and empirically grounded, specifically developed for analyzing asynchronous threaded discussions, and have already been employed by CSCL researchers (e.g., Ke et al., 2011; Wise & Chiu, 2011). The model

conceptualizes knowledge construction as a process of negotiation in which meanings, perspectives, and perceptions play roles. While not strictly sequential, interaction analysis model suggests five phases for knowledge construction to occur: 1) sharing and comparing of information, 2) discovery and exploration of dissonance or inconsistency among participants, 3) negotiation of meaning of knowledge co-construction, 4) testing and modification, and 5) phrasing of agreement and applications of newly constructed meaning. According to this model, interactions begin by sharing and elaborating ideas (phase 1), leading individuals to identify potential conflicts among each other (phase 2). Individuals build on these conflicts by negotiating meanings and perspectives (phase 3); then, they revise their ideas and perceptions (phase 4), allowing individuals apply their new knowledge (phase 5).

Since individuals do not exist as physical beings but enact their identities through language-in-use in online learning environments, discourse analysis is employed to explore how language-in-use mediates between identities, meanings, and practices. Discourse analysis reveals how identities regulate particular forms of meanings and social experiences by deconstructing the relationships among saying, doing, and being in the language-in-use (Gee, 2011):

If I say anything to you, you cannot really understand it fully if you do not know what I am trying to do and who I am trying to be by saying it. To understand anything fully, you need to know who is saying it and what the person saying it is trying to do. (p. 2)

According to this perspective, language-in-use not only gets its meaning from the context in which it is used but also it creates, sustains, or transforms meanings, negotiations, and practices in the context. Thus, it is an essential tool to critically analyze the otherwise hidden intersections between identity enactments and participants' pedagogical practices in technologically-mediated environments.

In order to understand how identities are manifested in language-in-use, I employ seven interrelated building tasks to analyze the discourse (Gee, 2011): (1) Significance, (2) Practices, (3) Identities, (4) Relationships, (5) Politics, (6) Connections, and (7) Sign systems and Knowledge. Specifically, we semantically analyzed each note in a thread and interpreted the meanings and identities in that particular note through building tasks in order to explain how individuals choose to enact particular identities and how such identities affect their engagements with each other. Indeed, while all building tasks may not be readily available in all text and while some building tasks may be more salient than others, each building task can provide means for understanding how individuals move through and within the online learning environment. Therefore we used the building tasks in relation to each other and triangulated between them.

Furthermore, it is important to note that I do not conceptualize identity manifestations in a Cartesian sense (that identities are either present or absent in a particular note) but rather argue that identities exist in various forms and are almost always so well blended into practices and meanings. That is, language-in-use not only conveys academic knowledge but also communicates bits of identity manifestations; either explicitly (i.e. As an artist, I think ...) or implicitly (i.e. I don't agree with you because I had problems with my Grade 7 class, ...)

Results

We identified 16 threads in which knowledge construction happened while students collaborated with each other. Of those 16 threads, we identified 9 threads in which our both case studies engaged with each other. Here I present 3 instances (due to space limitations) of how the two cases utilize their identities in those knowledge-construction threads.

Meet Michelle and Xiaomei. Michelle is a part-time PhD student. As a White-Canadian, she lives in Beijing with her daughter, where she works as an English lecturer at a university. She defines herself as an activist and hopes to employ critical pedagogy in her dissertation. Xiaomei is from China. She is a full-time PhD student and teaching assistant at her university. She got her master's degree from an English university, where she taught English as a Second Language courses. Her research interest is teaching English with digital media.

In week 2, class discussed the pedagogical potentials of web 2.0 and digital media. While Michelle has many identities to choose from, she enacted her "political-activist" identity and drew attention to political issues as she engaged with subject-matter. Michelle deconstructed the social and political aspects of using digital media in schools. This is, indeed, what Gunawardena et al. (1997) identify as "phase 1: sharing and comparing of information" in their interaction analysis model. Then, Michelle challenged the perspectives offered in weekly readings by articulating her concerns about the tyranny that social media creates (phase 3) and, in later notes, invited her peers to consider the motives behind the knowledge produced in social media (phase 4). Her peers built on these ideas by noting the importance of social, political, and historical structures and power relations in the reproduction of knowledge (phase 5). In response to her peers, Michelle further analyzed how mainstream newspapers influence both public opinion and public policies regarding schooling (phase 5). In the same threaded discussion, however, Xiaomei enacted her "teacher" identity and drew from her experiences as a teacher to make sense of the weekly readings (phase 1). Specifically, Xiaomei embedded her disagreement with

her peers (that cell phone use should be restricted for students) in her teaching experience (phase 3). She explained how she lets her students use a dictionary application on their cell phones for writing courses, suggesting such technologies are useful in class (phase 4). Xiaomei further posited that although a few students surfed on the internet instead of studying, her experience also suggests that mobile phones have a pedagogical value (phase 3). She concluded that, “as teachers, we need to be not only innovative but also motivate our students to use technology for teaching and learning” (phase 5). In this threaded discussion, while Michelle enacted her identity as an activist, Xiaomei enacted her teacher identity. However, either an activist or teacher, they both interpreted the subject-matter according to their own perspectives or backgrounds and in return their peers perceived them as how they enacted their identities in that particular thread. As this example demonstrates, identities can provide situated-meanings by which individuals can make sense of their learning practices.

The topic in week 4 was teaching and learning in Computer-Mediated-Communication (CMC) and social-networking sites. In a thread about communication types, Michelle drew from her teaching and living experience in China for more than a decade and suggested that asynchronous communication suits her students best (phase 1). In another note, Michelle disagreed with a claim in the readings (that since Chinese students are shy, they prefer not to participate in discussions; thus, they underachieve compared to their Western counterparts) (phase 2). She further argued that while her Chinese students are shy, online courses suit them because they are comfortable expressing their thoughts and opinions (phase 3). She concluded that, contrary to the readings, her Chinese students are successful in online courses (phase 3). In a later note, one of her peers asked Michelle whether she would think differently if her students were asked to use wikis (since wiki-based web applications allow individuals to edit each others work) instead of asynchronous threaded discussions (phase 4). Responding to this note, Michelle reappraised her thoughts (phase 3) and considered the different pedagogical values that different asynchronous communication types have (phase 5). In the same threaded discussions, Xiaomei directly engaged with Michelle enacting her Chinese and teacher identity while drawing from her experience in England and Canada. She articulated her perspective about communication types (phase 1) and particularly provided her insights about editing someone else’s work in a wiki-based application (phase 2). Xiaomei indicated that the idea of changing another’s work without permission is intimidating since she believes that “it is like saying that you think that what you have to say is more important or more valid than what someone else has to say” (phase 1). She suggested that when she was teaching in China no one edited anyone’s work to maintain the group harmony; thus, she saw no pedagogical value in collaborative wiki-based web applications (phase 2). Therefore, based on her experience in China, Xiaomei disagreed with her peers as well as with the weekly readings (phase 3). However, in a later note, she elaborated on her teaching experience in England and suggested that wiki-based applications has certain pedagogical value since her students in England were able to work productively and comfortably in wiki-based assignments (phase 4). As it is exemplified in this thread, Michelle and Xiaomei used their different identity traits in a single thread: they both enacted their teacher identity in interpreting the weekly readings; however, while Michelle further developed her knowledge as a Western person living in China, Xiaomei further enhanced her understanding building on her experience as a Chinese person living in a Western country.

In week 8, the class discussed the social and cultural issues of teaching and learning in CMC settings. In a thread about authenticity of learning context, Michelle enacted her maternal identity. Even though such an identity was not salient in Michelle’s other notes, being a mother was one of the identity traits to shape her experience in this particular collaborative process. Challenging one of her peers’ perspective, Michelle explained how she actively volunteers for her kids’ school (and according to her, it is not common practice in China) and argued that a authentic learning context requires collaboration between parents and teachers (phase 3). Another class-mate (also enacting maternal identity) built on Michelle’s perspective by further elaborating her experience with her kid’s school and suggested that the weekly readings offer an idealized understanding of what authenticity is and unfortunately do not reflect real-life situations (phase 4). Summarizing the weekly discussion and affirming her classmates (phase 5), Michelle synthesized weekly readings and noted that “most of us have the best of intentions as teachers and parents, but as you put it so well, life... happens!”. In the same thread, Xiaomei enacted her artist identity to make sense of the weekly readings. She agreed with her peers and further underscored the importance of social and cultural issues in creating an authentic learning context by providing examples from her learning art experience (phase 5). Specifically, she analyzed the role of culturally-relevant materials in learning local arts and explained how such materials helped her as an artist (phase 4). According to Xiaomei, as an artist, “authenticity is about individuals themselves rather than the material itself or [its] geographical situation”. Furthermore, to some extent, Xiaomei enacted her student identity (though not a unique identity trait, it was saliently used in this particular thread). Summarizing her learning experience in China, Xiaomei described she felt disconnected when her arts teacher used Western paintings as course material and disengaged because the material was not meaningful enough (phase 4). She also reflected on her current learning experience in Canada and suggested that it did not differ from China in terms of authenticity (phase 1). As this instance illustrates, while Michelle and Xiaomei had similar perspectives on the importance of

authenticity for learning, they enacted two different identity traits: Michelle is a mother and Xiaomei is an artist. Furthermore, this instance shows that individuals not only utilize their basic identity categories (i.e. ethnicity or profession) but also draw from their broader out-of-classroom identities when they collaborate with each other in the process of knowledge construction.

Discussion

Three instances provided in this paper represent three different and unique ways that identities play a role in collaboration and knowledge construction. In the first example, Michelle and Xiaomei utilized their identities to make situated meanings in their interpretations of the weekly readings. Furthermore, when Michelle and Xiaomei enacted certain identities, their peers accepted them as such and engaged with them accordingly. In the second example, both Michelle and Xiaomei enacted multiple identities at once; that is, while Michelle was a teacher and a Westerner living in China, Xiaomei was a teacher and a Chinese person living in Western world. In the third example, Michelle and Xiaomei had similar perspectives and agreed with each other's conceptualizations, they enacted different identities; thus, they explained their perspectives from different point of views.

Taken together, these three instances can provide initial understanding for the role that identities play in collaborative learning activities. For example, this research shows that individuals bring their various identities into the collaborative learning processes and utilize their different identities under different circumstances for different reasons. That is, individuals do not experience online learning through only one aspect of their identity but rather that learning experiences evoke different elements of their identities (Buckingham, 2008) that are used continuously and simultaneously (Gee, 2000) as they collaborate with each other. However, despite the variety of identity traits being used, in all these situations, identities play a canonical role: they provide situated meanings for individuals to draw from their experiences in order to make sense of their learning experiences. Depending on the context in which they participate, they choose to saliently use different identities, through which they analyze their previous experiences while they make sense of the present subject matter. Thus, they have different learning experiences and outcomes since learning is an aspect of practice-based identity (Nasir & Cooks, 2009). Identities, in this sense, become socio-cultural, historical, and cognitive artifacts by which individuals legitimize their learning experiences (Lave & Wenger, 1991) within their communities of practice (Wenger, 1998). This finding is align with the learning sciences literature in suggesting that:

identities allows a way to understand the intrapersonal dimensions of learning and to capture the ways that learning settings can support or fail to support not just the acquisition of skills and knowledge but a deep sense of connection with participants. This connection is more than just membership or belonging. In this way, participation in learning settings extends beyond learning (though learning is certainly critical) to the very definition of who one is and who one is in the process of becoming through participation. (Nasir & Hand, 2008, p. 176)

While this research affirms the existing literature, it further explains how identities create, support, and sustain the “interpersonal dimension of learning” by providing examples of how individuals make sense of each other and of their learning in relation to their identities.

This research also provides initial understanding for the role of identities in the process of knowledge construction. The current CSCL research (e.g., Gunawardena et al., 1997; Wise & Chiu, 2011) suggests that knowledge construction begins with basic interactions that facilitate the sharing of individuals' experiences. Once the foundation for common ground is established, meaningful dialogue and collective reflection takes place. Through the process of negotiations, individuals provide detailed analysis or criticism, drawing from their experiences to construct new knowledge. When new knowledge is constructed, individuals enhance their insights by developing an understanding that enables them to reconsider their understandings. “This reflects the cohesive conception of collaborative learning according to which learning through discussions can be conceptualized as developing, challenging, and re-conceptualizing ideas” (Arvaja, 2012, p. 99). While this research affirms the current literature, it further explains that identities are manifested at every phase of knowledge construction; however, they play a unique role in each different phase. For example, while identities can provide basic information about an individual in phase 1, they can they provide further detailed information about individuals and their perceptions in phase 2. In phase 3, individuals rely on their identities to challenge current perspectives offered by their peers or by weekly readings. While individuals analyze the learning material or the subject-matter in relation to their identities in phase 4, they explain what they learned from that particular discussion in relation to their experiences phase 5. In other words, individuals simply use their identities to articulate what their prior thoughts are in the early stages of knowledge construction. Then, they use their experiences to further develop or challenge the existing perspectives in middle stages of knowledge construction. Finally, in later stages, they find a common ground and reconsider their thoughts and further explain what they learned in relation to their identities.

Conclusion

This research is built upon the idea that learning is simultaneously an individual and social process that involves collaborative practices within learning communities (Brown et al., 1989). One approach to understand how social practices mediate cognitive activity (Cole, 1996) is to understand the role of identities in the process of knowledge construction. Indeed, identities provide opportunities for individuals to make situated meanings (Gutiérrez & Rogoff, 2003; Lave & Wenger, 1991) and incorporate aspects of themselves into the learning practice (Nasir & Cooks, 2009; Wenger, 1998). Analyzing in detail and demonstrating the role identities play in collaborative learning activities, this research suggests that identities provide more dialogic and reflective interaction; therefore, identities are not tangential to the collaborative learning practice but rather a central part of it.

The learning scientists have long argued that collaborative learning is a process of collective thinking (Stahl, 2006) and that it is manifested in and by dialogue (Sawyer, 2006). The CSCL researchers, therefore, have focused on the situated knowledge in the process of collective thinking and contended that the development of well-articulated identities in online learning situations can actually build a greater sociology of learning (Ke et al., 2011). Indeed, using individuals' own experiences as a source of learning "can support student agency... by giving opportunities to make personal sense through personal lives" to learning activities (Arvaja, 2012, p. 86). While this research affirms the current perspectives, it further explains in detail how identities play a role in each and every stage of collaborative knowledge construction processes.

Along with its epistemological contributions, this research also provides conceptual understandings for the CSCL research. Studying knowledge construction as a dialog distributed among individuals and exploring the collective discourse through individuals' identities go beyond focusing on cognitive artifacts and capture the socio-cultural and historical nature of situated meaning-making. By conceptualizing knowledge construction as a socio-cultural and historical process can provide opportunities for understanding knowledge construction not as limited in temporal time-scales (e.g., Arvaja, 2012; Mercer, 2008) but as a long-term identity based collaborative process.

The findings should be considered in relation to the limitations of the study. First, while this study provides important guidance toward understanding the role of identities in the process of knowledge construction, it must be noted that this study is just one preliminary investigation. Results are based on one course and two case studies. Thus, more research is needed in order to make stronger claims about such relationships between identity and knowledge construction. Second, identities in this study are not analyzed in relation to the concept of power. Indeed, including the concept of power and broader societal structures in analyzing identity can provide better insights about the constraints of collaborative work. Furthermore, in this study, identities are stripped from their social, political, and historical meanings since the aim of the research was not to provide hidden curriculum of collaborative learning practices but rather was to analyze the ways in which individuals utilize their identities for their learning. Thus, a research with more critical agenda should consider such meanings in its analysis.

Overall, this research suggests that identities are in the center of collaborative knowledge construction. As the theme of CSCL 2013 argues, this research supports the current understanding but further explores the phenomenon at different levels. However, more research is needed to confirm or challenge the findings of this research in order to provide better and stronger understating of the role of identities in the process of knowledge construction.

References

- Arvaja, M. (2012). Personal and shared experiences as resources for meaning making in a philosophy of science course. *International Journal of Computer-Supported Collaborative Learning*, 7(1), 85–108. doi:10.1007/s11412-011-9137-5
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational researcher*, 18(1), 32–42.
- Buckingham, D. (2008). Introducing Identity. In D. Buckingham (Ed.), *Youth, Identity, and Digital Media* (pp. 1–22). Cambridge, MA: MIT Press Journals.
- Cole, M. (1996). *Cultural psychology: a once and future discipline*. Cambridge, MA: Harvard University Press.
- Creswell, J. W. (2006). *Qualitative Inquiry and Research Design: Choosing among Five Approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Erikson, E. H. (1968). *Identity: Youth and Crisis*. New York, NY: Norton.
- Esmonde, I. (2009). Mathematics Learning in Groups: Analyzing Equity in Two Cooperative Activity Structures. *Journal of the Learning Sciences*, 18(2), 247–284. doi:10.1080/10508400902797958
- Gee, J. P. (2000). Chapter 3: Identity as an Analytic Lens for Research in Education. *Review of Research in Education*, 25(1), 99–125. doi:10.3102/0091732X025001099
- Gee, J. P. (2011). *An Introduction to Discourse Analysis: Theory and Method* (3rd ed.). New York, NY: Routledge.

- Gunawardena, C. N., Lowe, C. A., & Anderson, T. (1997). Analysis Of A Global Online Debate And The Development Of An Interaction Analysis Model For Examining Social Construction Of Knowledge In Computer Conferencing. *Journal of Educational Computing Research*, 17(4), 397–431.
- Gutiérrez, K. D., & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32(5), 19–25.
- Holland, D., Jr Lachicotte, W., Skinner, D., & Cain, C. (2001). *Identity and Agency in Cultural Worlds*. Cambridge, MA: Harvard University Press.
- Jenkins, R. (2008). *Social Identity* (3rd ed.). New York, NY: Taylor & Francis.
- Ke, F., Chávez, A. F., Causarano, P.-N. L., & Causarano, A. (2011). Identity presence and knowledge building: Joint emergence in online learning environments? *International Journal of Computer-Supported Collaborative Learning*, 6(3), 349–370. doi:10.1007/s11412-011-9114-z
- Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*. New York, NY: Cambridge University Press.
- Mercer, N. (2008). The Seeds of Time: Why Classroom Dialogue Needs a Temporal Analysis. *Journal of the Learning Sciences*, 17(1), 33–59. doi:10.1080/10508400701793182
- Nasir, N. S., & Cooks, J. (2009). Becoming a Hurdler: How Learning Settings Afford Identities. *Anthropology & Education Quarterly*, 40(1), 41–61. doi:10.1111/j.1548-1492.2009.01027.x
- Nasir, N. S., & Hand, V. (2008). From the Court to the Classroom: Opportunities for Engagement, Learning, and Identity in Basketball and Classroom Mathematics. *Journal of the Learning Sciences*, 17(2), 143–179. doi:10.1080/10508400801986108
- Oztok, M. (2012). Tacit knowledge in online learning: community, identity, and social capital. *Technology, Pedagogy and Education*, 1–16. doi:10.1080/1475939X.2012.720414
- Sawyer, R. K. (Ed.). (2006). *The Cambridge handbook of the learning sciences*. New York: Cambridge University Press.
- Scardamalia, M., & Bereiter, C. (1994). Computer Support for Knowledge-Building Communities. *Journal of the Learning Sciences*, 3(3), 265–283. doi:10.1207/s15327809jls0303_3
- Stahl, G. (2006). *Group Cognition: Computer Support for Building Collaborative Knowledge*. Cambridge, MA: The MIT Press.
- Stahl, G. (2010). Guiding group cognition in CSCL. *International Journal of Computer-Supported Collaborative Learning*, 5(3), 255–258. doi:10.1007/s11412-010-9091-7
- Stahl, G., & Hesse, F. (2009). Paradigms of shared knowledge. *International Journal of Computer-Supported Collaborative Learning*, 4(4), 365–369. doi:10.1007/s11412-009-9075-7
- Suthers, D. D. (2006). Technology affordances for intersubjective meaning making: A research agenda for CSCL. *International Journal of Computer-Supported Collaborative Learning*, 1(3), 315–337. doi:10.1007/s11412-006-9660-y
- Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, UK: Cambridge University Press.
- Wise, A., & Chiu, M. (2011). Analyzing temporal patterns of knowledge construction in a role-based online discussion. *International Journal of Computer-Supported Collaborative Learning*, 6(3), 445–470. doi:10.1007/s11412-011-9120-1