THE EPISTEMOGRAPHY OF JOURNALISM 335: COMPLEXITY IN DEVELOPING JOURNALISTIC EXPERTISE

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Abstract: As bloggers and mobile phone eye-witnesses increasingly supplement the 'news,' it is more important than ever to understand how professional journalists develop their expertise. In this paper, we examine an intermediate level reporting practicum course to explore the learning processes therein. Using a new method called Epistemic Network Analysis, we also explore emergent relationships within developing journalistic expertise. Understanding these relationships should be useful for journalism education as well as the design of research on learning environments.

Introduction

Increasingly, bloggers and mobile phone eye-witnesses seem to provide the public with all the news that's fit to see. At the same time seemingly each year, reports (McDonnell et al., 2008) document the decline in newspaper readership, speculating that for the few people who still care about the news, Google and other online services are increasingly the destinations of choice.

We argue that despite commercial pressures and in light of the explosion of online information technologies, it is more important than ever to understand how professional journalists develop their expertise. It matters because that expertise is focused on the work Kovach and Rosenstiel (2001) describe as journalism's primary purpose: "to provide citizens with information," gathered and produced through "a discipline of verification," necessary "to be free and self-governing."

In this paper, we examine one of the ways journalists develop expertise through an ethnographic study of Journalism 335, an intermediate level reporting practicum course at a large Midwestern university. The main goal of the study was to explore the learning processes experienced by the students in the course. Using a new method adapted from social network analysis called epistemic network analysis (Shaffer et al., 2009), we also explore emergent relationships within developing journalistic expertise. Understanding these relationships should be useful for journalism education as well as the design of research on learning environments.

Theory

In the professional practicum, novice professionals engage in simulations of professional work. Guided by reflective interactions with more experienced mentors, they "learn by doing," developing the "complex ensemble of analytic thinking, skillful practice, and wise judgment upon which each profession rests" (Sullivan, 2005, p.195). As Schon (Schon, 1983, 1987) argues, for most professions this "complex ensemble" is developed in capstone courses and/or professional practicum experiences.

Shaffer (2004, 2005a), extending Schon, calls this ensemble an *epistemic frame*, emphasizing that what makes professional expertise uniquely powerful are the relationships between the elements within the ensemble. In other words, the particular set of knowledge and skills that is the focus of most "hands-on" approaches is interconnected with a particular set of values and identities, forming a coherent and integrated perspective that professionals use when making professional judgments in the world. Thus, a professional journalist has mastered a body of writing and reporting knowledge and skills, sees herself and is seen by others as a journalist, and frames her efforts according to a set of journalistic values and norms.

Shaffer (2005b) argues that the practicum is designed to help develop this professional epistemic frame through its participant structures, or the "recurrent patterns of involvement that structure a particular kind of situation within a given practice." In his study of Journalism 828, an advanced reporting capstone course, Shaffer (2005b) explores three such participant structures: interactive copy editing of stories with peers and the professor, news meetings in which participants shared progress and received feedback on their reporting, and war stories from the professor or guest journalists providing lessons learned from past experience. Each participant structure "links identity and practice with particular knowledge and values of a domain" (Shaffer, 2005b) for one of three professional abilities: writing to formula, writing for story, and writing as a watchdog.

The ability to write to formula reflects the highly prescribed nature of journalistic writing (Shaffer, 2005b). From capitalization and punctuation rules in the Associated Press (AP) style guide to innumerable how-to guides for story organization and structure, being able to appropriately use formula is critically important (Murray, 2000; Edgerton, 1997). But this skill is also bound with knowing a particular set of principles concerning appropriate usage and application of this skill. It also involves adopting a particular kind of voice, or

identity, within the writing as a way of asserting certain values of neutrality, objectivity, if not truth (Kovach & Rosenstiel, 2001; Stewart, 1998).

Writing for story, on the other hand, focuses on the practices of reporting and developing the particulars of stories in order to realize the broader significance of specific characters and details (Shaffer, 2005b; Franklin, 1986). It employs knowledge about various reporting techniques and tools, skill in their use to capture key details, as well as knowledge and skill with narrative techniques to most effectively use those details in stories. It emphasizes the reporter's identity as a "professional pest," tenaciously seeking out information, and the value of letting the voices of real people carry the story.

Finally, writing as a watchdog organizes the various elements involved in the journalist's role as "watchdog for the public trust" (Shaffer, 2005b). This involves developing skills to "monitor power and offer voice to the voiceless" (Kovach and Rosenstiel, 2001) through knowledge of the normal activities of institutions and individuals, both powerful and humble, and it is guided by the profession's ethical value of public accountability.

Each of these abilities thus constitutes its own "complex ensemble" within the broader professional frame of journalistic expertise. They constitute, in other words, epistemic *sub-frames* in which particular kinds of knowledge, skill, identity, values and epistemology are bound together, and which should also feature linkages to other sub-frames as part of an overall integrated epistemic frame.

Shaffer (2005b) argues that each ability is developed separately and then integrated with the others through the epistemic discourse of the professor, as for example in discussions of how the different practices constitute "smart reporting." In this study, we explore an alternative possibility, that these abilities may each exhibit different patterns of internal development and integration with the others, and we describe a technique for quantifying these patterns called the Integration-Cohesion index below.

Here, we extend Shaffer's study by examining a similar journalism education context to investigate whether these three sub-frames manifest within a transitional practicum course. We then use epistemic network analysis to examine how these sub-frames become integrated into a unified professional perspective. I argue that epistemic network analysis can provide a quantitative measure of the complex linkages within and between ensembles of knowing, being, acting and valuing that comprise a professional perspective. Finally, I discuss how the results of this study may contribute to the design of learning environments.

Methods

Setting

As part of the University's School of Journalism and Mass Communication "Reporting" track, J335 occupies a key transitional role between highly structured introductory courses and more open advanced writing and reporting courses, thus providing an opportunity to study an early practicum environment.

J335 was a four-credit course that met twice a week for 75 minutes throughout a 15-week semester. Students also met outside of class in small groups while working on two different group reporting projects, the first occurring midway through the semester and the second occurring at the end of the semester. The specific sequence of assignments is described in the results section.

Participants

The class was comprised of 13 students. There were six seniors and seven juniors, all journalism majors. No other demographic information was collected about the students. The professor, John, is a prize-winning journalist. The class also had five guest speakers, each of whom was a reporter, editor, or publisher at local or regional newspapers or radio organizations.

Data collection

Data was collected about the course in several ways. Twenty six of the 30 class meetings were observed. During the semester, students worked on two team reporting projects, and one group was observed for the second project. This team included four seniors and one junior. Copies of all e-mail messages sent by the professor to the class and also of messages exchanged among members of the project group were collected and analyzed. Copies of all story assignments including both the story text and the professor's feedback were also collected and analyzed.

Classroom data was collected in digital audio recordings and supplemented with field notes. Recordings were transcribed to provide a detailed record of interactions, and field notes were used to capture meaningful non-verbal aspects of the context and supplement the transcripts. Out-of-class group meetings were documented via field notes.

Data analysis

The data was segmented into interactive units, which were defined as strips of activity with a consistent interactional structure and topical focus. The boundary between strips was marked by either a change in topic or a change in interactional structure. In other words, when either the focal point of discourse or the social arrangement changed, one unit ended and another began. For in-line story feedback, comments targeting the same passages in a story were treated as occurring within a single unit while comments targeting different parts of a story were treated as occurring in separate interactive units. Specific examples of classroom interactive units are provided below in the results section, but in the class the transition was clear and often explicitly marked by professor comments like "Alright, we're going to change gears now and focus on [something new]."

Strips were coded for particular practices, knowledge, identities, and values of each of the three epistemic sub-frames of entry-level journalism identified previously: 1) writing to formula; 2) writing for story; and 3) writing as a watchdog. Following Shaffer (2005b), segments were coded for writing to formula when participants "discussed or referred explicitly to the methods of journalistic writing, including specific rules of journalistic style and forms or formulae of traditional journalism." Segments were coded for writing for story when participants "discussed or referred explicitly to journalism as a process of telling stories: stories about particular people encountering problems or conflict, the thoughts and actions of those people, and the specific events that happened and the unique details surrounding them." Segments were coded for writing as a watchdog when participants "discussed or referred explicitly to informing the public about important information and events, drawing attention to inequities, monitoring people and institutions in positions of power, or offering a voice to those without power." Table 1 provides a brief description and example for each category used in this analysis. If a strip represented more than one category, it was coded for all applicable categories.

Table 1: Coding scheme for observations and stories using the elements of an epistemic frame

Code	Description	Example
Writing to Formula		
Practices	Using journalistic writing formula	"A terrific job of drawing readers into the lead by setting the scene and mixing a little action with quotes."
Identity	Invisible authorship	"No need to state your conclusions in the ending. Just let your sources and docs carry the story."
Values	Writing with a neutral voice	"Interviews where you speak the most will probably be the most fun and the most worthless."
Knowledge	Knowledge of journalistic style	"Please review AP style; his title wouldn't be capitalized unless it immediately precedes his name."
Writing for Story		
Practices	Skills of smart reporting	"Couldn't we get the police report and search warrant return to give readers this powerful piece of info?"
Identity	Identity as a professional pest	"Part of your job is to assess credibility. It's not just to get that good quote, but it's to aggressively assess whether your source really knows the issue."
Values	Importance of providing an individual face	"Strive to use character development, description, narrative storytelling and use of key details and facts to grab readers' attention. For example, the story could focus on John Doe with a little additional reporting."
Knowledge	Knowledge of reporting tools	"There's more information more readily available to journalists today than ever in history. … The challenge is knowing which kinds of information to acquire and what to do with it."
Writing as a Watchdog		
Practices	Recognizing important patterns	"You found ways to bring readers inside the world of students worrying about being admitted …. And officials shared insights into how things are supposed to work."
Identity	Acting as a watchdog	"Would be even better with interviews with some of the candidates and election officials. Still, this is an important issue and I applaud you for tackling it."
Values	Importance of public accountability	"Given the recent revelations about this charity's financial woes, would be important to include a graph or two about that."
Knowledge	Knowledge of journalistic ethics	"a good attempt to use data. But wouldn't it be far more fair to compare the campus ethnic mix to that of the state and city rather than the U.S. as a whole?"

The result was a database of interactive units showing the presence of epistemic frame elements organized by epistemic sub-frames for entry-level journalism as well as the times during which they occurred. The relationships among these different components were then analyzed using epistemic network analysis.

Epistemic network analysis

Epistemic Network Analysis (ENA) adapts the framework of Social Network Analysis (SNA) for use with cognitive, rather than social, elements (Shaffer et al., 2009). As Shaffer argues, while SNA was developed to provide insight into the relationships between individuals and groups, it also provides a robust set of analytic tools for representing and studying networks of relationships in different domains. In ENA, these tools can be useful for understanding the kinds of linkages between and across elements taking place over time.

For this study, each epistemic frame element was considered to be a node in the epistemic network representing the interaction captured in each interaction unit or strip. Links were defined as the co-occurrence of two or more epistemic frame elements within any strip. Links between the elements of a single sub-frame were defined as intra-frame links, while links from elements in one sub-frame to those in another were defined as inter-frame links.

In order to capture the strength and changes of these links over time, we developed an Integration-Cohesion (IC) index. The IC index measures the degree to which a given sub-frame or sub-frame element emphasizes cohesion, by linking more often to elements in the same sub-frame, or integration, by linking more often to elements of other sub-frames (see Table 2).

Table 2: Intra-frame and Inter-frame linkage formulae

$$Intra - frame = \sum \sqrt{(L_{in})^2 \big/ (M_{in} - 1)}$$	$$Inter - frame_{sub1} = \sum \sqrt{(L_{sub1})^2 \big/ (M_{sub1})}$$
Equation 1: intra-frame linkage	Equation 2: inter-frame linkage

As provided in Equation 1, the strength of intra-frame linkage for any frame element was calculated by first summing the squared values of the links between that element and the other frame elements in that element's sub-frame (L_{in}), then dividing by the number of elements in the sub-frame (M_{in}) minus one, and finally taking the square root of the resulting number. As provided in Equation 2, the strength of inter-frame linkage for any frame element was similarly calculated by first summing the squared values of the links between a given frame element and the frame elements in one of the other sub-frames (L_{sub1}), then dividing by the number of elements in that other sub-frame (M_{sub1}), and finally taking the square root of the resulting number. The inter-frame calculation was repeated for each of the two sub-frames in which each frame element was not a member. These values were then summed at each successive interaction unit, producing one intra-frame and two inter-frame linkage values which reflected the accumulated link behavior to that point in time. Finally, the ICI was calculated as the difference between the inter-frame linkage value and the intra-frame linkage value at each successive interaction strip, with positive values indicating integration across two different sub-frames and negative values indicating cohesion within a single sub-frame.

Results

Journalism 335 (J335) was an intermediate reporting class designed, according to the syllabus, "to develop reporting and writing skills." As a pre-requisite for several advanced writing courses, this course provides "practical training in a wide range of reporting techniques, including interviewing, use of public records and research methods" to help students "learn how to become better watchdogs over powerful individuals and institutions and how to provide a voice for the voiceless."

Our observations of J335 are described below. We describe the epistemic sub-frames, *writing to formula*, *writing for story*, and *writing as a watchdog*, that emerged during the course. Then, for each sub-frame we describe the Integration-Cohesion index relationships that manifested between the sub-frames.

Epistemic sub-frames

Shaffer (2005b) argues that journalism reporting courses are organized around at least three "critical elements in the skill set of an entry-level journalist: the ability to write to formula, the ability to write for story, and the ability to write as a watchdog" (p12). In turn, each of these three abilities comprises an interlinked and

integrated set of particular journalistic knowledge, skill, value and identity relative to that ability. These three epistemic sub-frames played an important role in organizing the experiences of students in J335 as well.

Writing to formula

As the syllabus suggested, part of the emphasis in J335 is to help students develop journalistic writing skills. In one interactive unit during class, for example, John and the students discussed different kinds of leads and when it is appropriate to use them in stories. John asked, "Blind leads, where are they helpful?" Carol replied, when the news is "important but people don't know the organization." "Right. The issue is interesting, but the group isn't well known," John said,

> "Something should be going off in your mind right at that point saying, maybe this is the right structure for this kind of story. Now generally if you do go with the blind approach, that's going to also suggest to you very quickly usually within a couple sentences, you'd better circle back in and start filling this in with some of that detail you omitted from that first graph cause you don't want to leave your reader hanging too long."

In this brief excerpt, John showed the students a particular journalistic writing *practice*: when "the issue is interesting but the group isn't well known," a blind lead may be "the right structure for this kind of story." He cautioned about a potentially conflicting journalistic writing *value*: "you don't want to leave your reader hanging too long." And he used specific journalistic writing *knowledge* to suggest ways of avoiding this problem, by "circling back in and filling this in with some of that detail you omitted from that first graph." In other words, he articulated an interconnected sub-frame of values, practices and knowledge journalists use to *Write to Formula*.

Using epistemic network analysis (ENA) to quantitatively look across all of the strips of activity for the semester as shown in Figure 2, the *Writing to Formula* sub-frame demonstrated relatively strong internal cohesion, particularly for its epistemic frame knowledge and skill elements. In other words, interactions throughout the course worked to develop rich intra-connections within this sub-frame, focusing in particular on binding understanding of journalistic writing formula with skill at its use.
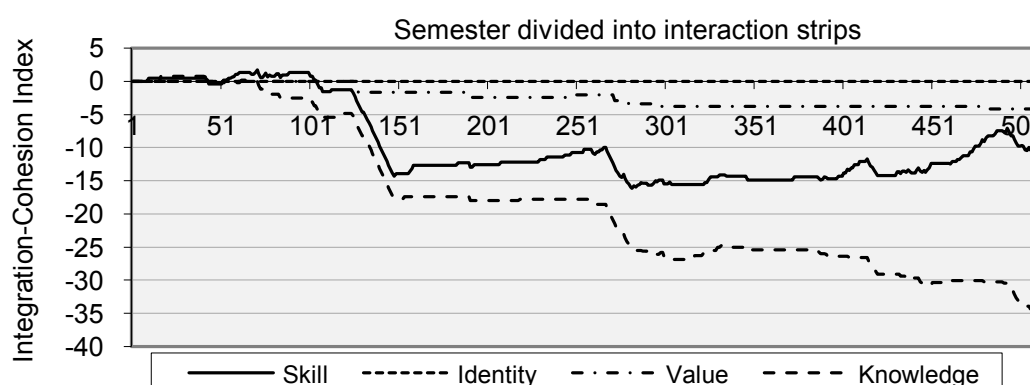

Figure 1. Writing to Formula Integration-Cohesion Index

Writing for story

As a reporting class, J335 was equally concerned with helping students learn to develop reporting skills. In an example from another class session later in the semester, John was reviewing Susan's education story in front of the class. "One thing I liked about this story," he commented

> "was instead of just saying it's a poor school district, there were some good supporting numbers. [Median household income for the town, median for North Carolina.] … There's also a description - the interior is shabby … Then we get down here, this different view that visitors would see at Randall Elementary. … So you get some idea of the disparity in what they look like as well as then disparities in the teachers."

Susan responded, "that was one of the interesting things about going to North Carolina. They were saying that they were taking teachers that weren't even certified. … I assumed that you needed to be certified." John then wrapped up the review by commenting,

"one thing that I think works here that is a good story telling device that you could think about for your own future work is, if you have a visual element that you think would help people understand and you have some important issue like the qualifications of teachers which is kind of an abstract concept, think about starting with the visual because that's more comprehensible, more tangible for your readers to describe things and point out disparities, visual disparities. Then when you've softened people up and you've gotten them interested in it, then talk about the disparities with teachers. … And in your own work, just keep looking for disparities like this. You can never go wrong by looking at situations involving the have's and the have-not's, whether you're talking about education, housing, whether you're talking about safe neighborhoods or unsafe neighborhoods. And these are issues that are ripe for journalists too ... Because they are open to us, few institutions point these things out, so that's part of our job is to explore these situations."

In this example, John showed the students a particular reporting *practice*: gathering and using "good supporting numbers," the median household income for the two communities in the story. This practice was guided by a particular reporting *value*: "You can never go wrong by looking at situations involving the have's and the have-not's," and connected to a particular reporting *identity*: "that's part of our job is to explore these situations." In other words, he highlighted the connections between a particular sub-frame of values, practices and identity journalists use to *Write for Story*.

Similar to the *Writing to Formula* case, using ENA to look across all of the semester's strips of activity, as shown in Figure 3, reveals developing internal cohesion for the epistemic frame elements of the *Writing for Story* sub-frame. In addition, the cohesion shown for this sub-frame is stronger than that for *Writing to Formula*, as shown by the relatively larger negative movement in the I-C index, and all of the elements are involved. Finally, the identity element of *Writing for Story* was also substantially more cohesion oriented in contrast to identity in *Writing to Formula*. These data suggest again and perhaps even more strongly that interactions throughout the course worked to develop rich intra-connections within this sub-frame, mobilizing the reporter's identity as an interviewer and storyteller along with developing skills and knowledge of techniques.
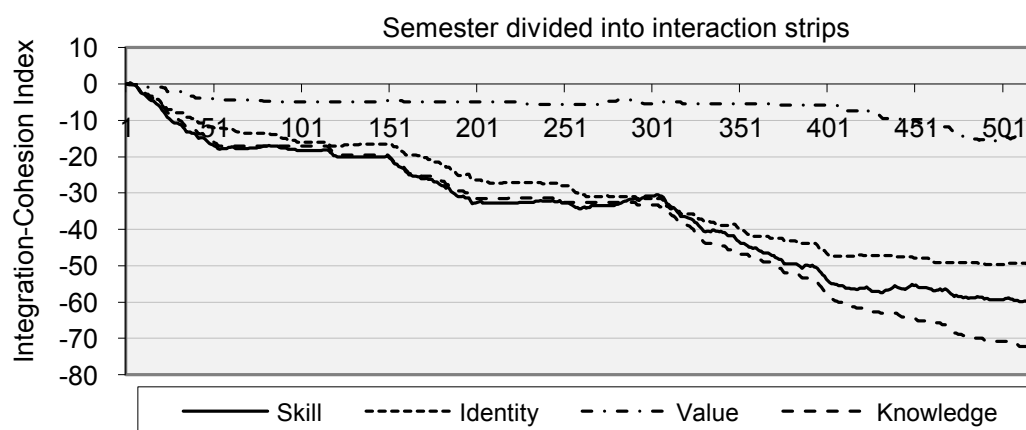

Figure 2: Writing for Story Integration-Cohesion Index

Writing as a watchdog

In J335, students were developing reporting and writing skills in order to "learn how to become better watchdogs over powerful individuals and institutions and how to provide a voice for the voiceless." After taking the class to meet with the County Clerk, the Police Department spokesperson, and the Mayor, John and the class discussed their interactions with these powerful institutions. One of the students, Sean, said, "as far as what [the Police spokesperson] was saying about be accurate and fair, seemed he stressed be nice to them. Isn't there a point where you don't want to be so accommodating to them? … His whole message to us was 'be nice to us and do what we tell you to do.'" John replied,

"Right. And through your whole career you're going to get that attitude, especially from people in law enforcement and paramilitary organizations – they're used to dealing with

hierarchy. Journalism breaks down hierarchy. Journalists seek to understand hierarchies, and then seek to penetrate those hierarchies. People in charge of those hierarchies often resent those efforts. You're exactly right-there's a tension there. I think the challenge for us as journalists is how to achieve the balance. It's possible to be both polite and aggressive. It's possible to be nice but yet firm. To articulate our point of view in a respectful manner, but keeping in mind that we have a different point of view and a distinctly different role than a public agency does. Our responsibility should be to whom? Who are we serving? The public, right."

In this case, John showed the students how a particular watchdog *identity* was connected to a particular set of watchdog *practices*: "Journalists seek to understand hierarchies, and then seek to penetrate those hierarchies." This linked identity and set of practices required a particular watchdog *understanding* guided by a particular watchdog *value*: how to achieve a balanced articulation of the journalist's point of view "in a respectful manner" while keeping in mind "our responsibility" to the public. In other words, he focused on the particular ways of understanding and valuing that guide journalistic practice and perspective when journalists *write as a watchdog*.

The ENA picture that emerges for the *Writing as a Watchdog* sub-frame, shown in Figure 4, is quite different from the other two sub-frames. In this case, all of the elements are revealed to be linking either neutrally (neither more internally nor externally linked) or strongly externally as in the case of the skill element, integrating this sub-frame with the others. These data suggest that interactions throughout the practicum used *Writing as a Watchdog* elements, and particularly the practices of pattern recognition central to this sub-frame, to tie together the developing sub-frames of formulaic writing and story reporting.
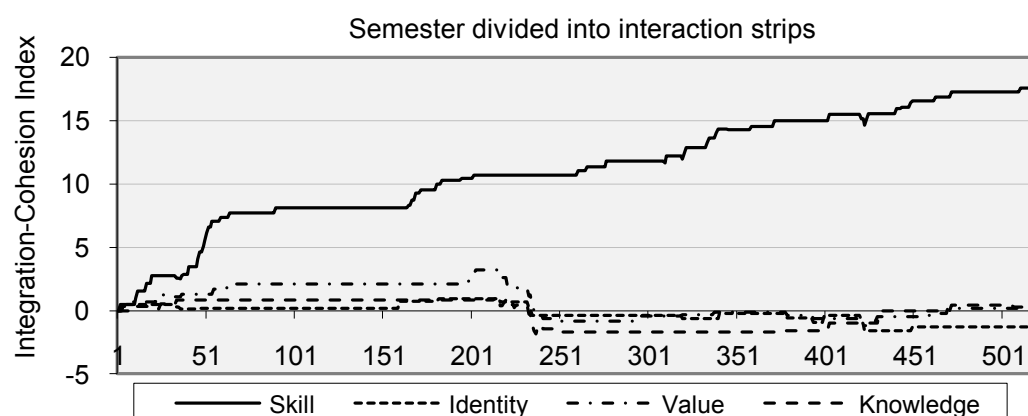

Figure 3: Writing as a Watchdog Integration-Cohesion Index

As described earlier, Shaffer's epistemography of the advanced reporting capstone course Journalism 828 (Shaffer, 2005b) provides a compelling account of the development of these abilities through the learning practices of the Journalism 828 practicum. While not surprising, the results of this study do suggest that these epistemic sub-frames organized student experience throughout the course in ways quite similar to those of the advanced practicum course. In addition, the ENA data provides a new perspective on the ways in which pedagogy was instantiated on the ground in course interactions

Discussion

These results suggest that over the course of Journalism 335, distinct elements of journalistic expertise were drawn out and linked together, helping to develop and integrate the epistemic sub-frames of *writing to formula*, *writing for story*, and *writing as a watchdog*. This confirms similar observations in Shaffer (2005b), suggesting that, despite being a transitional course, J335 provided an important practicum experience for its journalists in training.

In addition, the results of this study indicate that different sub-frames for specific areas of expertise can exhibit different developmental patterns, sometimes emphasizing the development of stronger connections with other elements of the same sub-frame, and sometimes emphasizing stronger connections with elements from other sub-frames. This in turn suggests an area for future study might be exploring the ways in which developers

of learning environments might best align different kinds of participant structures to take advantage of the different developmental patterns touched on here.

These results also suggest that the epistemic network analysis method can be productive way of studying interactions within learning environments. Building on Shaffer (2009), this study adds the *Integration-Cohesion* index to epistemic network analysis, to uncover particular linkages patterns occurring across sometimes difficult to see interactions. Epistemic network analysis suggests a powerful set of techniques for studying the traces of cognitive development through social interaction, and it points toward a promising new way of observing the translation of pedagogy into practice in various kinds of learning environments.

The study presented is of course limited. As observations of a single seminar, these results obviously can't generalize to all instances of journalism practica or capstone courses. Further, as an intermediate-level course, there was significantly less student-initiated interaction than might have been observed in more advanced courses. At the same time, these findings do suggest a more complex relationship within and between these epistemic sub-frames can emerge during the overall development of journalistic expertise, the details of which deserve future study. They also suggest that the method of epistemic network analysis may be useful for future investigations of learning environment interactions for a deeper understanding of cognitive development.

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