Jared McBrady, HOPE COLLEGE, mcbrady@hope.edu

Don't Set Goals, Set Systems: Using Decoding the Disciplines and Students as Partners to Strengthen a History Department and its Teacher Candidates

ABSTRACT

This case study presents the development of a system that integrated two strands of SoTL research—Decoding the Disciplines and Students as Partners—into a secondary history teacher preparation program. This system simultaneously refined teaching in undergraduate history courses and provided authentic learning experiences for secondary education teacher candidates. The system involved partnering a teacher preparation course with an undergraduate history course. Teacher candidates interviewed students from that history course to decode bottlenecks in their historical thinking. Teacher candidates then suggested instructional changes faculty could implement to respond to surfaced bottlenecks. This study explores how the connection between Decoding the Disciplines and Students as Partners can address the gap between university instruction and secondary teaching. It further describes how teacher candidates applied the decoding paradigm to analyze learning in undergraduate history courses and proposed curricular improvements. The study reflects on the benefits of this system for stakeholders, including teacher candidates, student researchers, history faculty, and undergraduate students taking history courses. Teacher candidates benefited from the practical experiences of decoding research, including eliciting learning cognition, assessing learner needs, and responding instructionally. Student research partners gained experience in data management and mixed-methods research while providing a valuable perspective as co-analysts. History faculty gained opportunities to have the cognition of their students systematically examined and receive recommendations for improving instruction. Finally, undergraduate students collectively benefited from improved instruction in history courses. This adaptable system could extend beyond history departments into other disciplines, especially in contexts that train secondary teachers.

KEYWORDS

decoding the disciplines, students as partners, teacher education, curricular reform, historical thinking

In his bestselling book *Atomic Habits*, James Clear (2018) advises his readers to forget about goals and focus on systems. "I began to realize that my results had very little to do with the goals I set and nearly everything to do with the systems I followed," Clear writes (23). Goals, or aspirations, focus on the results one wants to achieve. While helpful for setting direction, goals do not inherently yield desired results. Systems, on the other hand, involve the various processes one enacts to achieve their goals; these processes can lead to results. Clear argues that this becomes especially true when such systems become habitual. Without developing adequate systems, even the best-defined goal might

remain unachieved. While goals themselves have value, their worth depends on the systems used to achieve them.

At the State University of New York at Cortland (SUNY Cortland), we united two prominent strands of scholarship of teaching and learning (SoTL) research—Decoding the Disciplines and Students as Partners—in the undergraduate program of secondary history teacher preparation. These two strands formed the backbone of a system that simultaneously worked toward two goals: giving authentic experiences that improved the preparation of secondary teacher candidates and refining instruction in undergraduate history courses. Leveraging Decoding the Disciplines and Students as Partners created a synergy that productively addressed the needs of teacher candidates, faculty, and undergraduate students. In this paper, I describe the system we developed at SUNY Cortland as a case study. I start by providing an overview of the two strands of SoTL research that undergird the system: Decoding the Disciplines and Students as Partners. Next, I describe the institutional context of SUNY Cortland and provide a detailed description of each step in the system. Then, I provide a survey of the various stakeholders that participated in the system and the benefits they gained in doing so. Finally, I conclude with a discussion of the system's relevance in other institutional contexts.

STUDENTS AS PARTNERS

As an educational theory, practice, and ethos (Mercer-Mapstone et al. 2017), Students as Partners describes ways in which students can partner with academic faculty and other staff in higher education settings. Such partnerships constitute a "collaborative, reciprocal process through which all participants have the opportunity to contribute equally, although not necessarily in the same ways, to curricular or pedagogical conceptualization, decision-making, implementation, investigation, or analysis" (Cook-Sather, Bovill, and Felten 2014, 6–7). Partnerships center on the learning and teaching processes of higher education, including 1) learning, teaching, and assessment; 2) curriculum design and pedagogic consultancy; 3) subject-based research and inquiry; and 4) the scholarship of teaching and learning (Healy, Flint, and Harrington 2014). Further, students can participate in these processes in more or less proximal ways, including as co-researchers, pedagogical co-designers, consultants, or representatives (Bovill et al. 2016).

Students as Partners requires reciprocity; it departs from other conceptualizations of student and faculty relationships, such as a transmission model where a learned expert (the so-called "sage on the stage") transmits knowledge to students or a student-as-consumer model that seeks only to engage somewhat passive students (Cook-Sather, Bovill, and Felten 2014). Rather, Students as Partners positions both students and faculty as active collaborators who both bring their own different expertise to bear on a collaborative process. Both parties should engage, learn, and benefit from one another. Numerous studies have begun to describe the positive benefits a Students as Partners approach yields. Such benefits include positive learning impacts for students, increased engagement from students and faculty, increased self-awareness as researchers, and more inclusive teaching practices (Mercer-Mapstone et al. 2017).

DECODING THE DISCIPLINES

The Decoding the Disciplines approach to teaching and SoTL involves identifying and breaking down, or decoding, expert thinking processes so they become accessible and teachable to learners. First developed at Indiana University, the Decoding the Disciplines research and teaching paradigm provides an iterative framework that helps experts decode their discipline's epistemology, identify bottlenecks that impede student progress toward expert disciplinary thought, and design instructional interventions that address those bottlenecks (Middendorf and Shopkow 2018; Miller-

Young and Bowman 2017; Pace 2017; Pace 2021; Pace and Middendorf 2004). Expertise in a discipline represents mastery over that particular discipline, including its key concepts, skills, methodology, underlying disciplinary logic for evaluating relationships between evidence, and methods for evaluating and justifying claims (Hirst 1998). Such expertise often arises out of training and experience—for example, completing a doctorate in the discipline. Expertise, rather than a binary determination, exists on a spectrum. In the world of undergraduate education, however, teaching and learning often occur between instructors who have developed high levels of expertise in their field (derived from advanced training and years of experience) and students with comparatively less expertise in that field. Such a wide gap in expertise may lead to complications in instructors' attempts to foster the growth of students' disciplinary knowledge; concepts that have become easy and natural for instructors after years of building expertise suddenly become difficult to explain to novices. The seven-stage framework of Decoding the Disciplines, summarized in Table 1, helps instructors address these instructional difficulties.

Table 1. Decoding the Disciplines

Stage	Description
Stage 1: What bottleneck prevents learning?	Instructors define bottlenecks that prevent student learning.
Stage 2: How does an expert do these things?	Instructors uncover the mental tasks experts use to work through those bottlenecks.
Stage 3: How can instructors model thinking?	Instructors model experts' mental tasks for students.
Stage 4: How will students practice?	Instructors provide students with opportunities to practice those mental tasks and get feedback.
Stage 5: What will motivate students?	Instructors plan to motivate students and lessen resistance to learning.
Stage 6: How well do students master these learning tasks?	Instructors assess students' mastery of the thinking tasks.
Stage 7: How can instructors share resulting knowledge?	Instructors share findings from the decoding process.
	Modified from Middendorf and Pace (2004) and Pace (2017)

Decoding employs the metaphor of a bottleneck to describe critical junctures that impede students' progress with disciplinary learning; these cognitive or emotive bottlenecks prevent students from further developing their disciplinary thinking (Shopkow et al. 2013). A traffic bottleneck slows or halts the progress of vehicular flow; in a decoding bottleneck, students encounter an obstacle to their learning. This obstacle slows or halts a student's ability to progress toward deeper disciplinary understanding. Instructional bottlenecks persist when an instructor does not know how to teach in ways which allow students to work through the bottleneck. Bottlenecks occur when instructors, who themselves possess disciplinary understanding, encounter students who appear unable to learn that disciplinary understanding from instruction. Decoding the Disciplines provides guidance on how instructors can adjust their teaching so students can better work through whatever bottlenecks arise during the teaching and learning process.

Decoding interviews form a key part of determining how to help students work through bottlenecks; they often occur in stage one of the decoding framework (if used as a tool to further elucidate student cognition and associated bottlenecks) or in stage two of the decoding framework (if used as a tool to further elucidate how experts work through bottlenecks). Decoding interviews function as metacognitive interviews; through probing questions, they help interviewees become aware of and analyze their own learning and thinking processes. Through decoding interviews, expert interviewees can better surface and make explicit their tacit thoughts (Pace 2017). A decoding interview forces experts to wrestle with putting tacit knowledge into words, and through putting tacit knowledge into explicit words, they can better explain their mental operations to students.

Since the initial publication of the decoding framework (Pace and Middendorf 2004), researchers have taken the paradigm in new directions. Innovations within this Decoding 2.0 (Pace 2021) include elevating decoding from the level of the classroom to decoding whole departments, involving student partners both as data sources and co-investigators, and extending decoding from higher education to elementary and secondary instruction.

Decoding departments

Decoding proves useful beyond individual faculty and courses; decoding can work across a whole department to reveal tacit knowledge embedded within a curriculum. For example, Diaz et al. (2008) conducted interviews with historians at Indiana University. In these interviews, the historians surfaced bottlenecks their students faced in history courses across the curriculum. These interviews provided an impetus for departmental discussions on curricular reform and inspired the faculty interviewed—almost half the department—to reconsider their teaching. Undergraduate history curricula often divide their courses along geographical boundaries (including European, American, Asian, African, Latin American, or global history) or temporal boundaries (such as ancient, medieval, early modern, or modern). Decoding interviewers, however, revealed bottlenecks in historical skills that were applicable across these divisions. Decoding not only suggests changes within individual courses, but also changes across a department's curriculum. The American Historical Association, through its Tuning Project (Grossman 2012), has encouraged such curricular changes across history majors. These changes help students develop historical thinking skills along with breadth and depth of geographical and temporal content in the history major. Decoding can yield data that helps history departments consider how to achieve these ends.

Decoding elementary and secondary teaching

Although developed in the context of higher education, decoding holds value for elementary and secondary instruction. Elementary teachers, secondary teachers, and educators of teachers could use decoding to inform their work in at least four capacities (McBrady 2022). First, decoding informs teacher education practice through helping teacher educators address bottlenecks teacher candidates face when learning to teach (Brown 2018; Chistolini 2019; Diaz and Shopkow 2017). Second, decoding reveals expert thought from the content-area disciplines elementary and secondary teachers teach (Brown 2018; Schultz and Lovin 2012). Third, decoding becomes a method of elementary or secondary pedagogy where teachers decode their own thinking in relation to bottlenecks that their learners face (Bruno and Petrucci 2019; Cox 2018; Verkest 2019). Finally, the decoding interview can help elementary and secondary teachers better elicit and decode learners' more novice thinking (Cox 2018; McBrady 2022).

DECODING AND STUDENTS AS PARTNERS

When initially designed, decoding largely focused on experts' cognition; subsequent researchers have turned the paradigm's focus more toward student cognition. In some instances, researchers have used students as data sources, decoding students' tacit thoughts as they work through disciplinary tasks. Students bring prior understandings, sometimes inappropriate, to new cognitive tasks. The use of student decoding interviews helps to further explicate students' processes, assumptions, and folkways—those modes of thinking and acting common to students—that may contribute to bottlenecks. Rouse et al. (2017), for example, used decoding interviews with political science faculty and students to elicit the thinking of both groups when writing literature reviews. These interviews revealed the cognitive gaps between faculty experts and undergraduate political science majors. Cameron (2019) paired decoding interviews with eye-movement recordings to likewise surface differences in how faculty and students read graphical data. Decoding interviews can compare the thinking of experts to those developing expertise and can also further explicate the types of bottlenecks learners face. For example, Khomokhoana and Nel (2019) interviewed undergraduate computer science students who had struggled with a computer coding task. After collecting data from the task and conducting student interviews, researchers compiled a usable list of bottlenecks that could inform introductory computer science courses. Our work decoding undergraduate students' methods of identifying reliable sources for a history paper and placing documents into a historical context also surfaced categories of bottlenecks related to these tasks (DiCostanzo et al. 2024; McBrady 2022).

In other instances, decoding researchers have engaged with students as co-analysts, following the Students as Partners model (Cook-Sather, Bovill, and Felten 2014). With Students as Partners, educators engage with students as equal collaborators in the teaching and learning process. Rouse et al. (2017) and Cameron (2019) both make notable contributions in this regard; in addition to involving students as a source of data, these studies also invited students to work as co-analysts. Although research collaboration between faculty and student partners raises issues of power dynamics, it can greatly enhance the work of decoding (Pelnar et al. 2020; Rouse et al. 2017). Using undergraduate students as co-researchers solicits more candid student voices (Rudduck 2007) from interviewees and brings in perspectives on learning and cognition that a faculty researcher, well-removed from their own undergraduate experiences, might overlook (DiCostanzo et al. 2024; Pelnar et al. 2020; Rouse et al. 2017).

At SUNY Cortland, pairing decoding with Students as Partners engaged secondary teacher candidates as researchers and formed an important part of their teacher preparation.

CONTEXT

A public university within the State University of New York system, SUNY Cortland draws teacher candidates from across the state of New York and beyond. Originally founded as Cortland Normal School, SUNY Cortland continues to offer robust teacher preparation programs. The history department houses a secondary social studies teaching program that features a professional preparation sequence of coursework with training in general and disciplinary-specific pedagogy. In the United States, the elementary and secondary school subject of social studies involves the integrated study of the social sciences and humanities for civic competence. The purpose of social studies instruction is to prepare learners for "a lifelong practice of civil discourse and civic engagement in their communities" (National Council for the Social Studies 2023). In addition to majoring in social studies teaching, all social studies teacher candidates at SUNY Cortland also major in a social studies content

area such as history, economics, geography, or political science; most choose history. Most teacher candidates begin the four-semester professional sequence in their third year of undergraduate studies.

THE SYSTEM

The course HIS 399: The Teaching and Learning of History formed the heart of this system, as outlined in Table 2. Teacher candidates take this course in the second semester of the professional sequence. HIS 399 focuses explicitly on SoTL for history. In this course, teacher candidates applied SoTL literature to assignments that replicated the work of teaching. For example, teacher candidates practiced facilitating a disciplinary discussion, created a bibliography of teaching materials, designed a pre- and post-assessment that measures secondary students' knowledge of historical facts, substantive concepts, and historical thinking skills (Lee 2005), and completed a small decoding research project.

Table 2. The system

Faculty partners identified a bottleneck undergraduate students faced in their history course.
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Teacher candidates enrolled in HIS 399 interviewed undergraduate students from the faculty partners' courses to decode their thinking regarding the bottleneck.
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Teacher candidates analyzed the data generated from decoding interviews.
↓
Teacher candidates reported their findings and recommended instructional changes to faculty partners.
↓
Faculty partners made changes to their instruction following reports from teacher candidates.

But the work for this system started well before HIS 399's first class meeting. In a history department meeting the prior semester, I solicited history faculty partners for HIS 399. I worked with faculty partners to identify bottlenecks students experienced in a history course they taught. For example, in a recent iteration, a faculty partner used edited volumes of primary sources in her United States history course. However, she encountered students who struggled to use the editor's headnotes

to properly place these sources into historical context. Other past bottlenecks included contextualizing a primary source in an essay, interpreting a photograph, preparing to read an assigned reading for class, and selecting credible sources for a history research paper. The discussion of the bottleneck with faculty partners informed my design of HIS 399 the following semester.

In HIS 399, teacher candidates learned the seven-stage framework of decoding methodology. They practiced unpacking a faculty partner's bottleneck through interviewing each other regarding that bottleneck. Teacher candidates, also upper-level history majors, had already begun to internalize disciplinary thinking and skills. Therefore, these practice interviews helped make explicit teacher candidates' own tacit thinking when they worked through the bottleneck. Teacher candidates also read research that described expert historical thinking. Here, the work of Wineburg (2001), Bain (2005), Pace (2004), and others played an important role.

After this training, teacher candidates interviewed all the students enrolled in the faculty partners' general education history courses. Depending on enrollment numbers for a particular semester, I assigned each teacher candidate to interview either one or two undergraduate students from the partnered general education course. At SUNY Cortland, typical enrollments do not exceed 25 students in HIS 399 and do not exceed 35 students in general education history courses. In these decoding interviews, teacher candidates elicited metacognitive reflection from the interviewed students as the interviewees described what they do when they work through the historical thinking task. During these interviews, teacher candidates took thorough notes and, if interviewees consented, recorded audio for transcription. Immediately after concluding their interviews, teacher candidates wrote reflective memoranda that captured their initial understanding of the interviewed students' thinking.

Following the initial collection of interview data, teacher candidates turned to analysis. Working in small groups, they read each other's interview notes, transcripts, and reflective memoranda. Then, they sought to expose any gaps between the students' thinking and expert thinking. First, teacher candidates described that the cognition interviews revealed and unpacked potential misunderstandings, missteps, or gaps that could hinder students from developing their ability to think historically. After that, teacher candidates continued to the subsequent stages of the decoding paradigm. This included crafting suggestions for how the partnered faculty member might help students work past identified bottlenecks. In this work, teacher candidates drew from the pedagogical literature they had read in HIS 399 and other courses during their professional sequence. Each teacher candidate concluded their decoding project with a written report detailing their findings and suggestions.

In past years, I looked across these reports and crafted a summary to share with faculty partners. In more recent iterations of the system, I further deepened the Students as Partners element through systematic data analysis with student partners. To do so, I assembled a data set that contained interview data and decoding reports from all consenting students and teacher candidates. Then, I invited a subset of teacher candidates to participate in the Teaching and Learning History Lab. In the Teaching and Learning History Lab, I worked with student partners to systematically analyze the data using grounded theory (Charmaz 2006). We started with open coding (Emerson Fretz, and Shaw 2011). Following open coding, we discussed and solidified focused coding categories (Charmaz 2006). In the next phase of research, we divided student interviews and teacher candidate reports among team members and coded each using our focused coding categories. Two different lab members read over each data piece and met to discuss their respective coding decisions. If any discrepancies arose in focused coding decisions, lab members mediated through discussion and consensus. Finally, we examined the results and drew out meaningful analyses of the bottlenecks students faced and

suggestions for ways that instructors might better address those bottlenecks. We presented these findings to our faculty partners and others so they could make changes to their instruction in order to address students' bottlenecks.

STAKEHOLDERS AND BENEFITS

The above system brought together diverse stakeholders who benefited in different ways from participation in the system: history faculty, secondary history teacher candidates, and undergraduate students taking history courses. Through implementing this system, these different stakeholders worked to meet each other's needs.

Teacher candidates

Decoding research provided teacher candidates with practical experience eliciting learner cognition, assessing learner needs, and responding instructionally (McBrady 2022; Verkest 2019). Secondary students and entering undergraduate students were of similar ages. Significant overlap exists between secondary history curricula and those of many undergraduate general education history courses. Finally, studies into the historical thinking of secondary and higher education students reveal similar patterns of thought (Carretero, López-Manjón, and Jacott 1997; Hynd, Patrick Holschuh, and Hubbard 2004; Reisman and McGrew 2018). Therefore, differences between secondary and undergraduate learners in the history classroom involve degree, not differences in the fundamental nature of teaching history. In the United States, the national framework for social studies instruction provided by the National Council for the Social Studies encourages teaching history in ways that prepare secondary students for college, careers, and citizenship, including an emphasis on historical inquiry and pursuing open-ended historical questions, critical readings of textual evidence, the use of history-specific conceptual tools, and marshaling all this into conclusions built through evidence-based argumentation (National Council for the Social Studies 2013). Faculty in SUNY Cortland's history department shared these same goals for undergraduate students; the practices and understanding teacher candidates gained from decoding research with undergraduate students could therefore transfer to the secondary classroom.

Experiences with decoding provided teacher candidates with valuable practice in the skills required for secondary history teaching, including the ability to construct theories of mind for learners (Zunshine 2010). These theories of mind represented teacher candidates' abilities to describe learners' behaviors in terms of their underlying thoughts, feelings, desires, and intentions (Zunshine 2010, 117). Teacher candidates began to understand how students think about the discipline, including any misconceptions they might have and why they might hold those misconceptions. Teacher candidates also contended with their own tacit disciplinary thinking; previously, many had not critically examined the disciplinary assumptions that had internalized over the course of their study. In reflections written after their decoding interviews, teacher candidates' comments revealed new understandings on how decoding helped them critically examine and reify those disciplinary assumptions (McBrady 2022). For example, many teacher candidates realized the power of history-specific mindtools (Bain 2005) for making complex disciplinary thinking more explicit. Finally, the decoding paradigm, with its seven-step cycle, gave teacher candidates a framework that united pedagogical strategies learned across professional preparation. Across their professional preparation, teacher candidates learned about modeling (Collins, Brown, and Holum 1991; Dennen 2004); assessing learning (VanSledright 2015; Wineburg, Smith, and Breakstone 2012); engaging and motivating students (Ferlazzo 2017; Jackson and Zmuda 2014); providing opportunities for scaffolding practice (Wink and Putney 2002); and activating and assessing prior knowledge (Alexander and Jetton, 2000; Wineburg et al. 2012). All these

disparate teacher strategies fit together in a cohesive manner within the seven stages of the decoding framework.

When teacher candidates continued their professional coursework after HIS 399, decoding work became a touchstone experience. As teacher candidates prepared lesson plans for secondary students in subsequent coursework, many created instructional materials that addressed the historical thinking bottlenecks that surfaced the semester prior. Decoding emerged as a category of observation in some teacher candidates' journals on their secondary instruction field experiences; teacher candidates would write how the secondary history teacher they observed had either successfully decoded or failed to properly decode some aspect of historical thinking. After conducting a decoding interview with an undergraduate student about reading history texts, one teacher candidate replicated the interview with a secondary student in a field experience. Another teacher candidate implemented decoding in her work as a teaching assistant in a first-year seminar. She worked to decode the hidden curriculum of college for first-year students—those implicit norms, attitudes, or actions frequently expected in the culture of higher education but rarely explicitly taught (Giroux and Purpel 1983). This teacher candidate used decoding to create workshops on soft skills—those interpersonal attributes necessary to interact and succeed in the culture of higher education, such as how to productively meet with academic advisors. Given that our teacher candidates continued to use decoding methodology even after completing their decoding research project in HIS 399, the pedagogical tools of decoding persisted beyond just one research experience.

Teacher candidates' participation in the system also shaped how they thought about teaching history to secondary students. After completing the decoding project, many teacher candidates commented in their written reflections about how the experience shifted their perspective on teaching. As upper-level history majors, many teacher candidates had already internalized more advanced historical thinking moves. But engaging deeply with the thinking of students not as far along that path helped teacher candidates critically examine the purpose of teaching history, especially to students not destined to become history majors. As one wrote, "the key is to adapt to this new way of thinking to help people think like historians because it's not likely that many will actually become historians, but it's better to think like them to help your understanding of complex sources." Ideas like this became a common refrain in teacher candidates' comments, as they wrote about focusing on historical thinking skills that transferred to aspects of the daily lives of informed citizens, such as critically reading sources, evaluating them for reliability and credibility, and considering multiple perspectives. Engaging with other students helped to show that many students came to higher education not fully prepared for this type of thinking. "I thought everyone was taught the correct way of sourcing, annotating, and contextualizing, but I was wrong," wrote one teacher candidate. Teacher candidates recognized the gaps in the secondary training of interviewed students. This highlighted what teacher candidates needed to do in secondary classrooms in order to better address these gaps.

Student teaching in the following academic year provided most teacher candidates with their first opportunity to implement what they learned from decoding in real secondary classrooms. During their student teaching experiences, some teacher candidates observed that secondary students encountered similar challenges as undergraduate students. Recognizing these common bottlenecks, teacher candidates began to adapt strategies initially recommended to their faculty partner in their own secondary classroom instruction. For example, one student teacher employed the metaphor of buying a book to help secondary students approach historical documents effectively, emphasizing the importance of examining cover pages, tables of contents, and summaries before delving into the content. The student teacher used his prior experience with undergraduate students, who tended to overlook editorial scaffolds like a contextualizing headnote or citation, to inform his metaphor.

Furthermore, their participation in the system reinforced for teacher candidates the importance of eliciting and responding to students' developing disciplinary thinking in their teaching. One teacher candidate's decoding work with undergraduates inspired him to engage secondary students in discussions about their prior conceptions around the discipline of history when he began his secondary teaching. Then, he structured his teaching to shift students' perspectives on history throughout the semester. As this teacher candidate's experience demonstrates, engaging with this system regarding higher education bottlenecks also shifted how teacher candidates approached secondary pedagogy. Such work addresses the divide between secondary and higher education and furthers the goal of preparing secondary learners for college, careers, and citizenship (National Council for the Social Studies 2013).

Teaching and learning history lab members

Members of the Teaching and Learning History Lab built on the experiences from the prior semester in HIS 399. In the lab setting, members gained extended experience with mixed-methods educational research, including grounded theory, open coding, focused coding, and quantitative and qualitative analysis. Following their lab experience, members had opportunities to present (and sometimes publish) their findings. This lab experience provided rich opportunities to further develop skills in data management and analysis, useful both for secondary school careers and graduate study. In addition, students who worked in the lab had the opportunity to earn college credit for this supervised research experience.

Working as a faculty supervisor with my student partners in the Teaching and Learning History Lab also provided me with several benefits. First, it concretely linked my teaching to scholarly output, as this lab helped generate research findings that contributed to presentations and manuscripts. Second, partnering with students improved the research findings' quality. In analyzing the historical cognition of the whole class of undergraduate students, student partners provided perspectives that I might have overlooked (Bovill 2020). Student partners have revealed important considerations that helped the research team further contextualize the data, such as issues of motivation (history might not hold the interest of all college students, as much as faculty might assume!), the nature of recent secondary history experiences, and some college pressures not attributable to any one class (such as when my student partners considered the impact screen fatigue had on reading computer-based history texts). Student informants might also more candidly approach an interview with peers than with professors, yielding more authentic data. Given the near-peer status of undergraduate teacher candidates and undergraduate students, our review of interviews between the two revealed evidence of camaraderie and a reduction of the power imbalance between faculty and undergraduate students. These attributes of the near-peer interview facilitated a more comfortable, less inhibited sharing of metacognition on the part of interviewed students (DiCostanzo, Langone, and McBrady 2024). Finally, working as a faculty supervisor in the Teaching and Learning History Lab provided me the opportunity to mentor and work alongside driven and hard-working students, reinvigorating my purpose for becoming an educator.

History faculty

Faculty members' abilities to implement decoding on a departmental level are limited. Decoding's slow, systematic research into cognition and pedagogy takes time, a commodity faculty members have in short supply. Further, such careful attention to teaching often goes without substantive institutional reward. As Cuban (1999) notes, the research imperative often trumps the teaching imperative. When scholarly output outweighs pedagogical effort, institutions incentivize

faculty to focus their limited time on traditional research. In the discipline of history, such traditional research uses historical evidence to create narratives of persons, places, and events of the past, as opposed to SoTL research. As Cuban (1999) found in his case study, and as I have found in my own conversations with historians, many historians experience an unfortunate primacy of scholarship over teaching—fairly or not, intentional or not.

This system, however, outsourced the labor of slow, systematic research into pedagogy to teacher candidates, who greatly benefited from the experience. Partnered faculty members gained the opportunity to have instructional bottlenecks systematically examined without having to dedicate an extraordinary amount of time themselves to investigating them. Further, teacher candidates likely garnered more candid responses from students than an instructor might. In addition to the sense of camaraderie and reduced power imbalance in the work of the Teaching and Learning History Lab, this style of interview between teacher candidates and undergraduate students afforded anonymity to interviewed students. Often, interviewed students provided direct, frank, and uninhibited language in interviews that they likely would not have provided in an interview with their course instructor. Finally, teacher candidates, as part of their professional preparation, read pedagogical literature to inform their suggestions for faculty partners. Given limitations on their time, many faculty may choose to devote more time to reading scholarship in their own research fields rather than pedagogical scholarship. This system still lets faculty benefit from recent pedagogical scholarship, and some faculty partners redesigned their courses in response to the teacher candidates' feedback.

In one iteration of the system, for example, teacher candidates worked in the course HIS 100: The World to 1500. After interviewing students, teacher candidates offered our faculty partner several recommendations for how to improve students' ability to contextualize historical documents. These suggestions drew on pedagogical scholarship and frequently directed the faculty partner to relevant articles. In the next iteration of her course, the faculty partner incorporated teacher candidates' suggestions. "It was very helpful," she said of partnering on the decoding project. "I had no idea that my students didn't understand what historical context was because they don't tell me and they don't ask. That was just so basic to history that it wouldn't even occur to me that they didn't know what it was." Thanks to the teacher candidates' suggestions, our faculty partner completely redesigned her course.

Another faculty member, a tenured professor with many years of experience, found reading the results of teacher candidates' interviews "encouraging and affirming." Over his many years of teaching, he had built in more time for developing students' skills of historical thinking and primary source analysis in his HIS 101: The World since 1500 course. But of that change, he wondered, "Is it really working?" Reading comments from teacher candidates after they had interviewed his students "affirmed me in my belief that I have to have them read these primary sources." Reading comments also led, in retrospect, to some changes in how he taught the course the following year. "I am focusing more on contextualizing sources . . . Even if it's kind of an unconscious thing, I think I'm doing that in response to what I read in the summary of findings." The findings from teacher candidates' interviews confirmed for him the need to re-emphasize context in his teaching of primary source documents and suggested ways he could do so.

In our system, two different groups of undergraduate students partnered with history faculty to co-create learning environments (Bovill et al. 2011). Undergraduate teacher candidates made suggestions for shaping the learning environment; they made these suggestions based on the interview data collected from undergraduate students enrolled in that particular course.

Faculty participants also demonstrated some shifting in their pedagogical stance as they reflected on the connections between university and secondary teaching. "I think, especially when I

get the freshmen, the survey," explained one interviewed faculty member, "it is like a continuation of high school. They're still functioning that way." However, interacting with prospective secondary teachers prompted faculty members to adapt their teaching methods—not to create a continuation of secondary instruction but rather to create a more seamless transition. One faculty member did this through making his pedagogical and epistemological metacognition visible to students, pausing his teaching to have students reflect on the question, "Why do you think I did it this way?" "It was interesting," he explains, "to get there, to stop them in their tracks and say, and to ask them, why did I do it? I just did. And I don't think I had ever asked it in quite that way before. And it was useful." Through changes in his university teaching, this faculty partner helped undergraduate students transition from secondary teaching to their university coursework.

In addition, faculty began to realize their potential for impacting the latter end of the secondary school to university transition through their interactions with teacher candidates enrolled in their courses. Shaping the teacher candidates in their own history courses afforded faculty a way to influence future secondary teaching. One faculty member introduced a new learning activity into his pedagogical repertoire, giving his students a topic and asking them to imagine themselves as teachers and prepare to communicate the material to eighth graders. "So that turned out to be a much more useful way of teaching a class," he reported.

These changes in pedagogical stances forced faculty partners to grapple with the tension between coverage of historical content and "uncoverage" of the disciplinary and epistemological underpinnings of history (Calder 2006). In-depth exploration of historical thinking and metacognitive reflection takes time and requires the faculty member to reduce the number of topics covered. Through participation in the system, faculty partners gain more impetus for when and how to focus on uncoverage in their university courses.

Undergraduate students

Finally, undergraduate students, too, stood to benefit from this system. Collectively, the student body benefited as our history faculty had opportunities to improve their courses. This continual improvement benefited all students, history majors and non-majors alike, who took courses offered through the department.

Students might also have benefited individually from critically examining their own cognition in the decoding interviews. Participating in these interviews forced students to surface and articulate their own thinking as they described how they approached historical tasks to the teacher candidate interviewer; such metacognitive practices help students develop awareness of their strengths and weaknesses as learners and their abilities to actively monitor learning strategies and resources as they approach particular tasks (National Research Council 2000, 67). Indeed, in a past study, teacher candidates reported in written reflections following their Decoding interviews that participating as interviewees and interviewers forced them to contend with and sharpen their own disciplinary thinking. Teacher candidates similarly reported in this study that contending with their own disciplinary thinking sharpened that thinking. Further, teacher candidate scores on a post-assessment of disciplinary thinking administered after completing their decoding project improved, compared to the scores on a pre-assessment of disciplinary thinking administered prior to the decoding project (McBrady 2022). As one teacher candidate wrote, "this process of conducting and reflecting upon a Decoding Discipline interview made me a more confident historian." In their work with undergraduate students, Hynd, Holschuh, and Hubbard (2004) found that metacognitive interviews about how historians worked extended undergraduate students' own historical thinking. Further research may

indicate that the same holds true for those undergraduate students who participated in decoding interviews.

FRICTION IN THE SYSTEM

While implementing this system at SUNY Cortland consistently yielded progress toward the goals of improving teacher candidates' preparation and undergraduate history course instruction, points of friction did arise in iterations of the system. We mitigated some sources of friction as we refined the system; other sources of friction persisted.

Teacher candidates' neophyte status as decoding interviewers provided one source of friction. Exposed to the methodology in the very same semester they conducted interviews with undergraduate students, many teacher candidates did not probe interviewers' cognition to the depth a more experienced interviewer might have probed. While their more inexpert interviews still elicited disciplinary thought, providing opportunities to deepen their skills at probing disciplinary thinking yielded not only a richer interview experience but more substantive data for analysis. Some changes introduced over several iterations of the system helped strengthen the quality of teacher candidates' decoding interviews. These changes included providing a better representation of the practices of decoding interviews. In the earliest iteration of the system, I conducted a live interview with teacher candidates during a class session of HIS 399. In subsequent iterations, I supplemented this with a recorded decoding interview with a middle school history teacher. The recorded interview provided opportunities for pausing and deconstructing how the interviewer probed for deeper disciplinary thinking. In later iterations, teacher candidates also had more opportunities to practice, repeatedly conducting decoding interviews with each other for various historical thinking tasks, including the identified bottleneck for that year's iteration of the system. Finally, while earlier interviews often involved hypothetical or abstract discussions of historical thinking tasks, more recent iterations centered the interviews on a historical document, allowing more concrete and immediate interviewee reflections on their thinking as they worked through interpreting a historical document.

The participation (or lack thereof) of interviewed undergraduate students provided another source of friction. While many readily participated in interviews, others required frequent reminders from teacher candidates to actually schedule an interview. Still, others never completed their interview at all. Although this gave teacher candidates practice at persistence and encouragement with their assigned interviewees (skills they certainly would need with secondary students), it introduces problematic selection bias within the interview sample. History majors completed interviews with teacher candidates at higher rates than non-majors, for example. If significant overlap existed between students who failed to complete an interview and those who struggled in their history courses, those missed interviews may have yielded the most enlightening data. In iterations of the system where we could designate time within the history course schedule for completing these decoding interviews, we had much higher completion rates. However, the pressures of coverage inherent to general education surveys often make it difficult to designate class time for decoding interviews. We considered making decoding interviews a graded activity for students to increase completion rates, but we had concerns that this would reduce anonymity for students.

Faculty partners provided another source of friction. For faculty partners who were unfamiliar with conducting SoTL research, invitations to partner with HIS 399 could evoke some trepidation. Once we more clearly established the process, however, I had more assent from colleagues. Deciding upon the bottleneck to investigate often involved some negotiation. We had to balance finding an authentic bottleneck from the faculty partner's practice with addressing relevant,

easy-to-research bottlenecks that could become illustrative for future secondary teachers. We found in this process that narrower, more discrete bottlenecks worked better for this purpose.

A final source of tension came from conducting analysis in the Teaching and Learning History Lab. Relying merely on interview notes and reflective memos provided limited data for analysis. This became particularly important when reviewing notes from interviews someone else had conducted. We had far better data for analysis in the lab when we prioritized recording interviews and transcribing those interviews.

CONCLUSION

Each iteration of this system afforded opportunities for refinement and extension as we continued to work toward departmental goals of improving the preparation of secondary teacher candidates and honing instruction in undergraduate history courses. Although developed for the particular context and needs of the stakeholders in the history department at SUNY Cortland, this system could extend beyond history departments and the setting of SUNY Cortland. Institutions that prepare secondary teachers could adapt this pairing of Decoding the Disciplines and Students as Partners to meet the demands of their particular context and the needs of their stakeholders. Systems built on Decoding and Students as Partners could enrich both the practice experiences of secondary teacher candidates and the instruction in undergraduate courses.

Indeed, I intend to rebuild this system in my new institutional appointment at Hope College. There, I would encourage teacher candidates to extend their findings from their decoding projects into secondary instruction. Teacher candidates could design instructional materials tailored to address the bottlenecks uncovered in the prior semester. Although intended for secondary classrooms, history faculty members could easily adapt these instructional materials for undergraduate coursework. As the system investigates new bottlenecks in historical thinking with every iteration, teacher candidates would build a library of instructional materials over time, and these materials could help secondary and undergraduate students alike.

The aphorism “don’t set goals, set systems” (Clear 2018) guided the creation of this project. History departments might set noble goals of improving the quality of teaching in history courses or improving teacher candidates’ professional preparation. Yet, without a system to work towards these noble goals, they can become just two goals out of many, often in an environment with limited time and insufficient institutional support. These noble goals often become the least pressing for department members to deal with on a day-to-day basis. This system, however, integrated concrete processes for addressing the above noble goals into teaching and the yearly department curriculum. It also leveraged decoding and Students as Partners to simultaneously and complementarily meet the needs of stakeholders across the department.

AUTHOR BIOGRAPHY

Jared McBrady (USA) is an assistant professor of education at Hope College, where he teaches both teacher preparation courses and history courses. His research focuses on the preparation of elementary, secondary, and university history teachers and the scholarship of teaching and learning within the discipline of history.

ETHICS

The SUNY Cortland Institutional Review Board ethical review processes approved this research.

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