

## LONGITUDINAL DESIGN CASE OF A UNIVERSITY PRESERVICE TECHNOLOGY INTEGRATION CURRICULUM SHAPED BY ITS SOCIOPOLITICAL CONTEXT

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This design case describes the work of two designers related to a longitudinal university preservice technology integration course series. We anchored the discussion of our case with various design values that we shared and took a critical role in our design activities. We broke our stories into three chapters in order to discuss our case in a narrative format. In each of these chapters we discuss our design problem, design values, design solutions, and design tensions. Within the chapters our discussions zoom in and out of detailed design issues related to our individual design experiences. Our case demonstrates how our design efforts and our designed products were intertwined with the sociopolitical context in which our case was situated. We end the discussion of this case by sharing what we learned.

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The purpose of this design case is to share a longitudinal curricular project related to a series of preservice technology integration courses at Northern Illinois University (NIU). Our case highlights the complexities involved in designing courses that are inseparably intertwined with the sociopolitical context of a university teacher education program. The entire project took place over more than a 10-year span, but in this article we will only focus on selected snapshots of our experiences in chapter format. Each chapter we present is a design story that has a beginning, middle, and an end in itself. The chapters together create the longitudinal design case. We begin our discussions with an overview of our design values. We present our design case by introducing our design problem, and how the problem evolved the design over time as we applied our design values to each situation. We end the discussion of this case by sharing what we learned about design in general and the inseparable nature of design and its sociopolitical context.

### DESIGN VALUES

When we began working together to write this design case we recognized that we could not share our experiences in narrative format without discussing our shared design values. We also recognized retrospectively that these values affected our engagement throughout this longitudinal project. The values we identified that were critical in organizing our case were related to general design, learning environments design, and teacher education design. Our general design values were influenced from our past experiences as instructional designers and discussions in the design literature. Our learning environment design value was heavily influenced by our epistemological beliefs as researchers and practitioners. Our teacher education design values were influenced by our past work with inservice and preservice teachers. All of our shared design values are summarized in Table 1.

<b>GENERAL DESIGN</b>	
<b>GED-V1</b>	Design is a messy, real-world, ill-defined problem solving activity
<b>GED-V2</b>	Design entails both developing tangible products and identifying intangible aspects of design
<b>GED-V3</b>	Documenting design involves a reflective practice
<b>LEARNING ENVIRONMENT DESIGN</b>	
<b>LED-V1</b>	Learning environments must be situated in practice
<b>TEACHER EDUCATION DESIGN</b>	
<b>TED-V1</b>	Technology integration is beyond learning about computers and software
<b>TED-V2</b>	We need to demonstrate educational values of technology integration
<b>TED-V3</b>	Future teachers must engage in design from conception to product creation
<b>TED-V4</b>	Preservice teachers need scaffolding while developing as reflective practitioners
<b>TED-V5</b>	Teachers learn best from other teachers
<b>TED-V6</b>	University faculty are not the only significant key players of preservice teacher development
<b>TED-V7</b>	Teachers are more likely to engage in technology integration if they have prior experience

**TABLE 1.** Shared design values.

### General Design Values

As instructional designers we shared a core set of general design values. Our first General Design Value (GED-V1) was: Design is an ill-defined problem solving activity (Jonassen, 2011, Rowland, 1993). We embrace design as a messy process, while sequenced systematic design models often are not able to represent the complexities of real-world situations (Boling & Smith, 2012). This led to our second General Design Value (GED-V2): The act of design is not solely about developing tangible material products, but the act of design entails the identification and engagement with signs, things, actions, and thoughts that co-exist with tangible products of design (Buchanan, 1992). Finally, our third General Design Value (GED-V3) was: Documenting and sharing these intangible aspects of design requires that we become reflective practitioners (Schön, 1987) who share design cases through storytelling (Boling, 2010). By sharing our design cases our intent is to participate in the shared activity of building design knowledge based on precedent (Howard, Boling, Rowland, & Smith, 2012).

These general design values helped us as we retrospectively identified our core story in this design case. The design values guided us in deciding how to share our story in its whole form and what aspects of the story and artifacts from our design we could introduce as supporting materials. In this process, we also identified what aspects of the design story we would purposefully not include in this case to avoid distracting readers and ourselves from seeing the core story.

### Learning Environment Design Value

When identifying our approach to designing learning environments we agreed that learning occurs in the context of practice (Chaiklin & Lave, 1996; Lave, 1988). Therefore, our shared Learning Environments Design Value (LED-V1)

was: Learning is situated in practice. While we believe that learners are capable of making generalized inferences across situations, learning is not about acquiring generalizable values from a content area stripped from its context (Cognition and Technology Group at Vanderbilt, 1990; Lave & Wenger, 1991; Rogoff, 1990). We also believe that human cognition is distributed across time and space, and learners need to experience navigating and finding their own place as learners within sociohistorical contexts, communal practice, and shared cognition spaces (Hutchins & Klausen, 1996; Salomon, 1993).

Ultimately, this design value affected every aspect of our design efforts. It first affected how we approached the placement of our technology integration courses within the bigger picture of teacher education. Later, when we designed specific courses this value affected the types of activities and assignments we introduced to students.

### Teacher Education Design Values

Our Teacher Education Design Values, as compared to the previous sets of design values, were far more focused to our design problem and the related sociopolitical context. These values became pillars in our design storytelling while describing how we made detailed design decisions in response to our design problem. Based on our own experiences working with teachers and our knowledge of the teacher education literature, we believe that these values are commonly shared with other educational technology teacher educators. It is our hope that our efforts in sharing these values are likely to help other educational technology educators find relevance from our case to their own situations.

Our first Teacher Education Design Value (TED-V1) was: We need to demonstrate to teacher education faculty,

supervisors, inservice teachers, and preservice teachers that the purpose of technology integration courses is about designing and implementing curricular technology integration and not about how to use computers and very specific software tools such as commercial grade books. Both of us had discovered through our individual experiences prior to this project that our work in instructional technology tended to be misconstrued by non-instructional technology university faculty. They often believed that instructional technology was about computer hardware and software. As a result, many teacher education faculty, clinical supervisors, and teachers involved in preservice teacher education viewed the purpose of educational technology to be learning computer and software skills that did not have much to do with classroom learning and curricular design.

Our second Teacher Education Design Value (TED-V2) was: We need to demonstrate to teacher education faculty that there is value in making curricular space for technology integration courses. With limited experience for understanding what instructional design and curricular technology integration courses are about, many preservice education faculty often believe that our service courses do not add value to teacher preparation or pedagogical training. While collaborating with other program faculty, we both had experiences where we had to help the faculty understand what our field was about and that requiring content area faculty to use PowerPoint for their lectures and requiring students to engage in WebQuest activities were not sufficient preparation for future teachers to become designers of curricular technology integration.

Our third Teacher Education Design Value (TED-V3) was: We need to create a learning environment where preservice teachers engage in design themselves and experience instructional design from conception through product creation in order to understand that the use of media-based tools are subservient to instructional design and decision-making. Following our learning environment design value, we both wanted preservice teachers in our courses to experience instructional design and technology integration through authentic experiences and as much as possible in its entirety. We wanted to make sure that students left our courses understanding through practice that media tools did not solve their instructional problems. We wanted them to come to an understanding that their instructional design decision-making is what drove their choice of using or not using media tools in their future classrooms.

The fourth Teacher Education Design Value (TED-V4) was: We need to provide preservice teachers with a safe learning environment for them to engage in technology integration activities through trial and error in their coursework at the university and the field to help them become reflective practitioners. We both shared experiences prior to this project where we required preservice teachers in our courses

to observe lessons in inservice classrooms and complete reflection papers regarding what they learned from the experience. In many cases, these activities amounted to students describing what they observed, but they were unable to reflect on the practice of teaching because they themselves did not have enough experience in teaching and were not able to see the fast-paced decision-making that teachers were engaging in the classroom.

The fifth Teacher Education Design Value (TED-V5) was: Teachers learn best from emulating what other teachers' do in practice and hear others talk about their practice. Lisa, who is the first author of this article, had previous experience working with inservice teachers while supporting their efforts in a yearlong technology professional development program. In this program, there were teachers from kindergarten to middle school working in rural Indiana school districts. Through informal conversations with teachers, program evaluation surveys, and formal interviews with teachers, Lisa learned that the inservice teachers valued the time spent in the program for them to present their individual projects to the group. Many of them commented that even though they were teaching in such different grade levels surprisingly they learned a lot from each other, and looked forward to the teacher presentations that took place each semester during the one-year program (Yamagata-Lynch, 2003).

The sixth Teacher Education Design Value (TED-V6) was: University faculty are not the only significant key players in the development of preservice teacher education programs; K-12 teachers, field supervisors, and K-12 administrators all play a significant role in preservice teacher development. Lara, who is the second author of this article, discovered this value from her work at a professional development school setting while coaching preservice and inservice teachers integrating technology into their curriculum. The university faculty is only one source of influence for a developing teacher. In university classrooms, faculty create learning experiences and model best practices; however, preservice teacher development is also heavily influenced by their field experiences where they work closely with cooperating teachers, educational specialists, and school leaders. This is consistent with Karmos and Jacko's (1977) findings where they identified the "significant others" in preservice teacher development. In teacher development, the sphere of influence on preservice teachers is broader than the university professors; therefore, it is important to work closely with "significant others" towards similar learning goals.

The seventh Teacher Education Design Value (TED-V7) was: Teachers are more likely to integrate technology into the curriculum if they have prior experiences integrating technology into their classroom. Lisa learned this value in her work with the yearlong technology integration professional development program mentioned earlier. After the yearlong

program, Lisa followed the teacher participants two more years for her research. She found that many of these teachers commented during interviews that the fact that they completed curricular technology integration projects as part of the program and were held accountable for its design, development, and evaluation made them able to continue with new integration projects after the program. During the program, it was hard work and they resented being part of the program many times, but after the program ended they felt that it gave them the confidence they needed to continue pushing boundaries with technology integration. They also felt that experiencing a completed project within their classroom context made their efforts towards technology integration a legitimate part of their job as teachers (Yamagata-Lynch, 2003).

## DESIGNER INVOLVEMENT WITH THE CASE

Our design experiences with this project were longitudinal and iterative in the sense that both designers were involved for multiple years. Lara was involved from 2001 to 2013 and Lisa was involved from 2004 to 2011. During this time, the intensity of our involvement in the design, development, and implementation of the technology integration curriculum varied depending on our roles and moment-to-moment design goals.

## CASE IDENTIFICATION

In preparation for writing this design case we studied the works of Parrish (2006) and Boling (2010) regarding design storytelling and design cases. At first, we spent time discussing how to gain a voice for telling our design story while reflecting on our general design values. In our past work we both had backgrounds in qualitative research methods and had experience synthesizing qualitative data into thick description narratives with the purpose of presenting participant voices through our writing. However, we realized that our effort in identifying a voice for writing design cases was a new challenge because we had to find a coherent and trustworthy voice of our own to share the case.

In identifying the meaningful areas of discussion for this design case we relied primarily on our individual retrospective reflective writings about our personal involvement in the curricular and course design activities. We tasked ourselves to write our personal experiences for the duration we were involved in this project. We shared these writings and used them as sources to engage in peer review and further joint reflections. While reflecting on our experiences and writing them, we examined archived documents related to this project such as standards, documents, and syllabi.

Through our personal narrative exchange and commenting on one another's reflections it became clear that it was going to be challenging to organize the complex longitudinal

design activity into a narrative format with "organic unity" (Parrish, 2006, p. 75). Once we started discussing this case in detail with one another, we found that we shared a series of interwoven experiences that became difficult to talk and write about. Therefore, we spent a considerable amount of time discussing how to organize the narrative to the point that, on several occasions, we almost gave up sharing the case. Then we decided that in our reflections there were three distinct design chapters that had their own form of organic unity. By choosing to share and anchor our case in chapter units, we are able to provide the reader with an accurate non-fiction account of our experiences, and at the same time deliberately omit aspects of our experiences that would not be meaningful to the reader's chapter experience. These chapters include: the curricular context design, course design and implementation, and course evaluation and further design.

In this process we also made deliberate decisions to drawing boundaries around and within our case. In this boundary identification process we looked at design as an object-oriented activity (Leontiev, 1974). We looked at design as a mediational process directed by the designer and their object of design that addressed the goals and motives for designing tangible material and intangible symbolic design products (Yamagata-Lynch, 2014). We also identified specific elements of our story to address in each chapter to maintain a consistency in our storytelling. These elements included: the design problem, design values, design solutions, and design tensions. Table 2 summarizes key elements of each chapter.

## DESIGN CASE CHAPTERS

Each of our design case chapters is presented with independent design problems that framed a beginning, middle, and an end to the narrative. Lara led the activities in Chapter 1 where her design activity directly addressed how the series of technology integration courses as future design products could fit into the sociopolitical context of a university teacher education program. Lisa led the activities in Chapter 2, where she deliberately focused on course design, trusting that Lara had thoroughly addressed the sociopolitical issues and there was a little breathing room to focus on designing one of the courses. In Chapter 3, Lisa led activities related to both course design and sociopolitical context issues because at that point in the project one could not be addressed without the other.

### **Design Chapter 1: Curricular Context Design— Narration led by Lara**

This chapter documents the early design decisions that set the curricular context design of this case. In 2000-2001, Lara served as the Instructional Technology Program faculty representative to the Elementary Education Program Redesign

	<b>DESIGN CHAPTER 1: CURRICULAR CONTEXT DESIGN</b>	<b>DESIGN CHAPTER 2: COURSE DESIGN AND IMPLEMENTATION</b>	<b>DESIGN CHAPTER 3: COURSE EVALUATION AND FURTHER DESIGN</b>
<b>Design Problems</b>	Negotiating with other program faculty the value and place for technology integration courses within the preservice education program  Meet learning outcomes set by national bodies and program requirements	Designing a 2-credit hour campus-based course while taking advantage of student clinical experiences, meeting state teacher education-licensing requirements	Revising the 2-credit hour course based on evaluation results  Designing a 1-credit online course for preservice teachers during student teaching that met state teacher education licensing requirements
<b>Foregrounded Design Values</b>	<b>LED-V1:</b> Learning is situated in practice  <b>TED-V1:</b> Technology integration is beyond learning about computers and software  <b>TED-V2:</b> We need to demonstrate educational values of technology integration  <b>TED-V3:</b> Future teachers must engage in design from conception to product creation  <b>TED-V6:</b> University faculty are not the only significant key players of preservice teacher development	<b>LED-V1:</b> Learning is situated in practice  <b>TED-V1:</b> Technology integration is beyond learning about computers and software  <b>TED-V3:</b> Future teachers must engage in design from conception to product creation  <b>TED-V4:</b> Preservice teachers need scaffolding while developing as reflective practitioners  <b>TED-V5:</b> Teachers learn best from other teachers	All design values from previous chapters and;  <b>TED-V2:</b> We need to demonstrate educational values of technology integration  <b>TED-V6:</b> University faculty are not the only significant key players of preservice teacher development  <b>TED-V7:</b> Teachers are more likely to engage in technology integration if they have prior experience
<b>Design Solutions</b>	Split a 3-credit hour course experience into a 2-credit hour campus course early in preservice education, and a 1-credit hour online course during student teaching  Hire a new tenure track faculty with K-12 curricular technology experience	Maximize the 3-week clinical experience in the 2-credit course to take advantage of a critical part of course experiences  Engage students in situated learning activities that would be reinforced during observations and reflections they made during 3-week clinical period  Engage students in an entire design project	Adjust assignment expectations for the 2-credit course  For the 1-credit online course treat course activities as an ongoing just-in-time professional development experience for preservice teachers during student teaching  Work closely with the Clinical Placement Office Staff  Become a contributing member of the Elementary Education program faculty as the Teacher Education Technology Integration Course Coordinator to gain buy-in from all key players
<b>Design Tensions</b>	Managing credit hour compromise while designing an innovative approach to preservice technology curricular integration	Questioning whether our course embodies the essence of our design values  Splitting 3-credit hour experiences into a 2-credit hour campus-based course and a 1-credit hour online student teaching experience	Juggling design problems and outcomes from each design solution in previous design chapters while adjusting initial design of the 2-credit campus-based course and designing the 1-credit online course  Finding out the challenges of realities associated with innovative credit-hour courses that required interdepartmental and interoffice collaboration in a university setting as we implemented the design solutions

**TABLE 2.** Curricular design chapters and elements.



Committee (EPRC). This committee was comprised of representative faculty from all academic units that provided service or elective courses to education majors. Committee members were from academic disciplines in multiple departments and colleges across the NIU campus, each driven by a commitment to the importance of their discipline, and the opportunity to secure new resources and political standing toward finding a place in the new program. As a representative, Lara was tasked by her department faculty peers with solidifying a place in the elementary education curriculum for a technology integration course based on shared beliefs—or design values—regarding how the curriculum should be situated in the new program. In this chapter we will explore Lara’s overall curricular context design decisions that set the framework for the remainder of this longitudinal design case. Then we will discuss how our design values were addressed within the curricular context.

### Lara’s Design Context

Up until this point at NIU, instructional technology courses were offered to all preservice teachers as part of elective courses. The content of these courses covered a survey of computer-based tools that could be used in the classroom from productivity tools to educational software. The courses had no prerequisite requirements and were very popular among many majors. These were most popular among students from the largest teacher education program on campus, which was the Elementary Education program. Thus, these courses generated high undergraduate enrollments for Lara’s department.

Within the EPRC, committee members experienced typical constraints for program redesign in higher education. For example, there was great pressure to create a curriculum that did not exceed 120 credit hours so that undergraduate students could reasonably complete their Bachelor’s degree in four years. At NIU the Elementary Education Program drew 50% of its students from the native students who started at NIU as freshman. The remaining 50% of students were typically transfer students, primarily from two-year institutions. For this reason, the committee agreed from the start that the focus of the redesign would be the last 60 hours of the undergraduate program and that any prerequisite course in the program would also have to be articulated with feeder community colleges for transfer students. The 60

upper-level credits were divided into four semester blocks, referred to as the Professional Semesters. Each Professional Semester had a theme, and all but the last had a clinical component as shown in Figure 1.

At the same time as we were redesigning the Elementary Education Program, the new National Educational Technology Standards for Teachers (NETS-T) were released by the International Society for Technology in Education (ISTE), and the state of Illinois adopted the Core Technology Standards for All Teachers (CTSFATS) as a requirement for teacher licensure. The emergence of these state and national standards provided significant leverage for the Instructional Technology program faculty in developing a case for the value of technology integration in the elementary education curriculum.

### Design Problem

As a result of acting as a liaison between her department faculty and the EPRC, Lara identified a three pronged design problem that included: a) negotiating with other program faculty the curricular value and place for technology integration courses within the preservice education program, b) ensuring that teacher candidates met all of the learning outcomes set by national and state bodies, and c) identifying solutions that fit institutional structures and program requirements. This design problem and Lara’s experiences in the EPRC guided her in identifying the design space and object of design for this project.

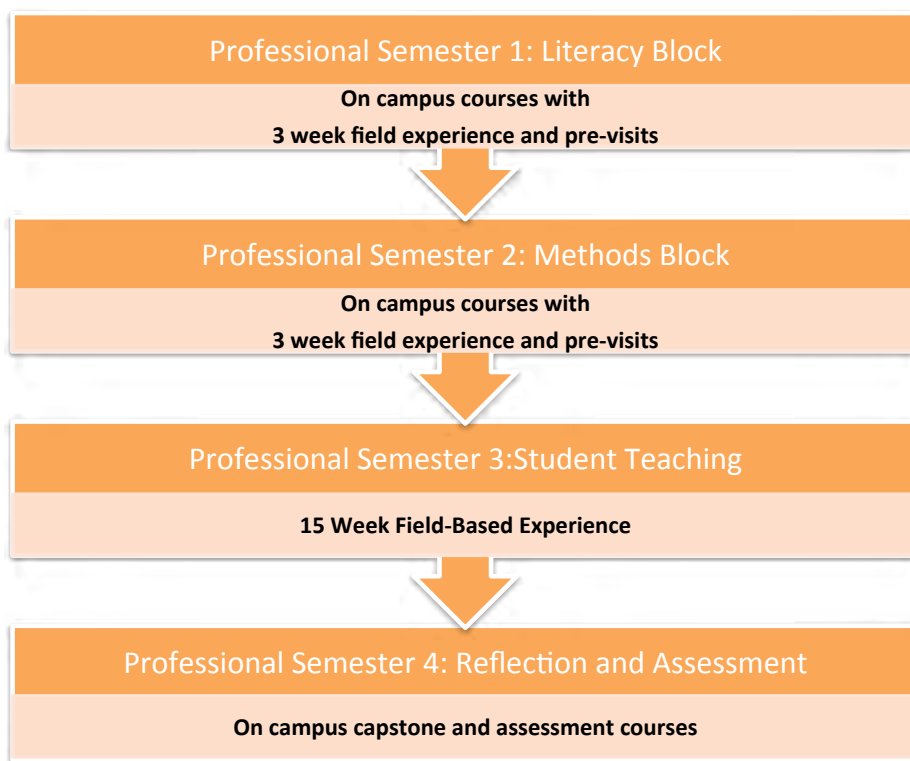


FIGURE 1. Elementary Education program sequence.

Lara quickly realized that there was a lack of initial buy in among other EEPRC members for recognizing the value that technology integration courses bring to teacher education. This realization led Lara to identify the object of design at this stage of the project as the comprehensive inclusion of technology integration in the elementary education curriculum. Her design space consisted of the object and resources such as her faculty peers and state and national standards as well as constraints put in place by program requirements. However, there were complications even within her resources. For example, the variability across the state and national standards made it challenging to ensure that teacher candidates would meet all of the learning outcomes.

### *Curricular Context Design Solutions*

Lara started to address her design problems engaging in a synthesis of the two sets of standards. In 2000, the Illinois CTSFAT standards had a heavy emphasis on productivity skills, yet the NETS-T standards (ISTE, 2000) had a more robust continuum of performance indicators spanning the development of a teacher from pre-admission through the teacher preparation program toward professional practice of inservice teachers. This provided leverage for the technology integration courses to find a place as a required and separate experience for elementary education students. However, continuing misconceptions of technology integration among the other program faculty persisted, as Lisa will discuss in Chapter 2.

After closely examining the standards and engaging in collaborative discussion with her department faculty, Lara proposed to the EEPRC a two course instructional technology series for inclusion in the Elementary Education Program. Her intent was that these courses would address TED-V1: Technology integration is beyond learning about computers and software and TED-V2: We need to demonstrate educational value of technology integration. In this proposal, Lara introduced a 3-credit course in productivity skills that aligned with NETS-T preadmission level and a significant portion of the CTSFAT followed by a second 3-credit course with primary focus on instructional planning and technology integration. Her intent was to address TED-V3: Future teachers must engage in design from conception to product creation through experiences students would gain from these courses.

Guided by LED-V1: Learning is situated in practice, Lara recommended that the series of courses be included in the professional semester blocks and connected to field experiences. The first productivity course was intended to be coupled with Professional Semester 1: Literacy Block, and the second instructional planning and technology integration course with Professional Semester 2: Methods Block. Her intent was that this placement would have afforded preservice teachers the opportunity to practice their newly attained

knowledge and skills in both the university setting as well as a school/classroom setting while acknowledging TED-V6: University faculty are not the only significant key players in the development of preservice teacher education programs: K-12 teachers, field supervisors, and K-12.

The EEPRC members for several reasons did not accept this initial proposal. First, although there was agreement that technology integration content should be in the elementary education curriculum, there was not a willingness among members to allocate six of the 60 credit hours in the professional semesters for technology integration. Also, the semesters with field experiences were highly sought after by all the academic disciplines vying for curricular placement. Additionally, there was a strong held belief by other academic disciplines that most students entering college in the early 2000s already had sufficient productivity skills, and the emphasis of the technology integration course should introduce tools specific for the school context. The larger EEPRC felt that grade book management and WebQuest development were the only two critical skills that preservice teachers needed to gain despite what was discussed in the state and national technology standards.

Lara went back to the drawing board, committed to her initial course concept series, which upheld the LED-V1, and TED-V1-3 and 6. Her new proposal included a 3-credit on-campus Technology Skills Course in the semester prior to the professional semester, a 2-credit on-campus Technology Integration Course in Professional Semester 1, and a 1-Credit Online Technology Integration Student Teaching Course. Lara's technology course sequence proposal that was eventually accepted by the Instructional Technology faculty and EEPRC members is described in Table 3 with our rationale of how each proposed course aligned with our design values.

For all three courses, Lara, in cooperation with her department faculty developed full course outlines. The course outline as a design document included details of course objectives, standards the course would address, typical course activities, and a pool of bibliographical references. Unfortunately, these course outlines are internal documents within the College of Education and we are not able to share them as part of this article. Instructional Technology faculty used the course outline for the 3-credit on-campus Technology Skills Course to develop and begin delivering the course immediately. Lara developed the corresponding proficiency exam and it too was offered immediately. The 2-credit on-campus Technology Integration Course was scheduled to be offered in 2004, and the 1-credit Online Technology Integration Student Teaching Course was scheduled to be offered for the first time in 2005.

At this time, there was great excitement among the Instructional Technology faculty about the innovative approach and the affordances this set of courses would offer

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### ON-CAMPUS TECHNOLOGY SKILLS COURSE (3 CREDITS)

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This course was proposed to focus on basic computer concepts, productivity tools (Microsoft Office-like products), some web design, and some image manipulation.

**DESIGN VALUES ADDRESSED** This course addressed NETS-T preadmission requirements so that we would be able to address our Learning Environments and Teacher Education Design Values in subsequent courses in the upper 60 credit hour professional semesters.

**RATIONALE** To address the concerns that students already had the productivity tools skills when they entered college, this course was placed prior to the professional semester. This course was articulated with similar courses at community colleges and aligned to an in-house computer-based assessment. Students who already took articulated courses or were able to pass the assessment received a waiver from the course requirement.

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### ON-CAMPUS TECHNOLOGY INTEGRATION COURSE (2 CREDITS)

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This course was proposed for the Professional Semester 1: Literacy Block. The course focus was on instructional planning, using a technology utilization model such as ASSURE (Smaldino, Lowther, & Russell, 2011).

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V1: Technology integration is beyond learning about computers and software; TED-V2: We need to demonstrate educational value of technology integration; and TED-V3: Future teachers need to engage in design from conception to product creation.

**RATIONALE** The goals for this course were to help developing teachers practice technology integration as part of instructional planning and decision making, and experience for themselves the value of technology integration into their future curricular development. This course was also designed to take advantage of both the university course experiences and student field-based clinical experiences to address the "prior to student teaching" standards on the 2000 NETS-T continuum.

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### ONLINE TECHNOLOGY INTEGRATION STUDENT TEACHING COURSE (1 CREDIT)

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This course was proposed for the Professional Semester 3: Student Teaching semester to help student teachers integrate technology into their classroom by university faculty serving as their technology integration coach.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V3 Future teachers need to engage in design from conception to product creation; and TED-V6: University faculty are not the only significant key players in the development of preservice teacher education programs; K-12 teachers, field supervisors.

**RATIONALE** The purpose of this course was to guide student teachers in authentic classroom settings and apply technology integration knowledge and skills that they learned from previous courses. Instructional Technology faculty were expected to take a coaching role while helping student teachers make daily instructional planning and delivery decisions.

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**TABLE 3.** Accepted technology integration curricular context.

the preservice teachers as well as the department. There was great optimism about having a secure placement in the Elementary Education Program. Faculty were also excited about the opportunity to work with preservice teachers multiple times through coursework and student teaching to help them understand the connections between technology integration content and practice. Because student teaching is the paramount experience a preservice teacher engages in, we were delighted to be an integral part of that professional semester. However, there were serious concerns on the part of the EEPRC about the placement of the 1-credit course during student teaching, but given that it was online, and was proposed to use a coaching model, there was concession to try it.

Although this curricular design was intended for only the Elementary Education Program, because the state and national standards for technology were mandates in the state of Illinois, other teacher preparation programs also requested similar courses. In parallel to this unique series for elementary education courses, a fourth course was

developed, a 3-credit on-campus Teaching and Learning with Technology course. This course was similar in content to the elementary education courses, and required the 3-credit on-campus Technology Skills Course as a prerequisite, but it was proposed only for the university classroom. A field experience component could not be secured for this course as it served programs with varying curricular sequences from across the university. The next step in the curricular design process was to secure a faculty position to take the remaining course outlines from concept to implementation. This is where Lisa's design experiences with this case begin. She will lead these discussions in Chapters 2 and 3.

#### *Design Tensions*

Based on the design problems that Lara identified, unsurprisingly the tensions she encountered in this chapter were all related to the sociopolitical context of a university teacher education program. In generating the design solution for the Curricular Context Design, the primary design tension was centered on managing the credit hour compromise to meet institutional structures and program requirements



while designing an innovative and comprehensive approach to preservice technology curricular integration. By the end of the Elementary Education program curricular redesign, the constraints that the EEPRC had to work with did not allow any academic discipline contributing to the program to achieve their ideal curricular solution. The Instructional Technology faculty had to compromise on the placement of the technology integration courses within the program and distribute total credit hours across the curriculum; however, we were able to uphold our commitment to our design values.

## **Design Chapter 2: 2-credit Course Design and Implementation—Narration led by Lisa**

This chapter is zoomed into Lisa's individual course design activities as a newly hired untenured faculty member, which took place from 2004 to early 2005. We will engage in this discussion by introducing the big picture design issues of the course. We will zoom into one specific course activity as an example of how we applied our design values to our design situation. We will also discuss how we addressed our design problem through the design process.

### *Lisa's Design Context*

Lisa began teaching at NIU in summer 2004. In the fall semester, her primary task was to design, develop, and teach the 2-credit campus-based technology integration course. When Lisa was hired as a faculty, the department chair communicated to her that this design project was a large portion of her responsibility. During her first semester at NIU, Lara, who was the assistant department chair who oversaw faculty course assignments, informed Lisa that the department chair decided to assign Lisa to teach four sections of the 2-credit hour course. The department chair made this decision because the regular teaching assignment in the College of Education at NIU was 9-credit hours per semester and three sections of teaching a 2-credit course would have given Lisa a release from an entire 3-credit hour worth of teaching assignment. Each section of the 2-credit class in fall 2004 enrolled 20 to 25 students and Lisa's teaching assignment involved close to 100 students.

In terms of resources for developing the 2-credit course, Lisa was provided with direct outcomes from Lara's work in the previous chapter. These resources included the course outlines and the syllabus of the 3-credit sister course. Lisa was also provided with technological resources for teaching the course such as well-equipped computer lab facilities, access to software, digital video recording equipment, and digital cameras. The department had impressive up-to-date technology resources and also had graduate assistants provide equipment maintenance support to instructors who taught in the computer labs. Lisa attended meetings weekly with a team of faculty in her department who taught

the 3-credit sister course to exchange ideas on daily course activities and assignments.

### *Design Problem*

When Lisa started designing the 2-credit course she decided to fine-tune her object of design to: Designing a 2-credit hour campus-based course while taking advantage of student clinical experiences and meet state teacher education-licensing requirements. To successfully accomplish assigned tasks as a new untenured faculty, this first semester Lisa chose to be most concerned about the course design and worry about sociopolitical issues as they became apparent. She trusted that the information shared to her from colleagues and in existing artifacts were a product of sociopolitical negotiations among departments involved in the Elementary Education program. At the same time Lisa was aware from past experiences working in a teacher education department at a different university that some sociopolitical issues have long histories and can be difficult to resolve. The narrowly defined object of design allowed Lisa to box the design space tightly and begin conceptualizing potential design solutions.

### *2-credit Design Solution*

While thinking about the overall structure of how the course will flow during the semester Lisa had to work through the fact that the 2-credit course was scheduled to meet 12 times, 3-hours per session during the 15 week semester to accommodate the clinical period and the fact that the course was 2 credit hours. In fall 2004 the clinical period occurred after seven weeks of course meetings and students came back for four more weeks of coursework.

Once Lisa had a rough understanding of how the 2-credit course would flow during the semester with weekly topics and assigned readings, she started to design details of course assignments that were floating around in her mind as ideas up until this stage. While designing these assignments, Lisa followed the LED-V1: Learning is situated in practice and TED-V1, V3, and V4 that included: a) Technology integration is beyond learning about computers and software, b) Future teachers must engage in design from conception to product creation; and c) Preservice teachers need scaffolding while developing as reflective practitioners. Based on these values Lisa planned five major assignments that included two different types of observation, the first to be completed during the first seven weeks prior to the clinical field work, and the second during the 3 week clinical period; one interview during the field work; a group technology ASSURE unit plan development; and a group presentation of the unit plan. The assignment descriptions and how each design value was applied to each assignment are discussed in Table 4. With a completed syllabus in hand, Lisa started the fall semester and went into the "no looking back, just keep designing and implementing" daily routine of teaching.

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### TECHNOLOGY CLASSROOM VIDEO CLIP OBSERVATIONS

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Preservice teachers conduct 2 observations of classroom video clips of inservice teachers integrating technology into teaching and learning activities. During this observation, preservice teachers take note of the activities that take place in the classroom. Then write a 1-page reflection for each observation.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V4: Preservice teachers need scaffolding while developing as reflective practitioners; and TED-V5: Teachers learn best from other teachers.

**RATIONALE** Selected online video clips provide students a far less chaotic form of activities to observe and practice reflecting on what they see and making connections to course related readings and activities, learning from actions of other teachers.

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### CLASSROOMS TEACHING AND LEARNING ACTIVITIES OBSERVATIONS

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During the 3 week clinical period preservice teachers conduct 2 observations of classroom teaching and learning activities. The classroom activity can be any type of activity including one that integrated technology and another that do not integrate technology. During the observation preservice teachers take note of the activities that take place in the classroom. Then write a 1-page reflection for each observation.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V4: Preservice teachers need scaffolding while developing as reflective practitioners; and TED-V5: Teachers learn best from other teachers.

**RATIONALE** Continue learning from reflecting on observations, but this time in a real-world classroom and learn from actions of inservice teachers.

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### INTERVIEW A TECHNOLOGY COORDINATOR, MEDIA SPECIALIST, OR A PRINCIPAL

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During the 3 week clinical experience, preservice teachers conduct an interview with a technology coordinator, a media specialist, or a principal about educational use of technology at the school. Then write a report of the interview.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V1: Technology integration is beyond learning about computers and software; and TED-V5: Teachers learn best from other teachers.

**RATIONALE** In many cases when interviewing technology professionals in the K-12 environment students find that technology integration is a real issue rather than a trend and that it has much more to do with curricular design and development rather than hardware and software issues.

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### TECHNOLOGY INTEGRATION ASSURE UNIT PLAN

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Throughout the semester, each student takes part as a team member who contributes to designing and developing a technology-integrated lesson that addresses Illinois Standards for Learning.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; and TED-V3: Future teachers must engage in design from conception to product creation

**RATIONALE** Students collaboratively design and develop a technology unit plan in its entirety and test specific lessons on one another to analyze evaluation data.

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### TECHNOLOGY INTEGRATION ASSURE UNIT PRESENTATION

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Each group Technology Integration ASSURE Unit Plan teams demonstrates their presentation skills and ability to effectively use a variety of media.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; TED-V3: Future teachers must engage in design from conception to product creation; and TED-V5: Teachers learn best from other teachers.

**RATIONALE** This is typically the first time for students to present with electronic media, which they will be expected to do as future teachers. This in-course presentation opportunity provides them a safe environment to engage in a media-based presentation. Additionally, students are greatly interested in the unit design and development projects shared by teams.

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**TABLE 4.** Fall 2004 2-credit course assignments.

Once the assignments were identified, Lisa worked on laying out the topics for the course and roughly how each topic and weekly activities would support students in successfully meeting the requirements of the assignments that we had already aligned with standards and course objectives. The topics introduced in the course included instructional

design, learning theories, educational use of computers and the Internet, distance education, visual design values, video editing, media evaluation, and ethics. Every week that the course met the class session was divided into a little bit of instructor lecture, then student hands on activities, and a reflective debrief. As the semester was closer to the end

there were more times when the instructor engaged in less lecture and students were engaged mostly in hands-on activities in their groups.

*Detailed Example of How We Applied Design Values to a Course Activity.*

As a sample course activity and to walk through how we applied our design values to one of our course activities we will share the Technology Purchase Simulation (Figure 2). We chose this activity because over the years, other faculty and instructors who taught the 2-credit course reported to us that this simulation was a valuable experience for their students. Lisa developed this activity with the intention to address the following design values: a) LED-V1: Learning is situated in practice; and b) TED-V1: Technology integration is beyond learning about computers and software. This activity was recommended for implementation during the first or second week of the course with the goal to quickly


make technology integration relevant to preservice teachers in the class, to assess participant background knowledge of prerequisite computer productivity software skills, and to keep participants engaged with course topics that will be introduced later in the semester.

The simulation required students to work in a team of three to four members to develop a technology purchase proposal for a hypothetical internal competition of \$3000 in an elementary school setting. Each team was required to prepare a 1-page word-processed proposal narrative, a proposal budget using a spreadsheet, and an electronic presentation of the proposal highlights. Student teams worked across two class sessions completing the above proposal components while they identified their equipment and how they planned to address curricular and student needs.

As shown in Figure 2, this simulation was introduced to students in a WebQuest format to address the Elementary

## Technology Equipment Purchase Simulation WebQuest

### ETT 401A Integrating Technology into the Elementary Classroom



<a href="#">Course Web Site</a>	<a href="#">Syllabus</a>	<a href="#">Assignments</a>	<a href="#">Schedule</a>	<a href="#">Lab Activities</a>
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[| Introduction |](#) [| Task |](#) [| Process |](#) [| Resources |](#) [| Evaluation |](#) [| Conclusion |](#)

**Introduction**  
Welcome to the new school year. As the principal of NIU elementary school I am very delighted to start off the new school year with such enthusiastic and highly qualified staff. I have a very important announcement to make. With the state budget determined at the last minute before the school year began, I have just been notified that we have \$3,000 dollars that can be used for technology equipment.

[| Back to top |](#)

**Task**  
In your proposal you need to demonstrate that your team can use the purchased equipment in an educationally sound manner that will assist student learning. Therefore, in your proposals I would like you to describe what type of activities students would be engaged in with the equipment you request to purchase.

Remember that each teacher room is already equipped with 1 teacher station that includes: a computer with a Pentium 4 processor, flat screen monitor, keyboard, mouse, 1 color inkjet printer, 2 USB ports, 1 CD/CDRW/DVD burner, Windows XP

**FIGURE 2.** 2-credit course Technology Purchase simulation.

Education Program faculty concern that preservice teachers need to be familiar with WebQuests. The content of this simulation was based on Lisa's real-life experiences working with K-12 teachers and the stories that teachers shared with her during interviews and observations related to her research. Additionally, over the years of teaching this course, through what students provided as reports from the Interview a Technology Coordinator, Media Specialist, or Principal assignment, Lisa was able to enhance the simulation scenario by adding more real-world constraints.

This simulation helped students to see how technology integration entailed issues beyond technology hardware and software because while the scenario was about purchasing hardware and software, the grant evaluation criteria required students to articulate how the items they proposed to purchase would meet critical curricular and student needs. There were also instances when after students came back from their clinical experiences they would report to the class: "Oh my God, teachers at the school I was placed were applying to grants like the one we did at the beginning of the semester!" This discovery helped to make the 2-credit course more relevant to the preservice teachers.

### *Design Tensions*

The tensions in this chapter that Lisa encountered were primarily related to course design and implementation. The outcome of Lisa's efforts in designing, developing, and implementing the 2-credit course at this stage was constrained to building a learning environment, then seeing what happened. At this time even though Lisa purposefully relied on various design values that she and her department faculty shared, it was not clear whether the 2-credit course and the experiences students gained from the course truly embodied those values effectively. This led Lisa to experience a tension during the 15 week period of the semester where she inevitably questioned herself whether she was engaging in a design activity that was aligned to her design values, and even though she did not have data to know whether she was or not, she had to keep on designing, developing, and implementing.

Another tension that Lisa experienced in this chapter was related to splitting a 3-credit course experience into a 2-credit campus-based course and 1-credit online course. Based on Lisa's past experiences of solely designing and teaching 3-credit courses, what a 2-credit course would look like and how it would behave was a foreign concept to her. It also turned out that this was the case with her department chair and her colleagues. At the same time, designing the 2-credit course became difficult when Lisa had to rely on a non-existing 1-credit online course supporting the 2-credit course to provide students with the full 3-credit experience equivalent to the sister campus-based 3-credit course. Lisa had a hunch that she will be heavily involved in the development of the

1-credit online course the following year, but this had not been determined in the department and it was unclear whether there were other faculty who would own the 1-credit course design and development.

### **Design Chapter 3: 2-Credit Course Implementation and Evaluation and 1-Credit Course Design—Narration led by Lisa**

This chapter is zoomed into Lisa's individual course revision activities for the Professional Semester 1 2-credit on-campus course and the design activities for the Student Teaching Semester 1-credit online course, which took place during late 2004 to 2005. At this stage there were several design problems that had to be addressed at the same time because they were inevitably interrelated with one another, and Lisa could not address one without the other. In this chapter we will discuss how each design problem that Lisa encountered materialized as an object of design. Then we will discuss how we addressed our design problems through solutions that we implemented.

#### *Design Problems*

The design problem that Lisa encountered at this stage was far more complicated and multifaceted than the previous chapter. It became clear to Lisa that she had to broaden her object of design to ensure a successful and sustainable implementation of the 2-credit on-campus and 1-credit online courses. Lisa had data from daily student reactions in the 2-credit class, comments made in assignments, and anonymous student evaluations to give her plenty of ideas on how to approach revising the course. For spring 2005 she was assigned two sections of the 2-credit course along with one 3-credit graduate level course. Therefore, she knew she had an immediate opportunity to design and implement revisions to the 2-credit course. Additionally, at the end of the fall semester, the department chair informed Lisa that she will be in charge of designing the 1-credit online course that will be offered for the first time in fall 2005.

#### *2-credit Course Revisions*

The formative feedback from the 2-credit course indicated that students strongly felt that the requirements in the course did not look and feel like 2-credits worth. They felt that it was too close to a 3-credit course. Students were also concerned that they were not provided with completed projects as samples for them to review while working on course related assignments. This seemed to be a common practice in other preservice education courses during the Professional Semester 1. Some students also reported that while they worked hard in teams putting a lot of time and effort into team projects, they felt that they were being penalized for work that their teammates did not contribute to 100%.

Lisa, as the instructor of the course, was also experiencing an overload of work related hours required for teaching this course and also fulfilling other departmental duties. She had been prepping and grading for the course every minute she had including times she spent in the car while her family was driving to the grocery store during the weekends. Lisa already had experience teaching a full load at the university level so she knew that something was not right.

First, Lisa examined the student issues related to “too much work for a 2-credit course.” She started by calculating the required seat time for two credits and three credits because she herself had a hunch that something was not right. To her surprise, student complaints and her hunch were correct! When translating course scheduling hours from the usual 3-credit framework to a 2-credit framework Lisa’s department had scheduled 36-hours of class time where a 2-credit course should have been scheduled for 30-hours instead. Lisa herself would have not recognized the meeting time error if she had not sat down and hand calculated the hours.

She brought this to the department chair’s attention and course hours were changed for the spring 2005 semester. At the same time, due to an overload from the fall semester, the department chair promised not to hold her accountable for the 1-credit hour load she owed the department in the fall. He also informed her that her preparations for the 1-credit online course will be sufficient for what she would owe the department in the spring semester for only teaching 7-credit hours.

Once the hours were changed, the course was redefined as a 10 week course rather than the initial 12 weeks, and that required shifting content. Lisa still wanted to address the “too much work” comment made by students so she started to look at how the course can be more efficient, require less “busy work,” but engage students in activities as set by the course objectives. She still wanted the course to address all the design values introduced in the previous chapter, but in a leaner form. Additionally, this is when she started to closely examine the CTSFAT that Lara referred to in Chapter 1 and the entire sequence of technology integration courses. This examination helped redefine the role of both the 2-credit and 1-credit courses as a coupled course experience. In combination with the formative evaluation data and what Lisa learned from the state standards she started the redesign process by adjusting assignments and related course activities, while continually questioning how the outcomes of these revisions embodied both the Learning Environments and Teacher Education Design Values.

To make the course leaner, Lisa eliminated the Technology Classroom Video Clip Observations as an assignment. However, to ensure to address the TED-V4: preservice teachers need scaffolding while developing as reflective practitioners, she decided to include this assignment as part of a

whole class activity. As an in-class activity, Lisa led the class to observe a teaching video clip. Then she led a discussion of the clip with targeted observation reflection questions to help students analyze teacher technology integration design strategies. This course activity also gave students a model for the clinical observation assignment much like an example of a completed assignment, while helping students carefully examine the moment-to-moment technology integration decisions.

Lisa also realized that she had to add a new assignment to address some of the state standards that were not adequately addressed in the first iteration of the course design. Lisa added the Media Evaluation assignment that students had to complete before their clinical experience. In this assignment, students were required to locate media to evaluate, then find, create, or modify an existing evaluation instrument, and engage in an evaluation of the media. Then students had to submit the narrative of their evaluation and reflections as part of the assignment.

Lisa decided to further address the “too much work for a 2-credit class” comment by cutting the clinical observation assignment from two observations to one. She made this decision also because in 2004-2005 there were students who found great difficulty in finding classrooms at their clinical placement sites where teachers were integrating technology. By decreasing the observation requirement from two to one, Lisa gave a choice to students for observing a classroom that technology was integrated or not integrated. However, in their reflections students were responsible to make clear connections to course-related topics and discussions by reflecting on the technology integration activities they observed, or by making suggestions for future technology integration opportunities.

Finally, to address student issues with teamwork, Lisa added an anonymous evaluation system, completed by individual team members, to the Technology Integration ASSURE Unit Plan. Through this evaluation, students assessed each team member’s contribution to the group project. Then the average score from the evaluation for each student contributed 10% towards their assignment grade.

### *1-credit Online Course Design*

Similar to the 2-credit course, the 1-credit online course design started with relying on the course outlines from Chapter 1. Lisa had to take a leap of faith that students would be able to capitalize on what they learned from the 2-credit course. She also decided to take into account the fact that preservice teachers would be enrolled in this course during student teaching. Lisa decided to design the 1-credit course with no required readings, but following the initial intent of the course design in Chapter 1, geared towards coaching student teachers to engage in curricular technology integration.



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## TECHNOLOGY STANDARDS FOR ALL ILLINOIS TEACHERS AND NETS\*T SELF ASSESSMENT

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Preservice teachers conduct a self-assessment of technology skills and how they meet the Technology Standards for All Illinois Teachers and NETS\*T. After the self-assessment, students are responsible for writing a reflection on the assessment and what they need to do to continue their professional development as a future teacher. Students are also required to post their assessment on the online discussion forum, and provide constructive comments to assigned peers.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; and TED-V2: We need to demonstrate educational values of technology integration.

**RATIONALE** Examining the State Standards related to technology integration makes preservice teachers aware that technology integration will take a vital role in their profession as a teacher.

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## NETS\*S ASSESSMENT PREPARING FOR TECHNOLOGY INTEGRATION LESSON

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Preservice teachers conduct an assessment of NETS\*S in the grade level that they have been placed for student teaching. Students are required to engage in this analysis within the context of their Technology Integration Lesson. Once students submit their analysis by posting it on the online discussion forum, they are responsible for providing constructive comments to assigned peers.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; and TED-V4: Preservice teachers need scaffolding while developing as reflective practitioners.

**RATIONALE** To make technology integration a “real” classroom issue, this assignment was designed to take a small step to help students contextualize curricular technology integration within the classroom that they were student teaching.

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## SCHOOL TECHNOLOGY RESOURCES ASSESSMENT

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Preservice teachers conduct an interview with their cooperating teacher and school building technology coordinator, media specialist, or principal about what technology resources and technology professional development opportunities are available at their school. Once students submit their resources assessment by posting it on the online discussion forum, they are responsible for providing constructive comments to assigned peers.

**DESIGN VALUES ADDRESSED** LED-V1: Learning is situated in practice; and TED-V5: Teachers learn best from other teachers.

**RATIONALE** Both inservice and preservice teachers often find new resources available in their own school building by just asking what is available. This assignment specifically was focused on finding resources that would help preservice teachers complete their Technology Integration Lesson. By sharing individual assessments, student teachers had the opportunity to learn about schools where their peers were placed.

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## TECHNOLOGY INTEGRATION LESSON

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Preservice teachers individually engage in designing, implementing, and evaluating one technology integration lesson during student teaching. They are required to post their lesson plan, evaluation results, and reflection paper on the online discussion forum. They are also required to provide constructive comments to assigned peers.

Design Value Addressed: LED-V1: Learning is situated in practice; TED-V3: Future teachers must engage in design from conception to product creation; and TED-V7: Teachers are more likely to integrate technology into the curriculum if they already have experience integrating technology into their classroom activities.

**RATIONALE** Preservice teachers completed one technology integration lesson during student teaching in its entirety from conception of design to evaluation so that they have one technology integration lesson that they can continue to modify and implement in their future classroom teaching experiences.

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**TABLE 5.** Fall 2005 1-credit course assignments.

Lisa targeted the design of the 1-credit course to address TED-V7: Teachers are more likely to integrate technology into the curriculum if they have prior experience integrating technology into their classroom. To address this design value, every assignment in the course was built towards students completing one technology-integrated lesson during student teaching. Table 5 lists the assignments for the 1-credit course with the design values they addressed.

In addition to the above assignments Lisa required one face-to-face meeting at the middle of the student teaching semester. The purpose of this meeting was to address

TED-V5: Teachers learn best from other teachers. Thus, the intent was to require students to share their progress towards their Technology Integration Lesson during the meeting. Additionally, Lisa wanted students to share what they learned about technology integration from each of their student teaching placement schools because their experiences may have been different from one another. The preparations involved in this one face-to-face meeting quickly led Lisa to realize that while the 1-credit online course was being offered through her department, it was not going to be successfully implemented without a close collaboration with the Student Clinical Placement Office.

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**THE GOAL FOR THIS POSITION IS AS FOLLOWS:**

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1. Maintain consistency in all sections of preservice technology integration courses;
  2. Ensure that all technology integration courses are meeting: IPTS, Core Technology, Language Arts, and the Elementary Education Content Standards;
  3. Provide mentorship to faculty who are new to teaching the technology integration courses;
  4. Maintain communication channels with the Elementary Education Program Faculty regarding technology integration courses and report back to the Instructional Technology (IT) Program faculty and the Department Chair regarding decisions that need to be made at the department level;
  5. Maintain communication channels with the Office of Field Experiences and Student Teaching Supervisors.
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**ACTIVITIES THAT SUPPORT THE ABOVE GOALS:**

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ACTIVITY	SUPPORTED GOALS
Facilitate meetings with technology integration course instructors and share resources.	1, 2, & 3
Review all technology integration course content and maintain alignment with all standards for NCATE review.	1, 2, & 3
Develop, create, and maintain technology integration course materials for LiveText and train other instructors to use them.	2
Attend and take an active role in the Elementary Education Committee. Report back to the IT faculty and the Department Chair any decisions that need to be made at the department level.	4
Attend and take an active role in meetings with the Office of Field Experiences as needed. Report back to the IT faculty and the Department Chair any decisions that need to be made at the department level.	5
Make sure that individual instructors are coordinating with the Assistant Clinical Coordinator for school visits while students are in their 3-week clinical experience.	5
Make sure that individual instructors coordinate with the Student Teaching Supervisors for school visits while students are in the field.	5

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**REQUIRED QUALIFICATIONS**

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- Teaching experience of preservice technology integration course or a similar course at another institution.
  - Experience in K-12 teaching or extensive K-12 field based research.
  - Must teach one section of the technology integration courses during coordinator term.
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**DEPARTMENT CHAIR AND ASSISTANT CHAIR RESPONSIBILITIES**

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- Scheduling technology integration course sections
  - Staffing of technology integration course sections
  - Adjunct performance review for all technology integration course sections
  - Administration of Computer Competency Exam
- 

**COMPENSATION**

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During the first year of implementation of this role (2005-2006 academic year), the coordinator will be given one course release per semester or term. After the first year, the appropriate course release will be reexamined.

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**COURSE SUPPORT PROVIDED BY THE DEPARTMENT**

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20 hours of GA work time per week to support the course coordination. Course support for individual faculty is a low priority for the GA.

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**NOTE FROM THE DEPARTMENT CHAIR**

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After the 2005-2006 academic year the department will reevaluate the course coordinator role; however, the coordinator can ask for help any time during the academic year.

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**TABLE 6.** Preservice technology integration course coordinator.

While preparing for this one-time meeting, Lisa learned that student teachers typically are placed near their home and they do not have a housing arrangement near campus. Some students were placed at schools that were approximately two hours driving distance away from campus. This also meant that most students did not have campus-parking permits. Then there was the matter of students not being able to leave their student teaching placement settings until close to 5 pm and they had to be at work the next day close

to 7 am. All of these factors led to making a meeting on campus next to impossible.

When consulting the Clinical Placement Office, Lisa found that student teaching supervisors, who were typically adjunct faculty and were often retired classroom teachers, met with student teachers a couple of times a month. Lisa inquired whether she could meet with students during one of those meetings, but was informed that they did not have

valuable time to spare. So, she decided to request an hour extension for one of the scheduled student teacher supervisor large group meeting session to hold the 1-credit course face-to-face meeting; however, this was not well received by supervisors who felt that the 1-credit technology integration course was already requiring too much time away during valuable the valuable Student Teaching Semester.

### *Design Tensions*

In the design activities of this chapter, Lisa experienced a tension from juggling design problems and outcomes related to her design solutions in previous chapters and adjusting her design decisions about the 2-credit and 1-credit courses at the same time. Unlike the previous chapter, Lisa's design activities in this chapter had to address the socio-political contextual consequences from the 2-credit course implementation. Then she found that the changes she made to the original design of the course based on formative evaluation results brought new real-world complications that affected her design activities for the 1-credit course as well. Some of the issues were beyond Lisa's control to manage, yet the course design had to address them. For example, Lisa found that it is very difficult for the university as a system to handle innovative credit hour teaching assignments. Even several years after numerous iterations of revisions to the course design, instructors including both tenure-track and adjunct faculty teaching the 2-credit and 1-credit courses continued to express their concern that the workload associated to teaching the two courses were disproportionately more than teaching a 3-credit course.

It also became clear, especially while designing the 1-credit course, that implementing a course during student teaching requires a significant amount of communication to take place among various key players in a teacher education program. Lisa reported this back to Lara and the department chair, and was encouraged to draw up a job description for a Preservice Technology Integration Course Coordinator in the department. Table 6 is the coordinator job description. This job description was circulated among Instructional Technology faculty and they voted Lisa to become the course coordinator starting fall 2005.

The fact that our department assigned a faculty to this role was symbolic to other departments involved in the Elementary Education Program that we were taking our role in teacher education seriously—"if there are any concerns the course coordinator is waiting for you." Over the years, after Lisa as the course coordinator started to take a critical role in the Elementary Education Program by embedding herself into the sociopolitical context of the teacher education program at NIU, we saw a difference in how other department faculty and department chairs would talk about our technology integration courses. We found that there was a gradual shift in perception about the value of technology

integration courses in the teacher education curriculum when other department faculty and department chairs who used to publically refer to our courses during interdepartmental meetings as unnecessary began acknowledging that technology integration has pedagogical implications beyond teacher use of PowerPoint in the classroom.

## **WHAT WE LEARNED**

While sharing our design case we were able weave into our narrative what we learned about integrating a series of preservice technology integration courses into the socio-political context of a university teacher education program. We will reflect specifically on our general design values to discuss what we learned from our design experiences. Then we will discuss what we learned specifically about designing this set of products, which are heavily intertwined with their sociopolitical context.

### **What we Learned about Design from this Longitudinal Project**

The values that we will use to anchor our reflections include: a) GED-V1: Design is a messy real-world ill-defined problem solving activity; b) GED-V2: Design entails both developing tangible products and identifying intangible aspects such as signs, things, actions, and thoughts; and c) GED-V3: Documenting design involves a reflective practice. In terms of GED-V1, living through our design experiences was indeed messy. However, in order to commit to taking action and to engage in designing a product, we had to be able to draw boundaries while identifying the object of our design and the design space in which it resided. For example, in Chapter 2 due to the limited time and the fact that Lisa had to be prepared to teach the 2-credit course in a typical short period of time at a university setting, she purposefully focused the object of her design primarily to be concerned with the 2-credit course. She did this even though she knew that she had to keep in mind the sociopolitical implications of her design in the larger context of the Elementary Education program at NIU and the impact it could have on the 1-credit course. At the same time, she used the formative evaluation she was collecting through her lived experiences teaching the 2-credit course as an opportunity to learn more about the sociopolitical context. Once Lisa identified a bounded design space and a focused object of design, she reminded herself that the boundaries as well as the object of design were malleable.

In terms of GED-V2: Design entails both developing tangible products and identifying intangible aspects such as signs, things, actions, and thoughts, we learned that in our project we had to put significant effort into formalizing intangible aspects of our design to ensure that our course series met learner and community needs and were packaged in a manner that was sociopolitically acceptable. For example, in

OBSERVATIONS	EXAMPLES
As designers, we encountered both opportunities and constraints when there were changes introduced in the sociopolitical context.	Lara's design activities in Chapter 1 were initiated as a result of the Elementary Education Program redesign and newly introduced National and State Teacher Technology Standards.
As designers, we needed to learn as much as possible about the sociopolitical context to maximize successful implementation of real-world design activities.	Lara's design activities in Chapter 1 were focused on identifying how technology integration courses can fit into the Elementary Education Program while meeting needs of various key players.
There were times when we had to stop worrying about the sociopolitical context and focus on product development in order to move forward with our design activities.	Lisa's design activities in Chapter 2 progressed only after she deliberately decided to focus on the design and development of the 2-credit course and not worry about the sociopolitical context.
As we implemented our designed product there was much to be learned about the sociopolitical context as we lived through product evaluation based on user and stakeholder feedback.	Lisa's design activities in Chapter 3 while revising the 2-credit campus-based course implementation and designing the 1-credit online course uncovered new aspects of the sociopolitical context that had to be addressed in future design activities related to both courses.
In a real-world longitudinal design project, we recognized that the consequences from our design activities and ourselves as designers could become part of the sociopolitical context of our future design activities.	Both Lara and Lisa during their involvement with this longitudinal project became part of the sociopolitical context as they began to take a critical role in the Elementary Education Program as represented by Lara being a member of the EEPRC in Chapter 1 and their department assigning Lisa as the Preservice Technology Integration Course Coordinator in Chapter 3.

**TABLE 7.** Observations and examples of what we learned about design activities and its sociopolitical context.

Chapter 1, the technology integration course sequence that Lara designed and was accepted by her department faculty and the Elementary Education faculty reflected a sense of respect to other programs. This respect was reflected in her willingness to remove one of the two courses that was initially proposed for the professional semesters. Additionally, in Chapter 3 we ended with the creation of a new faculty assignment as the Preservice Technology Integration Course Coordinator. Our effort in creating the coordinator role was a way to address the intangible aspects of teacher education curricular design and implementation.

In terms of GED-V3: Documenting design involves a reflective practice, we found it extremely difficult to present our case in a neat historically sequenced manner. Our real-world design experiences spanned more than a decade and included highly detailed minute-to-minute activities and overall conceptual level activities. We tried to resolve this difficulty by identifying three distinct chapters in our story, but even so there were several instances of zooming in and out of detailed activities to bigger picture issues. Throughout this zooming in and out, we attempted to highlight how we tried to create a design product that embodied our design values. In order to ensure that our narrative was readable, we tried to present each chapter with its own beginning, middle, and an end, but in real life we did not necessarily experience our design in a clearly identified beginning, middle, and end fashion. The chapters were organized in a manner that made sense to us while retrospectively reflecting on our design experiences and narrating them as part of this case.

### **What we Learned about Design and its Sociopolitical Context from this Longitudinal Project**

While reflecting on our design experiences and writing this case, it became clear that much of our design activities were interwoven with the sociopolitical context of the university-based teacher education program. This in itself was not surprising to us, as indicated in our shared Teacher Education Design Values, but through this project we learned how our design activities were affected by the sociopolitical context and our activities themselves started to take a role within the longitudinal project. Our observations and examples from our case specifically related to what we learned about our design activities and how they were interwoven with its sociopolitical context are summarized in Table 7.

We learned from this case that in future projects we need to see what we often interpret as constraints from the sociopolitical context of our design are also opportunities for change that can lead to innovative design solutions. We need to learn as much as possible about both the constraints and the opportunities. At the same time, we need to find a balance between collecting information about the context and analyzing them, and acting on them through our design activities. Then through iterative design revisions we need to once again see both the constraints and opportunities that are uncovered through evaluation. In this evaluation process we need to see how our design is interwoven with the sociopolitical context. Finally, in a longitudinal project as designers we may need to make a commitment in taking an active role in shaping the sociopolitical context as we embed ourselves into the bigger picture of our design.

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