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DEVELOPMENT ARTICLE

Conceptualizing a narrative simulation to promote dialogic reflection: using a multiple outcome design to engage teacher mentors

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Abstract Experienced teachers, tasked with mentoring, often find themselves inundated with large amounts of didactic information as they prepare for guiding new interns. In an effort to develop training that would both prepare new mentors and revitalize experienced mentors, a state Educational Professional Standards Board enlisted the help of instructional designers to develop an innovative online course. The focal point of the course design is a narrative simulation, embedded with standards-based information, that provides user-selected, multiple outcomes as decision points to support dialogic reflection. Theoretical and practical considerations for conceptualizing this multiple outcome strategy, quality review components and design specifications are discussed.

Keywords Cognition · Design · Educational reform · Instruction · Multiple outcomes · Narrative · Online training · Simulation · Teacher mentoring

As demands for accountability increase, P-12 education, in the United States, is inundated with high-stakes tests, regulations, specified curriculum, instructional guidelines, and performance standards for teachers. There is the charge of *No Child Left Behind* to assure that all students reach certain minimum academic standards, regardless of ability, preparation, or support outside of school (No Child Left Behind Act 2002). There are national standards for public education, state mandates for student achievement, and local demands that hold school systems, schools, administrators, and teachers accountable for specified levels of student performance (Zientek 2007). Whatever the intent of such demands, a focus on standardizing student performance implies there are best practices that can be applied across contexts, events, teachers, and students (Reigeluth 1997). In fact, educational leaders at local, state, and national levels produce an enormous amount of textual

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information (online and in paper form) in an effort to establish practices for P-12 education. These large amounts of didactic information often overload new teacher interns (first year teachers), as well as experienced teachers serving as their mentors, leaving little time for the kind of training that may better address teaching and learning in widely diverse real world contexts (Bransford et al. 2005).

New teachers and their mentors are left to navigate this maze of information, prioritize it and interpret it in their day-to-day instructional practice. To characterize the challenges of training teacher mentors, it can seem as though design and development of mentor training begins and ends with producing and refining content to be conveyed to interns. Too little attention has been given to how such content might be delivered more effectively to engage mentors in strategic reflection and professional dialogue (Colbert Desberg and Trimble 1996; Shulman and Sato 2006). Recognizing the need for better delivery mechanisms, the Educational Professional Standards Board (EPSB) in one state contracted university-based instructional designers to develop an innovative online course that would effectively prepare new mentors and revitalize experienced mentors. The focal point for this online course is a multiple outcome narrative simulation embedded with standards-based information, designed to offer opportunities for practice making difficult decisions, promote reflection, and scaffold new ideas or cognitive artifacts (Conle 2003). In this article, we conceptualize the design of a narrative simulation that implements user-selected multiple outcomes as decision points for reflection and dialogic learning. We discuss theoretical and practical considerations for using multiple outcome decision points to support mentors' heightened level of insight spurred by reflective self-talk. This type of silent internal dialogue is explored as a cognitive artifact (Song et al. 2007) that both mediates and is mediated by the mentors' internal negotiation with several possible outcomes for the narrative simulation.

Design challenges

According to Vygotsky (1978), as we attempt to mediate perception, memory, and behavior, the extent to which we can generate speech, especially "…self-talk and silent internal speech greatly extends [the] capacity to imagine and express meanings that are not in [one's] immediate perceptual environment (Stahl 2004, p. 73)." While experienced teachers in training to be mentors are typically selected because of their years of successful teaching experience, they can also be constrained by the limitations of those experiences (Clandinin and Connelly 1996). Given their status as *master teachers*, mentors may find it difficult to engage in the deeply reflective processes that are crucial to successful mentoring and professional growth (Shulman and Sato 2006). Moreover, the mentor may not model the very dispositions for self-examination they wish to inspire in the new teacher. In this online mentor' training, the narrative simulation employs an innovative multiple outcome design in which the mentor's choice of outcome implies internalization of past professional experiences as an array of existing cognitive artifacts. As these artifacts materialize through simulated choices, mentors are better able to consider how such past experiences shape the ways they guide new teachers.

We began this project by examining the structure of previous mentor trainings, reviewing and prioritizing content, and initiating conversations with experienced mentors. We explored state teacher standards, new teacher expectations, mentor training materials and agendas from prior training sessions. While the content of all was easy to understand, the amount of information and the redundancy with which it was organized presented

several difficult design challenges. For example, there was relatively little content that addressed implementation, which left a gap between expectations and actual learning activities that would prepare mentors to guide interns. In fact, during our initial conversations with experienced mentors, many indicated high levels of frustration with previous trainings because of the continually revised and unwieldy amount of standards-based content. Moreover, the training lacked opportunities to prepare for the more difficult unanticipated situations that occur in mentoring new teachers (Howard 2002; Jonassen and Hernandez-Serrano 2002; Sato 2006).

In sum, our major instructional challenges included: (a) presenting large amounts of prescribed standards-based content, (b) engaging learners who were all experienced teachers, some new to mentoring and others who had been mentors in the past, (c) providing opportunity for practice solving unanticipated problems, (d) facilitating dialogic interaction both among learners and with the course content, and (e) scaffolding new cognitive artifacts through reflective self-talk. In order to engage both experienced and new mentors, we situated the content (provided by the EPSB) in an online interactive environment that revolves around a narrative simulation based on an actual case of mentoring. We distilled the storyline, events, characters, and critical dilemmas from a case study of a new teacher and a mentor who struggled with a variety of difficult challenges (Jones 2003, Issues related to mentoring a first year teacher: A case study, "Unpublished manuscript"). After condensing the case, we rendered it as a narrative simulation with a range of strategically placed information on new teacher standards, guidelines, and expectations. The narrative simulation, *Staying Past Dark*, sets the stage for several subsequent modules in the interactive course. The online mentor training course includes: (a) a community of practice framework (Wenger and Snyder 2000), (b) *Staying Past Dark*, a narrative simulation based on an actual case of mentoring, (c) information and exercises that explore the practice of mentoring as critical inquiry and collaborative problem solving, (d) assessments that integrate insight, experience, and knowledge of course content, and (e) a w*ork sample* approach to evaluating interns. This conceptual analysis focuses on the efficacy of using narrative simulation to train teacher mentors and highlights the potential of innovative multiple outcome design for advancing the development of narrative simulation to promote dialogic reflection.

Conceptualizing the design

Making informed decisions in novel, varied, or unexpected situations requires a different kind of mental activity than that involved in knowing or remembering prescribed standards and practices (Bruner 1990). The rationale for combining standards-based didactic information with problem-solving practice is based on the fact that mentors not only have to refer to the current expectations for new teachers, they must also assist interns in applying standards-based requirements to a range of circumstances. Such enactment involves *productive thinking* that results in the ability to transfer knowledge rather than *reproductive thinking* that may support problem solving in similar situations but does not transfer to novel instances or events (Hatano and Inagaki 1993). In fact, a long-term challenge in teacher preparation is that many day-to-day decisions in the classroom cannot be standardized because they are contingent on student responses and particular objectives at any given moment (Hammerness et al. 2005). While meeting standards and new teacher expectations is essential for interns, they are faced with unique problems on a daily basis

and mentors must be prepared to help them make difficult decisions when there is no prescribed solution.

Characteristics of effective mentors

Research on mentoring has articulated various characteristics of effective mentors (Feiman-Nemser et al. 1999). These characteristics include the ability to: (a) reflect on one's own practice, (b) articulate goals, strengths and growth areas, (c) build a strong foundation for collaboration and cooperation, (d) use a variety of teacher assessment instruments, (e) analyze and prioritize assessment data objectively, and (f) listen carefully and question judiciously during conferences. In order to meet such challenges, mentors must understand and handle an array of complex situations that require reflective reasoning and professional judgment. For example, they need to know how to deal with their own *first impressions* of a new colleague they are asked to mentor, exploring their own biases, as well as those of the new teacher. Mentors also must understand the phases of new teacher experience, how to conduct strategic observations, how to articulate areas for professional growth, and how to intervene when problems occur.

Using narrative to understand experience

In order to create an interactive environment that would accommodate large amounts of didactic (standards-based) information and promote reflective thinking, we choose a narrative framework for the online course. We used narrative because of its potential to be engaging and situate information in familiar contexts (Brown et al. 1989; Cognition and Technology Group at Vanderbilt 1990, 1993; Lave and Wenger 1991; Polkinghorne 1988; Young 1993). According to Bruner (1990) narrative promotes a different kind of thinking than didactic information. While presenting information as *facts* can lead to logical or paradigmatic modes of thought, it leaves little room for interpretation or imagination. Narrative, however, can represent human behavior and events as lived experience in a manner that offers opportunity for interpretation and imagination, prompting learners to infer meanings that are not explicit. In fact, many insist that human beings think in narrative form and that our most memorable experiences are held in mind as stories (Fisher 1995; Sarbin 1986; Spence 1982; Vitz 1990). Epistemologically, the use of narrative in instruction relies on a constructivist perspective or the view that knowledge is constructed rather than transmitted. From this perspective, learners play an active role in their own learning, which many believe is enhanced by dialogic interaction (Duffy and Cunningham 1996; Hatano and Inagaki 1993; Jonassen 1999; Vygotsky 1978).

Narrative and problem based learning

Narrative has been used extensively in problem-based instruction and has been found to improve comprehension and transfer (Conle 2003; Egan 1988; Laurillard 1998). One important use of narrative has been in goal-based scenarios (Schank et al. 1993). Goal-based scenarios (GBS) are designed to develop skill and content knowledge by simulating events in situated contexts (Schank et al. 1999). Unlike narrative simulation, GBS require users to work toward a prescribed goal as characters with predetermined roles. Although GBS employs *realistic* narrative, it can be fictitious and stimulate game-playing strategic

thinking rather than the kinds of critical, imaginative, and reflective decision-making required in narrative simulation.

As an instructional intervention, narrative simulation has a long history of effectiveness in accident prevention, farming and mining safety, and solutions to work place problems, such as sexual harassment (Cole 1997, 2002). It has been particularly effective in personalizing new information, changing practices, and shifting attitudes (McCrary 2002; McCrary and Mazur 1999). As simulation stories develop, dilemmas evolve, which engage learners in real world problems, decision-making, and solutions. Dilemmas drive this type of learning and learners literally become characters in an unfolding story. This involves (a) learning that is grounded in everyday activities, (b) situational knowledge that transfers to similar circumstances, (c) learning that results from a social process involving certain ways of thinking, perceiving, problem-solving, and interacting, and (d) learning that exists in complex social environments made up of actors, actions, and events.

Evolution of narrative simulation in instruction

Traditionally, narrative simulations required learners to read segments of a story, followed by a question, and select a course of action by choosing from a list of both correct and incorrect answers. This entails: (a) reading a story segment; (b) reading a question about the problem or dilemma that arose in that particular story segment; (c) selecting an answer or action from a list of possible choices; and (d) reading a short discussion of the implications of that particular choice of action. The limitations of this conventional method of instructional simulation center on the *read and select the correct response* format. In earlier uses of narrative simulation learning goals were primarily behavioral, designed to teach learners to make correct decisions and perform tasks in a single best manner. This approach worked quite well for farming, mining, and industrial safety. More recently, design approaches for narrative simulation have been effective in providing learners with practice making difficult decisions when there is no single correct course of action. For example, studies on the use of *Jeff's Story*, a narrative simulation on social justice, have demonstrated its effectiveness in personalizing difficult social problems that have otherwise been considered remote or irrelevant to the learner (McCrary 2002). This evolution of instructional narrative, however, still limited our ability to create a learning environment that would ensure reflective thinking during the instructional activity. While McCrary (2002) found that narrative simulation could prompt reflection, such internal dialogue occurred over the weeks, even months, following use of the instructional exercise. It was not clear from her research that such reflective thinking took place during the actual instruction. In contrast to stimulating emotion, which might later lead to deeper reflection and behavioral change over time, there was the more immediate need to engage mentors in internal and external dialogue during the actual time allotted for training. After preliminary interviews and quality reviews with experienced mentors, it became clear that these target learners typically would not invest more time than required to work through the simulation once. This finding encouraged us to create an instructional context that would push reflective dialogue during first use of the online simulation. To address these issues, we went a step further in developing a teacher mentoring simulation with divergent outcomes.

Unlike traditional narrative simulations with a single outcome, *Staying Past Dark* departs from the main storyline at a most critical point and allows users to choose one of three narrative paths, each resulting in a distinct outcome based on the users' choice of action. Learners are prompted to choose an ending based on their anticipated outcome of the problem situation. The simulation thus becomes a fulcrum for dialogic interaction

between the mentor and the instructional material, as well as a tool to engage learners in self-narrative (Wortham 2000). Offering multiple outcome possibilities stimulates learners to personalize and reflect on simulated problems as they engage in self-talk in order to project a final outcome, as well as while they are selecting responses for each story dilemma.

Dialogic learning and professional reasoning

Dialogic learning has existed since ancient times (van der Linden and Renshaw 2005). The Socratic dialogue technique is included in most teacher preparation curriculum and instruction or pedagogical methods course. Recent research on dialogic learning elaborates the complexities, benefits, and challenges of using dialogic approaches in educational settings that have institutionalized positivistic pedagogies to effect didactic instruction (Ruf and Badr Goetz 2002). The use of dialogue is often couched as question and answer *interaction.* A close examination of the etymology of the word dialogue, however, reveals the complex and layered dimensions possible in dialogic learning. Dia, from the Greek meaning, two and logic meaning, reasoning. It is this *reasoning* that was a crucial element in designing the narrative simulation for teacher mentors. Mentors and interns are required to go beyond decision-making and reflect deeply to examine and analyze how decisions embody their own theories-in-action and professional reasoning in the classroom. For purposes here, we view dialogue as not only occurring between two or more individuals but also between learners and content, as internal self-talk and as identity in the process of restructuring self-narratives (Wortham 2000). More specifically, we interpret dialogue as an activity aimed at making meaning that occurs between learners and content, mentors and interns, and internally between existing understandings and new ideas. Borrowing from Freire (1970) and others (e.g., Bakhtin 1981) dialogic interaction in this context, requires: (a) critical thinking, (b) hope or expectation of understanding, (c) a sense of equity that consists of both self-efficacy and humility, (d) mutual trust, and (e) faith in the potential of the interaction to produce deeper understandings. In other words, mentors in training should practice critical thinking, trust that they will gain deeper understanding through participation, and experience both humility and a sense of efficacy regarding their own knowledge. In order to encourage mentor-to-mentor interaction and potential for professional dialogue, the protocol for using *Staying Past Dark* requires mentors to work in pairs or small groups. As they work through the simulation, mentors are asked discuss response choices, consequences, and expectations with mentor partners. In addition to working with a colleague, certain features of the narrative simulation designed to stimulate both internal and external dialogue are listed below.

1. Personalizing storied accounts for users: "As… the mentor, how would you have responded to [the intern's] initial concerns?" Mentors-in-training become characters in the unfolding story, which personalizes the events and consequences of selected actions. Question prompts that ask users how they would have responded to events in the story combined with external dialogue with mentor partner(s) further engages users as characters in the unfolding story. The use of first-person language in the mentor's telling of the story and reflection on dilemmas he encounters further personalizes the experience of using *Staying Past Dark*.
2. Inclusion of the mentor's self-talk or internal dialogue at each critical decision point, such as "I considered talking with the principal… but decided to wait on that." Or, "I was beginning to get very concerned about her teaching and classroom management.

…she was with a difficult class…, already struggling…, and now taking on extra responsibilities that had nothing to do with classroom management. I felt she needed all the extra time she had to just do her job…. I was beginning to get frustrated with her….” Modeling such internal self-talk inspires mentors to engage in their own internal dialogue in the form of questions about what they would feel and think in the same situation.

3. Use of didactic information on each response selection discussion screen, such as the *Guidelines for Inquiry Questions* that follow the response choice: “I would talk with [the intern] more about her concerns and question her to try to find out more about the situation”, promote dialogic interaction between mentors and content. For example, *Guideline 1* reads: “Avoid yes/no openers (did you…., can you…, will you…, have you…, might you…, etc.). Did your students learn what you wanted them to learn? What did you see and hear from students that let you know whether or not they learned what you intended?” Such didactic information is used to stimulate internal reflection on whether the mentor needs to rethink habits of questioning.
4. Immediate feedback is provided for each action or response selected. These discussions prompt users to think more deeply about the potential outcomes of their choices. For example, the discussion following “I would talk with [the intern] more about her concerns and question her to try to find out more about the situation”, reads: “Gathering more information by asking purposeful questions is a good idea. Questions can serve many important functions in mentoring, such as providing opportunity to clarify ambiguity, elaborate on the issues, and promote dialogue with your intern.”
5. Three possible storylines lead to divergent outcomes for the intern. These possible outcomes mirror new teacher paths to success, failure, or continued effort. The dialogic function of multiple outcomes lies in the tendency of learners’ to project their own expectations on the intern, based on the intern’s situation and behavior up to this point in the story. The choices of outcomes and storylines screen reads: ”Now it’s your turn! How do you think this story will end? Will [the mentor’s] plan work and will [the intern] remain in teaching? Click on one of the following story endings and follow that scenario to the END.” The choices are worded to portend specific outcomes, which allows mentors-in-training to select the one they most anticipate at this point in the story. As such, the choices, who’d have thought, a sad realization, and losing a new teacher, provide a basis for thinking about the reasons for their choice. This is designed to inspire mentors to seriously consider the role previous experiences may play in how they project the success or failure of an intern.

Multiple outcomes for a narrative simulations

Based on composite information from experienced mentors during our developmental research (see the quality review section below), mentors, as experienced teachers, often anticipated outcomes or wondered about the success of an intern when problems occured. Previous mentor training typically focused on techniques such as conducting a post-observational conference, but did not provide opportunities to puzzle about or work through those nagging internal questions. Would the new teacher make it? Would the new teacher truly change practices to meet the challenges of a difficult class? Would the teacher leave teaching altogether? Or, would a new teacher just bide time, thinking the criticisms would blow over, and hope for a better group of students next year? These are the

dilemmas and experiences captured and addressed through a multiple outcome design within a narrative simulation. By selecting an outcome to the year-long mentoring situation portrayed in the simulation, the mentor exposes cognitive and affective dispositions to the real-world situation posed in the story. Critical aspects of the mentoring relationship can be examined through the internal dialogue that led to the mentor's choice, as well as the choice itself.

The placement of this choice of outcomes is critical to maintain veracity of the story. At this point in the unfolding story, users have read and selected responses for nine story segments, each hinging on a particular delimma and all occurring prior to the *Christmas Break* segment. This segment ends with the mentor puzzling: "I didn't know how to respond to her [the intern's] concerns because I couldn't tell if they really assigned a new teacher an impossible class or if she was just having first year jitters." The following link asks users: "How do you think this story will end? Will [the mentor's] plan work and will [the intern] remain in teaching? As experienced teachers themselves, Christmas break signals time for rest, reflection, and preparing for the final semester of the school year. It is a natural point in the narrative to change directions, to renew commitment, and to revitalize both teaching and mentoring. Table 1 illustrates the sequence of events prior to the multiple outcomes option, along with the didactic content embedded within the answer-discussion sections for each story segment. Additionally, the titles of the multiple outcome

Table 1 Narrative simulation sequence of events, including location and type of embedded content

Story segment	Events/functions	Didactic content
The beginning	Sets the stage for the simulation	Guidelines for inquiry questions (2003 INTASC academy) Research informs practice EPSB new teacher standard II
Chaos	Describes the classroom climate and foretells problems to come	EPSB new teacher standards III, IV, V, VI
Extra duty	Further complicates the intern's problems	Research informs practice information
Student technology leadership program	The intern volunteers for additional responsibilities	EPSB new teacher standard VII
The big picture	Describes a disagreement between the intern and mentor	Research informs practice EPSB new teacher standards III, IV, VII
Unannounced visits	The principal begins dropping in on the intern's classroom	EPSB new teacher standard I
Professional identity	The intern and mentor engage in a proactive conversation	http://www.newteachercenter.org/article3.html EPSB new teacher standards III, VII
Identity and professional development	The intern and mentor discuss a Professional Growth Plan	EPSB new teacher standard, VI
Colleagues	Describes the intern's efforts to get help	EPSB new teacher standard, IV
Christmas break	Sets the stage for selection of story outcome	
Now it's your turn!	Multiple outcome choices	

choices are worded to foretell each outcome. Assuming, for instance, that "A Sad Realization" suggests a less than desirable outcome, users may select this path first because it most closely expresses their frustrations with the intern in the story. On the other hand, they may select it simply to see where it will take them. In any case, users know that "Losing a New Teacher" is explicit and "A Sad Realization" foretells an unhappy ending, leaving only one choice that may lead to success for the intern.

Using the narrative simulation: staying past dark

Staying Past Dark focuses on a case in which the first year teacher experienced a range of problems and the mentor was faced with difficult decisions. In order to create a qualitatively different instructional environment aimed at encouraging critical forethought (simulation) instead of informed hindsight (case study), we condensed the actual story of mentoring, determined critical decision points, added corresponding question and answer choices, and employed first-person (e.g., *I didn't know how to respond*), present-tense language (e.g., *you are establishing a relationship*). Figure 1 illustrates the first story segment and provides an example of the standard-based didactic information included on the answer response discussion screens. While story segments varying in length from 65 to 230 words, this example is typical at 119 words and none are longer than a single screen display without scrolling (Fig. 2).

Quality review: formative feedback from experienced mentors

Working closely with EPSB staff and consulting former mentors, we began the project with a needs assessment that included content, context, and audience analysis. Based on these findings, we chose narrative simulation embedded with standards and evidence-based didactic content as a focal point for the course. We collaborated with EPSB staff as we condensed the real world case and developed problem-based questions, possible response choices, and multiple outcomes. Once these expert reviews were complete and the narrative simulation was ready for initial use, we implemented a quality review (Halff 1993) as part of the ongoing design process. We used quality review or quality evaluation rather than conventional formative evaluation both because of limited access to mentors who were disbursed through the state and to more quickly identify and revise poorly designed features that could confound desired outcomes. According to Chao et al. (2006), quality reviews typically focus on quality characteristics such as, (a) functionality (How suitable is the content for the audience? Is the content accurate?), (b) reliability (Is the program at a point where it performs as needed and expected?), (c) usability (Is the program learnable, understandable, attractive to a range of potential users?) and (d) efficiency (time of response).

Six highly experienced induction year and student-teaching supervisor mentors were recruited as a critical feedback group. Of the four women and two men who participated, three were former middle/high school teachers and three were elementary teachers (one retired). These six participants used the *Staying Past Dark* narrative simulation in three paired groups according to a step-by-step protocol monitored by the user tester (one of the authors). After each section, as the pairs worked through the simulation, they were also prompted to respond with notes and observations to several feedback prompts. An additional observer from the EPSB was present, logged observation notes, and also recorded

Staying Past Dark
The Beginning

I let central office know I would be willing to serve as a mentor for a new teacher and when they assigned Kristin to me, I told them I looked forward to the experience.

I met with Kristen right away and we talked about how this internship would go. She was already nervous about her first year of teaching because she heard her fourth graders were *out-of-control*. This group of kids had been terrors in the third grade and no one had been able get them under control. Initially, I didn't know how to respond to her concerns because I couldn't tell if they really assigned a new teacher an impossible class or if she was just having first year jitters.

Please read the following question and select the response that best represents what you would do as Kristen's mentor.

Question A: As Parker Olsen, the mentor, how would you have responded to Kristen's initial concerns?

1. I would meet with the principal right away and discuss Kristen's concerns and the fact that she might need extra help managing a class that no one else had been able to control.
2. I would talk with Kristen more about her concerns and question her to try to find out more about the situation.
3. I would just listen, say nothing, and wait to see what happened when I observed her teaching.
4. I would speak with the third grade teacher who had these kids last year and try to find out if Kristen's fears were on target.

KY NEW TEACHER STANDARD II: The Teacher Creates and Maintains a Learning Climate for Students

A. The teacher communicates high expectations for all students.
B. The teacher supports student diversity and addresses individual needs.
C. The teacher uses positive classroom management techniques that foster self-control and self-discipline to create and sustain a climate that motivates students to learn.
D. The teacher facilitates mutual respect among class members through cooperative and independent learning activities.
E. The teacher employs creative and flexible use of instructional time and materials.
F. The teacher supports instruction through the creative, flexible, and safe use of physical space.

Fig. 1 Sample story segment of narrative simulation. After working through various decision points within the narrative simulation each learner departs from the main storyline based on a selected response to a dilemma-based question midway through the exercise. From that point, users follow one of three possible narrative paths, each resulting in a different outcome to the story. We derived the two additional real world outcomes from stories told by experienced educators during developmental research sessions. Figure 2 shows the divergent outcome segment of the narrative simulation, followed by introductions for each possible path

the final debriefing group discussion with the six participants after they had finished using the simulation.

Overall, participants found the program easy to use, and the instructions clear and informative. Teachers were very engaged in the simulated story, found the situation highly credible, and there was unanimous agreement that situating classroom decision making in a narrative that simulated actual classroom practice was thought-provoking, useful, and held their attention. When asked about the decision point that required them to select one of the multiple, possible outcomes, two users (one pair) noted they were at first perplexed about what to do because they were unfamiliar with this type of option in a story…they were simply expecting the story to conclude with one outcome. However, once they realized they

Now it's your turn!

How do you think this story will end?

Will Parker's plan work and will Kristen remain in teaching?

Select one of the following story paths and follow that scenario to the END.

Who'd Have Thought | A Sad Realization | Losing a New Teacher

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Wednesday January 9

Who'd Have Thought

I developed four components of a work sample, 1) contextual factors, 2) unit overview with learner objectives, 3) lesson plan, and 3) assessment plan. I used materials from my own teaching files and updated the formats to reflect current KTIP criteria as a way to provide Kristen with concrete examples for her to use in making her own work sample.

I went over the School Performance Report for Greenbrier Elementary and suggested she also use that report to develop the contextual factors component. When she saw the numerical and graphic data about achievement gaps, content comparisons, and demographics, the light bulb went on. She could see how this report could be used to improve her instructional planning. She said she thought it would be fun to really explore contextual factors for her group of students. She seemed to have a much better attitude after the Christmas break!

Wednesday January 9

A Sad Realization

I developed four components of a work sample, 1) contextual factors, 2) unit overview with learner objectives, 3) lesson plan, and 3) assessment plan. I used materials from my own teaching files and updated the formats to reflect current KTIP criteria as a way to provide Kristen with concrete examples for her to use in making her own work sample.
When we met, I gave her my materials, and asked her to begin doing her own work sample by first completing the contextual factors' component and having it ready for our next meeting in two weeks. I went over the School Progress Report with her and she said she thought it would be fun to really explore contextual factors for her group of students. She seemed to have a much better attitude after the Christmas break!

Wednesday January 9
Losing a New Teacher

I developed four components of a work sample, 1) contextual factors, 2) unit overview with learner objectives, 3) lesson plan, and 3) assessment plan. I used materials from my own teaching files and updated the formats to reflect current KTIP criteria as a way to provide Kristen with concrete examples for her to use in making her own work sample. When we met, I gave her my materials, and asked her to begin doing her own work sample by first completing the contextual factors' component and having it ready for our next meeting in two weeks. I went over my examples with her and she said she thought it would be fun to really explore contextual factors for her group of students. She seemed to have a much better attitude after the Christmas break!

Fig. 2 Divergent outcome segment of the narrative simulation, followed by introductions for each possible path. The three possible paths represent the ways mentors are likely to foretell the outcome of a teacher internship, which prompts users to think about how they project past experiences on present situations. Such use of divergent outcomes is an innovation that offers new possibilities for extending the interactivity of narrative simulation as an instructional tool

could not proceed until they had selected a story line, they were eager to see where that choice would lead them. Two of the groups selected the *Who'd Have Thought* ending and one group selected the *Losing a New Teacher* outcome. In the post-use discussion, the tester explored the meaning of these choices in terms of how they might discuss such outcomes with an intern. One respondent said "…these choices mean something about expectations, where you think the teacher is really going; what they can do and what you [as a mentor] might be able to accomplish with them." Finally, all of the participants said they wanted to go back and select another outcome and see how those stories would conclude.

The quality review and our observations of the experienced mentors as they considered the outcome of their selections raised additional design questions, both theoretical and practical. Basing the multiple outcome design on principles from research on narrative thinking, engagement and understanding required rethinking the purposes of the selection of a particular outcome. What does user-choice of one of the multiple outcomes mean? How might a teacher/mentor use the choice as a *basis* for reflection? How should follow-up questions be designed and incorporated to promote reflection on practice?

Based on quality review data, we corrected grammatical errors, reworded some questions for clarity, and added links so users could return to the multiple outcome choices from each path. We also revised the placement of some of the didactic information to better align with specific segments of the story and continued to condense embedded standards as concisely as possible.

Reflecting on choice: narrative in action

According to Wortham (2000), narrative has both *representational* and *interactional* functions and autobiographical narrative can be used to explore the relationship between these two functional dimensions. By their choice of an outcome, mentors expose underlying narratives that represent how they expect the story will be enacted. They not only take in the story as readers, but also consider what the story means and how they relate to the characters and situations. How might they perform differently than the characters portrayed? Would they *act* differently in the same situation? As mentors elaborate the narrative, they reconstruct self and enact key characteristics of their identities as mentors. Since enactment is closely related to performance, the story becomes a rehearsal for future action. The instructional design must address ways of engaging users in reflection on their choice of a story outcome as an indicator of a particular direction toward action that may reveal their expectations of interns, as well as their autobiographical narratives of professional identity. What follow-up prompt needs to be in place to effect these dispositions in the mentor/users through dialogic reflection? Clearly, the prompts have to engage both internal and external dialogues. Mentors need to reflect privately on their choice of outcome as well as discuss expectations in the mentoring process. Several strategies for scaffolding the internal dialogue were available to the designers: Journaling topics, for example, were developed. What does your story ending choice tell you about *your* expectations of an intern? Strategies for scaffolding external dialogic reflection were also developed, such as threaded discussion and online interaction with other mentors who may have chosen a similar outcome.

Design criteria for using divergent multiple outcomes in a narrative simulation

As we developed *Staying Past Dark*, certain criteria guided us through the formative process (see Table 2). Those criteria included fidelity to the actual story to retain a sense of

Table 2 Design criteria for a user-selected, multiple outcome narrative simulation

Design criteria	Design process/product characteristics
Simulation fidelity	Case-based data used to develop story line from a real world scenario
Simulation veracity	Narrative based on actual, real-world situations, data from quality review and user-centered design required
Definition of narrative learning outcomes	Affective outcomes for users defined, based on characteristics of professional mastery (e.g., for teacher mentors, recognition of bias)
	Cognitive outcomes for users defined, based on required cognitive knowledge and skill for user mastery (e.g., for teacher mentors, ability to revise instruction based on learning outcomes)
Narrative structure for content	Instructions to read the story in sequence and not skip ahead
	Story events occur over time
	User assumes the role of a character in an unfolding story
Engagement with narrative	Chunking story line to pose incremental elements of dilemmas
	Provide plausible decision points for user-choices
	Feedback based on user-choices provided
	Provide opportunities to explore other choice responses
Opportunity for internal dialogic interaction	Definition of multiple, plausible outcomes from user-centered design processes
	Inclusion of prompts to spur reflection and analysis of the dilemma and resolutions
Opportunity for external dialogic interaction	Definition of multiple, plausible outcomes from user-centered design processes
	Inclusion of prompts to spur reflection and analysis of the dilemma and resolutions
	Inclusion of collaboration and communication tools to encourage dialogue among users of the narrative simulation
	Archiving of dialogues (e.g., in a threaded discussion group) for ongoing dialogue, reflection and interaction. Archiving also provides opportunities for those not involved in original dialogue to participate vicariously

veracity for experienced educators. The narrative simulation, even when diverging into three possible outcomes, had to remain believable to these experienced professionals to maintain their interest and motivation to work through the entire exercise and take advantage of the embedded didactic information.

While real world stories must maintain fidelity when transformed to narrative simulations, it is also important that stories be condensed by removing extraneous information. The aesthetic power of narrative, however, can be diminished if a balance is not carefully preserved between the inclusion of descriptive language and concern for instructional efficacy. The primary power of narrative lies in both its believability and the ways it can inspire readers to imagine themselves as characters in the story. Designing narrative simulation for instruction requires that the story be segmented into brief accounts, each segment including a dilemma that can be followed by a question and possible response choices. In this case, the main storyline was adapted from a case study on a new teacher intern for which it was critical to assure that affective qualities, such as descriptions of characters, setting, and emotions, inspired compassion and empathy. With these criteria for story-based simulation in mind, it was also necessary to elaborate criteria for adding the divergent multiple outcomes component. The iterative process of developing *Staying Past*

Dark resulted in the formulation of design criteria for the multiple outcomes approach summarized in Table 2.

These criteria include maintaining story fidelity and veracity, as well as certain affordances of narrative that are not possible with the delivery of didactic information alone. For instance, the use of narrative creates opportunity for practicing difficult decision-making and considering potential consequences of one's decisions. This prompts reflection as learners become characters in an unfolding story, which occurs over time, segmented by real-world dilemmas. The element of time provides opportunity for users to synthesize situated content. Narrative used in this manner stimulates internal dialogue and provides a context for professional dialogue among users.

Limitations

The limitations of this instructional design process were largely lack of control, inadequate duration, and restricted access to end users. As a state EPSB project, certain contextual factors limited the extent to which we could confidently evaluate the design and generalize the results for similar instructional contexts. The context of working through a state agency offered both affordances and constraints that differ from the kinds of instructional design and development more often done in academic research settings. During early development of the simulation, for instance, we were reminded that the final story must not include language or events that might be perceived as overly negative or disturbing. This created the challenge of balancing the necessity for fidelity to the real world case with the public and political concerns of the EPSB. Prior to quality review we worked closely with EPBS professional staff to assure that there would be nothing objectionable in the final product. This required omitting some events from the real case and rewording several response discussions. Our concerns were to preserve salient events, conflicts, and tensions of the original case that would be most engaging. We were also constrained by having to use a third party web developer already contracted by the state to implement online instruction. This limited our control by adding another layer of protocol and prevented us from using our own web developer to implement the multimedia elements of the simulation. We found communicating with the off-site web developers challenging and struggled to be as explicit as possible regarding theory-based instructional rationales for the form and sequence of the narrative and the placement of the embedded didactic content. This interaction, however, extended our own dialogue on the more innovative elements of the design and provided opportunity to more explicitly articulate design criteria for the multiple outcome approach.

The most confounding constraints were limited time and access to mentors for fully evaluating the efficacy of the multiple outcome design through iterative user tests and summative evaluation of the final instructional product. In this context, mentors were provided an honorarium and travel expenses to attend three-one-day training sessions over summer and fall. This was the convention for all previous trainings and had been scheduled as such before we were contracted to design the online course. Since mentors were disbursed throughout the state, most were unlikely to volunteer for additional travel to the training site without compensation, which was not available at that time. Consequently, we relied on an adapted rapid prototype design process (Tripp and Bichelmeyer 1990) and used a relatively small group of experienced mentors and EPSB staff for quality review and revision throughout the design process. We also did not have adequate access to mentors to implement a systematic summative evaluation once the course was fully implemented online. We did, however, receive anecdotal feedback from several mentors and EPBS

administrators that applauded the use of the multiple outcome narrative simulation as a fulcrum for the course.

Evaluation

Had we been able to employ a more complete evaluation process, we would have implemented formative testing more iteratively on a larger scale. Accordingly, we look forward to replicating this design using a new case of mentoring in a stand alone narrative simulation to test the design criteria for the project. A major focus of the evaluation will be to determine the effectiveness of multiple outcome narrative simulation to promote reflective professional dialogue. The formative will test the instructional design with experienced mentors and involve: (a) expert reviews of the instruction with an evaluator, (b) learner pairs working through the simulation as they *think aloud* and an evaluator records their responses, (c) small group interviews with learners after they have used the simulation in pairs as one evaluator follows an open-ended questioning protocol and another records the discussion, and (d) field tests as mentors work through the instructional simulation in realistic settings. A final summative field test will be conducted with pairs of end users working synchronously online from a physical distance. Evaluators will observe these sessions electronically and follow each use with a brief interview to clarify interpretations of user responses. It may also be useful to include mentors at various phases of training and mentoring who have completed an inventory on perceived strengths, challenges, and dispositions for mentoring intern teachers. This will provide data on change in self-perceptions after use of the narrative simulation. We would also like to conduct small group follow-up interviews with a few mentors and their intern teachers to gain an ecological understanding of the affects of such instruction on second generation recipients. The summative evaluation will focus on the extent to which mentors develop new cognitive artifacts and change approaches to various mentoring tasks. Finally, we would implement electronic tracking in the narrative simulation to record response choice selection, time on each story segment and response prompts (Gay and Mazur 1993). This will allow researchers to examine usability factors and further investigate internal reflective activity as implied by time spent on specific sections of the simulation.

Although this context did not accommodate such evaluation, disseminating the innovations and criteria developed during this mentor training project may encourage wider use of narrative simulation leading to further refinement of design criteria and stimulate critical discourse on the potential for using multiple outcome scenarios in narrative instruction. Providing opportunity for critical analysis and replication at this juncture may enhance and extend the use of multiple outcome narrative simulation aimed at the kind of dialogic reflection that many claim is essential for effective mentoring and teaching in P-12 contexts (e.g., Dewey 1938; Eisner 1994; Freire 1970).

Discussion

Staying Past Dark delivers an otherwise confusing maze of teacher standards, student achievement expectations, and professional ethics in a more personally relevant manner as embedded text annotations throughout the unfolding story. It is more congruent with the actual practice of applying standards to mentoring intern teachers in varied contexts. Were it true that human development could be standardized, then learning to become effective teachers might lend itself to more traditional didactic instruction. In fact, learning to

mentor new teachers would be a relatively easy task, requiring concrete knowledge of correct practices to meet predetermined goals. When charged with training experienced educators to effectively mentor novice teacher interns, however, it is evident that organizing and distributing state teacher standards and new teacher expectations does little to help mentors guide interns in the day-to-day enactment of those standards. More importantly, mentors must assist their new teacher colleagues in becoming confident problem solvers, who can wisely reason through the complexities inherent in the myriad classroom activities in which they engage each day. Narrative simulations with divergent multiple outcomes provide an opportunity for the mentors to explore these complexities and reflect on their own decision-making by providing opportunities for both internal and external dialogic reasoning. These conversations, both internal and external, are the substance of professional judgment that rarely occurs through traditional, didactic, non-dialogic instruction. Further research and evaluation of the design should address the formulation of cognitive artifacts as new narratives for mentoring, articulation of the dialogic reflective experience and the extent to which the conceptualized design criteria support the divergent learning goals of the multiple outcome simulation.

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