Using Student-Developed Scenarios to Couple Design and Reflection

Neal Shambaugh

"Scenarios … provide rich descriptions of the complexity of design work and how the designer views the problem and subsequent design decisions."

Students in instructional design (ID) courses typically propose a solution to an instructional problem without a clear understanding of the instructional problem. However, the only people who find this response disconcerting are ID instructors! Having been enculturated in ID as a student and as an instructor, I used to intervene confidently and insert needs assessment into their plans. While I believe that needs assessment clarifies the instructional problem through a greater understanding of who the learners are, what the full range of the content is, and how the context plays a role, I have come to question the extent to which I was short-circuiting students' thinking. After all, humans survive crossing a busy city street because we move quickly to a solution. Instructional problems, of course, are incredibly more complex. Experienced teachers know how to make instructional decisions knowing full well their implications, while less experienced teachers act using behavior adjustments and lesson planning to help decrease uncertainty and increase confidence and control.

One of the dilemmas of any design endeavor is deciding how long to ponder design options before selecting an approach. With a decision one commits resources. Rapid prototyping provides one option. Design an early version with just enough resources, test it out with users and revise — an approach that works when versions are tested out. I have found that, within an academic semester, ongoing testing by students with prototypical users is limited and the time delay between prototype and review wreaks havoc on an instructional timetable.

Instructional design is an intentional activity in which reflection on design decisions plays an important role (Rowland, Parra & Basnet, 1994). Schön (1983) has observed that design reflection is frequently de-coupled from design activity. Owing to the way in which the ID process is managed, significant time may pass between design proposal and design review. I ask students to reflect on their individual ID phase decisions, but my comments on their design decisions and reflective comments are delayed by at least one week. How could I get students to think about the implications of their decisions, but keep their decision-making moving forward? In other words, how could I as an ID instructor take advantage of this human attribute to move to a solution in light of existing information (Simon, 1996)?

To address this instructional problem of my own making, I chose scenarios as a design activity. Scenarios, as case studies or simulations, typically serve as teaching devices to introduce students to instructional problems and ID approaches. However, I suggest student-developed scenarios in which a student's initial intent is written down, discussed with a peer and reflected upon individually, then revised. The goal is to couple design thinking and reflection more tightly as one designs, keeping the design cycle moving forward. Carroll (2000) characterizes

scenarios as "condensed descriptions" of proposed solutions to instructional problems. Scenario descriptions, especially at the early stages of instructional design, are narrative stories, which provide some insight into the context of the student and the rationale behind the student-designer's decisions. Carroll, who uses scenarios in computer system development, acknowledges that scenarios are rich and concrete but incomplete. Scenario descriptions tap existing knowledge, and because the descriptions are brief and quickly constructed, revisions are easily possible.

Course sequence and scenario task

During my first use of scenarios, I wanted to find out to what extent they helped the 20 students enrolled in my class to understand their instructional problem better — a task we usually assign to needs assessment. Figure 1 summarizes the sequence of the ID course and the implementation of the scenario descriptions at pre-needs assessment and post-needs assessment.

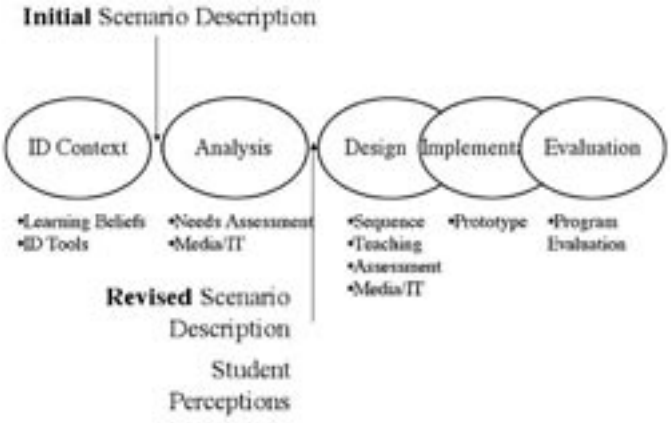

Figure 1. ID Course Sequence

Prior to conducting a needs assessment for their ID project, students developed a scenario description in a class session paired up with individuals working on similar projects. This initial peer writing and sharing provided students with a draft from which to revise and submit individually the following week. This initial scenario description consisted of three sections: a Vision Statement describing a successful implementation of the design; a Reality statement qualifying the constraints on the vision; and Next Steps or new design decisions. Following this submission, students conducted a needs assessment and conducted research on the content to be taught, the range of learners by learner characteristics and the reality of the context using a context analysis. Based on this research, project goals were determined and a Project Intent document was submitted. The Intent Statement included a revised scenario, a statement of the instructional problem, the major features of the proposed educational intervention and project goals (see Figure 2).

Initial scenario descriptions

The written forms of the scenario generally involved a first person statement of "this is what I want to do." From the initial scenario activity (Vision, Reality, Next Steps), students wrote more clearly about what they wanted to accomplish with their project than in their first design activity, which asked them in week one of the course to identify an instructional need and how they would address this need. Several students wrote about the tensions they felt in their Vision-Reality statements, such as helping their students to learn the content, balancing software skill learning with its use in learning other content, deciding "who are my learners?" and searching for different ways to teach. Several students, particularly students who were teachers, made critical decisions as to their learners. Teachers wrestled with the question of "Were the learners students in their classrooms or teachers like themselves?" In the "Next Steps" component of the initial scenario exercise, students wrote about adjustments to their original ideas. For example, one student changed grade level from middle grades to fifth grade based on the student's teaching experience in that grade.

Initial Scenario	Needs Assessment	Revised Scenario
Peer Review-Individual Reflection	Individual Activity	Individual Activity
• Vision • Reality • Next Steps	• Content Knowledge • Pedagogical Content Knowledge • Learner Profile (learner characteristics) • Context Analysis • Project Goals	• Scenario Narrative • Instructional Problem Statement

Figure 2. Scenario Sequence

Revised scenario descriptions

The form for the revised scenarios, submitted after the needs assessment, evolved from the "this is what I want to do" to an increasing use of narrative to depict the implementation. These narratives consisted of several points-of-view, including Class Scenarios, in which the scenario described how teaching unfolded. In addition, some scenarios focused on a hypothetical Student Case or Teacher Case, and the specific use of innovative Learning Activities. Two student scenarios, labeled as Future Scenarios, focused on both short-term and long-term goals. The revised scenario description included shorter scenario descriptions on new teaching or assessment approaches, such as the use of games for teaching multiplication, 3-D geometric worlds and reflective journals (as opposed to a workbook). Design strategies included specific details on intervention length, target learners and specific activities for teacher and student.

Student perceptions of scenarios

I asked students to record their perceptions of the scenario activity. Students responded to two questions: "In what ways did the scenario activity and the re-write help your thinking?" and "How can we make this a better activity?" Student perceptions were organized by what they wrote in terms of individual thinking and group activity. Students reported that the scenario activity gave them an opportunity to visualize and re-evaluate their original ideas, to think through their ideas and to "edit the dream" as one student wrote. Several students wrote about the value of peer discussion and then rewriting their notes to link ideas, throw out others and articulate the words for the instructional problem. One student commented that the task "made me really push myself to identify resources and constraints," while others commented that the scenario "helped me to think more deeply and to think about the activity differently." Students also commented on the group activity where students paired up to discuss each other's vision for their project. They reported the value of "bouncing ideas off another," that the conversation "sharpened my own sense of what I am doing." An interesting comment was that "I viewed the project from the outside and having to tell others helped me to think more about the details."

Scenario examples

The first student scenario example involved a substitute mathematics teacher who proposed to address the "dreaded word/story problems" students face in math courses. Her initial vision was to teach a complete unit in problem solving starting with simple logic activities. The revised scenario consisted of two parts: the first, a memory of an early substitute teaching experience while teaching fifth grade math, in which students said "Even our teacher hates story problems;" the second part of the revised scenario included a narrative of teaching a math lesson using a story as the basis for problem solving. Envisioned was "time to plan, discover, fail, and succeed" with helpful tips to guide the students in problem solving. The student proposed a five-day logic unit, Growing Solutions, to help fifth grade students learn logical thinking skills. Thus, her initial view of content as "solving word problems" expanded to include basic problem solving skills, logic and overcoming a dislike for word problems.

A second student scenario development involved a library staff person who proposed to create improved training materials for student library assistants. In the initial scenario description, the student envisioned four outcomes: understanding of basic library access services; standardizing training content; appreciation for patron needs; and training on tasks within relevant library

contexts. Currently in use were paper forms and outlines and inconsistent training across assistants due to low staffing. The student's decisions at Next Steps "only served to deepen my original intent to standardize instruction and to go beyond text and oral demonstration to include a more sensory experience" using self-paced multimedia tutorials. In the revised scenario the student described a training sequence involving an imaginary trainee using self-paced PowerPoint/ multimedia modules. The modules would contain interactive features to provide feedback to the trainee and her individual learning style. The subsequent design proposal, Bringing Learners and Library Skills Together, adopted the goals first identified in the original scenario description.

A third student scenario, written by a teacher educator, envisioned a module for her Language Arts Methods course, which was designed to teach children the writing process, text structure, grammar and spelling, and speaking and listening skills. The module was envisioned to teach students in the context of writing rather than through worksheets. She envisioned the use of Internet sites to show examples of children's literature and grammar. In her Reality Statements, she identified lack of classroom computers, minimal personal organization and an inadequate textbook section on grammar. In Next Steps she realized she could take her students to the library, develop her own knowledge base and change her teaching from worksheets to grammar searches in children's literature. In her revised scenario, this teacher educator cited a student survey in her needs assessment that helped her to learn about the attitudes of pre-service students toward grammar. She proposed activities in the children's section of a library where students worked in small groups to locate examples of grammar concepts. Her proposed project, Teaching Grammar in Context, identified the instructional problem as a lack of teaching strategies and a knowledge base for grammar rules. Pre-service teachers would design lessons for real situations rather than complete "skill and drill" lessons. Her project goals included an understanding of how to teach grammar to elementary students; designing lessons appropriate for organizational and state standards; changing an attitude of teaching "skill and drill" to teaching grammar in context; and incorporating technology into lessons.

"To what extent should needs assessment be modified or even eliminated?"

Implications for ID instruction

Student-developed scenarios could become a learning activity within different phases of ID. Students build on what they know and reflect on the design as they design. Thus, scenarios apply the situated perspective, that "… learning [is] a continuous, life-long process resulting from acting in situations" (Brown, Collins & Duguid, 1989, p. 33). Scenarios help students to envision a learning situation and what might occur in these envisioned settings. Student-developed insights, though incomplete, provide higher motivation to use needs assessment. The initial scenario description (Vision, Reality, Next Steps) allowed students to address the mental tension between what they would like to accomplish and what could be implemented given known constraints. Students' initial "goals" could be used to structure subsequent analysis activity. An interesting question is to what extent should needs assessment be modified or even eliminated? This option may be worth considering in actual development work in which team members employ scenarios in a continual cycle of design-reflect-reframe, as long as critical questions that keep learning in the forefront are used. However, the value of needs assessment as a tool in an introductory ID course to learn more about content, learners and context still appears useful in this regard.

One possibility for future ID instruction would be to begin a class with an existing scenario to help students experience each phase of instructional design. A multimedia counterpart to the scenario activity might be considered for use

out-of-class or online to simulate collaborative design-reflect-reframe activity. Another use would be to increase the use of scenarios in design teams. This might be effective if a class-based instructional problem or case study is used for ID instruction. I would consider this approach for teaching a summer course in instructional design.

Scenarios provide individual and participatory design artifacts through ongoing cycles of designing, reflecting and reframing of the design response based on growing understanding of the instructional problem and awareness of options and realities. Although scenarios are limited by their incompleteness, they provide rich descriptions of the complexity of design work and how the designer views the problem and subsequent design decisions. As one student reported, "when we start sharing, our thinking becomes clearer and additional ideas surface." Student-developed scenarios merit consideration as a learning activity in instructional design, particularly when connected to needs assessment.

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References

Brown, J. S., Collins, A., & Duguid, P. (1989, January-February). Situated cognition and the culture of learning. *Educational Researcher,* pp. 32-42.

Carroll, J. M. (2000). *Making use: Scenario-based design of human-computer interactions.* Cambridge, MA: MIT Press.

Rowland, G., Parra, M. L., & Basnet, K. (1994). Educating instructional designers: Different methods for different outcomes. *Educational Technology, 34*(4), 5-11.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. New York: Basic Books.

Simon, H. A. (1996). *The sciences of the artificial.* (3rd ed.). Cambridge, MA: MIT Press.