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Design as Storytelling

By Patrick Parrish

What is the most critical skill required by an instructional designer? Having worked with many IDs over the years, and having been responsible for hiring more than half of a dozen of them (and of course interviewing many more than that in the process), I've thought about this question quite a bit. In my own practice, I've also wondered what has contributed to my being successful on particular projects and less so on others. Of course, as in any design discipline, "success" is a multi-layered judgment. I suggest that it includes much more than simply whether or not learners achieve the stated objectives. It also includes whether or not the product can engage learners, treat content in a meaningful way and foster an interest in the subject matter, all of which contribute directly to the quality of learning. Given this broad definition of success, the answer I've arrived at to the question posed is this — the most critical ID skill is the ability to step outside one's own perspective and see the design through the learner's eyes.

"The most critical ID skill is the ability to step outside one's own perspective and see the design through the learner's eyes."

I liken this skill to poet John Keat's concept of "negative capability," or the ability to be in "uncertainties, mysteries, doubts, without any irritable reaching after fact and reason" (Keats, 1817/1992, p. 494). Keats attributed this quality to literary geniuses like Shakespeare, who could lose their personal identity at will and see the world of their characters *through* those characters. But perhaps a more direct term for this ability, suggested to me by my colleague, Scott Switzer, is "learner empathy." This ability is central to ID because it is needed to understand how instruction would be experienced — including how text will be interpreted, how instructional software will be navigated, what will be discerned in illustrations, what will engage or bore learners during the course of instruction and what they will take away from the experience. This is different than learner analysis, which typically focuses on systematically considering only a few important qualities identified in a sample of questionnaires, interviews and discussions with the client organization. Negative capability, on the other hand, implies a willingness to explore less obvious implications of the analysis, free of "fact and reason," and open to unexpected findings.

This isn't a textbook answer to the question, and it doesn't quite fit in the list of Instructional Design Competencies published by ERIC (Fields, Foxen, & Richey, 2001). But I suspect that I'm not unique in placing a high value on empathy. However, this aspect of ID is not often talked about explicitly, and most likely is simply assumed to underlie good design practice. In the past year, I have pondered much more about the quality of empathy and its place in the design process. How do IDs exercise empathy as they design? Can they do it intentionally, or is it simply a trait they possess that shows itself in the quality of their work? Can they learn to practice empathy more effectively? This article summarizes an initial proposal for how we can better utilize and nurture learner empathy in instructional design. To do so requires a shift from emphasizing the technical problem-solving nature of ID. Instead, we might view design as more a process of composing a story of learner experience.

Design as technical problem solving: a dead end?

ID as technical (or rational) problem solving has always been the traditional viewpoint, and nearly all models of ID reflect this orientation (cf. Gustafson & Branch, 2002). In this view, an initial analysis phase allows us to create a depiction of the "problem space" (Simon, 1999), including the goals and constraints of the problem, and designers then work within this space to generate potential solutions. This view has led ID theorists to call the task analysis phase "the single most important component process in the instructional design process" (Jonassen, Tessmer, & Hannum, 1999, p. vii). As conceptions of instructional design problems have evolved and grown to encompass broader social systems, the recommended kinds of analysis have grown as well. In addition to task and content analysis, these now include learner analysis and context analysis, for example (Tessmer & Richey, 1997). Better solutions reflecting our broadening conceptions of learning systems are assumed to require more thorough analysis in creating the problem space.

While this viewpoint represents a logical ideal, it doesn't appear to represent the realities of practice. Design studies have shown that instructional designers (and designers in other fields, as well) do not rigidly divide analysis and synthesis into separate phases, and can at times even appear to skip an explicit analysis phase (Lawson, 1997; Rowland, 1992; Visscher-Voerman & Gustafson, 2004; Wedman & Tessmer, 1993). Rowland's (1992) study of IDs showed that experts often generate a tentative solution quite early in their analysis of a design task, and that they consider and evaluate this initial solution as they learn more about the problem. This finding recalls the work of Darke (1984), who found that architects tended to begin their process with a "primary generator," a seed to a solution that provides a more productive way into problem exploration than would a list of constraints. Lawson (1997) considered viewing design analysis as separate from synthesis a dead end, and preferred instead to speak of "analysis *in* synthesis."

But the mechanism for this form of thinking remains mysterious. Analysis skills are traditionally viewed as opposite those of synthesis, and it is often assumed that good designers must be somewhat unusual in their possession of high levels of both. Do good designers truly possess a unique capability? Or do designers, as practitioners of "the first tradition" (Nelson & Stolterman, 2003), exercise a universal human capacity? What thinking process is it that can reconcile these apparent opposites, drawing from both analysis and synthesis in equal measure?

Storytelling in the design process

One process that bridges analysis and synthesis is storytelling. Stories are always drawn from life, from both the general qualities we distill from experience and the particular qualities we discern in careful observation, but they get their power from going beyond this basis in fact. Stories are not simply reproductions in words of fully understood situations. From the standpoint of a reader or listener, stories are revealing journeys that we can take multiple times, discovering new things in each telling. But storytelling itself is also a process of discovery for the teller. Stories have been seen as important modes for storing knowledge and assigning meaning to our experiences (Polkinghorne, 1988; Schank, 1990), but for storytellers, they also perform an investigative function. In telling fictional stories we use imagination to create scenarios that help us learn things about our world that would not become apparent through analysis. Story can be seen as a form of inquiry in which, rather than dissecting through analysis, we bring elements of the world together in the imagination to discover the potentialities of their interaction. It is this quality that makes story a likely tactic used by designers in formulating their designs.

"How do IDs exercise empathy as they design? Can they learn to practice empathy more effectively?"

Authors have been known to say that writing fiction is often a matter of first creating characters and then merely placing them in situations to "watch" how they react. In other words, not all of the character's reactions are necessarily plotted out in advance, but only narrowed by their prior experience as imagined by the author. It is only in the process of composing the story that the full range of possible constraints, conflicts and desires inherent in the situation come into play. The "backstory" that authors create, which contains details about the characters' lives prior to the timeframe of the story, is analogous to the analysis details used by a designer in composing a design solution. Analysis provides enough information to seed the process of imagining a story of user experience, a story that forms an important test of a design. But the analysis by itself doesn't predict user experience in any useful detail.

Design stories can be seen as a form of *dramatic rehearsal*, a stage in the process of deliberation that John Dewey described as part of his effort to naturalize the concepts of logic and inquiry (e.g., Dewey, 1922/1988). Dewey rejected the formal logic explored by most philosophers of his time, and instead sought to describe a natural form of deliberation, the kind people carry out in everyday life as well as in more formal activities like scientific inquiry. Dewey saw deliberation as including a *dramatic rehearsal* of competing courses of action, a process akin to a thought experiment in which choices are played out to see what might result if they are taken. A deliberation that takes the form of dramatic rehearsal can be seen as the story of an imagined journey that continues past obstacles until arriving at a decisive, positive outcome (Dewey, 1922/1988).

"In telling fictional stories we use imagination to create scenarios that help us learn things about our world that would not become apparent through analysis. It is this quality that makes story a likely tactic used by designers in formulating their designs."

Dramatic rehearsal goes a long way in explaining the outcomes of research into ID practice mentioned above. The reason expert IDs perform a less pure analysis phase may well have to do with their use of the more productive and efficient process of dramatic rehearsal. In this process, analysis and synthesis merge as the designer uses both while imagining the journey of a learner's experience in engaging with a finished design.

Uses of design stories

Design stories can be useful tools in several phases of the design process, including the *design phase*, the *design communication* or documentation phase and in *formative evaluation*. This section will examine each of these uses.

Stories in the design phase

The first place to use design stories is during the "analysis-in-synthesis" or design phase of a project. Brief, imagined stories are likely used by all designers in evaluating possible designs or design features during and immediately following analysis, but actually writing out a *design story* may be a useful step in any instructional design project. A design story might be written to explore an episode of use of some key or problematic design feature, or it might be told at a much higher level, about a path to expertise that takes place over a long period of time, and through many different learning experiences. For example, consider the following story and the role it could play during the design phase of a course that teaches weather forecasters how to improve their written forecast products for aviation customers (specifically, their Terminal Area Forecasts, or TAFs).

"After nine years on the job, Dave considers himself a well experienced weather forecaster. Both his accuracy and scientific knowledge are as good as, if not better than, many more seasoned forecasters. In fact, he often finds himself explaining subtleties of the science to his more senior colleagues and sharing the implications of recent research articles he has read. His MS degree gave him a good grounding in meteorological science for diagnosing and forecasting. He had considered continuing his education and pursuing an academic position, but the limited job prospects led him to take a National Weather Service position when it became available. Now he feels that forecasting is probably the best way to enjoy what he loves most about the science, and the tedious process of writing research papers was never going to be enjoyable anyway.

Taking a course on *Writing Effective TAFs* over the Internet would not be Dave's first choice for spending his very limited free time, especially not during an evening at home. But completing the course is necessary for his professional development plan, so here he is launching the online course on his laptop in dining room, the TV audible from the family room where his kids are enjoying a relaxing evening after completing their own homework. He often completes web-based training modules, and frequently does them from home. Typically this training is about the science, which interests him enough to keep him engaged even under these conditions. The objectives of this course, however, say that it will focus on understanding customer needs and communicating aviation forecasts, and that leaves him a little cold. It's not that he doesn't appreciate the customer perspective. He enjoys interacting with

the aviation community and respects his service role. But writing a forecast is just a matter of putting into words what the science tells him about the day's weather potential. Where is the need to take an entire course on the topic? His time could be much better spent learning more about what creates the weather conditions that affect airlines—or enjoying the evening with his family.

When he launches the course, he is taken to the course orientation, where he learns that the course consists of a series of scenarios that include practical exercises in writing a TAF. He thinks this isn't a bad approach, until it dawns on him that the scenarios will likely not include any real weather forecasting. In fact, in the first module there is a section on *Writing for Understanding*, which apparently is not even about weather! He clicks the link to confirm this, and after launching the site, he indeed finds that the first section is about communicating directions for driving somewhere. Now, the connection between writing good directions and writing a good forecast is not lost on him, but this feels like a condescending approach for teaching professionals. His slim motivation is getting slimmer. . . ."

While this story doesn't promise to land me a place on any bestseller list, it serves a very useful role by exploring a learner's response to the structure and scope of the proposed course. Other design stories, or extensions to this one, might explore in more detail a learner's experience with a proposed web interface, the embedded interactions, or the final assessment. Another might further explore how this particular course fits into the larger context of Dave's developing professional practice.

Qualities of design stories in the design phase. The rather clumsy exposition at the start does more than list learner analysis details — it puts the story into play. Dave's character is drawn from aspects of many forecasters I've met over the years, but bringing him to life and watching his reactions helps me understand some details about the possible learning experience for some subset of my target audience. Notice that once the action does begin in the second paragraph, the description is of immediate experience. It is not an objective description of events as seen from a distance, or in the past. I am there with Dave, actually inhabiting Dave, taking his actions with him, hearing his thoughts and feeling his feelings. This immediacy is critical to achieving a level of veracity in the design story.

Writing the story encourages empathy on my part for learners like Dave. I don't just end my analysis by determining that because a large portion of my learner population has a certain characteristic X, that I will do Y with my design. I explore the result of a potential design decision by watching, in my imagination, a learner's response to it. I can honestly say that I did not anticipate Dave's negative reaction to the decision to begin with an analogy of writing a forecast to giving driving directions. That was a surprise, and it might encourage me either to take another approach, or to couch that section carefully to avoid a negative response.

"I am there with Dave, actually inhabiting Dave, taking his actions with him, hearing his thoughts and feeling his feelings. This immediacy is critical to achieving a level of veracity in the design story."

I wrote the story rapidly, not allowing myself too much time to control what was happening, but trusting intuition as a better means to uncover the thoughts and feelings of my imagined learner. I wanted the writing to be somewhat automatic and improvised. Writing in this way is likely to capture a truer emotional response, and less likely to allow myself opportunities to rationalize the validity of my design idea.

While a design story isn't necessarily a complete narrative in the sense of having a beginning, middle and end, and containing a denouement, it does follow many other principles outlined by Aristotle in his Poetics (trans. 1984). For example, it demonstrates *condensed action*. While the action is presented at an immediate level, the story is very condensed — only key dramatic details and moments central to the design being investigated are portrayed. Dave's story also demonstrates *organic unity*, or consistency of theme, as aided by its condensed action. Rather than telling a tedious story of every aspect and detail of use, the design story focuses on a particular research question, as it were: How will a forecaster who views himself first as a scientist react to a required course centered on improving communication skills? This question is the story's animating idea, not simply the taking of the online course. However, within the bounds of their designated context,

design stories should explore as many aspects of learner experience as possible—including considerations of the job or learning site, as well as learner personalities, motivations, frustrations, ambitions, and desires. They should attempt to embody the learner's intentions.

Writing design stories in the design phase doesn't replace the need to gather information on the learning and performance environments, the task or content to be learned and the learner. That research is essential to building the "backstory." But analysis has diminishing returns, and it can be difficult to know exactly which information will be important until it is tested. Too much of a good thing can lead to the problem of "analysis paralysis," in which a novice designer can get lost in the complexity of conflicting analysis details and become stalled. In addition to providing a path forward, imagining the implementation of particular solutions or solution details through stories can actually uncover constraints (like the extent to Dave's resistance to the TAF Writing course design or specifics about his learning at home) and desirables that may not otherwise become obvious. As design theorists have often expressed, a full understanding of the problem space does not truly emerge until solutions have been proposed and tested for validity (Dorst, 2004; Lawson, 1997; Schön, 1990). Design stories, whether written, told or played out only in the imagination, provide an early test of solutions during a process of analysis-in-synthesis.

"Written stories have the advantage of becoming a document for creating shared vision within the design team ... and for better communicating the rationale and value of a design to clients."

Design stories in design communication

Nelson and Stolterman (2003) describe the need for *imagination* and *judgment* in the design enterprise. Imagination allows us to create the "not-yet-existing" through a process of composing parts, functions, structures, processes and forms in way that fits the design situation. Judgment is used to evaluate that composition to determine how well it fits. But the enterprise also requires additional skills in design *communication* (both internal and interpersonal) to bring the composition into a perceivable form that allows judgment to occur. Design stories are both a form of design communication that allows us to judge designs and an exercise of imagination that contributes to the process of composition. In this section, I will focus on their use as a communication tool that makes a design sufficiently tangible to allow judgment by others and provide guidance for the development team.

In architecture, the use of stories to articulate, refine and even conceptualize (as described in the previous section) design solutions is relatively common (Lawson, 1997). In such stories, the architect may describe users of the building carrying out routines of everyday life within the structure, helping to reveal how and why design features would enhance or detract from their experience. Löwgren and Stolterman (2004), both information systems designers, also describe in some detail the process of creating a "scenario" about "how the intended system is used" (p. 80). Instructional designers can borrow this tactic for their own practice to better communicate their design solutions. Design stories could remain thought experiments and still serve in design deliberations. But written stories have the advantage of becoming a document for creating shared vision within the design team, reminding SMEs about the instructional goals and end-user, for example, if they are providing script drafts, and for better communicating the rationale and value of a design to clients.

The following example is an excerpt from a design story describing a complete learning experience with a self-paced, web-based learning module. It was used in a project plan to demonstrate to the client how key concerns were being addressed by the design.

> "Kim is a weather forecaster coming to the module as a required training assignment. Kim has less than a year of experience in the field, and feels she has had only limited preparation for a module on Numerical Weather Prediction through her education. While she is dedicated to perform competently, she is a little skeptical about the need to learn what might be perceived as unnecessary details about numerical models. She is somewhat reluctant to complicate her forecast process, with its already significant time constraints, by including the need to analyze the performance of more than one model.
>
> *Section 1.* In the opening section, the first thing Kim encounters is a realistic case, the type a forecaster might experience in the field. She immediately perceives the relevance of the content

and becomes engaged with the problem of sorting out the discrepancies of global vs. WRF model performance. She attempts the interactions, which she finds challenging because they ask her to think about the implications of the differences between global model and WRF guidance (which she is unfamiliar with). But because the presentation of the exercises is instructional, rather than test-like, she feels game to make the best guesses she can. What also adds to her comfort level in approaching this new content is that it supports what she already understands about the need to use a forecast funnel—to start with the large scale (including global scale model guidance) and working down to the Mesoscale, or more local issues. After reviewing the case, she feels she knows what to expect to learn from the rest of the module.

Section 2. Kim enters the second section and finds it conveniently divided into 4 subsections, each addressing a key forecast problem (like the effects of topography, which she knows frequently makes model forecasts suspect), and how the WRF model offers improved guidance for the problem. The small divisions make it easier for her, because she is unsure whether she will get through the module in one sitting today. . . . Kim begins to feel a growing, deeper understanding about how and when the WRF model will make a difference due to its more realistic depiction of topography. In the final page, her new understanding is confirmed as she reads about a few operational scenarios describing how other forecasters like her might use WRF data in their forecasts.

Section 4. Breathing a sigh of relief, Kim enters the final section and is pleased that it is also relatively short. It appears to be merely a few pages of content about a problem that was introduced in the opening section—how does a forecaster deal with a situation in which a long range forecast is needed, but the global model forecast beyond 48 hours disagrees significantly from the mesoscale model at 48 hours (its longest range forecast), which typically makes the best forecast in this kind of situation? She's already experienced such situations. In fact, they're the norm rather than the exception. So Kim easily sees its relevance and hopes the section will help ... This section, and the module as a whole, makes her appreciate the complexity of her role as weather forecaster even more than before, and motivates her to take up the challenge with new energy, armed with a deeper knowledge of NPW models."

Qualities of design stories for design communication. You will notice that this design story, although written for a different purpose, demonstrates most of the qualities called for in stories for the design phase of projects. It is a story about a broad range of thoughts and feelings of a typical learner, told in first person, describing immediate experience. Its action is relatively condensed, although in this case it is meant to describe experience with all portions of the final product. While design communication stories still require imagination and empathy, they are likely more controlled and pointed, and less exploratory, ensuring that they document a desired vision for the product.

Design stories in formative evaluation

A final use of design story is to prepare for formative evaluation, or to provide an additional form of formative evaluation when it might be otherwise limited. More than just storyboards of the product that serve as limited models for formative evaluation, design stories are "prototypes" of the final design outcome—the learner experience. In this way, they can provide a rich source of information about a design in lieu of immediate user feedback. One traditional purpose of storyboards is to depict content sequencing and interface design in providing a limited prototype for clients and testers to envision the finished product and comment on how the design is proceeding. However, design stories can be combined with storyboards to better flesh out an episode of use before a review. For example, a design story could be combined with sketches that depict the learner's actions in using computer-based instruction, or at minimum the learner's on-screen choices, as well as depictions of the computer screens. A segment from a combined storyboard and design story focused on a learner's experience with a case-based, learning-object-supported web module is included in the Appendix (also see Löwgren & Stolterman, 2004, p. 84 for use in the context of software application design).

When formative evaluation doesn't or can't happen, engaging in design storytelling can be highly motivating for IDs, who might otherwise remain quite removed from the end user. The story can help make user experience more tangible, and can round out the design

Guidelines for design stories

1. Write design stories during the design phase of a project to explore an episode of use of a) a key or problematic design feature, b) a complete, coherent learning experience, or c) an entire learning path.

2. Write design stories to communicate the design to clients and others in the design team. These can become part of the project plan or design document.

3. Write design stories as a part of the formative evaluation phase of a project. Use these stories to explore a wide range of learner responses during an episode of use.

4. Use analysis details as the backstory.

5. Include sufficient exposition to establish character and setting.

6. Inhabit the learner in the story as you imagine his or her responses during the learning experience.

7. Improvise and allow yourself to be surprised with the outcome.

8. Write rapidly, almost automatically, to avoid rationalization. However, stories written for design communication purposes should be done with more care to document a desired vision.

9. Maintain unity by sticking to a single animating idea or research question, however narrow or broad.

10. Give the action immediacy. Use present tense and include learner reflections only as a response to tangible elements of the design.

11. Explore as many aspects of the learner's experience as possible, including setting, motivations, desires, ambitions and frustrations. Consider how values (of the designer, client, and learner) and political factors come into play.

Table 1: Guidelines for design stories

experience by broadening its significance beyond the mere act of building a product.

One might argue that design stories are a poor response to the need for formative evaluation, and that they are no replacement for testing prototypes with real learners. Alternatively, one could argue that good prototyping and formative evaluation are outward forms of dramatic rehearsal, and that their value is similar. Rapid prototyping, or "successive approximation" (Allen, 2003), and formative evaluation of any type can contribute substantially to improving a design. Design stories are not a replacement for these activities, they are companions. Without prior inward dramatic rehearsal, the prototypes used in outward formative evaluation begin in worse condition, and the improvement process may be more challenging as a result.

Furthermore, just as writing a design story is an imaginative activity, good prototyping and formative evaluation also require a high degree of imagination to compare them to real learning experiences. Unfortunately, because of cost and time constraints, prototyping often consists merely of screen and interaction mockups, along with roughed out content scripts, and formative evaluation of these prototypes often happens in unrealistic settings. The goals of formative evaluation are often narrow as well, focused on finding the degree to which objectives are met and whether the products demonstrate good usability. However, the final impact of instruction comes from more than these; it depends on all qualities of the learner experience, including its practical, aesthetic and ethical dimensions, all of which may be more completely understood when design storytelling accompanies formative evaluation.

Qualities of design stories for formative evaluation. The desirable qualities for design stories in the late phases of the ID process are the same as those required in the design phase — including first person narration, immediacy, condensed action and rapid, improvisatory telling to avoid rationalization. Stories at this stage are once again exploratory, and the learner reactions described should result from a high

degree of empathetic imagination, attempting to discover a wide range of learner reactions to the product. However, like design communication stories, stories written in this later phase of a project will likely cover a complete experience with the product, unless only a limited number of elements of the design are of concern. (For a summary of all the guidelines for design stories described in this section, see table 1.)

Cultivating empathy

It is easy to see how empathy and negative capability become important in the dramatic rehearsal, or storytelling, processes of design. A designer must use his or her imagination, of which empathy is one form, to anticipate the authentic experience of a user. What is most important about explicitly cultivating empathy in instructional design is that its use broadens our conception of what we are designing and what our designs are meant to achieve. Simply using logical reasoning in an attempt to fit together, puzzle-like, what is known through analysis will often miss critical aspects of user experience, and even the value of that experience. A technical problem solving perspective can tend to focus on immediate needs and goals, the measurable achievement of outcomes attributable to isolated instructional activities. However, experiences have continuity with one another, and the quality of one experience, not merely its immediate outcomes, impacts our future ability (and willingness) to learn from and perform in similar situations (Dewey, 1938/1997).

Alternatively, allowing one to vicariously experience through empathy not only the cognitive processes of learners, but also their personalities, motivations, ambitions, desires and the things that frustrate these, opens us up to a fuller conception of how our designs fit into the learner's world. It allows us to be supported by each of what Wilson (2005) calls the "Four Pillars of Practice," including knowledge of individual cognition, connection to the practice environment, values and political considerations and aesthetics.

Empathy, or our ability to put ourselves in the place of other individuals (Eisenberg & Strayer, 1987), is a central component of dramatic rehearsal, and it is essential for creating valid design stories and successful designs. What can be done then to enhance our empathy, and how can we foster it in students of instructional design? Is empathy a quality we are born with or a trait we develop in our formative years, or is it a skill we can enhance purposefully? I suggest it is a combination of the three, and that while some people might lack sufficiently native empathy to be good designers, there are clearly things we can do improve our powers of empathy.

- First, we need to know our audience. By this I am suggesting we do more than a formal "learner analysis" that documents characteristics we think are useful to know about. I'm suggesting we need to socialize with them when we can, to learn what motivates and frustrates them about their work and learning experiences. This is difficult for consulting IDs, but IDs can cultivate effective interviewing skills to quickly connect with individual learners during interviews to draw out much more than can be achieved through surveys or demographic data.
- We need to do more than run formative evaluation activities and collect surveys to understand how learners use our designs. We need to participate in learning events and observe how learners react when they aren't test subjects. We need to see how learners use our designs in their natural settings, if only vicariously through reports from those in a position to observe learners.
- We need to be learners ourselves, using the kinds of materials we are developing for our learner audiences. For example, using a self-paced CBT module or participating in an online course with a genuine intent to learn from it, rather than critique it as a designer, will help us understand learner experiences better.
- We need to become more adept at creating rich design stories through practice and by reading the stories of other designers. We could benefit by looking to the strategies and tactics authors use in the creative writing of stories and backstories. These tactics may help us better capture human experience in design stories and provide guidance for exercising our negative capabilities.
- In a similar vein, IDs could benefit from learning basic acting techniques, particularly improvisation skills, because design stories are fundamentally an exercise in improvisation. "Method" acting

"When formative evaluation doesn't or can't happen, engaging in design storytelling can be highly motivating or IDs, who might otherwise remain quite removed from the end user."

skills could help increase negative capability, allowing IDs to let go of preconceived notions of how learners will use their instruction and to inhabit the worlds of their learners.

- In teaching instructional design students, we can ask them to include design stories as part of their ID project assignments. At minimum, we might ask them to defend their design decisions by citing considerations of the full experience of learners. Such practice might instill an understanding of the value of the empathetic imagination.
- Finally, we should do more to share actual stories of learners' experiences with instructional designs. As in design stories, these stories should pay attention to the holistic experience of learning, not just achievement of objectives.

Conclusion

Writing a design story takes time, and IDs should always be wary about adding complexity to an already time-consuming process. However, the benefits may be numerous. Any tactic that improves our design deliberations should ultimately be seen as a time saver, rather than time sink. If my dictum is true, and rapid is better when it comes to writing design stories, one wouldn't spend any more than an hour or so on any one story anyway, and probably much less. Furthermore, I suspect that after a time, the practice of writing design stories may improve the quality of our internal deliberations as well. With practice, we can increase our ability to slip into and out of the viewpoint of our learners, improving our decision making at every point in the design process.

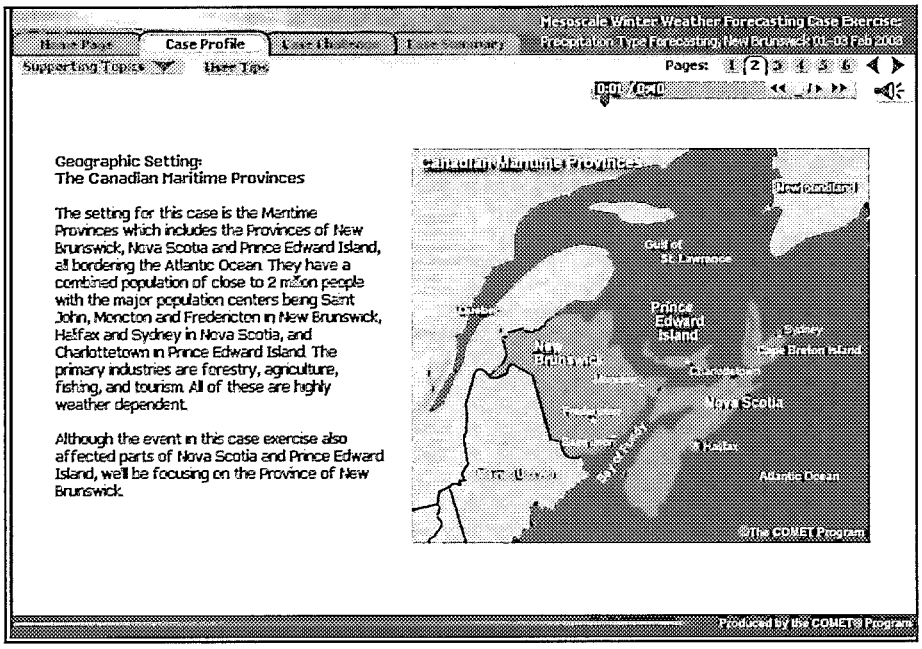
Appendix

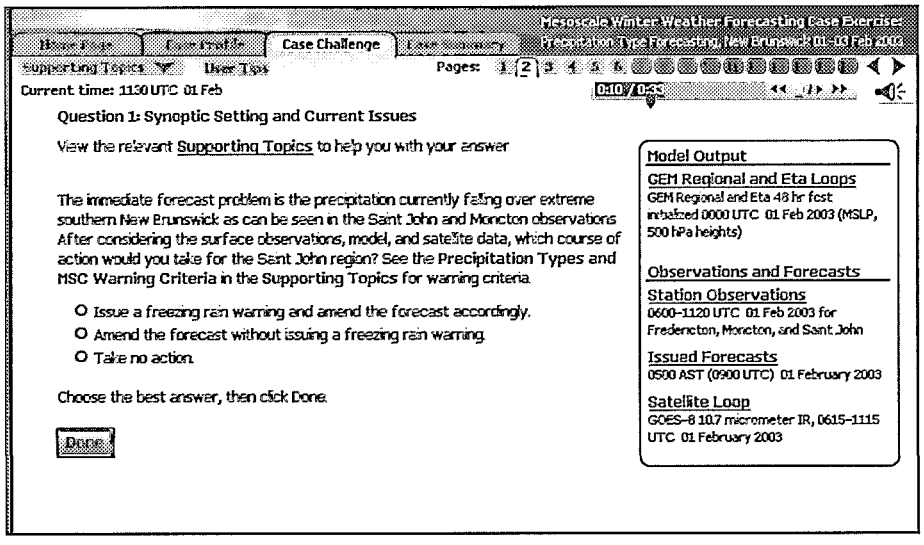
Design Story Excerpt with Storyboard

The following excerpt skips the exposition stage of the story, presenting only a few key learner interactions told through a first-person internal monologue. (This module is available at http://meted.ucar.edu/norlat/snow/preciptype_case/index.htm)

"... I really like these case-based modules because it's easier to see whether the content I'm learning really applies to my work. I like the fact that right off the bat I'm doing something, and not just reading or getting a lecture. It's great to see a case in New Brunswick this time. Too much of this training is so U.S. centric. I appreciate the audio narration as well because it means I can save the eye strain for studying the graphics, not the text. So far, the interface seems pretty clear, but I haven't clicked on everything yet. I'll wait and see if I really need it all. A lot of times, these extra buttons are kind of superfluous."

"Well, the first question looks simple enough, but like forecasting, it's deceptive. I'd better look through all the data products they are making available in that yellow box. I hope all the remaining 15 pages don't make me look through so much data or I'll be here all night. Should I really use





Technical problem solving as a model for instructional design has its strengths, and it has done much to provide designers strategies for their work, but it has substantial limitations as well. For one, it doesn't do a good job in describing how designers actually think. Slavish adherence to its methods can also be considered responsible for the proliferation of designs regarded by many as boring, and therefore ultimately ineffective (Allen, 2003). In this article, I have proposed a modification to the problem-solving model to include storytelling as an explicit part of design. Storytelling might better represent how productive designers think, reconciling the apparent opposites of analysis and synthesis, and also allow more fruitful application of empathy in design. In the end, because it is a representation the ultimate goal of design — the user experience, the design story may be one of the most critical interim products of the design process.

Patrick Parrish is manager of instructional design with the COMET ® Program, a program within the University Corporation for Atmospheric Research that provides education and training, in web-based and residence forms, to operational meteorologists in government, military and private positions. Patrick is also currently a doctoral student at the University of Colorado at Denver in the Educational Doctorate in Leadership and Innovation program. His current work includes examining design processes exploring the aesthetic aspects of teaching and learning. His website can be found at http://www.comet.ucar.edu/~pparrish/.

Acknowledgments

The author wishes to thank Brent Wilson, *TechTrends* Editor-in-Chief Elizabeth Boling, and the two anonymous manuscript reviewers for their many helpful suggestions in the preparation of the manuscript.

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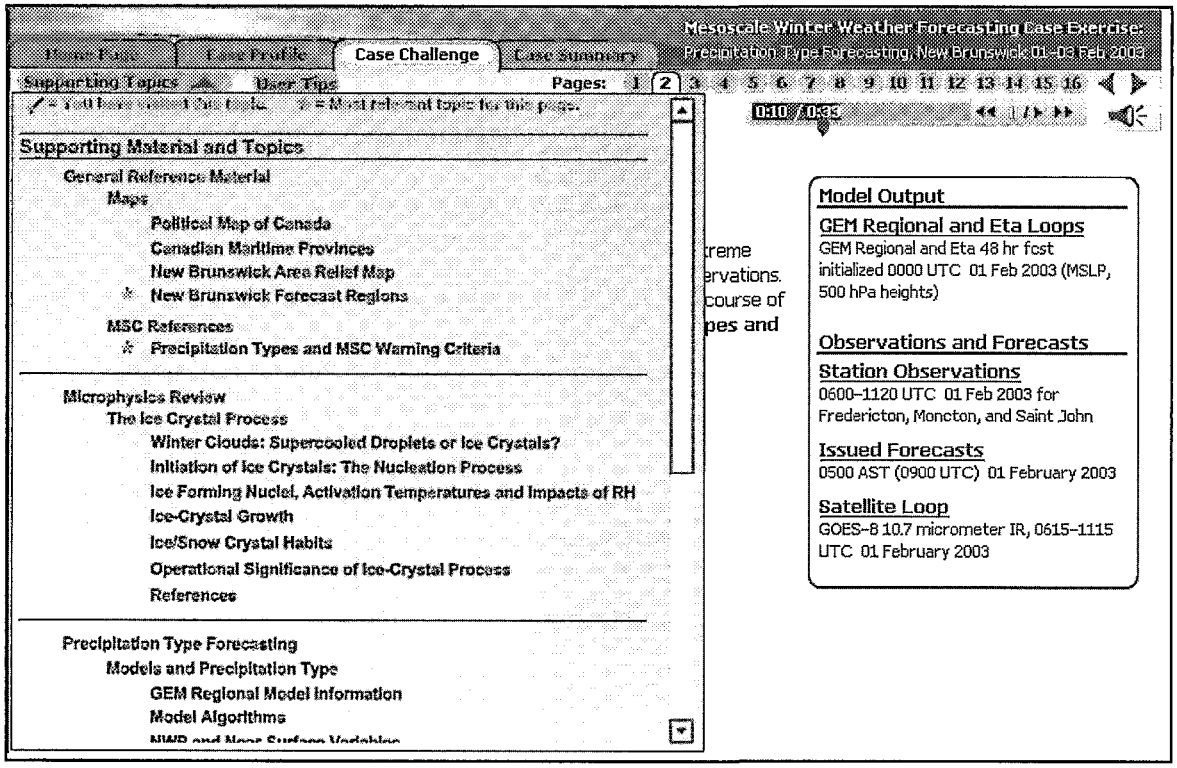
Appendix *(continued)*



these "Supporting Topics" they're providing, or should I just try to answer the question without them? I've been forecasting winter weather for 9 years after all."

"Ok, I'll look at the supporting topics to see what they're about. The first are just background maps and things I can refer to help me understand the case, but it looks like these others each take several minutes to study. It seems like really good content, and nicely presented, but I've been working on the first question for 15 minutes now. Is this case going to take more than four hours to finish?! Maybe it will get faster as I get farther in. I hope so."

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