Science and math teachers as Instructional Designers: Linking ID to the ethic of caring

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Abstract: In this exploratory inquiry into the nature of the relationship between systematic instructional design models and teachers' planning practices and needs, the researchers conducted open-ended interviews with six teachers of science and math in order to discover how they conceptualized and practiced instructional design. The most important finding to emerge from this research was that, from the teachers' perspective, caring must be a central component of any instructional design activity. Regardless of gender and grades taught, the teachers indicated that they need to be able to make instructional decisions based upon their caring relationships with individual learners.

Les enseignant de sciences et mathématiques comme concepteurs pédagogiques: relier l'identité et l'éthique de la sollicitude

Résumé : Dans cette enquête exploratoire de la nature de la relation entre les modèles systématiques de conception pédagogique et les besoins ainsi que la pratique de planification des enseignants, les chercheures ont effectué des entrevues ouvertes avec six enseignants de sciences et mathématiques afin de découvrir leurs représentations et leurs pratiques de la conception pédagogique. Le résultat le plus important émergent de cette enquête a été que selon la perspective des enseignants, la sollicitude se doit d'être une des composantes centrales de n'importe quelle activité de conception pédagogique. Indépendamment du genre et du niveau d'enseignement, les enseignants ont indiqué qu'ils doivent être en mesure de pouvoir faire des décisions pédagogiques en fonction de leurs relations empathiques avec les apprenant individuels.

Introduction

Formal, systematic approaches to instructional design (ID) have been readily appropriated by the corporate world, the government, and the military, but, despite the efforts of many instructional design scholars and specialists, such processes and models are not, by and large, used by K-12 teachers (Moallem, 1998; Young, Reiser, & Dick, 1998). As Dick (1986) observes, "[a] process for improving student achievement through the systematic design, development, and evaluation of instruction is currently available but not widely used by the public schools" (p. 54). Seels and Richey (1994) agree that "many instructional technologists feel they are not

particularly welcome in school environments, nor their ideas especially heeded" (p. 67). As they deplore this state of affairs, instructional design professionals also offer a variety of explanations. For example, Gustafson and Tillman (1991) suggest that public education "has been least accepting of these practices" because of "the many profound problems" it faces (p. 7); Reiser (1987) speaks of "the difficulty of instituting change in schools" (p. 37); Wiburg (1995) speculates that "the current organization of schooling" prevents incorporation of instructional design practices; Dick (1986) contends that the root of the problem is the failure of public schools and textbook publishers to recognize the role that instructional design can play within the overall curriculum plan; Martin and Clemente (1990) refer to the fact that teachers are unwilling or unable to "alter their practice to benefit from ISD" (p. 61); Mauldin and Gustafson (1998) view the lack of impact as a consequence of "public education's strong traditions, its apparent negative attitude toward instructional development, and the general lack of knowledge of the ways that instructional development might contribute to schools" (p. 130); and Reigeluth and Carr-Chellman (2007) attribute the divide between instructional design theory and teachers' practices to the tendency of educational institutions to institute piecemeal initiatives. Rose (2002) characterizes all such explanations as "boundary talk," which, in constructing teachers as other by virtue of the typically ad hoc nature of their planning processes, may offer, in itself, "the most compelling reason for instructional design's failure to play a significant role in education" (p. 17). This perceived and discursively enforced distinction between what teachers and instructional designers do is at the root of a longstanding discussion about whether teachers are, or should be considered to be, instructional designers (e.g., Earle, 1985; Earle, 1994). While Earle (1994) describes the goal of this discussion as "bridging the gap" (p. 6) between the two groups, it has failed to do so because it is largely motivated by a reform impulse and a desire "to increase the likelihood that the [systems] approach will be used to design instruction in the public school" (Reiser, 1994, p. 11). Even as the enforced line between teachers and instructional designers blurs under the pressure of constructivist ideas, it remains true that, despite the commonalities of purpose, most teachers are unfamiliar with the processes and models of instructional design and may not even have heard the term. The perceived failure of ID within K-12 settings was the starting point for our research. However, we were not satisfied with the explanations given, most of which posit deficiencies in the public school system or shortcomings in the planning processes of those who work within it, and thus enforce the boundaries between instructional designers and teachers. As instructional designers, we undertook this exploratory research in order to look at the debate from the teachers' perspective, through the lens of teachers' understandings, needs, and experiences. We asked, How do teachers conceptualize instructional design? What instructional design processes do teachers use? Do teachers have needs that prescriptive instructional design models fail to meet? And how might we adapt or modify systematic approaches to instructional design so that they can better accommodate teachers' needs? Our underlying hope was that, as we investigated teachers' values, assumptions, beliefs, and practices—what Bruner (1996) calls their "folk pedagogies"—we would gain new insight into the apparent disconnect between the instructional design community and those working within K-12 classrooms. Unexpectedly, the most important finding to emerge from this research was that, from the teachers' perspective, caring must be the central component of any instructional design activity. When asked to talk about their instructional design processes, and to describe what makes a lesson successful, teachers responded with a recurring theme: Good instructional design is inextricably linked to an ethic of caring.

The Ethic of Caring

In 1988, Nel Noddings observed that the educational emphasis on imparting information and attaining intellectual goals means "the ethical considerations that should enter into teachers' choices of content, methods, and instructional arrangements are largely ignored" (p. 221). This remains largely true (Collinson, Killeavy, &

Stephenson, 1998), although Noddings' (1984, 1992) own work has paved the way for an emergent discussion about the importance of an "ethic of caring" within the discourse of education and has formed the basis of subsequent research—for example by Nias (1999), Rogers and Webb (1991), and Vogt (2002)—on caring and moral education. Much of this research focuses upon teacher-student relationships in the primary grades. However, a concern with the ethic of caring has made few inroads into the field of instructional design—a consequence, perhaps, of ID's traditional emphasis upon the effective, efficient transmission of factual and procedural knowledge. As Damarin (1994) points out, the core values of ID appear to be at odds with an ethic of caring: At its most extreme, instructional design is clearly anti-ethical in the sense that it denies the voice of "the learner" in the determination of the learners [sic] need. Analyzing the learner through abstract systems whose relation to the needs of the learner are theoretical rather than experientially concrete, "ideal systems" proscribe treatments which work by colonizing the minds of learners. (p. 37) Damarin (1994) goes on to suggest ways in which instructional designers can develop more ethical instruction: by striving to enhance the caring role of the teacher and by "honor[ing] cultural narratives, objects, artefacts, and procedures of both the classroom and the wider society" (p. 37). Like Damarin, Ertmer (2001) is concerned primarily with the work of instructional designers rather than with the use of ID practices by K-12 teachers. She offers a responsive instructional design model that will enable designers to build on and respond to teachers' belief systems. And, most recently, Osguthorpe, Osguthorpe, Jacob, and Davies (2003) have proposed a framework for incorporating the moral dimensions of instructional design. One important dimension that they believe must be considered is "conscience of sacrifice," which they define as the extent to which the designer "act[s] out of concern for those who will experience the instruction" (p. 21). Recognizing the disparity between this model and the traditional concerns of ID, they acknowledge that a critic of their framework might protest in the following terms: Okay stop right there; you're not being realistic. Instructional designers might enjoy acting on moral instincts of caring, of sacrificing, or promise keeping, but they are under constant pressure to produce—to deliver a product—and you can't ask them to listen to these voices of conscience when they hardly have time to meet with the subject matter expert. (p. 22) Osguthorpe et al. (2003) counter this anticipated critique by insisting that caring, ethical design will ultimately be more effective than that which is focused solely on the attainment of learning outcomes. Despite the growing body of literature on pedagogical care, the term continues to elude clear definition. According to Rogers and Webb (1991), "caring has been relatively ill-defined and unexamined in the context of education. ... Our knowledge of caring is tacit; it is implicit in action. In other words, although we have difficulty defining it, we know it when we see it" (p. 177). Noddings (1988) agrees that "the characteristics of all caring relations can be described only at a rather high level of abstraction" (p. 219), in part because caring may not always be manifested in visible behaviours: "we shall have to look beyond observable action to acts of commitment, those acts that are seen only by the individual subject performing them" (1984, p. 10). Mayeroff (1971) defines caring in terms of knowing: "caring ... includes explicit and implicit knowledge, knowing that and knowing how, and direct and indirect knowledge, all related in various ways to helping the other grow" (p. 21). According to Mayeroff, caring is a commitment. In acquiring knowledge about who students are as individuals, the caring teacher must be patient, hopeful, trusting, and courageous enough to remain caring during difficult times. Hult (1979) argues that, teachers' performance of their professional duties and facilitation of learning should also be regarded as a manifestation of pedagogical caring. And Noddings (1984) defines caring as a relationship between the teacher (or the "one-caring") and learners (or the "cared-for") in which receptivity and empathy are key: "Caring involves stepping out of one's own personal frame of reference into the other's. ... Our attention, our mental engrossment, is on the cared-for, not on ourselves" (p. 24). Further, an ethic of caring entails doing things out

of love and natural inclination rather than a sense of duty. These perspectives all contribute to an understanding of pedagogical caring as a professional and ethical commitment to supporting the growth and development of others. Caring has been traditionally defined as a gendered social activity associated with women. Noddings (1984), for example, identifies it as a specifically feminine approach to ethics. Vogt (2002), however, proposes that we consider caring in terms of a continuum: being committed, developing relationships, maintaining physical well-being, expressing affection, parenting, and mothering. While caring at one end of the continuum may be clearly associated with the female role, at the other end is a gender-neutral understanding of caring that anyone might consider to be an aspect of their professional role as a teacher. In this way, we may agree that "both women and men employ an ethic of care when reflecting on teaching" (Vogt, 2002, p. 262).

Methodology

Noddings (1988) distinguishes between research about teaching and research for teaching, the former representing the reality and the latter her ideal:

Research for teaching would concern itself with the needs, views, and actual experience of teachers rather than with the outcomes produced through various instructional procedures. ... Research for teaching would not treat teachers as interchangeable parts in instructional procedures, but, rather, as professionals capable of making informed choices among proffered alternatives. (p. 227)

In Noddings' view, the researcher who engages in research for teaching becomes "part of an educational enterprise" that supports "a caring community" (p. 228).

Our approach to this inquiry certainly falls into the category of research for teaching. In order to begin to answer our research questions about how teachers perceive instructional design and describe their own instructional planning processes, we conducted open-ended interviews with six teachers, two women and four men. While the small sample necessarily limits the generalizability of our findings, we felt that depth rather than range was more important for this exploratory inquiry. We wanted to learn as much as we could about these teachers: why they taught, how they taught, and how they conceptualized their work as instructional designers.

The Teachers

The six teachers we interviewed all work in a small New Brunswick city. Because this was an exploratory study, we chose to limit variability in terms of the subjects taught, although the grades taught by the teachers spanned all levels: elementary, middle school, and high school. Of the teachers interviewed, three taught science, two taught math, and one taught both science and math. All were experienced teachers, with 12 to 32 years of experience.

Madeleine (like the other teachers' names used herein, this is a pseudonym) is the youngest of the six teachers interviewed. She has 12 years of teaching experience spanning kindergarten to high school, but primarily the latter. She holds an undergraduate degree in physical education, but currently teaches Grades 9 to 10 science and Grade 12 environmental science. Madeleine feels that good instructional design practices come naturally to some people, but "I have to work at it." What she knows she says she has learned through experience and observing other teachers. She emphasizes the importance of making learning exciting and relevant, and of providing opportunities for collaborative learning. Over the years, Madeleine has also learned that it is helpful to keep her lesson plans down to three key points.

Stewart has 17 years of teaching experience. He taught middle school for the first six years of his teaching career and high school since then, with subjects ranging from physical education and health to general science and physics, which he currently teaches. Stewart recalls that, as a new teacher, his design process was highly scripted and planned, but it has become much more flexible, allowing him "to challenge the way I do things." He believes that it is important to be able to combine that flexibility with a structure, so that it is always clear to students what the purpose of a particular lesson is. Stewart also emphasizes the importance of basing all instructional decision-making on a clear understanding of what he calls the "shell"—the current knowledge levels of the learners and constraints related to time or the physical environment.

Ray also has 17 years of teaching experience, primarily in high school math and science, including physics, chemistry, and biology. Ray feels that he has a lot of latitude as an instructional designer and can vary activities as needed to meet his students' needs. However, while Ray feels that instructional design is vital to his success as a teacher, he also believes that it is important not to be tied to the lesson plan: "You have to be able to change gears," he says. Ray recalls trying to apply the planning process that he was taught in his teacher training, but says that it "was flawed" because it failed to emphasize learning outcomes.

Louis has taught for 22 years. He started out as a physical education teacher but currently teaches middle school math and science for the core French program. Louis "used a lot of trial and error before I developed a methodology that I think works." Louis is very concerned with learner engagement; he wants his students to "walk away with their curiosity for learning triggered." In his view, differentiated or individualized instruction is an important means of achieving that engagement and excitement for learning. A good teacher, Louis says, needs to be "in touch with students' interests."

Alberto also has 22 years of teaching experience, and currently teaches math to Grades 10, 11, and 12. He is passionately committed to the principles and practices of cooperative learning and designs his lessons accordingly. Grouping is particularly important, as he finds that all students benefit when the more advanced learners are given opportunities to verbalize their own knowledge. He also emphasizes the importance of making connections for learners by starting each lesson with a recap of the previous lesson. For Alberto, good instructional design is crucial, but learning how to do it "came hard. ... The 'out-of university' toolbox wasn't nearly big enough." After 22 years of trial-and-error learning, Alberto describes his current instructional design process as "desperately different" from how it was when he was a new teacher.

With 32 years of experience, and only a few months away from retirement, Candace has taught all subjects at the elementary level but, primarily and currently, French immersion math. Candace believes that instructional design is important to the overall quality of her teaching because it helps her "create a pattern," so that her students will understand the instructional intent of all activities. She also emphasizes the importance of knowing her students and what they are capable of doing, although she finds that "kids have changed a lot over the years. I think they have too much on their plates." Having learned how to design instruction through trial and error, Candace now emphasizes the importance of preceding all lessons with warm-ups—games and puzzles that "get kids thinking mathematically."

The Interviews

We had hoped to conduct the interviews in an informal atmosphere, away from the teachers' schools, where they could speak freely about their experiences. Unfortunately, due to the teachers' time constraints, four of the interviews were conducted in school meeting rooms and offices. At the beginning of each interview, the

interviewer offered a simple, working definition of instructional design as the range of activities and decision-making processes that take place during the planning, preparation, and delivery of instruction. The teachers were at best only vaguely familiar with the term "instructional design," but following the explanation, all easily self-identified as instructional designers. A standard set of probes was used with each interview in order to generate dialogue and keep the discussion on track. The probes consisted of open-ended questions—for example, "How important is instructional design in the overall quality of your teaching?"; "How do you prepare to teach a lesson?"; and "In your view, what makes for a successful lesson?" Although all of our probes were about instructional design, they were deliberately framed in a simple language, avoiding the use of terms commonly used by professional instructional designers, such as "target population," "analysis," and "behavioural objectives." In this way, we hoped to gain a clearer understanding of the teachers' perspectives and understandings, rather than imposing a language and all its attendant values and expectations upon them.

Data Analysis

The emergent nature of qualitative research becomes most evident during the process of data analysis. As Morse (1994) observes, while analyzing data, "the researcher must remain open to alternative modes of sorting, to alternative explanations, and to alternative theories" (p. 33).

Accordingly, it was during the data analysis phase that our research was informed, and in many ways transformed, by an unexpected finding. As we read and reread the data from the interviews, and worked independently to code it for keywords and themes that were consistent among the six teachers, a startling trend emerged. Although all of our probes were about instructional design, and none related either directly or indirectly to the issue of caring, caring nevertheless emerged as a consistent overarching theme that informed virtually every answer the teachers gave about their instructional design processes.

Findings

How do teachers conceptualize instructional design?

As previously noted, once the term had been defined for them, the teachers we interviewed all self-identified as instructional designers, indicating that instructional design was "very important" and "crucial" to them. However, it was also clear that they conceptualize their work as instructional designers not as a matter of following a systematic process of analysis, design, development, implementation, and evaluation, but as entailing a constant process of innovation and adaptation based upon a keen attentiveness to their students' needs. Madeleine defines instructional design in terms of creativity and being able to "capitalize on a teachable moment." Ray says, "The lesson plan is everything," but adds that "I have to be ready to change everything on the spot" if it is apparent that learners are struggling. Stewart compares his design to creating a "roadmap" to which he is not tightly bound, allowing him the flexibility to "mix it up a bit" as needed in order to meet students' needs.

There is no sense among these teachers that there is a single best way to design instruction. Rather, they express a belief that it is part of their professional responsibility to, as Louis puts it, "update and vary methods" continually in order to be as responsive as possible to students' needs. Stewart agrees that it is important to "keep learning new and better ways" to design and deliver effective instruction and Candace emphasizes the importance of "being open to changes."

What instructional planning processes do teachers use?

The teachers all indicate that they did not learn how to design instruction at university; in fact, some say that they have had to "unlearn" the planning processes they were taught. Neither, apparently, is their knowledge drawn from educational theory and research, to which there are only three oblique references during the interviews: one teacher refers briefly to Howard Gardner, another describes his use of graphic organizers as "consistent with recent brain research around concept attainment," and a third states that all teachers "need the help of cognitive models," but does not elaborate. It would seem that what they know of instructional design comes not from university training or from research but from trial and error and watching or working with other teachers.

In analyzing their responses, we found a consistent pattern. The teachers all indicate that they begin by identifying outcomes: general statements of what learners are supposed to know, understand, or do on completion of a lesson. "It is important to be clear about the outcomes for the student," says Ray. "You can't be vague." In many cases, identifying outcomes entails consulting the teacher guides and curriculum documents, where learning outcomes are pre-specified. "I look at what I have to hit," explains Madeleine, "and then I supplement." This is consistent with Martin's (1990) findings: "Regardless of their level of experience, the teachers in this study used curriculum plans or a course of study when they design instruction" (p. 66).

Having identified outcomes, the teachers next select instructional activities that will best meet the outcomes—or, as Alberto puts it, "I start with what I want them to learn" and then "try to determine what is the best way to get there." Here, the emphasis is consistently on making learning relevant and engaging. For example, Louis "look[s] to the community where we live to identify examples that we can talk about in class." If the topic is water erosion, he brings in local examples and issues to "make the topic more real." Candace reports making frequent use of experiments, group projects, and discovery learning in her plans.

Louis is the only teacher who explicitly mentions an attention to the instructional sequencing. He describes "going from smaller to larger concepts and back again"—a process that evokes Reigeluth's elaboration theory (Reigeluth, 1999). Less explicitly, Ray says that he uses a spreadsheet to gain a broad view of the structure of a course.

Finally, the teachers describe using formal assessment processes to "find out what is lacking at the end of each unit and lesson" (Candace) and to determine whether or not students "have it" (Stewart). However, consistent, again, with Martin's (1990) findings, the teachers' emphasis is consistently on more informal means of achieving these ends, such as body language, facial expressions, and talking to students at the end of class. Alberto says that "when they ask 'what if' questions, I know they are really reflecting."

Although flexibility is an expressed ideal in instructional planning, the teachers agree that their latitude is often constrained by the fact that they have to follow existing curricula in content areas (science and math) that are very outcome driven. Given the number of pre-specified outcomes in the curriculum guides, time is also consistently identified as a limitation: Madeleine says that the expectations for coverage are "not realistic," and Stewart agrees that "time is a problem for all teachers."

We might conclude, then, that the teachers' primary concern would be with imparting information and meeting learning outcomes. However, it is consistently in answers to questions about their instructional design practices and concerns that the theme of care arises. For example, Candace asserts that the most important thing for a teacher is to be a caring person: "You have to care about the children if you are going to be an effective

teacher." In response to a question about her approach to instructional design, she adds that it matters greatly how teachers treat children: "I think it is important to be respectful and ethical." Stewart indicates that the notion of care has to extend beyond the students and even the instructional content to teaching and learning itself. When asked to describe his instructional design process, he replies that the most important thing he has to bring to his instructional design is "passion," because "students don't care what you know until they know that you care."

Following both Noddings, who sees caring in terms of a relationship between the one-caring and the cared-for, and Mayeroff (1971), who perceives it as a form of ethical knowing, the teachers we interviewed emphasize the importance of building relationships with and getting to know their students. For example, in responding to a question about the techniques she uses to design instruction, Madeleine says, "I am most proud of the fact that I establish relationships with the students. ... They know I care about them and am interested in their lives." Ray "think[s] rapport is the most important thing." Louis agrees that "It is important to get to know your students," and Stewart is happy that he has been able to "develop strong connections" with his students, although he seems to share Noddings' (1984) understanding of caring as entailing reciprocity: "A teacher can only go half way. Students have to come half way, too."

Caring is also expressed in terms of a concern for how learners feel about themselves, the educational experience, and the subject matter, a theme that is related to the recurrence of words such as "trust" and "worthiness." For example, Ray comments that "People remember less about what you said and more about what you made them feel while learning it." He adds that he tries "to create trust and help students know that they are worthy. I need to be worthy of their trust, too." Similarly, Stewart says, "I like knowing that they feel they are worthy, capable learners and can feel proud of their ability." For him, knowing that students have grasped the ideas and concepts being taught comes second to knowing that "they have a positive feeling through respect, dignity, encouragement, trust, and honesty." Alberto observes that he likes to create "an eagerness to learn" and is careful "not to place students in a position of fear. ... After a while, I build up a trust with them and they are never afraid that I am going to embarrass them or humiliate them. Madeleine agrees that knowing that her students are cared for, and that they have the capacity to be caring individuals, takes precedence over meeting proscribed learning outcomes: "I don't know how much science I actually teach them. I try to teach them to be good, nice people. ... I like them to know that I do care about them. I hope that they become greener, care about the environment more, and become responsible citizens."

Thus, despite the pressures of ensuring that their students meet all pre-specified learning outcomes and the consequent limitations on class time, the teachers we interviewed choose to spend precious time nurturing caring relationships with their students. Like the science teachers in Van Sickle's (1996) study, who described building relationships with students as an essential aspect of their teaching, these teachers indicated, in response to questions about their instructional design practices that they believe that the creation of caring relationships with their students should be an important goal of instructional design. What is more, it appears that, regardless of grade taught or gender, caring is a primary concern for these teachers and is considered to be integral to all their instructional decision-making.

Do teachers have needs that prescriptive instructional design models fail to meet?

Preliminary as it is, our research suggests that a significant factor in the fundamental disconnect between systematic instructional design models and teachers' practices is the fact that instructional design models offer

no apparent means by which teachers can express and act upon their belief that care is at least as important a part of the educational experience as the development of competence. The discourse of instructional design, with its traditional emphasis on enabling a target population to learn new information or skills as efficiently as possible, seems to offer no place for teachers' inclination to attend in a caring way to the capabilities and needs of individual learners. What is more, the models and the discourse that surrounds them—the language of task analyses, subject matter experts, and taxonomies of objectives in the cognitive domain—are tacitly dismissive of non-rational approaches to instructional planning, in which decisions are informed as much by an empathy with the feelings of others as by logic and method. As Campbell, Schwier, and Kenny (2005) observe, this is part of instructional design's "grand narrative" (n.p.). Inaccurate as it may be, it is what teachers know of instructional design—and, generally, one of the few things.

This perception may set up an immediate resistance to instructional design, for the teachers we interviewed do not appear to base their instructional planning decisions upon a systematic process, or even entirely upon the imperatives of an impersonal set of learning outcomes. Although the latter is certainly an unavoidable consideration, the teachers' instructional design activities are also significantly informed by the importance they ascribe to establishing a caring relationship with their students.

Our study therefore contributes to a growing body of research that supports the suggestion that teachers' instructional decisions are greatly influenced by their personal beliefs (Churchill, 2006; Collier, 2005; see also, for example, Eisenhart, Shrum, Harding & Cuthbert,1988 and Pajares, 1992). According to Fang (1996), this research indicates that "teachers' beliefs act as a filter through which a host of instructional judgements and decisions are made" (p. 51).

But what role, if any, can belief systems and, in particular, the ethic of caring play in a systematic instructional design model? As Noddings (1992) observes, "[c]aring cannot be achieved by formula" (p. xi), and design based upon an ethic of caring relentlessly eludes any kind of standardization, for "[w]ho the teacher is, who the students are, what they are trying to accomplish separately and together all matter in designing instruction" (p. 8).

Ethical Design: Some Considerations

This section addresses our final research question: How might we adapt or modify systematic instructional design models so that they can better accommodate teachers' needs? Given our findings, the question becomes, more specifically, is it possible to integrate an ethic of caring into instructional design models—or at least into the language in which they are represented—that will allow teachers to express and affirm what they believe to be an essential aspect of their professional work: the formation of caring relationships with learners? We believe that the answer is yes, and offer the following suggestions on the basis of our exploratory research; a more complete model may emerge from subsequent research.

Analysis

One of the activities undertaken in the analysis phase of most instructional design models is a target population analysis, in which the learners are objectified as homogeneous, faceless entities. As Damarin (1994) puts it, "the positioning of the real live student as 'the learner' denies the autonomy and intentionality of the person, and imposes upon him or her the needs of the designer" (p. 37). This activity is distinctly at odds with the inclinations of the teachers we interviewed, who were much more concerned with getting to know their

students as unique individuals. For example, in Louis' view, "teachers should reflect on their own strengths and where the students are," with the goal of "help[ing] students know themselves better, too." Our research suggests that, if aligned with the ethic of caring, the analysis phase would include a period of sharing (perhaps through focus groups with stakeholders) and self-reflection, with the desired outcome being that both teacher and learners have a better understanding of their needs and capabilities and of the ways that they might best work together and help each other.

Design and Development

Rogers and Webb (1991) observe that an ethic of caring "requires teachers to encourage student learning" (p. 176) rather than making it a matter of compulsion. As a mathematics teacher, Noddings (1984) offers the example of an imaginary encounter with a student who is doing poorly. Rather than insisting that the child "love mathematics," and making him feel deficient for not doing so, Noddings says that a caring teacher must help the student "find some reason, acceptable in his inner self, for learning the mathematics required of him" (p. 15). The teachers we interviewed indicated that they do just that, selecting diverse instructional strategies and media (for example, singing, games, and videos) not on the basis of how well they accord with predetermined learning outcomes but on the basis of such criteria as "relevance," giving students a sense of purpose, "taking the fear and intimidation away from learning" (Alberto), creating a positive attitude, and helping students "be passionate" about what they are doing (Madeleine). Similarly, Osguthorpe and Osguthorpe (2007) quote an experienced teacher who decides to forego the classroom use of token economies, despite their instructional benefits, because "I decided that I had forgotten the dignity of the children I was teaching" (p. 20). The teachers we interviewed also indicated a strong preference for collaborative learning activities, which tend to produce a sense of team cohesion and trust rather than hierarchizing students on the basis of their individual achievement of learning outcomes. In order to support teachers' abilities to select and create activities and resources that will sustain a caring relationship, the design and development phases of instructional design models should allow for a deep consideration of the welfare of the students (Rogers & Webb, 1991). This means, among other things, "insur[ing] a reasonable measure of success for every student" (Collier, 2005, p. 355) and allowing for the possibility that students need not all be required to achieve the same level of mastery or participate in the same activities. It also means providing the opportunity and means for teachers to consider instructional decisions in moral terms. The decision, for example, to introduce a competitive element into a learning game in which all students are expected to participate has ethical implications, since there must be losers as well as winners. Additionally, design decisions might be made on the basis of Noddings' (1988) recommendation that classroom activities in moral education, from the perspective of an ethic of caring, should provide opportunities for modelling ("teachers treat students with respect and consideration"), dialogue (open negotiation based on trust), practice (students are encouraged to support each other and are given opportunities to be of service to the community), and confirmation (pp. 222-223).

Evaluation

According to Noddings (1988), the use of "impersonal grading in written, quantitative form" creates barriers to caring and "risk[s] losing opportunities for moral education and mutual growth" (p. 222). Osguthorpe, et al. (2003) agree that the caring teacher "cares for students in their wholeness" rather than simply focusing on test performance (p. 19). And Thornton (2001) observes that, according to an ethic of caring, "[a]ssessment of learning outcomes will center on 'What did each pupil learn?' rather than 'Did all the pupils learn X?'" (p. 3).

These sentiments were reflected by the teachers we interviewed, who indicated that they tend to assess the success of their lessons and the learning of their students by experiential indicators, such as the "good noise" of laughter and discussion (Ray), the expressions on learners' faces (Madeleine), the questions they ask, and their body language. Louis emphasized his need to see that a lesson has relevance and purpose for his students: "It's not just a teacher pouring out information and hoping that the student gets it." He also lamented the fact that, because of a systemic emphasis on test results, "[t]eachers end up working to get good test results rather than what is best for the students." Candace agreed that the emphasis on test results makes the educational experience too much like a business, in which the focus is on test results rather than diverse student needs. Clearly, an instructional design model that accords with an ethic of caring must make provision for non-quantitative indicators of student and lesson success. Learners must participate fully in the evaluation process rather than merely serving as the subjects of an imposed assessment that fails to determine what the instruction contributes to each student's welfare and sense of self as a capable learner.

Conclusion

The notion of an ethic of caring and its central importance in educational transactions has only begun to make inroads into the discourse of instructional design, and clearly much more research is needed to explore the extent to which the ethic of caring informs teachers' instructional decisions. As we sought, through this research, to conduct an exploratory inquiry into teachers' perceptions of instructional design, and the nature of the relationship between systematic instructional design models and teachers' planning practices, our most significant and unexpected finding was that, regardless of gender and grades taught, teachers need to be able to make instructional decisions based upon their caring relationships with individual learners, not upon the imperatives of an impersonal, systematic process. Hence, very possibly, the lack of uptake of instructional design within the public school system; while ID models do not preclude the ethic of caring, the language that surrounds these models, and the field as a whole—a language that valorizes efficiency, prescription, and standardization—seems to diminish the importance of the ethical act that teachers place uppermost: the formation of caring relationships with learners.

In making the argument that an ethic of caring should be the regarded as the core of any educational transaction, Noddings (1992) acknowledges that her beliefs may be deemed anti-intellectual. She offers the following response to this anticipated objection:

[A] dedication to full human growth ... will not stunt or impede intellectual achievement, but even if it might, I would take the risk if I could produce people who would live nonviolently with each other, sensitively and in harmony with the environment, reflectively and serenely with themselves. (p. 12)

Rogers and Webb (1991) agree that "[a]n ethic of caring does not preclude or exclude competence or motivation, in fact, it implies a concern with both" (p. 180). On the basis of our research, we too suggest that caring can and should be the basis for thoughtful instructional decision-making, and that adapting or creating an instructional design model that explicitly incorporates the ethic of caring is an essential step for an instructional design community that wishes to play a greater role in K-12 education.

References

Bruner, J. (1996). The culture of education. Cambridge, Mass.: Harvard University Press. Campbell, K., Schwier, R. A., & Kenny, R. F. (2005). Agency of the instructional designer: Moral coherence and

transformative social practice. Australasian Journal of Educational Technology, 21(2), 242-262. Available online:

http://www.ascilite.org.au/ajet/ajet21/ campbell.html

Churchill, D. (2006). Teachers' private theories and their design of technology-based learning. British Journal of Educational Technology, 37(4), 559-576. Collier, M.D. (2005). An ethic of caring: The fuel for high teacher efficacy. The Urban Review, 37(4), 351-359. Collinson, V., Killeavy, M., & Stephenson, H. J. (1998). Exemplary teachers: Practicing an ethic of care in England, Ireland, and the United States. Annual Meeting of the American Educational Research Association. San Diego, CA: AERA. (ERIC Document Reproduction Service No, ED 423 217). Damarin, S. K. (1994). Equity, caring, and beyond: Can feminist ethics inform educational technology? Educational Technology, 34(2), 34-39. Dick, W. (1986). Instructional design and the curriculum development process. Educational Leadership, 4(4), 54-56. Earle, R. S. (1985). Teachers as instructional developers. Educational Technology, 25(8), 15-18. Earle, R. S. (1994). Instructional design and the classroom teacher: Looking back and moving ahead. Educational Technology, 34(3), 6-10. Eisenhart, M. A., Shrum, J. L., Harding, J. R., & Cuthbert, A. M. (1988). Teacher beliefs: Definitions, findings, and directions. Educational Policy, 2(1), 51–70. Ertmer, P. A. (2001). Responsive instructional design: Scaffolding the adoption and change process. Educational Technology, 41(6), 33-38. Fang, Z. (1996). A review of research on teacher beliefs and practices. Educational Research, 38(1), 47–65. Gustafson, K. L., & Tillman, M. H. (1991). Introduction. In L. J. Briggs, K. L. Gustafson, & M. H. Tillman (Eds.), Instructional design: Principles and applications (pp. 3-16). Englewood Cliffs, New Jersey: Educational Technology Publications. Hult, Jr., R. E. (1979). On pedagogical caring. Educational Theory, 29(3), 237-243. Martin, B. L. (1990). Teachers' planning processes: Does ISD make a difference? Performance Improvement Quarterly, 3(4), 53-73. Martin, B. L., & Clemente, R. (1990). Instructional systems design and public schools. Educational Technology Research and Development, 38(2), 61-75. Mauldin, M. P., & Gustafson, K. L. (1998). Is instructional development a paradigm got public education? In C. R. Dills & A. J. Romiszowski (Eds.), Instructional development paradigms (pp. 129-140). Englewood Cliffs, NJ: Educational Technology Publications. Mayeroff, M. (1971). On caring. New York: Harper Perennial. Moallem, M. (1998). An expert teacher's thinking and teaching and instructional design models and principles: An ethnographic study. Educational Technology Research and Development, 46(2), 37-64. Morse, J. M. (1994). Emerging from the dark: The cognitive processes of analysis in qualitative inquiry. In J. M. Morse (Ed.), Critical issues in qualitative research methods (pp. 23-43). Thousand Oaks, CA: Sage. Nias, J. (1999). Primary teaching as a culture of care. In J. Prosser (Ed.), School culture (pp. x-x). London: Paul Chapman. Noddings, N. (1984). Caring: A feminine approach to ethics and moral education. Berkeley: University of California Press. Noddings, N. (1988). An ethic of caring and its implications for instructional arrangements. American Journal of Education, 96(2), 215-230. Noddings, N. (1992). The challenge to care in schools: An alternative approach to education. New York: Teachers College Press. Osguthorpe, R. T., & Osguthorpe, R. D. (2007). Instructional design as a living practice: Toward a conscience of craft. Educational Technology, 47(4), 13-23. Osguthorpe, R. T., Osguthorpe, R. D., Jacob, W. J., & Davies, R. (2003). The moral dimensions of instructional design. Educational Technology, 43(2),19-23. Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. Review of Educational Research, 62(3), 307–332. Reigeluth, C. M. (1999). The elaboration theory: Guidance for scope and sequence decisions. In C. M. Reigeluth (Ed.), Instructional-design theories and models: A new paradigm of instructional theory (pp. 427-453). Hillsdale, NJ: Lawrence Erlbaum. Reigeluth, C. M., & Carr-Chellman, A .A. (2007). Whistling in the dark? Instructional design and technology in the schools. In R. A. Reiser & J. V.

Dempsey (Eds.), Trends and issues in instructional design and technology (2nd ed.) (pp. 239-255). Upper Saddle River, NJ: Pearson Education. Reiser, R. A. (1987). Instructional technology: A history. In R. M. Gagné (Ed.), Instructional technology foundations (pp. 11-48). Hillsdale, NJ: Lawrence Erlbaum Associates. Reiser, R. A. (1994). Examining the planning practices of teachers: Reflections on three years of research. Educational Technology, 34(3), 11-16. Rogers, D., & Webb, J. (1991). The ethic of caring in teacher education. Journal of Teacher Education, 42(3), 173-181. Rose, E. (2002). Boundary talk: A cultural study of the relationship between instructional design and education. Educational Technology, 42(6), 14-22. Seels, B. B., & Richey, R. C. (1994). Instructional technology: The definition and domains of the field. Bloomington, IN: Association for Educational Communications and Technology. Thornton, S. (2001). Caring and competence: Nel Noddings' curriculum thought. Seattle, WA: Annual Meeting of the American Educational Research Association (ED 453 280). Van Sickle, M. (1996). Caring relationships in science classrooms: A symbolic interaction study. Journal of Research in Science Teaching, 33(4), 433-453. Vogt, F. (2002). A caring teacher: Explorations into primary school teachers' professional identity and ethic of care. Gender and Education, 14(3), 251-264. Wiburg, K. M. (1995.). An historical perspective on instructional design: Is it time to exchange Skinner's teaching machine for Dewey's toolbox? First International Conference on Computer Support for Collaborative Learning. Bloomington, IN: Indiana University. Available online: http://www.columbia.edu/~fs184/wiburg.htm Young, A. C., Reiser, R. A., & Dick, W. (1998). Do superior teachers employ systematic instructional planning procedures? A descriptive study. Educational Technology Research and Development, 46, 65-78.