



Creative Teaching: Collaborative Discussion as Disciplined Improvisation

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Teaching has often been thought of as a creative performance. Although comparisons with performance were originally intended to emphasize teacher creativity, they have become associated instead with contemporary reform efforts toward scripted instruction that deny the creativity of teachers. Scripted instruction is opposed to constructivist, inquiry-based, and dialogic teaching methods that emphasize classroom collaboration. To provide insight into these methods, the “teaching as performance” metaphor must be modified: Teaching is improvisational performance. Conceiving of teaching as improvisation highlights the collaborative and emergent nature of effective classroom practice, helps us to understand how curriculum materials relate to classroom practice, and shows why teaching is a creative art.

Although the teacher-proof movement of the post-Sputnik 1960s has long been considered a failure, new versions of teacher proofing have gained adherents in the 1990s, as increasing numbers of schools continue to implement scripted curricula that turn teachers into script readers. These curricula often provide word-for-word scripts that teachers are strongly encouraged to follow, and include Slavin’s *Success for All* (Slavin & Madden, 2001), Engelmann’s *Direct Instruction* (Adams & Engelmann, 1996; Engelmann, 1980), and Hirsch’s *Core Knowledge* (Hirsch, 1987, 1996). Scripted instruction is particularly popular in urban districts; for example, beginning in 1997 the New York City Board of Education mandated *Success for All* reading instruction in low-performing schools (Goodnough, 2001, 2003). Scripted teacher-proof curricula do not rely either on teachers’ creative potential or their subject matter expertise; the message of these programs seems to be, if you can perform well from a script, you can teach. Yet critics of such programs note that the best teachers apply immense creativity and profound content knowledge to their jobs, both in advance preparation and from moment to moment while in the classroom. For example, Sizer’s *Coalition for Essential Schools* (Simon, 1999) has criticized scripted instruction, arguing that effective teaching requires teachers to know their students and respond to them individually. Although scripted approaches have documented improvements in test scores, critics argue that scripted instruction emphasizes lower-order skills that are particularly easy to measure with standardized tests. Advocates of creative teaching argue that it results in deeper

understanding among learners, a form of learning that is more difficult to quantitatively assess (Bereiter, 2002; Palincsar, 1998; Rogoff, 1998; Wells & Chang-Wells, 1992).

Thus, underperforming schools are faced with two very different visions for reform. Scripted approaches attempt to teacher proof the curriculum by rigidly specifying teacher actions, and essentially removing all creativity and professional judgment from the classroom. Creative teaching suggests a very different vision: teachers are knowledgeable and expert professionals, and are granted creative autonomy in their classrooms. Our economy is increasingly based on knowledge workers and a “creative class” (Florida, 2002), and these economic trends seem to require creative teaching that emphasizes learning for deeper understanding, rather than mastery of lower-order facts and skills (Bereiter, 2002; Kafai & Resnick, 1996).

Scripted teaching is consistent with a long tradition of comparing teaching to performance (Baker-Sennett & Matusov, 1997; Harrison-Pepper, 1991; Lessinger & Gillis, 1976; McLaren, 1986; Pineau, 1994; Rubin, 1985; Timpson & Tobin, 1982). One advocate of “direct instruction” noted, “It’s like actors in a play; we don’t ask the actor to write the play, but he interprets the play and presents it” (Viadero, 1999). Scripted instruction is clearly performative: teachers stand “on stage” in front of the classroom “audience”; the lectures and student exchanges are “scripts” for the performance; teachers should “rehearse” their presentations; and the teacher/performer must work hard to hold the attention of the audience, with timing, stage presence, and enthusiasm.

The teaching as performance metaphor encourages teachers to think of themselves as actors on a stage, enacting a performance for their students (Lessinger & Gillis, 1976; Timpson & Tobin, 1982). This metaphor emphasizes important skills for teachers, such as presentation, delivery, voice, movement, and timing. Yet the metaphor of teaching as performance is problematic, because it suggests a solo performer reading from a script, with the students as the passive, observing audience. These uses of the performance metaphor reduce teaching to an individualistic focus on the teacher as an actor. Like scripted instruction, the performance metaphor suggests that an effective actor could be an excellent teacher even without understanding anything. The extreme is represented by the famous “Dr. Fox” lecture, in which students gave high class ratings to a professional actor who enthusiastically delivered a lecture, even though the lecture contained intentionally meaningless content—impressive-sounding phrases and non-sequiturs cobbled together from journal articles (Naftulin, Ware, & Donnelly, 1973).

In this article I argue that creative teaching is better conceived of as *improvisational performance*. Conceiving of teaching as im-

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provisation emphasizes the interactional and responsive creativity of a teacher working together with a unique group of students. In particular, effective classroom discussion is improvisational, because the flow of the class is unpredictable and emerges from the actions of all participants, both teachers and students. Several studies have found that as teachers become more experienced, they improvise more (Berliner & Tikunoff, 1976; Borko & Livingston, 1989; Moore, 1993; Yinger, 1987). For example, Yinger described a master math teacher who did not plan more than a day or two ahead, because each day's plan improvisationally responded to his students' performance on the prior day.

Creative teaching is *disciplined* improvisation because it always occurs within broad structures and frameworks. Expert teachers use routines and activity structures more than novice teachers; but they are able to invoke and apply these routines in a creative, improvisational fashion (Berliner, 1987; Leinhardt & Greeno, 1986). Several researchers have noted that the most effective classroom interaction balances structure and script with flexibility and improvisation (Borko & Livingston, 1989; Brown & Edelson, 2001; Erickson, 1982; Gershon, 2002; Mehan, 1979; Simon, 1995; Yinger, 1987).

I use the improvisation metaphor to address two problems with prior uses of the performance metaphor. First, previous performance metaphors tend to suggest an overly scripted, planned perspective, with the teacher performing from a script—the lesson plan or lecture. Second, they suggest a focus on the teacher rather than a collective focus on the entire classroom (cf. Gershon, 2002; Smith, 1979, p. 33). Both of these are problematic, given that many contemporary pedagogical approaches emphasize the importance of the active participation of students—including inquiry-based learning, constructivism, project-based learning, and collaborative learning. The National Research Council's (1996) *National Science Education Standards* and the National Council of Teachers of Mathematics' (1991) *Professional Standards for teaching mathematics* both draw on these approaches in emphasizing negotiation and collaboration in inquiry. For example, in classrooms inspired by social constructivism, children work together to collectively construct their own knowledge—as in both neo-Piagetian approaches (Doise & Mugny, 1984; Perret-Clermont, 1980) and Vygotskian approaches (Forman & Cazden, 1985; Palincsar, 1998). Educators who hold to constructivist principles are those most likely to be critical of scripted instruction; and advocates of scripted instruction are often critical of constructivist theory and practice.

In this article I draw on recent studies of improvisational theater to provide a novel perspective on classroom creativity. I begin with an example of improvised dialogue taken from a professional theater performance. I then discuss recent research on the discourse processes of effective classroom collaboration. In true discussion, the topic and the flow of the class emerge from teacher and students together; the outcome is unpredictable, just as in theater improvisations. I close by drawing on the improvisation metaphor to suggest a new perspective on how curriculum structures relate to classroom practice.

The New Metaphor: Teaching As Improvisation

In improvisational theater, a group of actors creates a performance without using a script. Some groups specialize in short

skits only a few minutes long, and others specialize in fully improvised one- or two-act plays of an hour or more. These performances emerge from unpredictable and unscripted dialogue, on stage and in front of an audience. In a similar way, an effective classroom discussion emerges from classroom discourse, and is not scripted by the lesson plan or by the teacher's predetermined agenda. In a study of improvised theater dialogues, Sawyer (2003c) referred to this type of discourse as *collaborative emergence*. Both classroom discussion and theater improvisations are *emergent* because the outcome cannot be predicted in advance, and they are *collaborative* because no single participant can control what emerges; the outcome is collectively determined by all participants.

To demonstrate some important characteristics of collaborative emergence, I begin with an example of dialogue taken from a performance of a Chicago theater group (Example 1). This is the first few seconds of dialogue from a scene that the actors knew would last about 5 minutes. The audience was asked to suggest a proverb, and the suggestion given was "Don't look a gift horse in the mouth."

Example 1. (*Lights up. Dave is at stage right, Ellen is at stage left. Dave begins gesturing to his right, talking to himself* [from Sawyer, 2003c].)

1. Dave: All the little glass figures in my menagerie, the store of my dreams. Hundreds of thousands everywhere! (*Turns around to admire*)
2. Ellen: (*Slowly walks toward Dave*)
3. Dave: (*Turns and notices Ellen*) Yes, can I help you?
4. Ellen: Um, I'm looking for uh, uh, a present? (*Ellen is looking down like a child, with her fingers in her mouth*)
5. Dave: A gift?
6. Ellen: Yeah.
7. Dave: I have a little donkey? (*Dave mimes the action of handing Ellen a donkey from the shelf*)
8. Ellen: Ah, that's—I was looking for something a little bigger . . .
9. Dave: Oh. (*Returns item to shelf*)
10. Ellen: It's for my dad.

By turn 10, elements of the drama are starting to emerge. We know that Dave is a storekeeper, and Ellen is a young girl. We know that Ellen is buying a present for her Dad, and because she is so young, probably needs help from the storekeeper. These dramatic elements have emerged from the creative contributions of both actors. Although each turn's contributions to the play can be identified, none of these turns fully determines the subsequent dialogue, and the emergent play is not conceived nor chosen by either of the actors.

The emergence of the play cannot be reduced to actor's intentions in individual turns, because in many cases an actor cannot know the meaning of her own turn until the other actors have responded. In turn 2, when Ellen walks toward Dave, her action has many potential meanings; for example, she could be a coworker, arriving late to work. Her action does not carry the meaning "A customer entering the store" until after Dave's query in turn 3. In improvisation, many statements do not receive their full meaning until after they have occurred. This sort of retrospective interpretation is quite common in classroom discourse (Lemke, 1982), and a better understanding of improvised dialogues can help us

understand these intersubjective processes in collaborative classrooms (Sawyer, 2003b).

The Improvisation of Classroom Discussion

The basic insight of constructivism is that learning is a creative improvisational process (Sawyer, 2003a). Recent work that extends constructivist theory to classroom collaboration conceives of learning as *co-construction*. Both neo-Piagetian social constructivists and Vygotskian-inspired socioculturalists focus on how knowledge is learned in and by groups (Forman & Cazden, 1985; Hicks, 1995; Palincsar, 1998; Rogoff, 1998; Tudge & Rogoff, 1989; Verba, 1994; Wells & Chang-Wells, 1992). Sociocultural studies have demonstrated the importance of social interaction in groups, and have shown that a microgenetic focus on improvised interactional process can reveal many insights into how learning takes place. A central theme in the sociocultural tradition is the focus on the group rather than the individual. Socioculturalists analyze the entire group as their unit of analysis; cognition is “an aspect of human sociocultural activity” rather than “a property of individuals” (Rogoff, 1998, p. 68). As a result of this emphasis, these scholars examine how groups collectively learn and develop; in Rogoff’s terms, learning is reconceptualized as a “transformation of participation in sociocultural activity” (p. 687). Socioculturalists hold that groups can be said to “learn” as collectives, and that knowledge can be a possession or property of a group, not only of the individual participants in the group (Rogoff). For example, Hutchins (1995) documented actions taken by the crew of a ship to make their way into a harbor, but with a broken navigational system that forced the crew to collectively improvise. A transcript of their interactions indicated that no one crew member understood the complete system that they had improvised or exactly why it was succeeding; thus, the crew’s solution to the problem they collectively faced emerged from ensemble improvisation, and this emergent solution can be thought of as a form of collective learning.

In sociocultural and social constructivist theory, effective teaching must be improvisational, because if the classroom is scripted and directed by the teacher, the students cannot co-construct their own knowledge (Baker-Sennett & Matusov, 1997; Borko & Livingston, 1989; Erickson, 1982; Rogoff, 1998; Sawyer, 1997a; Simon, 1995). As Erickson noted, “talk among teachers and students in lessons . . . can be seen as the collective improvisation of meaning and social organization from moment to moment” (1982, p. 153). Such talk is open ended, is not structured in advance, and is an interaction among peers, where any participant can contribute equally to the flow of the interaction (Cazden, 2001; Freire, 1989; McLaren, 1986). Classrooms are not as improvisational when the teacher controls the flow of the class, strictly limiting when students can talk and how much impact what they say can have on the flow of the class (as in the initiation-response-evaluation [IRE] sequences studied by Mehan [1979]). Cazden (2001) associated this latter type of classroom discourse with the *traditional* classroom, to contrast it with the more improvisational, collaborative classrooms associated with constructivist and inquiry-based methods.

The sociocultural perspective implies that the entire classroom is improvising together; and it holds that the most effective learning results when the classroom proceeds in an open, improvisa-

tional fashion, as children are allowed to experiment, interact, and participate in the collaborative construction of their own knowledge. In improvisational teaching, learning is a shared social activity, and is collectively managed by all participants, not only the teacher (Baker-Sennett & Matusov, 1997, p. 204). In improvising, the teacher creates a dialogue with the students, giving them freedom to creatively construct their own knowledge, while providing the elements of structure that effectively scaffold that co-constructive process.

Rather than lecturing or asking “known answer” questions and calling on specific students, Example 2, from an introductory lesson on functions (Lampert, Rittenhouse, & Crumbaugh, 1996), is an example of improvisational teaching. Lampert is the teacher in a whole-class discussion with her fifth-grade math class. The discussion in Example 2 occurred after small-group work. Several of the small groups had found the following problem particularly hard: given four sets of number pairs, what is the rule to get from the first number to the second? The number pairs were 8-4, 4-2, 2-1, and 0-0.

Example 2. (*Whole-class discussion. Ellie is the first student to speak after the teacher opens discussion.*)

1. Ellie: Um, well, there were a whole bunch of—a whole bunch of rules you could use, use, um, divided by two—and you could do, um, minus one half.
2. Lampert: And eight minus a half is?
3. Ellie: Four. (*In response to this answer, audible gasps can be heard from the class, and several other students tried to enter the conversation*)
4. Lampert: You think that would be four. What does somebody else think? I, I started raising a question because a number of people have a different idea about that. So let’s hear what your different ideas are and see if you can take Ellie’s position into consideration and try to let her know what your position is. Enoyat?
5. Enoyat: Well, I agree with Ellie because you can have eight minus one half and that’s the same as eight divided by two or eight minus four.
6. Lampert: Eight divided by two is four, eight minus four is four? Okay, so Enoyat thinks he can do all of those things to eight and get four. Okay? Charlotte?
7. Charlotte: Um, I think eight minus one half is seven and a half because—
8. Lampert: Why?
9. Charlotte: Um, one half’s a fraction and it’s a half of one whole and so when you subtract you aren’t even subtracting one whole number so you can’t get even a smaller number that’s more than one whole. But I see what Ellie’s doing, she’s taking half the number she started with and getting the answer.
10. Lampert: So, you would say one half of eight? Is that what you mean? (*Lampert and Charlotte alternate for three turns; then, Lampert checks in with Ellie*)
11. Lampert: Ellie, What do you think?
12. Ellie: Um, I still think, I mean, one half, it would be eight minus one half, they would probably say oh, eight minus one half equals four. Um. (*Lampert talks with Ellie and two other students before calling on Shakroukh*)

13. Shakroukh: I would agree with Ellie if she had added something else to her explanation, if she had said one half of the amount that you have to divide by two.
14. Lampert: Okay. You guys are on to something really important about fractions, which is that a fraction is a fraction of something. And we have to have some kind of agreement here if it's a fraction of eight or if it's a fraction of a whole.

The students propose different answers throughout the discussion; the teacher does not evaluate any given answer, but instead facilitates a collaborative improvisation among the students, with the goal of guiding them toward the social construction of their own knowledge. In fact, she has guided them to learning that was not in her original problem, which was simply to ask them to come with the “divide by two” rule. In addition, the students have begun to learn about variables, and have learned a fundamental insight about fractions that will help them when they begin to multiply by fractions. The classroom dialogue of Example 2 is fundamentally improvisational. Although an experienced teacher may have encountered most of the potential student answers in prior years, a teacher cannot know exactly which answer will be proposed on any given day. And even with years of experience, a teacher cannot predict how the rest of the class will respond to a proposed answer; the flow of the discussion is collaboratively determined by all of the students responding to each other, and the knowledge that is co-constructed by the students emerges from the improvisational flow of dialogue. The classroom is collaboratively creative; the teacher is not the sole creative force, but rather a facilitator for the entire group's creativity.

To create an improvisational classroom, the teacher must have a high degree of *pedagogical content knowledge*—to respond creatively to unexpected student queries, a teacher must have a more profound understanding of the material than if the teacher is simply reciting a preplanned lecture or script (Feiman-Nemser & Buchmann, 1986; Shulman, 1987). An unexpected student query often requires the teacher to think quickly and creatively, accessing material that may not have been studied the night before in preparation for this class; and it requires the teacher to quickly and improvisationally be able to translate his or her own knowledge of the subject into a form that will communicate with that student's level of knowledge.

In addition to pedagogical content knowledge, it is less widely recognized that classroom collaboration requires the teacher to skillfully manage group improvisation. Improvisational skill is required to manage the participatory aspects of social interaction—turn taking, the timing and sequence of turns, participant roles and relationships, the degree of simultaneity of participation, and rights of participants to speak. It is also required at the pedagogical content level—to notice and comment on connections among students and with the material. A better understanding of improvisational performance can help us understand the creative processes involved in collaborative learning.

Improvisational Peer Collaboration

In addition to lectures, IRE recitations, and solitary work on problems, many teachers use the technique of collaborating groups, where a group of two to four students is placed in a circle and given an assignment to solve collectively. In many cases,

the members of the group are graded on the performance of the entire group as well as on their own performance, providing them with an incentive to contribute to the group's overall learning. Social constructivists believe that these groups are effective because they provide an opportunity for the improvisational collaboration that results in deeper understanding (e.g., Cobb, 1995; Forman & Cazden, 1985; Palincsar, 1998).

In Baker-Sennett and Matusov's (1997) study of second- and third-graders' collaborative preparation of a play, they found that when children's groups were child directed—without an adult present—the children often spontaneously improvised, developing their plans on the fly by trying out new ideas for actions or dialogue. Once an interesting idea emerged from the improvisation, the children recognized it and then moved to a more global, metacommunicative level to figure out how to integrate the newly emergent idea into their evolving collaborative creation. However, when adults participated in a play-crafting session, they never joined in this improvisational planning and elaboration. Rather, they typically presented their ready-made play plans and scripts to the children, who then simply executed the adult's script (pp. 201–203). Such studies suggest that children instinctively improvise together (also see Sawyer, 1997b), but that it is difficult for adults (including teachers) to learn how to manage a collaborative improvisation in class.

Conceiving of classroom interaction as a collaboratively emergent improvisation helps us see how learning occurs in peer-group discussion. Example 3 presents two second-grade students working together to solve a math problem, using manipulatives called *multilinks* (from Cobb, 1995). The students were asked to solve “How many do you add to III::: (36) to make IIIII:. (53)?” Both of the students quickly discovered the correct answer (17) but because they used different methods, they each at first think the other is wrong.

Example 3. (*Two second-grade math students.*)

1. Ryan: (*Starts to put out bars of multilinks*)
2. Katy: (*Counts from 36 to 53 on her fingers and says*) Seventeen.
3. Ryan: Look, 36. (*Pointing to 3 ten-bars and 2 three-bars*) And how many do we have on that? (*Pointing to the picture of 53 on the activity sheet*)
4. Katy: Fifty three. So you add two more tens.
5. Ryan: Two more tens and take away one of these. (*Pointing to the three-bar*)
6. Katy: Come here, come here, I think you're not getting this right. All right, you have this many numbers (*points to the picture of 36*) and that makes 36, and that makes 37, 38, 39.
7. Ryan: (*Interrupting*) Look, look—
8. Katy: (*Ignores him and continues counting*)—50, 51, 52, 53.
9. Ryan: Well this is 36 (*points to the activity sheet*), and we have to take away one of these things. (*A strip of three squares in the picture of 36*)
10. Katy: Oh no you don't.
11. Ryan: (*Ignores her*) And then we add two of these things. (*Two strips of 10*)
12. Katy: Here, I'll explain it to you how I got the number.
13. Ryan: That's how I did it.
14. Katy: Here, you have that many numbers, 36, and you add 10 more, makes 46 (*holds up both hands with all 10*

fingers extended, and then puts them down and sticks seven fingers out one by one as she counts) . . . 47, 48, . . . 53.

15. Ryan: Katy, look, you have to take away 10. (*remainder of his statement is inaudible*)
16. Katy: I'll show you how I got my number. See, you have 36, and add 10 more makes 46 (*again holds up 10 fingers, then brings them in and counts seven one by one*) . . . 47, 48, . . . 53. Do you agree with 17?

How could this collaborative discourse be more effective than scripted instruction and traditional drill-and-practice methods? After all, it seems inefficient to many critics—a waste of time, and an abdication of teacher responsibility. Like many neo-Piagetian social constructivists, Cobb argued that this interaction is *multivocal*: containing multiple perspectives rather than the single “right” perspective of the teacher. These two students are both getting to the correct answer, but are using different methods. Even though the children do not appear to be listening to each other, they reciprocally influence each others’ arguments, and both of them make conceptual advances by elaborating their assumptions (Cobb, 1995, pp. 48–49). By exchanging views and working toward identifying what is shared by their two solutions, they gradually construct a robust and profound understanding of subtracting numbers, which is more profound than if they had been taught the rote method of “borrowing” with scripted instruction and then been made to drill-and-practice using worksheets at their desks.

Cobb’s analysis connects the Piagetian sociocognitive insight that children learn from the conflict and controversy of peer interaction (Bearison, Magzamen, & Filardo, 1986; Doise & Mugny, 1984; Perret-Clermont, 1980; Piaget, 1932/1948, 1950) with a Bakhtinian focus on multiple voices, or *heteroglossia* (Bakhtin, 1981). Improvising ensembles are similarly heteroglossic, as the voices of the performers meld together through a give and take whereby intersubjectivity is collaboratively emergent (Sawyer, 2003c). Children learn from collaborative discourse because there are multiple perspectives, and this form of learning can only work if the group is improvisational, with no predetermined outcome and no preset script. Collaborative learning only works if there is a give-and-take, the mutual responsiveness associated with jazz and improv theater groups. Student discussion must be allowed to take its own course, so that group learning can emerge from the interaction of the group. More than 2 decades of research have shown that this form of collaborative practice is uniquely beneficial to learning in a wide range of content areas (Bossert, 1988–1989; Webb & Palincsar, 1996).

The Structures of Disciplined Improvisation

The improvisation metaphor suggests a general framework within which scripted teaching and teaching for deeper understanding can be reconciled. Even when teachers are following a rather rigid script, there is always some residual requirement to improvise responses to students in the class. Mehan (1979) found that even when teachers followed conventionalized classroom routines they subconsciously and effortlessly improvised variations on the routine in response to the unique demands of each classroom. When a student’s response is unexpected, the teacher has to improvise a way to respond to the question and then return to his or her own script for the class. Thus, even relatively scripted in-

struction could benefit from a better understanding of improvisational performance.

Disciplined improvisation acknowledges the need for a curriculum—there must be some structure to the classroom performance. Even flexible, creative teachers—like Lampert in Example 2—have plans and goals for each lesson, and they pose problems and situations for students that are based in a pedagogical framework (Simon, 1995). Disciplined improvisation provides us with a way to conceptualize creative teaching within curricular structures. The improvisation metaphor allows us to frame more sophisticated questions; rather than “script or no script?” the metaphor leads us to ask: (a) What sorts of guiding structures are appropriate in what kinds of settings and subjects? (b) How can teachers learn to improvise effectively within structures? and (c) When should teachers stick with the script, and when should they improvise creatively?

Disciplined improvisation is “a dynamic process involving a combination of planning and improvisation” (Brown & Edelson, 2001, p. 4). Erickson’s (1982) analysis of improvisational classroom discourse revealed that collaborative dialogues are midway between ritual and the extreme improvisationality of everyday small talk. In Erickson’s phrase, lessons are “structured conversations,” in which dialogue is largely improvisational, but within overall task and participation structures. Yinger (1987) similarly noted that interactive teaching is best conceived of as composition-improvisation combined (p. 36). In disciplined improvisation, teachers locally improvise within an overall global structure.

Professional staged improvisation always occurs within a structure. Jazz ensembles improvise using the framework of a familiar song; improv theater groups use broad outlines to help provide their 30-minute improvisations with an overall plot structure. In addition to these broad overall structures, improvisation works because all participants have internalized many shared conventions (Sawyer, 2001). The improvised dialogue of Example 1 could only work if both actors were deeply familiar with the various culturally specific encounters that could happen in a retail store, and with our culture’s customs surrounding gift giving; the entire 5-minute performance depends on all actors’ familiarity with the aphorism “Don’t look a gift horse in the mouth.”

Improv groups have developed a wide variety of structures to scaffold their collaboratively emergent performances. The influential medieval performances of the *commedia dell’arte* were improvisations within an overall plot structure known as a *scenario*. The dialogue was not scripted in advance; no scripts have ever been found by historians. However, many scenarios were written down and have been preserved; these specify the sequence of scenes, which characters are to appear in each scene, what happens in that scene and how it relates to the overall flow of the plot. In modern theater, overall structures are quite common in *long-form* improvisation, when ensembles perform a fully improvised 30- to 60-minute play. Although dialogue and characters are not determined in advance, the actors often choose an overall framework for the plot structure. For example, in the mid-1990s Chicago group *Sitcom*, all actors were trained in the typical elements of sitcom structures—three acts separated by commercials, and common plot structures like “false crisis” or “misunderstood overhearing” that are resolved in the third act (Sawyer, 2003c).

When teachers organize collaborating groups of students, they face a tension familiar to improvising ensembles: between the need for pre-existing structures and the need to leave flexibility for collaborative emergence to occur. Research has shown that the most effective collaborating groups are those that are partially structured, in careful ways, by the teacher (Azmitia, 1996; Cohen, 1994). The most effective collaborations involve some structure, but not too much, and are of a type appropriate to the learning task (Webb & Palincsar, 1996). For example, the teacher may constrain the collaboration by instructing students in specific conversational strategies or requiring them to follow a certain sequence of actions; or the teacher may assign specific functional roles, such as “facilitator,” to individual students (Cohen, pp. 17–22). If, on the one hand, teachers do nothing to structure a collaborating group of students, the students can easily become anxious as they become overwhelmed by the challenges of the task (Azmitia, p. 139). If, on the other hand, the collaboration is overly structured, the students are prevented from co-constructing their own knowledge, thus, preventing the benefits that collaboration was intended to accomplish. Disciplined improvisation seems best suited for unstructured tasks with no clear-cut procedures or answers, when effective interaction depends on “a mutual exchange process in which ideas, hypotheses, strategies, and speculations are shared” (Cohen, p. 4).

Teachers have to manage the balance between structure and improvisation differently than a theater group. Teachers cannot afford to fail too much of the time because students’ learning is at stake; they will probably always need to have more structure than improv performances. Educational theorists have proposed a variety of terms for the structures used in disciplined improvisation: scaffolds, activity formats, pedagogical frameworks, interactional routines. Examinations of improv theater games and formats (as documented in Sawyer, 2003c; Seham, 2001) can help us better understand the relationship between curriculum structures, classroom processes, and learning. The most effective teachers are those that can effectively use a wide range of degrees of structure, shifting between scripts, scaffolds, and activity formats as the material and the students seem to require (Berliner, 1987; Borko & Livingston, 1989; Leinhardt & Greeno, 1986). These shifts in themselves are improvisational responses to the unique needs of that class.

When teachers participate in curriculum development, they participate in the creation of these guiding structures. Because of the teacher’s active participation, the structures that result are more likely to lend themselves to disciplined improvisation. In creative approaches, such as Lehrer and Schauble’s *web of inquiry* in their Modeling in Mathematics and Science (MIMS) project, curriculum development is an improvisational process guided by the teacher in collaborative response to the students (Lehrer, Carpenter, Schauble, & Putz, 2000; Lehrer & Schauble, 2000). Rather than performers of curricula, teachers become creative designers of curricula (Brown & Edelson, 2001).

Teaching has always involved the creative appropriation of curricula within the situated practice of a given classroom. The curriculum is a cultural tool, and like all such tools, it carries constraints and affordances that always allow creative improvisation in their application (Wertsch, 1998). Yet we need to better understand the relation between curriculum and classroom practice

(cf. Brown & Edelson, 2001). Studying how improvisation takes place within the structures of performance can help us better theorize the relation between curriculum and classroom practice.

Conclusion

Creative teaching is improvisational, and participatory classroom discussions gain their effectiveness from their improvisational, collaborative nature. Educational research on collaborating groups has begun to emphasize the features that they have in common with improvising groups: their interactional dynamics, their give-and-take, and the fact that learning emerges from individual actions and interactions, requiring a shift in focus from the psychological analysis of individual participants to a collective, group level of analysis. These education researchers have discovered that the benefits of collaboration accrue from the complex processes of group improvisation.

The improvisation metaphor integrates and combines several common recent metaphors for teaching, such as teacher as performer, teacher as decision maker, and teacher as facilitator. Improvisational teaching requires constant decision making as routines and activity structures are modified on the fly to suit local student needs. And improvisational teaching requires a teacher who can facilitate structured discussion among students. When we realize that creative teaching is improvisational, we see that teachers are creative professionals, requiring not only pedagogical content knowledge but also creative performance skills—the ability to effectively facilitate a group improvisation with students.

The improvisation metaphor has at least five implications for education. First, the performance metaphor has been used in a simplistic way that implies the teacher is a solo, scripted actor on stage. The metaphor of teaching as *improvisational* performance is more appropriate for social constructivist learning. Improvisation allows us to move beyond the ambiguities of the teaching as performance metaphor, and provides a valuable set of perspectives on a critical debate facing schools: Should we improve schools by investing in scripted curricula—a capital intensive approach—or by investing in teacher training and professional development, a labor-intensive approach?

Second, social constructivist theory and research have shown the importance and effectiveness of unstructured, collaborative classrooms. But without detailed empirical studies of exactly *how* improvised discourse contributes to learning, this theory remains controversial. Some exciting new studies are beginning to explore the moment-to-moment processes whereby collaborative discourse results in constructivist learning (Cobb, 1995; Kelly, Crawford, & Green, 2001; Sfard & Kieran, 2001). Recent studies of group creativity (John-Steiner, 2000; Sawyer, 2003b) and of creative conversation (Sawyer, 2001, 2003c) could contribute to this recent line of educational research.

Third, studies of classroom discourse have shown the benefits of collaborative discussion when contrasted with traditional lessons such as lectures and IRE recitations. But although some studies have begun to explore the discourse processes involved, it remains unclear exactly how unstructured, exploratory discourse contributes to learning. The improvisation metaphor provides a framework to think about why classroom discussion contributes to learning, and suggests an empirical approach that closely focuses

on the temporal emergence of group learning from classroom discussion. Rigorous studies of collaborative discussion have the potential to provide data that might document the widespread claims that constructivist and inquiry-based methods lead to deeper understanding.

Fourth, beginning teachers need routines, but also need to learn how to flexibly apply them. Research has shown that experienced teachers have a larger repertoire of automatized routines than novices, but also that they can modify them to improvisationally respond to each classroom's unique needs (Berliner, 1987; Leinhardt & Greeno, 1986). Borrowing a page from scripted instruction, beginning teachers could be explicitly provided with a set of routines; but in creative teaching, those routines would be designed to allow variation and embellishment.

Fifth, beginning teachers have great difficulty mastering the ability to lead collaborative discussion, and these techniques tend to be used effectively only by experienced teachers who also possess profound content knowledge. Some advocates of the performance metaphor suggest that teachers are stage directors, with the students the actors (Park-Fuller, 1991; Smith, 1979, p. 34). Yet unlike stage directors, who remain silent once the performance begins, teachers are ever-present facilitators. Because students are not experienced improvisers, beginning teachers could be taught how to enforce the ground rules of effective discussion while allowing disciplined improvisation to continue.

The improvisation metaphor suggests a set of techniques that can help teachers master these difficult skills—techniques that are taught to aspiring improvisational actors (see Sawyer, in press). Once we recognize that creative teaching is improvisational, it opens up a new range of opportunities for training teachers, because teacher-training programs can take advantage of the training that aspiring improvisational actors receive. Aspiring improv actors begin by taking improvisational acting classes, and these classes teach a set of basic principles that encourage collaborative and emergent performances. For example, actors are taught the “Yes, and” rule—always accept the new plot development proposed by a fellow actor, and then build on it by adding a new elaboration. Actors are also taught to avoid “playwriting,” thinking more than one or two dialogue turns ahead—trying to predict the response to his or her proposal, and then formulating in advance his or her next dialogue turn. Given the uncertainty of improvisation, such prediction is impossible, and results in a distracted performer who is not “in the moment” and not fully listening to the other actors.

Several professional development programs have begun to use improvisational training, both with K–12 teachers (Kuhr, 2003; www.academicplay.com; www.artistryinteaching.org) and college instructors (Logan, 1998; Nudd, 1998; Park-Fuller, 1998). For example, the Center for Artistry in Teaching runs a summer workshop in Washington, DC, which is heavily based on improvisational exercises such as verbal spontaneity games, role-playing, and physical movement (Kuhr, 2003). A program assessment found that teachers were more effective in the year following the workshop; teachers shifted from a teacher-centered style to a more student-centered facilitative style, and both teachers and students asked more higher-order questions (Center for Artistry in Teaching, 2001). Such programs could be expanded and evaluated more systematically, to determine the most effective ways to enhance creative teaching.

The recurring tension between scripted teaching and creative teaching is a manifestation of deeper, competing conceptions of teaching: Is it a profession, deserving of autonomy and respect like other professions such as law or medicine? Or, is it a technical, clerical task, more like data entry? An individual is considered a professional when granted broad autonomy to creatively solve problems in response to the unique needs of each situation (Schön, 1983). In contrast, clerical workers are expected to follow instructions and stick to procedures prepared by experts. Our society values and respects the professional more, and teachers generally prefer to conceive of themselves as professionals.

Yet education critics often argue that not all teachers have the creative skill to manage the improvisational creativity associated with professionals. Advocates of Direct Instruction, for example, often claim that “the reality is that we draw our teachers from the bottom quartile of our colleges” (Leontovich, 1999). In addition, many policymakers do not trust teachers to use their autonomy and flexibility responsibly and effectively. Advocates of scripted instruction argue that most teachers need a detailed structure provided by expert educators. The tension between scripted curriculum and creative teaching reflects the opposition between centralized efforts to make practice uniform and decentralized initiatives to engage teachers in local participatory solutions (Dow, 1991; Tyack & Cuban, 1995).

Underperforming schools are faced with two very different visions for reform. Scripted approaches attempt to teacher proof the curriculum by rigidly specifying teacher actions, and essentially removing all creativity and professional judgment from the classroom. These approaches may offer some improvement for some schools; yet although there have been documented improvements in test scores, critics argue that scripted instruction emphasizes lower-order skills that are particularly easy to measure with standardized tests. And these approaches are likely to reduce the number of bright young students who choose to become teachers. There is a national shortage of teachers, and school systems are working to attract bright new teachers by promising them autonomy and creativity in the classroom. Such teachers are even more critically needed at struggling urban schools. Yet it is in just such schools that pressures to improve math and reading scores are leading to the adoption of scripted curricula in which creativity is discouraged. These scripted, teacher-proof approaches have the effect of turning bright college students away from choosing teaching as a career. As in any profession, what makes teaching rewarding is the autonomy and creativity granted to the teacher.

Creative teaching suggests a very different vision—teachers are knowledgeable and expert professionals and are granted creative autonomy to improvise in their classrooms. People generally choose to become teachers with this vision in mind. Creative teaching results in deeper understanding among learners, a form of learning that is more difficult to quantitatively assess; yet, close empirical studies of the discourse processes of collaboration have the potential to document these benefits. Implementing creative teaching will require serious, long-term investment in professional development for teachers and administrators, and basic improvements in preservice teacher education. Yet it has the potential to result in brighter, more motivated, and more effective teachers, and to result in students with deeper understanding and improved creative and social skills.

The teaching as performance metaphor must be extended to recognize the collaborative and emergent nature of exploratory classroom discussion. Otherwise, the metaphor could become just another form of scripted instruction, denying teachers the creative freedom that the metaphor was initially intended to evoke. Improvisational theater provides a natural way to extend this metaphor. Improvisation is a genre of staged performance, but one in which collaboration among actors is of the essence. In staged improvisation, a scene emerges from the collaborative discourse among the actors. In the same way, in collaborative classrooms, new knowledge and insights emerge from exploratory discussion among learners. Students and teachers are both creative, and students learn how to participate in collaborative creative groups, an essential skill in the knowledge economy. The many parallels suggest that the improvisation metaphor can help us understand the essential role of creativity in teaching and learning.

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