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What Makes Good Teachers Great? The Artful Balance of Structure and Improvisation

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In the 1970s and 1980s, educational researchers began to study what makes good teachers great. One common approach of these early researchers was to compare experienced teachers with novice teachers; they found that experienced teachers have a greater repertoire of *scripts* than novice teachers – standard sequences of activities, or responses to students, that work in specific situations. Researchers also found, however, that experienced teachers were better at *improvising* in response to each class's unique flow; in fact, they tended to spend less advance time planning than novice teachers (Berliner & Tikunoff, 1976; Borko & Livingston, 1989; Yinger, 1987). Experienced teachers do two apparently contradictory things: They use more structures, and yet they improvise more.

These early studies of teacher expertise focused on the structures that teachers created themselves, as ways to enhance teaching, manage classrooms, and handle problems that may arise. In addition, many of the structures that guide teaching are mandated by law, administration, or state and federal guidelines. Modern schools are complex organizations, with relatively rigid structures and bureaucratic and administrative frameworks that constrain what teachers can do in classrooms (Olson, 2003). Many education researchers have explored the tension between teachers' professional autonomy and reflective practice on the one hand and the many policies that constrain teachers on the other (e.g., Cochrane-Smith & Lytle, 1999; Darling-Hammond, 1997; Ingersoll, 2003). In the United States, one of these constraining policies is the No Child Left Behind Act (NCLB), which has mandated that states develop tests to assess yearly progress; these tests

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have typically had the effect of increasing the amount of structure and the number of constraints that teachers must satisfy (O'Day, 2008).

An active debate rages about how to improve schools: Should we invest in the professional expertise of our teachers, and then grant them autonomy to exercise that expertise? Or should we structure and script teachers' work in classrooms, as a way of ensuring standardization of desired curricular goals and learning outcomes?

This book provides a new voice in this debate. We accept the need for structures in the classroom; after all, research on teacher expertise shows that all good teaching involves structuring elements. Teachers are rarely allowed to do whatever they want, even in schools committed to constructivist and creative learning. The challenge facing every teacher and every school is to find the balance of creativity and structure that will optimize student learning. Great teaching involves many structuring elements, and at the same time requires improvisational brilliance. Balancing structure and improvisation is the essence of the art of teaching. The contributors to this book are deeply concerned about the increasing constraints placed on teachers, because there is a risk that too much additional structure could interfere with the creative improvisation associated with expert teaching. The increasing use of scripted teaching methods, sometimes called direct instruction, is particularly disturbing, because it risks disrupting the balance associated with great teaching. Scripted instruction is opposed to constructivist, inquiry-based, and dialogic teaching methods that emphasize creativity in the classroom. Many educators are concerned that the recent emphasis on standardized testing has resulted in less creative teaching and learning.

This book proposes that we view teaching as an *improvisational* activity. Conceiving of teaching as improvisation highlights the collaborative and emergent nature of effective classroom practice, helps us understand how curriculum materials relate to classroom practice, and shows why teaching is a creative art. The best teaching is *disciplined* improvisation because it always occurs within broad structures and frameworks (Sawyer, 2004). 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; Mehan, 1979; Yinger, 1987). Effective teachers act as directors, orchestrating learning



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experiences (Park-Fuller, 1991); their students participate in a collective improvisation, guided by and along with the teacher.

The chapters in this volume each focus on one or more manifestations of the tension between structure and improvisation:

- *The teacher paradox*: Teacher expertise must weave together a large knowledge base of plans, routines, and structures, within improvised practice.
- *The learning paradox*: In effective constructivist classrooms, students are provided with scaffolds loose structures that are carefully designed to guide the students as they improvise toward content knowledge, skills, and deeper conceptual understanding.
- The curriculum paradox: Good curricula and lesson plans are necessary to guide teachers and students down the most effective learning trajectory toward the desired learning outcomes. Yet, the most effective curricula are those designed to foster improvisational learning within the curricula.

Like most education scholars, the contributors to this book are committed to the use of constructivist, inquiry-based, and dialogic teaching methods. Contemporary research in the learning sciences has repeatedly shown the superiority of constructivist methods for teaching the kinds of deeper understanding needed by knowledge workers in the innovation economy (Sawyer, 2006a); constructivist methods result in deeper understanding among learners (Bereiter, 2002; Palincsar, 1998; Rogoff, 1998; Sawyer, 2004, 2006d). However, today's constructivism is not a free-wheeling, student-centered caricature; rather, learning scientists have repeatedly demonstrated that constructivist learning proceeds more effectively in the presence of *scaffolds*, loose structures that guide students (Mayer, 2004; Sawyer, 2006a). Effective constructivist learning must constantly negotiate the learning paradox.

In the most effective classrooms, all three paradoxes are balanced through improvisational processes. To address the teacher paradox, teachers constantly improvise a balance between creativity and constraint. To address the learning paradox, teachers create and adapt structures of just the right sort to scaffold students' effective learning improvisations. To address the curriculum paradox, teachers adapt textbooks and develop lesson plans that enable students to participate in classroom improvisations. In great classes, all three paradoxes are addressed through an artful dance; the direction of the class emerges from collaborative improvisation between the teacher and the students.



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THREE RESEARCH TRADITIONS

This book builds on three traditions of previous scholarship: teaching as performance, teacher expertise, and creativity in teaching.

Teaching as Performance

Beginning in the 1980s, several educators explored the implications of the "teaching as performance" metaphor (McLaren, 1986; Pineau, 1994; Rubin, 1983, 1985; Sarason, 1999; Timpson & Tobin, 1982). These scholars noted many obvious similarities between theater and teaching. Teachers stand at the front of the classroom, "on stage," and they perform for their "audience," the students. Effective teachers master many skills that actors must also master. If a teacher is entertaining and animated, students will be more attentive. If a teacher speaks clearly and projects the voice, students are more likely to hear and understand. Effective teaching, like theater acting, involves rehearsal, scripting, timing, and stage presence.

One of the first uses of the "teaching as performance" metaphor was to emphasize the artistry of teaching (Barrell, 1991; Dawe, 1984; Eisner, 1983; Hill, 1985; Rubin, 1985). These writers argued that, like improvising stage actors, teachers are artists who operate on intuition and creativity. Barrell (1991) emphasized the improvisational elements of classroom artistry: Expert teachers "forego the insistence upon clear-cut behavioral objectives and predictable learning outcomes for the freedom to adjust and to explore new avenues with unpredictable outcomes" (p. 338).

Eisner (1979) argued that teaching is an art, in four ways. First, some teachers perform with such skill that students perceive the experience of the classroom to be aesthetic. This is quite similar to the experience of a skillful symphony orchestra, or a mesmerizing reading of a Shakespearean monologue. Second, teachers "make judgments based largely on qualities that unfold during the course of action" (p. 176). This is the improvisational element of teaching. Third, teaching should not be limited to routines; rather, teachers should also creatively respond to the unique contingencies of each classroom. Fourth, the ends that teachers achieve are often "emergent ... found in the course of interaction with students" (p. 176–177) rather than predetermined.

These writers make the important point that good teaching has an undeniably aesthetic dimension. Unfortunately, there are two problems with many of these "performance artistry" metaphors. First, in their advocacy for an aesthetic conception of teaching in opposition to



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an instrumental conception, they tend to emphasize what Pineau (1994) called an "instinctive, nebulous" creativity. For example, Hill (1985) argued that artistic teachers are guided by instinct and intuition as they use an "unconscious competence" (p. 184). This conception of teaching neglects the large body of structures that underlie teacher expertise, and makes teaching seem like an innate, intuitive ability that resists analysis.

Second, "performance artistry" metaphors tend to emphasize performance as a set of techniques that can enhance instructional communication. This has two unfortunate implications. First, it emphasizes the teacher's actions in isolation, as a "sage on the stage," and thus offers fewer practical insights as to what teachers should do when they are interacting with students. It is dangerously close to a view of teaching as a form of public speaking rather than a view of teaching as the scaffolding of students' learning improvisations. Thus it provides little insight into how teachers might resolve the learning paradox. Second, it leads to a conception of the teacher as a reader of scripts – highly detailed curricula developed by others. Performance is reduced to style (as in Timpson and Tobin, 1982). As Smith (1979) pointed out, "if the acting analogy were carried to its logical extreme, a teacher who took it seriously would never have to understand anything" (p. 33). Thus it provides little insight into how teachers might resolve the curriculum paradox.

This book extends the teaching-as-performance metaphor by shifting the focus to *improvisational* performance. Skillful improvisation always resides at the tension between structure and freedom. Of course, expert teachers have deep intuition and are talented performers, but their performance is rooted in structures and skills. The improvisation metaphor emphasizes that teachers and students together are collectively generating the classroom performance; in this way, it is consistent with constructivist learning principles rather than the transmission-and-acquisition model implied by earlier performance metaphors.

Teacher Expertise

In the 1970s and 1980s, a distinct and parallel group of researchers began to analyze the knowledge structures that underlie expert teaching. These researchers took an opposite approach from the performance artistry tradition; instead of an intuitive, inexplicable art, these researchers analyzed expert teachers to better understand exactly what they know that makes them good teachers.

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Teacher expertise research emerged from the 1970s "cognitive revolution" in psychology (e.g., Chi, Glaser, & Farr, 1988; Ericsson, et al., 2006). Cognitive scientists study the internal mental structures that are responsible for observed human behavior. From the 1970s onward, cognitive scientists have been particularly interested in expert performance – initially, because they were collaborating with computer scientists who were attempting to capture expertise in artificial intelligence (AI) computer programs. Among AI researchers, these software applications were called *expert systems* – computer programs that codified and captured professional expertise.

Much of this research explicitly contrasted novices with experts (Ericsson, et al., 2006). In one classic study, novice and expert chess players were shown chess positions that had occurred in the middle of a game. Experts were much better at remembering the locations of all of the pieces. Emerging from this research, the cognitive elements of expertise were thought to be some combination of learned rules, plans, routines, conceptual frameworks, and schemas. The cognitivist roots of the teacher expertise tradition are most obvious in the widely cited article "The Cognitive Skill of Teaching" by Gaea Leinhardt and James G. Greeno (1986).

Developing the "knowledge base" of teacher expertise has been the focus of teacher expertise research, as represented by David Berliner (1986, 1987), Leinhardt and Greeno (1986), and Lee Shulman (1987). To take one example, Richard Shavelson (1986) described three types of "schemata" that characterize teacher expertise: scripts (with temporal event sequences), scenes (common classroom events; the relationships in these schemata are spatial), and propositional structures (factual knowledge). In a second example, Leinhardt and Greeno (1986) argued that expertise is based on operational plans they call "agendas," which are specific versions of their schemata. Experts' cognitive schemata are more elaborate, more complex, more interconnected, and more accessible than those of novices.

In a third example, Robert Yinger (1980) described two types of structure used in planning: *activity* and *routine*. The activity was the basic structural unit of planning; the features were "location, structure and sequence, duration, participants, acceptable student behavior, teacher's instructional moves, and content and materials" (p. 111). Routines came in four types: activity (coordinate the activity), instructional (questioning, giving instructions), management (controlling behavior not associated with an activity – e.g., transition between activities, handing out materials), executive planning (not during instruction, but during preactivity planning). Yinger further proposed that planning occurred at five



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different time scales: year, term, unit, week, and day (also see Clark & Yinger, 1977 and Yinger 1979).

Like cognitive science more generally, the focus on teacher expertise tended to emphasize the fixed structures – plans, routines, and scripts – that supported expert performance. In exchange, this tradition of research on teacher expertise largely downplayed teacher improvisation and decision making in the classroom. For example, Shulman's (1987) list of the teacher knowledge base did not include improvisational practice (p. 8). The focus on the fixed structures of teacher expertise was valuable, given the tendency in the broader culture to devalue the teaching profession. Shulman (1987) argued that "[t]his emphasis is justified by the resoluteness with which research and policy have so blatantly ignored those aspects of teaching in the past" (p. 13). Shulman and others presented brilliant examples of teachers demonstrating astonishing expertise.

One goal of these researchers was to demonstrate that content knowledge alone is not enough to make a good teacher. A second goal was to identify a set of skills and competencies that could be used in a national board exam for the teaching profession. Berliner (1987) noted that his research argued against granting teaching certificates on the basis of content knowledge alone, because this policy "denies that there is any sophisticated knowledge base needed for classroom teaching" (p. 77). The research of Shulman, Berliner, and others, showing that teaching depends on a knowledge base of expertise, was used to argue that teaching was not just an art based on intuition.

Yet, the structuralist and cognitivist background of this research had the unintended effect of downplaying the improvisational artistry of teaching – even though these early scholars of teaching expertise realized that fixed cognitive structures had to be implemented in practice, and that this practice would involve some sense of improvisation. Schön's (1983) concept of *reflective practice* is essentially improvisational – and his notion of what it means to be a "professional" is, essentially, the ability to improvise effectively within structures. Eisner (1979) emphasized the uncertainty of classrooms and the need for teachers to develop an "educational imagination" that would enable them to balance structure and spontaneity. Shulman (1987) noted that the "wisdom of practice" was poorly understood; he said its study should be a "major portion of the research agenda for the next decade" (p. 12).

In one of the first studies of how the structures of expertise are improvisationally applied in practice, Clark and Yinger (1977) analyzed "interactive decision making." They concluded that teachers "rarely changed

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their strategy from what they had planned, even when instruction was going poorly. That is, interactive decision making rarely resulted in an immediate change in the course of instruction" (p. 293). It was "more a process of fine tuning and adapting to aspects of the situation that were unpredictable in principle, such as specific student responses." They concluded that teacher improvisation was rare:

The few findings available indicate that teacher interactive decision making occurs primarily at times when there are interruptions of the ongoing instructional process by students. The teachers studied seem to be monitoring student involvement as their primary index of smoothness of the instructional process. When interruptions of the instructional process occur, teachers occasionally consider alternatives but hardly ever implement those alternatives. That is, for various reasons, teachers tend not to change the instructional process in midstream, even when it is going poorly. (Clark & Yinger, 1977, p. 301)

At about the same time, several scholars began to analyze improvisational, opportunistic action by teachers in the moment. These studies observed quite a bit more classroom improvisation than did Clark and Yinger (1977). In studies of classroom discourse, Hugh Mehan (1979) and Frederick Erickson (1982) noted that classroom discourse was often improvisational. One of the first studies to apply these insights to teacher practice was a study of physical education teachers; it found that experienced teachers are more opportunistic than novices; and that experts planned for adaptation twice as often as the novices (Housner & Griffey, 1985). One of the first scholars to use the term "improvisation" to describe teachers' classroom practice was Yinger (1987); in this influential article, Yinger explicitly noted the parallels between classroom instruction and live jazz improvisation. Borko and Livingston (1989), building on both the teacher expertise tradition and Yinger's improvisational metaphor, presented the first explicit statement of the teacher paradox: What is the relationship between knowledge structures and the improvisational characteristics of practice? As Borko and Livingston wrote, "Expert teachers notice different aspects of classrooms than do novices, are more selective in their use of information during planning and interactive teaching, and make greater use of instructional and management routines" (1989, p. 474).

The improvisation metaphor also provides insights into what I have called the curriculum paradox. Boote (2004) wrote: "All curricula are inherently vague, requiring a teacher to interpret the intentions" (p. 2); thus there is always some teacher discretion. Boote identified three levels of teacher



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discretion. Procedural professional discretion is simply the ability to devise a coherent curriculum and teach it. At the next higher level of expertise, substantive professional discretion is demonstrated by a teacher's "ability to recognize that their actions are inadequate for achieving the intended results or that their intended results need modification and their ability to make appropriate changes" (p. 5) Haworth (1986) called it critical competence: A person who has it "creatively seizes the opportunities that come his way" (p. 46). The highest level of expertise is innovative professional discretion or "the ability to go beyond merely choosing among established and sanctioned curriculum options to creating new curricular-instructional practices that ameliorate the dilemmas of their domain of curriculum practice" (p. 6). At this level of expertise, teachers are creating curriculum and assessment, not merely implementing them. Boote recommended that novice teachers "should generally be expected to follow prescribed curricula until they demonstrate adequate professional discretion" (p. 8). Novice and expert teachers resolve the curriculum paradox in very different ways, and increasing expertise is reflected by a shift in how this paradox is resolved, as demonstrated by Borko and Livingston (1989).

This book extends teacher expertise research by acknowledging that both structures and improvisation are essential to good teaching. Expert teachers engage in *disciplined improvisation* – they have mastered the knowledge base of expertise identified by these scholars, and at the same time, they know how to apply this expertise in improvisational practice.

Creative Teaching and Learning

The study of creative teaching and learning has traditionally been associated with arts educators, but many contemporary scholars have argued that creative learning should be embedded in all subject areas (e.g., Craft, Jeffrey, & Leibling, 2001; Gardner, 2007). This is not a new idea; one of the core features of the progressive education movement has always been an emphasis on student creativity throughout the curriculum. Creativity is an important component of the kindergarten movement of Pestalozzi, of the Montessori method, and of Dewey's emphasis on inquiry and experience.

One of the most influential modern scholars to study creativity in education was the late E. Paul Torrance, a psychologist who worked in the "first wave" of creativity research in the 1950s and 1960s (Sawyer, 2006b). Torrance developed an influential test to measure creative potential, known as the Torrance Tests for Creative Thinking (TTCT: Torrance, 2008). This test was based on J. P. Guilford's proposal that a key component of creativity

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is *divergent thinking*, the ability to generate a large number of possible solutions to open-ended problems. The Torrance test resulted in several scores. The three most important ones are *ideational fluency*, the sheer number of ideas generated; *originality*, the number of ideas generated that were not usually suggested by similar-aged students; and *flexibility*, the number of different categories that the ideas fell into. Torrance also developed several different curricular units to teach creativity, with the goal of helping students increase their scores on the TTCT, such as the Future Problem Solving Program (Torrance, Bruch, & Torrance, 1976).

In the 1990s, an important group of scholars in the United Kingdom began to study creative teaching and learning, based on the broader societal recognition that creativity is required to succeed in the modern world (see the papers collected in Craft, Jeffrey, & Leibling, 2001). First, these scholars emphasized that creativity was not limited to arts classes, but that it was important to all subjects, including mathematics and sciences. Second, these scholars argued that creativity was not limited to gifted and talented students, but that creative potential should be nurtured in all students.

These scholars studied two distinct, but related, elements of creativity in education: the creativity of teachers, or "creative teaching"; and the types of learning environments that foster creativity in students, or "teaching for creativity." These studies were contributions to both the teacher paradox and the learning paradox. Both of these were emphasized in the UK National Advisory Committee on Creative and Cultural Education report (NACCCE, 1999; Joubert, 2001). According to this report, teaching for creativity involves encouraging beliefs and attitudes, motivation and risk taking; persistence; identifying across subjects; and fostering the experiential and experimental. Creative teaching involves using imagination, fashioning processes, pursuing processes, being original, and judging value.

Cremin, Burnard, and Craft (2006) defined creativity as *possibility thinking*, which includes seven habits of mind: posing questions, play, immersion, innovation, risk taking, being imaginative, and self-determination. A report by the UK government's Qualifications and Curriculum Authority (2005) mentions six quite similar habits of mind: questioning and challenging; making connections and seeing relationships; envisaging what might be; exploring ideas, keeping options open; and reflecting critically on ideas, actions, and outcomes.

These writings are closely related to the "thinking skills" movement in the United Kingdom, and the "twenty-first-century skills" movement in the United States. Twenty-first-century skills are thought to include creativity and innovation (creative thinking, collaboration, and implementation);