2. Field Study Methods

To observe the learning and teaching of generic skills in vocational and academic settings, we conducted intensive field studies of both kinds of classrooms. Our efforts to understand these classrooms focused on answering several questions:

• What teaching practices do vocational and academic teachers use to teach generic skills and work-related attitudes?
• How do the practices employed by vocational and academic teachers differ? Why?
• What is the broader context within which these practices arise? How are the practices supported or hindered by elements of this context?
• What positive aspects of the context are amenable to intervention—by staff development, policy, and so on?

We addressed these questions by examining teaching of generic skills in vocational and academic classrooms with a combination of research approaches that included case study, ethnographic, and survey methods. A case study approach permitted the intensive observation and analysis of a limited set of specifically targeted sites. We used ethnographic methods to deepen our understanding of what goes on in classrooms, particularly the interactions among teachers and students (Dobbert, 1982; Woods, 1986). By triangulating data collection methods—using participant observation, formal and informal interviews, student focus groups and survey, and collection of artifacts—we attempted to strengthen the reliability of our findings within classrooms (cf. Goetz and LeCompte, 1984).

As described in Section 1, our previous study of vocational classrooms produced a framework for analyzing the learning and teaching of generic skills (Stasz et al., 1990). The present study further develops the framework and applies it to the analysis of a variety of vocational and academic classrooms that purport to engage students in learning generic skills and dispositions, but that differ in significant ways—the students, teacher, subject, and school. In both studies, we use theory and previous research to develop the framework and refine it based on our classroom research experience. Our intent is not to test a particular theory but to use theory as an initial guide for data collection and for interpreting the results.
Our approach leaves open the possibility that factors not explicitly identified in our framework may be important in some classrooms and contexts in explaining the activities observed. It also permits the discovery of issues important to understanding classrooms that are not accounted for a priori by an analytic perspective. In our previous study (Stasz et al., 1990) this approach proved valuable, enabling us to identify an unexpected emphasis by teachers on shaping and supporting development of work-related attitudes in students.

This approach to studying classrooms also accepts the view that reality in a social setting—the classroom, in this case—is constructed by individuals through interactions that reflect their understanding about the world (Geertz, 1973). When individuals share a classroom over time, they develop mutual understandings and expectations about the classroom. These constitute the classroom culture. The classroom is also embedded in a wide school and community culture that further affects teaching and learning.

Site Selection

In keeping with our goal to test the framework produced from our previous study (Stasz et al., 1990) in both vocational and academic settings, we used site selection criteria suggested by that study’s findings. Initially we sought to identify classrooms of both sorts where teachers claimed to (1) teach problem-solving skills, (2) value students’ cooperation and responsibility for their own learning, (3) provide opportunities for project and group work, and (4) hold high expectations for students’ performance.

We employed a “snowballing” or “chain-sampling” approach to locate potential sites (cf. Patton, 1980). We began by contacting high schools, skills centers, and community colleges throughout Los Angeles County based on leads from ongoing research and other professional contacts. We developed a slate of twelve candidate classrooms and secured permission for a prestudy visit to each. Two members of the research team conducted the visit, which included classroom observation, informal discussions with students, and an interview with the teacher. Based on a written report of the prestudy visit and subsequent discussion by the research team, we identified eight classrooms and negotiated entree with the school principals. (Again, one of these classrooms—an interior design class—was reported on in our preceding study.)

We rejected two candidate math classrooms because the curriculum relied on traditional classroom practices to help students acquire skills that were prerequisites for the next level. We also rejected a candidate science classroom when district budgetary problems led to overcrowding and delayed delivery of
supplies, spoiling the teacher’s planned use of cooperative projects. In the final candidate site, the teacher resigned before we could conduct a visit.

In spite of the selection process, observations culled from a single visit were insufficient to fully assess our prerequisite criteria. For instance, all the teachers in our sample stated that they held high expectations for students in all the classes they taught and nothing revealed during a single visit suggested otherwise. However, in the three classrooms that we judged not to work, we observed learning expectations for students to be low. This conclusion came as a result of many and repeated classroom observations and subsequent analysis. This, of course, reinforces the appropriateness of the extensive and in-depth ethnographic methods we employ to understand classrooms.

Site Characteristics

School and Community Context

Characteristics of the resulting sample of eight classrooms are summarized in Table 2.1. The classrooms were housed in three different comprehensive high schools with a predominantly college preparatory curriculum. Thus, the vocational and ROP (Regional Occupational Program) classes were on the margins from the schools’ main focus. The chemistry classes were in a special academy program that maintained the school and district’s college preparatory focus. In subsequent sections we discuss the characteristics of this marginality and analyze how it affected teaching and learning.

Five of the eight classes were in largely suburban communities; the chemistry and interior design classes were in an urban setting. Students’ socioeconomic status was mixed in the urban schools. The school housing the remaining five classes was in an upper-middle-class community on the border of Los Angeles County. While this school’s population was primarily Anglo (i.e., non-Latino Caucasian), the urban school’s was primarily African-American and Latino. The interior design class’ school was changing, with an increasing minority, particularly Latino, population.
Table 2.1
Site Characteristics

<table>
<thead>
<tr>
<th>Site</th>
<th>SchoolType</th>
<th>Location</th>
<th>Socio-economic status</th>
<th>Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior design</td>
<td>Comprehensive high school</td>
<td>Urban</td>
<td>Mixed</td>
<td>Anglo, increasing African-American, Latino, Asian</td>
</tr>
<tr>
<td>Landscape</td>
<td>Same</td>
<td>Suburban</td>
<td>Middle to high</td>
<td>Primarily Anglo</td>
</tr>
<tr>
<td>English</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Electronics</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Architecture</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
<td>Same</td>
</tr>
<tr>
<td>Chemistry (2 classes)</td>
<td>Academy within comprehensive high school</td>
<td>Urban</td>
<td>Mixed</td>
<td>Primarily African-American and Latino</td>
</tr>
</tbody>
</table>

Teachers and Students

Four teachers taught these eight classes. Below we summarize their backgrounds and relevant experience:¹

- *Ms. Adams*, the interior design teacher, had seven years of teaching experience and was a practicing professional in the field. She held a vocational teacher certification.

- *Mr. Price* taught landscape/horticulture and English literature and composition.² He had botany and English degrees and was certified to teach both science and English. He had taken a year off to study writing at a local university and conducted workshops for teachers on cooperative learning techniques. He began teaching when the school opened twelve years ago.

- *Mr. Benson* taught industrial arts—electronics, architectural drawing, and mechanical drawing—and Algebra I at the same high school as Mr. Price. He had over twenty years of teaching experience and was certified to teach math and physics, as well as vocational education. He had an M.S. in industrial technology and an M.A. in fine arts (furniture design). He was active in a statewide consortium on teaching manufacturing.

¹To ensure anonymity, teachers and students have been given pseudonyms throughout this report.
²In the class we observed, he taught several contemporary Latin American novels in English translation.
Mr. Stone taught chemistry in the academy program. He was a relatively new teacher with only three years of experience. This was his second year teaching full time. Mr. Stone had a Master’s degree in seismology and had worked in the seismology lab at a local university. He held a temporary teaching credential, but was working toward certification in math and science.

The eight classes also varied as to the students who enrolled in them. All the vocational classrooms included limited-English-proficient (LEP) and special-education students in keeping with the school placement policies, as well as students with specific vocational interests. Ms. Adams’s interior design class enrolled a heterogeneous group of tenth to twelfth graders. Mr. Benson’s three industrial arts classes also drew a heterogeneous mix of students in ninth to twelfth grades, including students in the lower third of the school’s ability distribution and others with emotional and behavioral problems. In electronics, all the students were male. The tenth grade students in Mr. Stone’s chemistry class were also a heterogeneous group because the academy had a diversity strategy and selected students with different academic profiles, including limited-English-proficient and special-education students. Mr. Price’s classes were homogeneous but had decidedly different characteristics. The English students were college-bound seniors. The majority of the landscape/horticulture students were in the lower third of the school’s student ability distribution and most had emotional and academic problems.

In all cases, the students have enrolled or been placed in a class for various reasons, which tie into students’ aspirations, teachers’ and schools’ expectations for students, and the course’s place in the overall school curriculum. These are complicated stories that we address in the sections on specific classrooms.

Analytic Procedures

The goal of the field study was to develop a model of generic skills instruction based on an understanding of classrooms that “worked”—i.e., that appeared successful in the attempt to impart generic skills and attitudes. During the course of the present study we considered the three teachers sequentially and carried out intensive, six-week case studies of five classrooms (landscape/horticulture, English, electronics, and two chemistry) and shorter case studies of two vocational classrooms (architectural drawing; mechanical drawing/manufacturing). We targeted all three academic classrooms (English and the two chemistry classes) for intensive study since our previous research had been based solely on vocational classrooms. The intensive case study of the
interior design classroom, as indicated above, was carried out as part of the preceding project.

Following ethnographic methods as described by Spradley (1980), the analytic process for understanding these classrooms was organized into five activities:

1. Descriptive observation and questioning, which identified key teacher practices and student behaviors.
2. Focused observations and structural questions, which expanded the list of practices and behaviors and their differences.
3. Selected observations and contrast questions, which clarified the differences that separate practices and behaviors.
4. Indexing data, which placed practices and behaviors in meaningful domains.
5. Analysis of relationships between domains and generation of themes, which composed the model of instruction.

Figure 2.1 suggests how the analytic activities progressed over time (details of the figure will be explained in the following pages). We began our analysis during early stages of the fieldwork with “low inference” procedures so as not to bias or close off our observations: that is, we attempted to observe with little theoretical guidance, not inferring initially that we understood and could describe in theoretical terms what was occurring. Over time, increasingly inferential procedures became appropriate and were applied. As we became ethnographically familiar with classrooms, we returned to our conceptual framework and explored cognitive science and motivation literature to derive hypotheses to explain what we were observing. We reviewed literature on work design and sociotechnical systems to help us frame questions about the design of the classroom and the teacher role as we were beginning to understand these elements as explanatory of the classroom culture. Throughout the process we employed an iterative approach to develop deeper understanding of the classrooms (Spradley, 1980). The iteration involved blending and staging the data collection and analytic procedures as represented in the figure.

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3We treated our initial conceptual framework and research literature as a source of alternative hypotheses to be confirmed or rejected in the field. For instance, instead of judging a classroom to be poor or ineffective on the face because it did not conform to these priors, we sought to understand practices as participants understood and made use of them. This approach provided an interpretive lever for our analysis—understanding factors that drive practices, in this case instructional practices associated with learning generic skills and work-related attitudes. For additional reading, see Chapter 1 in Geertz (1973) on thick description and the interpretive theory of culture and Chapter 6 in Guba (1978) on the evaluation of hypotheses.
We conducted training sessions to prepare fieldworkers for each task. This training included practice opportunities prior to going into sites, modeling by an experienced member of the team, and feedback on field notes.

All five members of the fieldwork team collected data for each intensive case. Teachers were scheduled sequentially over a year, spring 1991 to summer 1992. Two fieldworkers visited each classroom twice weekly for six weeks and submitted field notes of their observations. The fieldwork team met weekly to review their notes, discuss role management (i.e., how to be an effective classroom observer), review potentially useful literature, discuss observations and reconcile discrepancies between observers, and plan the week’s observation agenda. After completing observations, we conducted formal interviews with

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4 Each fieldworker took brief notes during observations from which he or she produced an extensive 6–8 page field note that covered the fifty-minute classroom period. Observers’ comments (speculations, hypotheses, preliminary analyses, and comparison) were also included, but set off from the observations. Field notes were produced within a week of the observation.

5 Because the fieldworker is the tool of the ethnographic method, we focused on role management during fieldwork to ensure the reliability of findings. Our social role in the classroom was generally that of an adult participant/observer. We took on special roles when our observational agenda directed us to do so. For instance, when our focus centered on group work, we would ask students to permit us to become a working member of the project team, or when we wanted to understand better the teacher’s role, we would shadow the teacher for several sessions. Our meetings also helped us to maintain role, avoiding “going native,” i.e., becoming overly sympathetic to or identified with participants and thereby reducing the reliability and validity of findings.
teachers and administrators and focus group discussions with students. Before the focus group discussions, students completed the survey instrument.

**Descriptive Observation**

Experience with microethnography has shown that nine-tenths of what goes on in a social scene is captured in interactions (Spradley, 1980). To collect this data, ethnographic fieldwork relies on an iterative strategy of observation and questioning. Repeated observation of interactions begins to expose the “meaning-making” behind behavior (Spradley, 1980; Geertz, 1973). The observer’s understanding of this meaning is sharpened through questioning of the participants.

We observed students in various classroom activities, paying particular attention to their interactions and their context. At first we focused on making participants familiar and comfortable with fieldworkers while we became familiar with the classroom environment and identified key informants, individuals who would serve as our early guides, provide informal introductions to other students, and supply an “insider’s” view into the inner workings of the classroom. We then structured our descriptive observations by “shadowing” these key informants, joining their work groups as an observer and questioning them during the course of their activities. In all cases the teacher was a particularly important informant, and one researcher in each classroom shadowed the teacher to observe specific teacher/student interactions. We collected classroom artifacts such as assignment sheets, lab experiments, and drafts of student work. Finally, through informal discussions with teachers and students, we attempted to gain understanding of the meanings that they attached to the activities and practices that we observed.

**Indexing of Observational Data**

At the close of descriptive observations in each case, we began indexing raw field data. Indexing involves identifying and tagging segments of field-note text. Suspending observations for a week, as a group we developed a list of index terms as a first attempt at describing the classroom: Examples include classroom policies and practices, feedback, and infractions. This involved a process of reading and noticing the interesting things in our data and variation within a classroom. In addition, the list included concepts or issues identified in our earlier study: Examples are problem solving and motivation/disposition. Over the course of the fieldwork and after several discussions, we reached consensus on a list of low-inference terms and definitions that each researcher-fieldworker
used to tag their field notes—e.g., affect toward learning/classroom/teacher; extraordinary engagement, trust/respect, stress, acting out, and horseplay. For further examples, see Appendix B.

To achieve reliability in reading, noticing, and tagging, we calibrated the indexing task. Each fieldworker indexed several field notes, written by different fieldworkers, and we compared our results. As a group we clarified definitions and identified previously neglected areas. We used *The Ethnograph* (Seidel, Kjolseth, and Seymour, 1988), a computer-based analytic tool, to help manage the indexing task. The computer program made it possible to number lines of text and then sort text lines by index terms. *The Ethnograph* permitted organization of our data set, some 1,000 plus pages of text, into relevant categories—using our index terms—while establishing an audit trail. It facilitated data reduction by permitting assignment of index terms to sections of text. The text then could be sorted according to these index terms to reveal patterns across the separate observations. As domains were identified, index codes could be recoded and merged. Thus, we were able to index complex passages of text while maintaining the whole and merge data as domains were developed.

**Focused Observation**

By the third and fourth week, we were able to account for a broad and varied range of classroom activities, practices, and behaviors, using our developing index terms. At this point we sought to understand how each of these worked or was employed. We moved from asking descriptive questions (e.g., “what are you doing now?”) to posing structural questions that were directed at reasons for behaviors and the conditions in which they were considered appropriate (e.g., to the teacher, “when do you use one-to-one instruction? when do you use cooperative groups?”). We planned for observation opportunities to obtain answers to structured questions by engaging in participant observation with a specific project group or to shadow the teacher during teaching rounds.

**Selective Observation**

During the final weeks of fieldwork we moved to selective observations to clarify the differences and relationships among core skills taught in the classroom, student behaviors, and practices teachers employed. During our weekly meetings we developed contrast questions that would look at two or three teaching practices and explore how they differed or resembled each other (for examples see Table 2.2). Interviews with teachers and student focus group
discussions provided a final opportunity to account for differences and relationships among similar key observed characteristics of classrooms.

On the final day of observations, we surveyed students to gather personal background information and data on classroom motivation and beliefs about their own self-efficacy for learning. The questionnaire was designed as a series of statements against which students could rate their own level of agreement on a scale of 1 (strongly disagree) to 4 (strongly agree). For example, the statement “Working in groups is a good way to learn” refers to students’ assessment of the educational benefit of group work.

Following the survey we conducted focus group discussions to understand student grades, expectations, and experiences.6 Two fieldworkers, one leading the discussion and the other taking notes, held a discussion with a group of 10–12 students. Multiple groups were held simultaneously over 30–40 minutes. To encourage students to speak freely about the class, the teacher was absent from the classroom. During the weeks following classroom observation, we interviewed teachers and school administrators to better understand classroom and school contexts, respectively. Our formal interview instruments were designed to carefully assess respondents’ perceptions about and experiences with the learning of generic skills and how they viewed school policies and teaching practices that potentially influence classroom instruction and curriculum. Because we had already spent many weeks in the classrooms, we were able to fold our observations into the interview questions, asking for explanation and insights. During interviews we asked respondents first about their perceptions, then sought specific examples or probed for issues known to affect vocational and academic settings.

**Domain Analysis**

Domain analysis involves understanding patterns of behavior or practices. A domain is a category of meaning that includes other smaller categories; for instance, the domain of student goals may include easy grade, graduation credit, preparation for work, etc. Similarly, the domain of teacher tactics includes subcategories such as scaffolding, fading, and articulation.

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6We did not conduct focus group discussions in the landscape class because the teacher advised against it given disciplinary problems in the classroom. As an alternative we individually and informally interviewed students in the closing weeks of the observation period.
Table 2.2
Examples of Contrast Questions Used to Define Teaching Techniques Observed in the English Classroom

<table>
<thead>
<tr>
<th>Contrast Question</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>When do scaffolding, fading, and articulation resemble each other?</td>
<td>Never.</td>
</tr>
<tr>
<td>How are the three different?</td>
<td>When scaffolding, the teacher verbalizes or performs a process. When fading, the teacher “hands off” verbalization or performance to the student. During articulation, the teacher prompts the student to verbalize understanding of a concept or process.</td>
</tr>
<tr>
<td>When are any two related?</td>
<td>Scaffolding and fading are used sequentially. Articulation might result from scaffolding, but also in response to other prompts, e.g., a question. Teachers fade, students articulate.</td>
</tr>
</tbody>
</table>

As we progressed from focused observations to selective observations, our domains shifted from “folk domains” (terms used and recognized by participants—e.g., *seat-of-the-pants instruction, “negative capability,” trial and error*) to more “analytic domains” (terms adopted or created by the research team—e.g., *master/apprentice roles, work-related attitudes, generating alternative solutions*) (see Table 2.3). We determined that nineteen domains sufficiently accounted for understanding the eight classrooms we studied (see Appendix C for full list). In Section 3 we compare the eight classrooms along these nineteen domains.

**Generation of Themes**

We began our final analytic procedure by comparing classrooms by domain. Establishing relations between domains in certain classrooms led to generation of themes (e.g., the importance of having instructional goals that explicitly target generic skills and work-related attitudes). We report these themes in the section that follows and use them to organize our descriptions and analyses of the successful classrooms in later sections. Taken together, these themes compose a model of generic skills instruction. In classrooms that are organized around these themes, the teaching and learning of generic skills and attitudes appears to be successful.
Table 2.3
Three Examples of Shifting from Folk Domains to Analytic Domains

<table>
<thead>
<tr>
<th>Folk Domain</th>
<th>Analytic Domain</th>
<th>Research Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Seat-of-the-pants” instruction</td>
<td>Master-apprentice role</td>
<td>Cognitive apprenticeship</td>
</tr>
<tr>
<td>The use of “negative capability”</td>
<td>Work-related attitude</td>
<td>Generic skills (Stasz et al., 1990)</td>
</tr>
<tr>
<td>The skill of “trial and error”</td>
<td>Generate alternative solutions</td>
<td>Complex reasoning skills (Stasz et al., 1990)</td>
</tr>
</tbody>
</table>

We designed and conducted the study to ensure a high degree of reliability and validity of findings. In particular, we triangulated our data collection methods, required interobserver reliability among the five-member research team during within-site and cross-site analysis, staged analysis by suspending high-inference procedures until we had spent sufficient time in the field to understand fully how participants make meaning of their classroom activities and learning, and delineated characteristics of teachers and classroom practices to establish clear differences between generic skills classrooms and traditional classrooms. These methodological procedures were set to support translatability and comparability across sites. Whereas translatability and comparability are factors that contribute to generalizability in experimental studies, they are the foundation for generalizability and causal claims in ethnographic research (cf. Goetz and LeCompte, 1984 and Lincoln and Guba, 1985).

Although the sample of eight classrooms is too small to permit statistical inference needed for a claim of generalizability, our findings hold across many observations of teacher and student behaviors in the eight classrooms that purport to focus on generic skills. Our level of analysis informs teaching practices in these classrooms. Moreover, because several classrooms we studied “did not work,” we were able to use these cases to contrast with our findings of “what does work” and to generate an instructional model for generic skills.