DESIGNING CLASSROOMS THAT WORK: CONCEPTION AND PILOT STUDY

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Kim Ramsey and Cathy Stasz co-directed the project. Kim Ramsey was the lead trainer for the mini-sabbatical course. Tor Ormseth and Jennifer Co, research assistants, were responsible for all the logistics of conducting the mini-sabbatical. Tor Ormseth and RAND researchers Rick Eden and Brian Stecher contributed to the curriculum development and training. David Adamson, RAND communications analyst, organized the mini-sabbatical materials into a coherent whole. Tor Ormseth, David Adamson, Erika Nielsen Andrew and an anonymous reviewer provided many helpful and insightful comments and suggestions for improving this report. Donna White prepared the manuscripts and throughout the project provided her always able assistance.

We dedicate this project to the late Charles S. Benson, director of the National Center for Research in Vocational Education from 1988-1993. His vision for education continues to inspire us.

PREFACE

During the 1990s, educators and employers have been reconceptualizing the relationship between education and work. As a result, school programs that more explicitly link school and work have been expanded and developed, and many are supported by federal funds through the School-to-Work Opportunities Act of 1994. In order to realize the curriculum and pedagogical reforms that underlie these programs, teachers need appropriate staff development.

In 1996, RAND staff designed and pilot-tested a six-week "mini-sabbatical," "Designing Classrooms that Work." The mini-sabbatical was developed as a prototype course to help teachers learn how to make the kinds of curricular and pedagogical changes implied by school-to-career reforms, whether they work in career academies, cooperative education, school-based enterprises, or other types of programs.

This report describes the design of the mini-sabbatical and presents findings from our assessment of the pilot study. A companion report presents the mini-sabbatical curriculum: *Designing Classrooms that Work: Teacher Training Guide* (Ramsey, Stasz, Ormseth, Eden, & Co, 1997). Both of these documents should be of interest to educators engaged in school-to-career programs and to curriculum developers and teacher-trainers in district and state education offices or at universities.

Development and testing of the mini-sabbatical at RAND was funded by the National Center for Research in Vocational Education, University of California at Berkeley, from a grant provided by the U.S. Department of Education, Office of Adult and Vocational Education. The research was conducted with RAND's Institute on Education and Training.

EXECUTIVE SUMMARY

Introduction

Almost universally, America's teachers have been trained to teach curricula that are school-based and subject-specific. However, federal legislation and school reformers are urging that teachers develop and teach curricula that focus on "generic" skills, such as problem solving and teamwork; integrate vocational and academic education; and emphasize "real-world" applications, especially applications found in the workplace. Unfortunately, most teachers are being asked to change their practice without the requisite knowledge or the means for doing so. To make use of the workplace as a context for learning, teachers need (1) knowledge of work and work practice; (2) an appropriate model for classroom design and instruction; and (3) the opportunity to learn and apply both.

In response to this need we developed a six-week "mini-sabbatical" for high school teachers and teacher-trainers. The mini-sabbatical proposed to give teachers the tools they need to gain knowledge that is necessary for defining curriculum and instruction in many school-to-career programs. Put another way, it is intended to help teachers answer three questions: (1) What to teach? (2) How to teach it? and (3) How to assess what students learn?

The mini-sabbatical was a six-week (four days per week) course, with six to eight hours of training per day. We identified four explicit goals that we wanted teachers to achieve:

1. Increase teacher knowledge of work practice and the authentic applications of domain knowledge (e.g., math, science, and English) in work.
2. Create high-quality, integrated curricula that incorporates domain-specific and generic skills.
3. Adopt teaching roles to support authentic learning.
4. Develop alternative assessments that provide meaningful feedback to students and the teacher.

The mini-sabbatical activities were organized around three phases. The first phase addressed the first learning goal by linking teachers to the workplace. It involved a week of preparation for teachers to learn how to carry out structured observations at work sites. In Week 2, teachers visited worksites, completed fieldnotes on their work observations and conducted interviews. The second phase of the mini-sabbatical, Weeks 3 and 4, focused on classroom design, including developing authentic assessments and curriculum development. This phase incorporated direct teaching by mini-sabbatical staff, activities to promote curriculum development, and group discussions and feedback. It also emphasized the Classrooms that Work (CTW) model for designing instruction, which the study team had previously developed. In the final phase of the mini-sabbatical, Weeks 5 and 6, teachers taught their curriculum units to a small group of students. During the teaching phase, teachers received feedback on their teaching from mini-sabbatical staff and through videotape playback of selected lessons.

The mini-sabbatical was structured to reflect conceptions of adult learning and learning to teach. Specifically, it incorporated the following design characteristics: active learning; focus on a concrete task (the curriculum design); opportunities for inquiry, experimentation, and reflection; and collaboration in a learning community.

Although the mini-sabbatical provides an intensive learning experience, it falls short of an ideal model because it is not directly tied to a long-term school reform or professional development strategy. The mini-sabbatical curriculum addressed issues about implementing change in the existing school context, but teachers were left to implement what they learned when they returned to their home schools. Follow-up conversations with teachers during the school year indicated that they had some success in sustaining changes in their teaching practice or in disseminating lessons from the mini-sabbatical to other teachers or school personnel.

Pilot Study Design

During the summer of 1996, we implemented the mini-sabbatical as a pilot test. The purpose of the pilot study was to assess the feasibility of implementing the six-week mini-sabbatical and to determine whether the curriculum and process would achieve the goals discussed above. We recruited seven teachers and one teacher-trainer as participants from four schools in the Los Angeles area. The participants, five men and three women, had diverse experience and backgrounds. Five teachers taught in a transportation career academy program at two different high school campuses. Two taught at a medical magnet high school. The final participant, a teacher-trainer, was responsible for curriculum and staff development at a new math, science, and technology magnet high school. Their teaching areas included English, life science, mathematics, computer-aided design (CAD), architectural drafting, and mechanical drafting.

We recruited student participants through the counselors and schoolwide announcements at the high school that agreed to provide classrooms for the teaching phase of the mini-sabbatical. Each teacher was assigned from six to seven students.

The pilot test design incorporated multiple assessment instruments and other sources of data to assess the mini-sabbatical's overall effectiveness and success in achieving each of the main goals outlined above, including journal writing (for teachers and students), written evaluations, teacher survey, curriculum designs, and a focus group.

Pilot Study Findings

Overall, we determined that the implementation is feasible, although somewhat time-consuming to organize, and that teachers were able to learn key concepts and incorporate them into the design and delivery of their curriculum units. The teacher participants were highly enthusiastic about the value of the mini-sabbatical with respect to the knowledge they gained as well as the opportunity it provided for changing teaching practice. Most participating teachers showed and expressed fairly substantial changes over the course of the mini-sabbatical that appeared to continue when they returned to their home schools.

Goal 1: Increase Teacher Knowledge of Work Practice

For most teachers, the activities designed to increase their knowledge of the world of work, as related to their specific discipline, were very successful and meaningful. Teachers were introduced to the skills they needed to perform, analyze, and document worksite observations. Presentations by mini-sabbatical trainers addressed several topics: (1) authentic practice, work context, and the rationale for worksite observations; (2) understanding work from workers' perspectives; (3) techniques for observing and documenting work; (4) types of tasks suitable for the design of high-quality learning experiences; and (5) the logistics of the workplace observation scheduled for Week 2 (e.g., assigned mentor, schedule, and so on).

Teachers spent a week at assigned workplaces to observe work practice, take fieldnotes, and interview their mentor. We attempted to match teachers to worksites and mentors based on the teachers' disciplines, their school programs' industry focus, and the teachers' initial ideas about the curriculum unit that they were going to develop.

After only two days of observation, several important themes emerged from discussions, journal entries, and fieldnotes which suggest that teachers were learning valuable lessons and new information about work practices. They discussed the importance of interpersonal relations at work, and the need to work with different types of people to build consensus. They noted differences in types of workplace communications, teamwork, and management styles. From these and other insights, they began to identify authentic work problems that can animate the design of project-based work in the classroom.

Goal 2: Create High-Quality, Integrated Curricula

Curriculum development activities (Weeks 3 and 4) first included an exercise to help teachers move from worksite observation to instructional design--that is, from job tasks to authentic problems. Mini-sabbatical trainers led a discussion about authentic practice, then asked teachers to discuss and write a summary of their own job study.

Teachers read and discussed alternative approaches to developing integrated curricula, and reviewed the CTW model. Teachers were asked to build their new curricula around a project or investigation based on authentic practice and solving authentic problems. We provided an instructional design template for teachers to specify several elements of their design: (1) summary of student product, (2) instructional goals (generic, domain, attitudes, or dispositions), (3) design (e.g., culture of practice, teacher role, assessment, classroom set-up), (4) teaching methods, (5) resources required, and (6) organizational supports (e.g., coaching by mini-sabbatical trainers or peers, preparation time). In

subsequent sessions, teachers had opportunities to modify this "baseline" design and provide a rationale for any changes they made.

We assessed teachers' progress in curriculum development by comparing the types of lessons and units they initially proposed, prior to being selected as mini-sabbatical participants, with the projects and topics they began to refine during Week 3. This comparison reveals some significant changes. One clear difference was the emphasis on group work over individual learning assignments. Final projects were much more "authentic" in their connection to real work settings. Another significant change was the integration of academic skills, generic skills, and specific competencies needed to carry out a project. Although their initial projects were often interdisciplinary or explicitly connected to other classes in the school program, they did not typically emphasize or articulate work-related skills. Teachers were also very inventive in defining their teaching roles and in creating a culture of practice in the classroom.

Goal 3: Adopt Teaching Roles To Support Authentic Learning

Teachers were introduced to the CTW model during the first week of the mini-sabbatical through a set of briefings, readings, and journal writing exercises. Concepts were reinforced in Week 3, when teachers began to develop their curriculum. Teacher evaluations indicated that the curriculum materials and processes were very useful for developing teachers' understanding of the CTW model. Journal entries emphasized developing teaching goals, re-defining teacher and student roles, thinking of students as responsible learners and problem-solvers, and working collaboratively with other teachers on curriculum and practice issues.

The CTW model defines several specific techniques that teachers should adopt to enhance student-centered learning such as coaching, scaffolding, and fading. Adopting these techniques requires fairly significant changes on the part of teachers because they must give more responsibility to students for their own learning and not always take center stage. While teachers supported such pedagogical techniques in principle, they found it much harder to put them into practice. Some indicated that changing this aspect of their teaching practice was the most difficult and challenging part of the mini-sabbatical. In particular, teachers struggled with relinquishing "power" and control, and trusting the student groups to succeed with less intervention on their part.

Overall, while teachers were generally familiar with the concepts of student-centered learning and cooperative learning, they had not been introduced to a comprehensive model that outlined specific teaching practices or design principles for implementing such concepts. Nor had teachers had an opportunity to participate in professional development that allowed them to systematically explore and reflect on the implications of the model for practice.

Goal 4: Develop Alternative Assessments

Of all the mini-sabbatical goals, this one seemed to have been the most challenging for teachers. During Week 3, teachers participated in a presentation and discussion of alternative assessment, covering purpose; types of assessment; and the concepts of reliability, validity, and feasibility. Even experienced teachers had difficulty thinking about how to assess students' performance in ways that aligned with all of their instructional goals.

In the final analysis, the mini-sabbatical was successful in getting teachers to think explicitly about assessments, even though they did not really develop formal assessment procedures. Rather, teachers tended to informally monitor student performance on a day-to-day basis.

Conclusions and Lessons Learned

Our assessment suggests that the mini-sabbatical met with success in achieving most of the goals we set out. However, we note some possible improvements to the mini-sabbatical curriculum and some observations about the process that might inform future staff development efforts of this type.

Teachers Need More Assistance in Developing Assessments

Teachers did not fully develop assessments to accompany their curriculum. This is partly due to the situation--teachers taught an experimental class where students were paid for their participation. Students were not working for grades, and teachers were not required to turn them in.

In addition, we found that most of the teachers were unfamiliar with the concepts and approach toward developing assessments presented in the mini-sabbatical curriculum. As a result of limitations in teachers' knowledge about assessment design, the staff did not press teachers to complete assessments.

Future implementations of the mini-sabbatical can be modified to accommodate teachers' level of expertise or comfort with their assessment development skills. The schedule could be modified by extending class time to permit more time for discussion and practice, to explicitly require teachers to develop assessments for their particular curricular units, or to identify assessment or evaluation practices used at the worksites.

Teachers Had Difficulty Relinquishing Control Over Learning

Our observations and teachers' discussions and journals indicate that giving up control of the classroom processes was a significant challenge for most of the teachers. The CTW model instructs teachers to adopt teaching techniques that place more responsibility for learning on students. The teachers' role is to provide coaching or scaffolding to assist students as needed to enable them to make progress, but then to "fade"--to let the students proceed on their own. The teacher's primary role is as a guide or coach, not as a source of the answers. This shift in behavior requires teachers to trust that students can do the work and to permit them to proceed on their own, and also to sometimes fail.

Teachers initially expressed their conflict as resulting from doubts about the students' abilities or their level of preparation. As time went on, teachers explicitly discussed this issue as a matter of giving up power and control. And many continued to struggle throughout their teaching.

Teacher Collaboration Is an Important Catalyst for Learning

An important design aspect of the mini-sabbatical was to establish a learning community by having teachers work as a collaborative group and use each other as resources, critics, inspiration, and so on, as they developed their curriculum. Teachers typically have little time for collaboration and are used to working in isolation. By having teachers establish their own "community of practice," we hoped to provide a model for collaboration that they could take back to their home schools and, ideally, establish as part of their everyday practice. In addition, their own group work and interaction might give them insights about how to design and support collaborative work for their students.

Staff Development Should Support the Reflective Practice

The mini-sabbatical supported teachers' reflection on their own learning and practice through journal writing, videotaping, and adopting an action research approach to teaching. These methods were not uniformly successful, as some teachers did not write journals regularly or action research did not appeal as a strategy for teachers to

systematically understand and monitor their own practice. We conclude that the group collaboration was most valuable for promoting reflective practice, since it did not depend on teachers also taking the time to write in their journals. The value of collaboration through shared planning time or other means has been corroborated in many other studies of teaching.

Industry Experience Is Not Sufficient for Developing Work-Related Curricula

Research on approaches for integrating academic and vocational education often suggests that academic and vocational teachers should collaborate because each brings different expertise to the curriculum development process--the academic teacher brings subject-matter expertise, while the vocational teacher contributes work-related knowledge and experience. Although this characterization is undoubtedly true at some level, it does not necessarily mean that academic or vocational teachers' past experience prepares them to create project-based curriculum that reflects authentic work practice. Even teachers with relevant work experience may need assistance in translating that experience to first identify authentic problems and then to transform those problems into a curriculum that meets a complex set of learning goals for students.

The workplace observation phase of the mini-sabbatical proved very successful in helping even experienced teachers think about the workplace as a source of information for designing curriculum projects that both engaged students and taught subject-specific knowledge. The approach enabled teachers to learn about the social nature of work--for example, whether projects are carried out by groups or individuals, how teams are comprised and managed, and how supervisors motivate staff--as well as the knowledge and skills that individuals need to carry out a particular job. Understanding the social aspect of work is important for classroom design under the CTW model because it helps reveal problems and projects that can be simulated in the classroom. Learning about these non-technical skill requirements may require vocational teachers to modify the usual way they look at work requirements.

Work-Based Learning Requires Different Teacher Planning

An important challenge for teachers developing integrated curricula is the need to incorporate work context into their instructional planning. This requirement necessarily broadens teachers' instructional goals to include goals related to learning generic skills and work-related attitudes in addition to the basic subject matter. It also challenges teachers to incorporate relevant aspects of work practice into classroom design in order to replicate the social context of work--for example, teachers may need to organize team activities where students adopt different roles. When students are given more control over the learning process, as in problem-oriented, project-based assignments, classroom activities may be more fluid and unpredictable--teams may proceed at different paces or require different amounts of guidance. Thus, teachers may be called on to improvise more often and to frequently make use of opportunistic moments for advancing their instructional goals.

The mini-sabbatical began with a premise about what teachers needed to know in order to teach in school-to-career programs--knowledge about work and knowledge about designing classrooms and assessing students. It also began with the premise that any staff development process for teachers should adopt an adult teaching model, including such features as opportunity for reflection, collaboration, and active learning. Our pilot test indicates that the mini-sabbatical content and process, with some small modifications, is an effective approach for changing teaching practice. We believe that our approach is a useful starting point for developing both inservice and preservice programs for teachers, particularly those involved in school-to-career programs.

INTRODUCTION

Almost universally, America's teachers have been trained to teach curricula that are school-based and subject-specific. However, federal legislation and school reformers are urging that teachers develop and teach curricula that focus on "generic" skills, such as problem solving and teamwork; integrate academic and vocational education; and emphasize "real-world" applications, especially applications found in the workplace. Unfortunately, most teachers are being asked to change their practice without the requisite knowledge or the means for doing so. To make use of the workplace as a context for learning, teachers need (1) knowledge of work and work practice; (2) an appropriate model for classroom design and instruction; and (3) the opportunity to learn and apply both.

In response to this need, we developed a six-week "mini-sabbatical" for high school teachers and teacher-trainers. The mini-sabbatical proposed to give teachers the tools they need to gain knowledge that is necessary for defining curriculum and instruction in many school-to-career programs. Put another way, it intended to help teachers answer three questions: (1) What to teach? (2) How to teach it? and (3) How to assess what students learn?

The mini-sabbatical activities include classroom instruction, worksite observation, curriculum design, and teaching a small group of students. The instructional activities that comprise the mini-sabbatical were designed to reflect a conception of adult learning and learning to teach. Key features of the content include a model of classroom design, including appropriate assessments, and knowledge about work practice and action research. The mini-sabbatical is intended for high school teachers in a variety of programs that aim to connect school and work, whether they teach in career academies, cooperative education, school-based enterprises, career focus schools, or other program types.

This paper reports on the design and pilot test of the mini-sabbatical. It begins with a brief background discussion, then outlines the six-week mini-sabbatical activities. The paper then presents the goals the mini-sabbatical aims to achieve. The complete mini-sabbatical curriculum is found in a companion *Designing Classrooms that Work: Teacher Training Guide* (Ramsey, Stasz, Ormseth, Eden, & Co, 1997). Finally, it describes our assessment of the mini-sabbatical pilot test, which was conducted in the summer of 1996.

BACKGROUND

A major factor in shaping the need for revamped teaching practice is the growth of school-to-career (STC) programs. Encouraged by federal legislation, many localities and states are developing new STC programs and systems. The impetus for STC reforms comes from different sources, including a poor record of transition from school-to-career for many youth and concerns about youth preparation for a workplace that is changing dramatically in response to new technology and a competitive business environment (Stasz, 1995; Stasz, Kaganoff, & Eden, 1994; Stern, Finkelstein, Stone, Latting, and Dornsife, 1995).

STC reforms encompass a wide variety of programs and serve students in high schools, non-baccalaureate postsecondary institutions, or out-of-school youth. While some programs explicitly prepare students for work, others have an industry focus to motivate students, contextualize learning, or provide a broad introduction to industry-related career opportunities. The kinds of programs under the STC rubric include cooperative education, school-based

enterprise, Tech Prep, career academies, and youth apprenticeships. While there is much variety within and between program types, STC programs, by and large, share three common elements: (1) integration of school-based and work-based learning; (2) combined academic and vocational curriculum, and (3) the linking of secondary and postsecondary education (Stern et al., 1995). Creating programs which include these elements often requires sweeping changes in curriculum; methods of instruction; and relations between schools and other organizations, including employers and institutions of higher education.

STC programs can impact participating teachers in many important ways, but perhaps most significantly when they require changes in curriculum and teaching. STC's success depends on teachers' ability to develop new integrated curricula and to design classrooms to promote active learning in students. Most teachers have little knowledge of the world of work, which makes it difficult to develop curricula that incorporate "real-world" problems or demonstrate the applicability of academic learning outside of school (Stasz, Ramsey, Eden, DaVanzo, Farris, & Lewis, 1992). Developing integrated curricula often depends on collaboration between academic and vocational teachers who each bring needed expertise to the curriculum design task; however, most high school teachers are not well-prepared to change curriculum or practice or to collaborate across disciplines in ways that support STC reforms (Bodilly, Ramsey, Stasz, & Eden, 1992; Grubb, Davis, Lum, Plihal, & Morgaine, 1991; Stasz et al., 1994).

OVERVIEW OF MINI-SABBATICAL DESIGN

Like any curriculum, the design of the mini-sabbatical addressed both content and process--what to teach and how to teach it. In this section we present a brief overview of the mini-sabbatical content and process. Subsequent sections discuss each in more detail. The process we developed is based on theories of adult learning and learning to teach.[1] In brief, these theoretical perspectives suggest that teachers learn best when they are active in their own learning and when their opportunities to learn focus on concrete tasks of day-to-day work with students. Further, teachers' opportunities to learn should be problem-oriented and grounded in inquiry, experimentation, and reflection. Teacher learning opportunities should also be collaborative and involve interaction with other teachers or education professionals as sources of feedback and new ideas. Ideally, these learning opportunities should be intensive, ongoing, and linked to broader goals for student learning and school improvement (Smylie, 1996; Sprinthall, Reiman, & Thies-Sprinthall, 1996).

The mini-sabbatical was a six-week (four days per week) course, with six to eight hours of training per day. We identified four explicit goals that we wanted teachers to achieve.

1. Increase teacher knowledge of work practice and the authentic applications of domain knowledge (e.g., math, science, and English) in work.
2. Create high-quality, integrated curricula that incorporates domain-specific and generic skills.
3. Adopt teaching roles to support authentic learning.
4. Develop alternative assessments that provide meaningful feedback to students and the teacher.

The mini-sabbatical activities were organized around three phases. The first phase addressed the first learning goal by linking teachers to the workplace. It involved a week of preparation for teachers to learn how to carry out structured observations at work sites. In Week 2, teachers visited worksites, completed fieldnotes on their work observations, and conducted interviews. The second phase of the mini-sabbatical, Weeks 3 and 4, focused on classroom design, including

developing authentic assessments and curriculum development. This phase incorporated direct teaching by mini-sabbatical staff, activities to promote curriculum development, and group discussions and feedback. In the final phase of the mini-sabbatical, Weeks 5 and 6, teachers taught their curriculum units to a small group of students. During the teaching phase, teachers received feedback on their teaching from mini-sabbatical staff and through videotape playback of selected lessons. Further details on the mini-sabbatical activities are presented in Appendix A.

As mentioned above, the mini-sabbatical was structured to reflect conceptions of adult learning and learning to teach. Specifically, we incorporated the following design characteristics:

- *Active Learning*
  The mini-sabbatical promoted active learning in several ways.[2] The first two weeks were devoted to learning about work. We trained teachers to conduct, analyze, and document worksite observations. Teachers practiced their skills by first observing a RAND employee, and then by spending several days in assigned worksites.

  The mini-sabbatical incorporated teacher presentations at various stages of the process. For example, after worksite observations, each teacher presented an overview of their worksite and identified authentic work activities that incorporated their subject area. In the last two weeks of the mini-sabbatical, teachers actually taught their curriculum unit.

- *Focus on a Concrete Task*
  Each teacher in the mini-sabbatical was required to create a product--a curriculum unit that integrated work context with subject-matter curriculum. The curriculum unit was to be built around a project or investigation that followed the principles of authentic practice and solving authentic problems.
- *Inquiry, Experimentation, and Reflection*
  Because teachers come into the mini-sabbatical with a broad experience base, we did not know what any individual teacher needed to know and do in order to change his or her classroom practice. However, we wanted teacher participants to seriously call into question their current model of practice. To accomplish this, the mini-sabbatical process needed to facilitate teachers' reflecting on personal practice and exploring the new approaches. We incorporated several inquiry and reflection opportunities in the mini-sabbatical, including daily journal writing, specific homework assignments, frequent discussion and exchange among peers, videotaping of classroom lessons with replay feedback, and presentations to the group.

  Mini-sabbatical staff adopted the roles of coach and guide to support teachers' inquiry. Rather than provide answers to teachers' questions, for example, staff encouraged teachers to arrive at their own conclusions, to seek advice from peers, or to discuss issues and questions as a group. Staff attempted to model the kinds of teacher roles that we hoped teachers would adopt with their own students. In particular, we wanted teachers to relinquish control over student learning and to permit active, self-directed learning in students. Staff also read journal entries to provide individual feedback to teachers, and coached teachers during videotape replay of lessons.

  The mini-sabbatical incorporated experimentation by giving teachers the opportunity to teach their new curriculum unit to a small group of students. To give them a framework for evaluating their own performance and teaching practice, the curriculum introduced teachers to the concept of action research.

- *Collaboration*
  We attempted to create a learning community among the mini-sabbatical teachers by emphasizing peer

discussion and review in all three phases. The mini-sabbatical staff modeled facilitative and group techniques to enhance collaboration efforts that teachers might adopt in the future.

Although the mini-sabbatical provides an intensive learning experience, it falls short of an ideal model because it is not directly tied to a long-term school reform or professional development strategy. Since all the teachers involved in the mini-sabbatical had regular teaching positions in school programs that incorporate STC goals, the mini-sabbatical was certainly relevant for their professional development. However, once the teachers returned to their schools, they faced the challenge of incorporating whatever they learned in the mini-sabbatical into their teaching practice. We met with teachers several months into the school year to find out how they fared.

THE GOALS OF THE MINI-SABBATICAL

The aim of the mini-sabbatical project was to design a curriculum whereby teachers, as adult learners, could acquire skills and behaviors that will help them develop curricula and teaching practices that promote integration of school and work and active learning in school. The goals of the mini-sabbatical represent content areas that teachers were exposed to and given the opportunity to practice by actually designing and teaching a short course with high school students. This section discusses the rationale for each of the four subgoals listed above and briefly describes related mini-sabbatical activities.

Goal 1: Increase Teacher Knowledge of Work Practice

In STC reforms, unlike other school reform proposals, work and occupations take center stage. In some cases, the occupational area defines course or program content as, for example, in apprenticeship programs, which prepare students for work in a particular industry. In other cases, the occupational area provides a focused context for learning--a source of meaningful examples which illustrate the application of knowledge in use--as in many career academies. In both cases, teachers require knowledge of the occupational area in addition to knowledge of their discipline.

Academic teacher training, however, typically follows a baccalaureate model, which emphasizes subject-matter preparation with the addition of courses in traditional teaching methods. Once in school, teachers are often assigned to subject-specific departments, an organizational structure which can hamper interdisciplinary collaboration. A century of tradition separates academic from vocational teachers and students in most comprehensive high schools. Staff development programs are few, of short duration, and do not normally give teachers the opportunity to come in contact with the world of work outside the schoolhouse (AFT, 1997; Stasz et al., 1992).

A core idea behind the mini-sabbatical is that teachers need deeper knowledge of work and work practice to make use of the occupation or industry as a context for (or sometimes object of) learning. The challenge is to develop a way for teachers to acquire the knowledge they need--short of becoming working practitioners in the occupation.

Thus, we designed the mini-sabbatical to link teacher participants with workplaces and workers as sources of knowledge about real-world work contexts. Teachers visited workplaces with the goal of understanding work so they could identify contexts where generic skills and subject-matter knowledge are required and used. This understanding forms the basis for their curriculum design. Even if teachers continue to make use of traditional teaching methods, the *content of instruction* will be more authentic if they learn how to assess and make use of nontraditional sources, such as

the workplace, to inform and supplement curricula and teaching in classrooms.

Goal 2: Create High-Quality, Integrated Curricula

Many reformers believe that combining academic and vocational curriculum will result in more effective instruction for a broad range of students. Integration is intended to expand curriculum content in ways that bridge the academic and vocational knowledge and skills found in an occupational area. High-quality, integrated curricula can have the following characteristics. They can (1) enhance the academic content of vocational courses; (2) show the application of abstract disciplinary knowledge or concepts in work; (3) aim for broad understanding of an industry, not narrow job skills; (4) link courses in coherent sequences; and (5) incorporate instruction, to the extent possible, in all aspects of an industry.

The mini-sabbatical process addressed the first three characteristics of integrated curricula and did so in several ways. First, as just discussed, teachers visited specific worksites to gain broad knowledge about work and work activities related to their field of study. Teachers began a process of thinking about how to incorporate aspects of work practice into their curriculum planning.

In the mini-sabbatical classroom, we introduced teachers to an instructional design model that we developed in previous research. This Classrooms that Work (CTW) model specifies, first, that teachers build their curriculum around a project or investigation that results in some kind of product.[3]

The CTW model asks teachers to specify different kinds of learning goals for students. In addition to subject-matter knowledge, such as math or English, teachers needed to establish learning goals for generic skills (problem-solving, communication, and working in teams) and work-related attitudes (e.g., taking responsibility for learning).

In addition to project-based work, the CTW model suggests creating a "culture of practice" that mirrors real-work situations. Depending on the task and work situation, this might include organizing students into teams or having them take on different roles and responsibilities (e.g., one student as product designer, another as product tester). Students might be asked to make oral presentations at different stages of the project or to establish criteria for evaluating their work.

Integrated curricula in the CTW model aims to be more "authentic" than traditional curricula. One measure of authenticity concerns the learning tasks that students engage in. Tasks should require students to use and apply knowledge in contexts or problem situations that reflect their real use (Collins, Brown, & Newman, 1989). Activities should require students to think, to develop in-depth understanding, and to apply academic learning to important, realistic problems (Newmann, Secada, & Wehlage, 1995).

Goal 3: Adopt Teaching Roles To Support Authentic Learning

What kinds of pedagogy support authentic, project-based learning? According to the CTW model, pedagogy and classroom design should favor an activity-oriented, student-centered approach to teaching that moves the focus away from the teacher to the student. In contrast, a more conservative, traditional pedagogy would emphasize teacher behaviors for transmitting knowledge and skills in a clear, well-structured, and efficient manner (Collins, in press; Prawat, 1995).

The mini-sabbatical emphasized several teaching techniques to help guide student learning: modeling, coaching or scaffolding, and fading. A teacher can model a process or demonstrate how something works. Students learn through observation. Coaching is more directed than modeling and may involve asking questions to focus students' thinking, supplying hints, or providing information to help students move to the next step. Teachers can also provide physical supports such as diagrams or cue cards. These support techniques or "scaffolds" help guide the students' learning without taking control over it. As students progress, a teacher can withdraw these supports or "fade," until students can continue on their own.

In designing the curriculum, teachers had to think about how to incorporate their instructional goals, classroom design, and teaching techniques and describe them on the "template." Teachers practiced these techniques when they taught their curriculum units. They then viewed videotapes of their teaching and received feedback from mini-sabbatical staff and peers.

Goal 4: Develop Alternative Assessments

The final goal of the mini-sabbatical is to help teachers develop assessments that reflect diverse learning goals and provide meaningful feedback to teachers and students. Popular forms of assessment test students' knowledge of facts, concepts, and processes in a domain. They rarely assess students' ability to solve problems, reason, cooperate with others, or demonstrate other skills and capabilities attained in situated learning environments. They also are not always able to help teachers and students diagnose learning successes and failures in ways that help modify and improve on the learning process (Stasz et al., 1992).

In addition to a general need for valid, reliable, and affordable methods for assessing skills, teachers need a systematic approach for choosing among assessment methods for their particular needs. One such approach, which we adopted for the mini-sabbatical, guides teachers through the following steps:[4]

1. Clearly define the purpose of the assessment.
2. Determine the knowledge and skills to be measured.
3. Select assessment strategies that best measure those skills and knowledge.
4. Check the quality of the strategies to be implemented.
5. Make sure each strategy is feasible to implement.

Different types of assessment strategies are used for different purposes, and these purposes determine how to measure knowledge and skills. A paper and pencil test is most appropriate, for example, for assessing students' knowledge of mathematical or history facts. In contrast, a performance event, such as a group-led experiment or problem-solving exercise, is a more fitting strategy for assessing a student's ability to think and solve problems as a member of a team.

Written tests are popular types of assessments, including multiple-choice or open-ended items, essays, and problem- or scenario-based items. A second type, performance tasks, may consist of one or a set of multiple physical tasks, such as giving a speech or changing the oil in a car engine.

To ensure that an assessment strategy will provide accurate information, the technical quality of the measures must be considered. Three aspects of quality are of particular concern: (1) reliability: How accurate is the information? (2) validity: Does the assessment measure what it is intended to measure? (3) fairness: Is the assessment free of biases against any group of students? Higher reliability, or degree of accuracy of an assessment, enhances fairness.

Finally, a teacher must consider a number of practical issues. Is the assessment feasible in terms of the cost and time required to administer and score? Alternative assessments, like performances or portfolios, are more expensive to develop, administer, and score than selected-response tests. Complexity is also an issue; alternative assessments are often more complex than traditional tests because they can require special materials (e.g., manipulatives) or special training for administration and scoring. During the mini-sabbatical, teachers were introduced to the assessment concepts. They then discussed ways to assess student work in their individual curriculum units.

THE MINI-SABBATICAL PILOT TEST AND ASSESSMENT

During the summer of 1996, we implemented the mini-sabbatical as a pilot test.[5] The purpose of the pilot study was to assess the feasibility of implementing the six-week mini-sabbatical and to determine whether the curriculum and process would achieve the goals discussed above. In this section, we review the design of the pilot study and report our assessment findings.

Overall, we determined that the implementation is feasible, although somewhat time-consuming to organize, and that teachers were able to learn key concepts and incorporate them into the design and delivery of their curriculum units. The teacher participants were highly enthusiastic about the value of the mini-sabbatical with respect to the knowledge they gained as well as the opportunity it provided for changing teaching practice. Most participating teachers showed and expressed fairly substantial changes over the course of the mini-sabbatical that appeared to continue when they returned to their home school.

Participants and Weekly Schedule

For the pilot study, we recruited seven teachers and one teacher-trainer as participants from four schools in the Los Angeles area. The participants, five men and three women, had diverse experience and backgrounds (see Table 1).

Two male teachers taught math and technology, respectively, in a career academy with a transportation industry focus (Teachers 1 and 2). Both were relatively new to teaching, and one came to teaching with a background in engineering and architectural drafting. Teachers 3, 4, and 5 (two men and one woman) also taught in a transportation industry-related career academy that was part of the same program, but at a different school. All three teachers had prior work experience in areas related to their main teaching discipline. Students enrolled in these academies had various opportunities to learn about the transportation industry throughout the school year; juniors and seniors had opportunities for paid summer employment in transportation-related jobs.

Table 1
Characteristics of Participating Teachers

Main Subject Taught	School Program	Teaching Credential	Years Teaching Experience	Relevant Industry Experience
1. Algebra AB, Intro to Computers	Transportation Career Academy 1	Mathematics	4	No

2. CAD/ Technology	Transportation Career Academy 1	CAD, Mechanical Drafting	3	Yes
3. Mathematics, Computer Science	Transportation Career Academy 2	Mathematics	2	Yes
4. English, Business Planning	Transportation Career Academy 2	English	7	Yes
5. CAD, Architectural Drafting	Transportation Career Academy 2	Architectural Drafting	25	Yes
6. English, Literature	Medical Magnet High School	English	11	No
7. Biology	Medical Magnet High School	Life Science	12	No
8. Teacher-Trainer	Math, Science, and Technology Magnet	Life Science	10	No

Teachers 6 and 7, a male and a female, taught at a medical magnet high school where students spent one-half day per week (over three years) as interns in various medical settings. The final participant, a teacher-trainer, was responsible for curriculum and staff development at a new math, science, and technology magnet high school. Previously, she had taught life sciences for ten years. None of these three teachers had industry experience.

As part of the recruitment process, teacher candidates completed a background survey, including education and credentials, typical practices, preferred ways of working within the educational system (e.g., level of comfort with crosscurricular planning), and desired work assignment. Teachers also submitted a work sample--that is, a project or instructional unit designed by the teachers that they found engaging to students. The results of the survey, the work sample, and a personal interview determined a candidate's eligibility.

Selected teachers were paid an honorarium of $3,000 to participate in the six-week mini-sabbatical pilot. The first four weeks were spent in class at RAND or conducting work observations at assigned worksites. The last two weeks were held at a local high school, where teachers taught their curriculum unit to a small group of students. Throughout the mini-sabbatical, teachers had specific homework assignments and kept a daily journal.

We recruited student participants through the counselors and schoolwide announcements at the high school that agreed to provide classrooms for the teaching phase of the mini-sabbatical.[6] Written parental consent was obtained for each student's participation. Fifty-one students (57% female), ages 13-18, were paid $20 per day to participate. Their ethnic background was 55% Latino, 10% African-American, 23% Asian, and 12% Anglo. Each teacher was assigned from six to seven students. Students also kept journals and completed activity logs daily.

Assessment Instruments and Methods

The pilot test design incorporated multiple assessment instruments and other sources of data to assess the mini-sabbatical's overall effectiveness and success in achieving each of the main goals outlined above (see Table 2).

Teachers were encouraged to write in their journals daily and were also given specific journal assignments (e.g., write a note to one of your colleagues back at school, explaining what makes a "classroom that works"). We collected journals on a weekly basis and wrote summaries of their content for each teacher. In writing these summaries, we paid particular attention to identifying points of change in knowledge and practice.

Table 2
Sources of Data for Assessment

Sources	Teacher Survey	Teacher Journals	Teacher Evaluation	Designs and Curriculum	Student Journals
Goal 1: Increase teacher knowledge of work practice		x	x	x	
Goal 2: Create high-quality, integrated curricula	x	x	x	x	
Goal 3: Adopt teaching roles to support authentic learning	x	x	x	x	
Goal 4: Develop alternative assessments		x	x	x	
Overall		x	x		x

Students wrote journals on each of seven days in response to specific questions or prompts (e.g., "What problems are you facing working in teams?" "What were some challenges you felt as a learner?" "Describe a problem that you solved today.") We wrote summaries of journals written by all the students in each class, by day and by teacher.

At the end of the mini-sabbatical, teachers completed an evaluation form. Teachers rated the usefulness of activities (e.g., journal writing, readings, briefings, and so on) associated with learning the CTW model, worksite observation, curriculum design, and summer school on a scale of 1 (not at all helpful) to 5 (very helpful). Open-ended questions asked teachers to identify the most important way their practice changed and what critical moments or experiences contributed to this change. In addition, we asked what, in retrospect, might have helped teachers accomplish change more easily or would allow them to make additional hoped-for changes. Finally, we asked teachers to anticipate the likelihood that they would incorporate changes into their day-to-day professional practice (see Appendix B).

In addition to surveys, journals, written evaluations, and curriculum and assessment designs, we conducted a focus group with participating teachers in October 1996. The purpose of the focus group was to find out the extent to which teachers had been able to incorporate lessons learned in the mini-sabbatical to their regular teaching and what barriers, if any, they perceived in changing their teaching practice.[7]

Evaluation Findings

Before reviewing findings related to each goal, we note that teacher ratings on the cumulative evaluation form were very positive overall: average rating ranged from 3.6 to 4.9 (33 items covering activities in four areas). One activity received a rating of "2" from one teacher; otherwise, all items were rated 3 or higher. Uniformly, teachers had very positive comments about the experience as a whole. When asked if they had any suggestions for improving the mini-

sabbatical experience, one experienced teacher wrote, "No! The professional development mini-sabbatical was very interesting, exciting, well-prepared, interactive, and challenging!"

In the following sections, we describe the set of mini-sabbatical activities related to each goal, then discuss findings related to achieving each.

Goal 1: Increase Teacher Knowledge of Work Practice

For most teachers, the activities designed to increase their knowledge of the world of work, as related to their specific discipline, were very successful and meaningful. Again, the goal of this phase of the mini-sabbatical was for teachers to understand workplaces, not merely to visit them. At the end of the first week, teachers were introduced to the skills they needed to perform, analyze, and document worksite observations. Presentations by mini-sabbatical trainers addressed several topics: (1) authentic practice, work context, and the rationale for worksite observations; (2) understanding work from workers' perspectives; (3) techniques for observing and documenting work; (4) types of tasks suitable for the design of high-quality learning experiences; and (5) the logistics of the workplace observation scheduled for Week 2 (e.g., assigned mentor, schedule, and so on). Teachers had an opportunity to practice observation and documentation techniques by shadowing a RAND employee. Work observations included an electrician, a computer trouble-shooter and repairer, and a public relations officer.

Teachers spent the following week at assigned workplaces to observe work practice, take fieldnotes, and interview their mentor. We attempted to match teachers to worksites and mentors based on the teachers' disciplines, their school programs' industry focus, and the teachers' initial ideas about the curriculum unit that they were going to develop. Five teachers working in transportation career academies were assigned to various departments at the Los Angeles County Metropolitan Transportation Authority (LACMTA), which is a business partner with the school district that houses these academies. Others conducted worksite observations at a local university and two public agencies (see Table 3).

Table 3
Worksite Observation Assignments

Discipline	Location	Assignment
1. Math/Technology	LACMTA, Construction Management	Design engineer working on tunnel design/inspection
2. CAD/Technology	LACMTA, Facilities Engineering	CAD operators involved in design project with engineering emphasis
3. Math/Computers	LACMTA, Engineering	Civil engineer working on a project at conceptual/design stage with architects
4. CAD/Technology	LACMTA, Countywide Administration	Project manager using GIS applications on an architectural project
5. English	LACMTA, Contract Administration	Contract administrator responsible for briefing media on major project
6. English	Medical Center, Marketing Department	Communications specialist working on multimedia presentations
7. Science	LA General Services, Standards and	Scientists working in field and laboratory settings

	Testing Laboratory	
8. Teacher-Trainer	Department of Water and Power (DWP), Executive Offices	Administrator involved with everyday operations requiring multi-task problem solving

During the observation phase, mini-sabbatical staff reviewed and commented on teachers' fieldnotes to ensure that teachers were focusing their observations to capture information about work organization, workplace skills, and other aspects of work life that could inform their curriculum development projects. Mini-sabbatical staff were also "on call" in case teachers had questions or encountered problems during their worksite visits.

Except for the transportation career academy English teacher, whose original mentor assignment did not work out as expected,[8] the teachers learned a great deal from their worksite observation and interviews. Teacher journals and fieldnotes highlight important themes such as understanding the difference between domain-specific and generic skills and identifying authentic work problems that can animate the design of project-based work in the classroom. The following journal entries illustrate teacher experiences in their own words:[9]

I saw a brainstorming session in which each person, knowing what they bring to the table, created a powerful example of people working together to solve a problem--to get out a simple message, the uniqueness of the cancer center. . . . If I can create curriculum with structures to allow students to bring to the table their experience and knowledge to work through a problem based on literature or media, it will feel great to transfer the creative chaos, with reason never far behind, to the classroom. (Teacher 6, Medical Center Marketing Department) After having observed for two days, I finally am beginning to feel like I can do this. I am learning a lot of additional information about laboratory procedures. I see how the plant works. This is a rich source for planning biology labs. (Teacher 7, Standards and Testing Laboratory) Some of the generic skills that I think would be transferable to the curriculum I'm writing . . . (1) how to *communicate* effectively in a small group setting and make so that everyone has a job to do according to the level of expertise; (2) how can the project be *managed* effectively so that a complete product is the endpoint; (3) how can *motivational* techniques be utilized to keep student on task over a large period of time? (4) what kind of *goal setting* techniques can be utilized? (Teacher 5, DWP Executive Offices)

During debriefing and discussion sessions, the teachers shared observations about their worksites and implications for their curriculum and teaching. After even two days of observation, several important themes emerged from their discussion which suggest that teachers were learning valuable lessons and new information about work practices. For example, several teachers discussed the importance of interpersonal relations at work, and the need to work with different types of people to build consensus. They noted differences in types of workplace communications (e.g., informal hallway conversations versus a formal meeting for sharing information) and the importance of having good communication skills. They also discussed teamwork and interdependencies among jobs and departments, particularly for projects or tasks that require different types of expertise (e.g., subway station design and construction, multimedia presentations). They noted differences in management style, in particular, ways to motivate staff and organize projects. One teacher, for example, considered how techniques used to motivate staff in the workplace might be applied to motivating students in the classroom. In discussing their individual worksites, teachers agreed that workplaces are not always "easy places."

From these and other insights gained during their worksite observations, they began to identify skills and knowledge to incorporate into their curriculum plans. In addition, they also began to think differently about the workplace learning experiences that their school programs provided for students. Several teachers admitted that they had never thought much about these work placements because they were organized by a program coordinator or because they were not

required to interact with employer sites.[10] Their own experiences prompted new considerations: Are we doing a good enough job of preparing students to enter a real-work environment? Should we give students specific tasks to accomplish at their work-based learning sites?

Interestingly, even teachers with previous related work experience found the fieldwork valuable. For example, one teacher with experience working as an architectural draftsman reported that his critical moment or experience in the mini-sabbatical was related to what he learned in the workplace: "Using problems from MTA, as opposed to standard educational texts, creates the classroom into an office."

We noted some differences in the way academic and vocational teachers initially focused their observations. Vocational teachers tended to concentrate initially on the domain or technology-related skills used at work. This perhaps reflected the traditional role of vocational educators to prepare students for jobs, when the teachers are responsible for making sure students acquire job-related technical skills. The training and feedback in the mini-sabbatical was essential for helping vocational teachers broaden their view of work and workplaces to include social aspects of working or work problems that incorporate technical skills. Further evidence that the worksite observation activities enhanced teachers' integrated curriculum development is presented later in the text.

Goal 2: Create High-Quality, Integrated Curricula

Throughout their worksite observations, teachers began the process of thinking about how to incorporate aspects of work practice into their curriculum plans. Curriculum development activities (Weeks 3 and 4) first included an exercise to help teachers move from worksite observation to instructional design--that is, from job tasks to authentic problems. Mini-sabbatical teacher-trainers led a discussion about authentic practice, then asked teachers to discuss and write a summary of their own job study.

Their summary addressed several dimensions, including skills, tasks, and work context for the job; authentic problems; categories and examples of instructional goals that address authentic problems; and aspects of a hypothetical classroom environment. Teachers read and discussed alternative approaches to developing integrated curricula, and reviewed the CTW model. Teachers were asked to build their new curricula around a project or investigation based on authentic practice and solving authentic problems. We provided an instructional design template for teachers to specify several elements of their design: summary of student product, instructional goals (e.g., generic, domain, attitudes, or dispositions), design (e.g., culture of practice, teacher role, assessment, classroom set-up), teaching methods, resources required, and organizational supports (e.g., coaching by mini-sabbatical trainers or peers, preparation time). In subsequent sessions, teachers had opportunities to modify this "baseline" design and provide a rationale for any changes they made.

One way to assess teachers' progress in curriculum development is to compare the types of lessons and units they initially proposed prior to being selected as mini-sabbatical participants with the projects and topics they began to refine during Week 3. On the pre-course survey, we asked teachers to submit a previously taught curriculum unit that they planned to refine during the mini-sabbatical. If they did not have a particular unit in mind, but planned to create a new unit for an existing course, we asked for the course summary or syllabus. As a third alternative, teachers could submit a curriculum unit that they believed motivated students' effort. Teachers also answered a series of detailed questions about the curriculum. This comparison reveals some significant changes (see Table 4).

One clear difference is the emphasis on group work over individual learning assignments. Six teachers began with individual student projects or assignments, but all designed team-based projects for their final curriculum.

Although some teachers initially proposed projects, their final projects were much more "authentic" in their connection to real-work settings. A CAD/drafting teacher, for example, initially proposed to develop a project that he already conducted in his class--to build a popsicle bridge as a way to illustrate principles in drafting, math, and science. The requirements for the bridge project came from a contest held by the local chapter of the American Society of Engineers, where schools could actually send teams of students to a bridge-building competition. For this teacher's final project, students designed a bus parking lot on a real site, given a set of specifications drawn from actual design requirements by a county facilities engineering department (where he had done his work observation). Students worked in teams as design engineers or architectural drafters and produced an actual plan. This project supported many of the same skills as the popsicle stick bridge (e.g., drafting, math, problem solving), but also incorporated other work-related, generic (e.g., teamwork, communication, and presentation) and technical skills (understanding spatial relationships, two-dimensional area planning). In addition, the students' final product was not a toy model, but an actual plan of the type that working engineers and architects produce.

As the previous example also illustrates, another significant change was the integration of academic skills, generic skills, and specific competencies needed to carry out a project. Although their initial projects were often interdisciplinary or explicitly connected to other classes in the school program (e.g., the English teacher's assignment for students to write reports about work conducted in their technology class), they did not typically emphasize or articulate work-related skills. When teachers came to the mini-sabbatical, curriculum integration typically meant "interdisciplinary." By the end of the mini-sabbatical, however, they learned to incorporate other aspects of integration into their lesson planning and instructional goals, namely the connection between school and work.

Teachers were also inventive in defining their roles and in creating a culture of practice in the classroom. The biology teacher, for example, became a laboratory supervisor (who occasionally adopted the role of lab assistant) to her students--the "testing laboratory" scientists. On the first day of class, she handed out a memo to the "scientists" at the "Wilson County General Services Division, Testing Laboratory" that outlined training they would receive in the lab and what their work duties would entail. The teacher/lab supervisor wore a white lab coat and fitted the classroom with test tubes, thermometers, chemicals, and other materials needed for water testing.

Table 4
Initial and Final Curriculum Topics

Discipline	Initial Topic	Final Topic
1. Mathematics (transportation)	Mathematical problem-solving unit on understanding distance/time problems	Design and build a model jack for underground tunneling
2. CAD/Technology (transportation)	Design and build a popsicle stick bridge	Design a bus parking lot on a particular site plan, in accordance with certain specifications
3. Math/Technology (transportation)	Math curriculum unit to investigate inscribed angles in circles	Design and build a monument bridge, including financial and architectural plans, and community research
4. English (transportation)	Plan, organize, orally present, and write a report about projects done in technology class	Produce a formal presentation of a feasibility study on a community through which a new subway line will pass
5. CAD/Technology	Team projects to research and design a	Create a foot traffic model that will predict

(transportation)	facility, with functional requirements provided, and produce a written presentation	student traffic patterns and recommend needed changes to school administration
6. English (medical)	Introduction to literature: unit, "What Is Poetry?"	Create a multimedia advertising and marketing campaign for teen health-related product
7. Science (medical)	Curriculum unit on scientific methods of problem solving--example on denaturation of proteins	Develop a report on water samples from various sources; design public service information sheet
8. Teacher-Trainer (science and technology)	Cooperative group activity, "The Hunger Project," where students research solutions to solving world hunger	Develop a plan for NASA on managing the colonization of the moon

Goal 3: Adopt Teaching Roles To Support Authentic Learning

Teachers were introduced to the CTW model during the first week of the mini-sabbatical through a set of briefings, readings, and journal writing exercises. Concepts were reinforced in Week 3, when teachers began to develop their curriculum. Teachers had opportunities to practice new teaching methods during Weeks 5 and 6, when they taught their curriculum units. Teachers received coaching from mini-sabbatical staff and benefited from videotape feedback and group discussion.

Teacher evaluations indicate that the curriculum materials and processes were useful for developing teachers' understanding of the CTW model. Six teachers' journal entries during the first week emphasized developing teaching goals, re-defining teacher and student roles, thinking of students as responsible learners and problems solvers, and working collaboratively with other teachers on curriculum and practice issues. One experienced teacher remarked, "I'm beginning to realize that after taking time to meditate on what makes `classrooms that work' that I have much to learn."

Overall, while teachers were generally familiar with the concepts of student-centered learning, cooperative learning, and the like, they had not been introduced to a comprehensive model that outlined specific teaching practices or design principles for implementing such concepts. Nor had teachers had an opportunity to participate in professional development that allowed them to systematically explore and reflect on the implications of the model for practice. As teachers reflected on the CTW model and what implementation of CTW concepts actually means for their practice, they began to develop useful insights. In Week 4, just before teachers went into the classroom, an experienced teacher wrote,

Last night I read "A Tale of Two Classrooms" and realized that experience as a teacher does not necessarily mean an effective teacher. . . . I am challenged to ask what skills should I be teaching? What is the classroom design? What teaching technique will I use?

As discussed above, the CTW model defines several specific techniques that teachers should adopt to enhance student-centered learning such as coaching, scaffolding, and fading. Adopting these techniques requires fairly significant changes on the part of teachers because they must give more responsibility to students for their own learning and not always take center stage. While teachers supported such pedagogical techniques in principle, they found it much harder to put them into practice. Some indicated that changing this aspect of their teaching practice was the most difficult and challenging part of the mini-sabbatical. In particular, teachers struggled with relinquishing "power" and control, and

trusting the student groups to succeed with less intervention on their part. Teachers wrote about and openly discussed problems associated with giving up power and control:

Very difficult for me to relinquish control. I feel that I need to be at every phase of the project, making sure that they are doing it right. (Teacher 5, Week 5) I have felt strained over the changes necessary to becoming more conscious of my teacher role in becoming a "coach" and letting go of my centered ego. (Teacher 6, Week 5) My teaching style of old is still in evidence. I think it stems from my reluctance to let them or trust them to explore on their own. I need to find my niche in the class in order to fulfill my role as a facilitator. It's an issue of control. (Teacher 8, Week 5) I must think and rethink my role as a teacher because I like being the person that all the students run to for all of the answers. I have a hard time backing off and just letting the students learn on their own. (Teacher 2, Week 5) Old habits are hard to break and it's *very* hard for me to turn over the control of the class over to the class. But, I also understand that if I want them to be responsible for their own learning, I have to turn over that responsibility. (Teacher 8, Week 5)

Teachers also mentioned their successes in changing practice, despite the difficulties they initially experienced:

Today I felt more comfortable in the classroom. I trusted the class to complete the work. They did not disappoint me. (Teacher 4, Week 5) I'm pleased that the process is working! I felt somewhat insecure because they didn't "NEED" me. (Teacher 4, Week 5) I started to have them do all of the work in the classroom and I would transfer their work to the computer at home and return with the finished product. However, I decided that they would benefit more from doing the entire project themselves. (Teacher 7, Week 6) As a teacher who loves to be very involved in the process, it was very difficult for me not to lead the discussion; but I stepped away and behind the group. (Teacher 8, Week 6) I am continuing to keep a low profile and am encouraging them to take responsibility for their work. I think it has a motivating factor because they can take *ownership* of the project and not feel that they are doing something for the teacher. (Teacher 3, Week 5)

Teacher journals also illustrate the opportunistic aspects of teaching, where classroom events present a situation that a good teacher can use to advance his or her instructional goals (Stasz, McArthur, Lewis, & Ramsey, 1990). One English teacher, for example, reported an incident where a student objected to her starting the class five minutes ahead of schedule because students were only being paid for a certain amount of time. She used this objection to talk about workplace attitudes:

I explained that I was aware of the time, but I needed to bring a few things to the attention of the group before I forgot. . . . I took a few moments to explain again about the importance of the employee's attitude and work ethic. I cited the example of a manager seeking to promote someone to a new position. The attitude of the worker comes into play when a manager must justify a decision to promote one employee over another. Other students in the class immediately began to shake their heads affirmatively to signal their agreement with me. . . . Then I moved the discussion to the business at hand. (Teacher 4)

A key tool in facilitating changes in teachers' classroom roles was the use of videotapes. Set up on the model of movie production "dailies," where participants can view and discuss the results of a day's work, mini-sabbatical teacher-trainers videotaped portions of the morning classes, then led debriefing sessions in the afternoons. On one afternoon, a teacher-trainer turned the sound off and simply had teachers observe the physical organization of the class and the extent to which students were actively engaged in a learning task versus simply listening to the teacher talk. These discussions allowed teachers to see themselves and their colleagues, and to measure their own progress toward acquiring the teaching techniques outlined in the CTW model.

Goal 4: Develop Alternative Assessments

Of all the mini-sabbatical goals, this one perhaps proved most challenging for teachers. During Week 3, teachers participated in a presentation and discussion of alternative assessment covering purpose; types of assessment; and issues of a variety of topics, including reliability, validity, and feasibility. They also worked on some exercises which aimed to clarify these and other assessment-related issues. Even experienced teachers had difficulty thinking about how to assess students' performance in ways that aligned with all of their instructional goals:

This week has been very informative for me. I have had the opportunity to actually find out what assessment is. The presentation that I received went into extreme detail, which really helped. However, I did not have any experience in assessing popsicle stick bridges or jacks. Assessment will be a challenge when determining the preferred outcomes from students. (Teacher 1) The assessment piece will probably be the most challenging. The documents and readings on assessment were quite helpful--but I guess I need some "hand holding" through this because my usual assessment practices include tests that measure *nothing* about learning. (Teacher 8)

As the following quotations suggest, teachers did gain some insights and understanding about assessments during the mini-sabbatical:

I will need to provide the assessment criteria to my students so they know what to do and I know how to grade. (Teacher 3) A deeper realization is to connect closer my assessment criteria with the work students are actually doing. Tied to this is the idea that students need more precision--as to my expectations and the reasons for my assessment criteria and curriculum goals--make my thinking plain and vocal. Let them see and hear how I think about thinking. (Teacher 6)

Some issues were problematic for most of the teachers. The group had a lengthy discussion, for example, on how to assess the quality of students' designs, as several projects included a design element (e.g., monument bridge, parking lot plan). What criteria should be used to assess the designs and how should criteria be presented to students? The following journal excerpt discusses this issue as one of developing scoring "rubrics," and the trade-off between validity (measuring what the students are taught) and feasibility (teachers' time is limited):

My problem with designing a rubric is that I want it to be fair to the learning of the students, yet I don't want it to have to take forever to make. If it does, I don't know how to convince my staff to do it regularly. (Teacher 8)

Teachers also discussed whether to assign individual or team grades and what criteria to use for team assessment. They also discussed the constraints of assigning team or project grades, since each student must have an individual grade in a class. Since these were experimental classes, in which grades had little meaning, teachers did not actually assign grades to their students. The discussion about assessment was still important, however, because teachers would need to grapple with these issues when they implement their curriculum units in their actual classrooms.

In the final analysis, the mini-sabbatical was successful in getting teachers to think explicitly about assessments, but they were unable to really develop formal assessment procedures. Even so, teacher journals indicate that the teachers constantly evaluated the learning process as students worked on their projects. This assessment was not formal, or explicit, in the sense that teachers decided beforehand to track particular student behaviors or look for certain signs of progress. Rather, they seemed to monitor what students were doing, and then recorded what they saw and heard. In addition, they recorded their responses to student work, such as the type of feedback they provided or the suggestions they advanced to assist the groups. Thus, even though teachers did not always think formally about assessment, nor

consider technical aspects such as validity or reliability, they nonetheless tracked student progress and assessed student performance.

CONCLUSIONS AND LESSONS LEARNED

Our assessment suggests that the mini-sabbatical met with success in achieving most of the goals we set out. However, we note some possible improvements to the mini-sabbatical curriculum and some observations about the process that might inform future staff development efforts of this type.

Teachers Need More Assistance in Developing Assessments

Overall, the mini-sabbatical appears successful in helping teachers attain the first three goals, but somewhat less successful with the last. Teachers did not fully develop assessments to accompany their curriculum. This is partly due to the situation--teachers taught an experimental class where students were paid for their participation. Students were not working for grades, and teachers were not required to turn them in. In addition, the curriculum templates that teachers completed to record their curriculum design did not explicitly ask about assessment plans. This can be remedied in the future by simply modifying the form.

In addition, we found that most of the teachers were unfamiliar with the concepts and approach toward developing assessments presented in the mini-sabbatical curriculum. Only one relatively new teacher reported that the lessons on assessment were straightforward and "obvious." He did not understand why the other teachers felt challenged by the material. As a result of limitations in teachers' knowledge about assessment design, the staff did not press teachers to complete assessments. Rather, it seemed more important to pay attention to other aspects of their curriculum and teaching.

Future implementations of the mini-sabbatical can be modified to accommodate teachers' level of expertise or comfort with their assessment development skills. The schedule could be modified by extending class time to permit more time for discussion and practice and, as discussed above, to explicitly require teachers to develop assessments for their particular curricular units. It might also incorporate examples of alternative assessments from actual "classrooms that work." In addition, the workplace observations could include an assignment to identify assessment or evaluation practices used at the worksites. These might provide additional models for creating authentic assessments.

Teachers Had Difficulty Relinquishing Control Over Learning

Our observations and teachers' discussions and journals indicate that giving up control of the classroom processes was a significant challenge for most of the teachers. The CTW model instructs teachers to adopt teaching techniques that place more responsibility for learning on students. The teachers' role is to provide coaching or scaffolding to assist students as needed to enable them to make progress, but then to "fade"--to let the students proceed on their own. The teacher's primary role is as a guide or coach, not a source of the answers. This shift in behavior requires teachers to trust that students can do the work, thus permitting them to proceed on their own, and to sometimes fail.

Teachers initially expressed their conflict as resulting from doubts about the students' abilities or their level of

preparation. The teachers were unsure about when to appropriately intervene and when to stay out of the way. The group had many discussions about when to "fade" and when to intervene, as the following excerpts from their journals illustrate:

I'm convinced that the lecture-discussion doesn't cut it. Allowing students "freedom to explore" also has problems in that some kids need structure--it's finding the balance that will be the challenge. (Teacher 8) One group was working well and the other "shy" group remained apart from each other. I returned later and the students [in the shy group] were silent. I felt frustrated, but I tried to let them be. On the other hand, the other three were already designing a magazine ad. They were working independently but stopping and sharing their work with each other. (Teacher 6)

As time went on, teachers explicitly discussed this issue as a matter of giving up power and control. Many continued to struggle throughout their teaching. Teachers were also often pleasantly surprised when students could do the work on their own. This suggests that having high expectations for students may be an important ingredient for teachers to feel comfortable relinquishing control:

As we approached the meeting deadline to decide who the presenter [for the final presentation of the class project to the other classes] will be, I was anxious. As we sat down to discuss, I began to feel that the group was wanting to continue. . . . They were annoyed to be interrupted by a planning meeting. They had great confidence in the person they announced to me that they had already chosen. The decision was made long ago. I was the last to know! (Teacher 4)

Teacher Collaboration Is an Important Catalyst for Learning

An important design aspect of the mini-sabbatical was to establish a learning community by having teachers work as a collaborative group and use each other as resources, critics, inspiration, and so on, as they developed their curriculum. Teachers typically have little time for collaboration and are used to working in isolation.[11] We knew that teachers brought relevant experiences to the mini-sabbatical that were vital to their personal success, and we needed to find ways to reveal this expertise to enhance learning for all. By having teachers establish their own "community of practice," we hoped to provide a model for collaboration that they could take back to their home schools and, ideally, establish as part of their everyday practice. In addition, their own group work and interaction might give them insights about how to design and support collaborative work for their students.

In many respects the group of participating teachers became a collaborative team. In many group situations, teachers openly shared ideas, concerns, and even self-doubts. Teachers formed smaller groups and had long discussions and debates. Teachers from the same school discussed strategies for continuing to work together during the school year and for disseminating lessons from the mini-sabbatical to the remaining teaching staff and school administration. Teachers also got involved in each others' projects, for example, by role-playing a "client" for the advertising campaign or a representative from city government who reviewed the monument bridge. The last day of the mini-sabbatical was orchestrated by the teachers themselves. They held a panel discussion for students, mini-sabbatical staff, and guests in which they discussed their own experiences and asked students to present their work.

Staff Development Should Support the Reflective Practice

The mini-sabbatical also supported teachers' reflection on their own learning and practice. We asked teachers to write journals on a regular basis, sometimes following specific prompts. Journal writing appeared to aid reflection and learning processes for some teachers, but not others. Some teachers wrote extensively and on a regular basis, while

others appeared to write because they were given the assignment. As discussed earlier, journal writing was a particularly useful tool for recording the classroom activities and students' responses to the curriculum.

The mini-sabbatical curriculum also introduced teachers to the concept of action research (Bullough & Gitlin, 1995). Specifically, action research was presented as a way for teachers to examine their own practice during the teaching phase of the mini-sabbatical. We asked teachers to identify a concern or issue related to some aspect of their teaching (e.g., inability to give up control to students); to gather data about it (e.g., through videotaped replay of classes, student behavior, discussion with mini-sabbatical staff and peers); to reconsider the initial concern in light of the data, and possibly reformulate it; and develop a strategy for future practice. Most teachers' daily journals during the teaching phase of the mini-sabbatical indicate use of the action research principles. Some teachers, however, showed little sign that the action research approach appealed to them as a strategy for systematically understanding and monitoring their own practice. We conclude that the group collaboration was most valuable for promoting reflective practice, since it did not depend on teachers also taking the time to write in their journals. The value of collaboration through shared planning time or other means has been corroborated in many other studies of teaching.

Industry Experience Is Not Sufficient for Developing Work-Related Curricula

Research on approaches for integrating academic and vocational education often suggest that academic and vocational teachers should collaborate because each brings different expertise to the curriculum development process--the academic teacher brings subject-matter expertise, while the vocational teacher contributes work-related knowledge and experience. Although this characterization is undoubtedly true at some level, it does not necessarily mean that academic or vocational teachers' past experience prepares them to create project-based curriculum that reflects authentic work practice. Even teachers with relevant work experience may need assistance in translating that experience to first identify authentic problems and then to transform those problems into a curriculum that meets a complex set of learning goals for students.

The workplace observation phase of the mini-sabbatical proved very successful in helping even experienced teachers think about the workplace as a source of information for designing curriculum projects that both engaged students and taught subject-specific knowledge. Our method was to train teachers as observers, just as if they were conducting research about work. At the worksite, teachers identified a job for study that was related to their proposed curriculum unit, then focused their attention on defining the social setting for the work and the frequent and critical tasks assigned to the job. They took fieldnotes, which mini-sabbatical staff read and provided feedback on, then used their fieldnotes and group discussions about work observations as input to curriculum design. This approach enabled teachers to learn about the social nature of work--for example, whether projects are carried out by groups or individuals, how teams are comprised and managed, how supervisors motivate staff--as well as the knowledge and skills that individuals need to carry out a particular job. Understanding the social aspect of work is important for classroom design under the CTW model because it helps reveal problems and projects that can be simulated in the classroom. As mentioned earlier, learning about these non-technical skill requirements may require vocational teachers to modify the usual way they look at work requirements.

Work-Based Learning Requires Different Teacher Planning

Traditional pedagogy, which follows an instructional design model, emphasizes efficient teaching, where teachers' goals lead to well-structured lessons that clearly transmit skills and knowledge. Studies of teaching reveal that teachers'

planning, instructional activities, and teaching techniques are organized around their instructional goals. However well-planned, teaching is also a dynamic and fluid activity, and teachers must often improvise (McArthur, Stasz, & Zmuidzinas, 1990; Stasz et al., 1992). Thus, models of teaching should be useful for guiding both planned and unplanned aspects of teaching practice.

The CTW approach begins with defining instructional goals, which, in turn, become a focal point for classroom design. Good teachers can identify opportunities that spontaneously arise in the classroom for advancing their instructional goals (Stasz et al., 1992). As described earlier, Teacher 4 used a student's complaint about starting the class five minutes early to talk about the importance of work attitudes for success on the job. Another teacher noted,

I have made a conscious decision to not always have planned lectures, but to let them come naturally from questions found from researching the material. (Teacher 8)

An important challenge for teachers developing integrated curricula is the need to incorporate work context into their instructional planning. This requirement necessarily broadens teachers' instructional goals to include goals related to learning generic skills and work-related attitudes in addition to the basic subject matter. It also challenges teachers to incorporate relevant aspects of work practice into classroom design. To replicate the social context of work, for example, teachers may need to organize team activities where students adopt different roles. When students are given more control over the learning process, as in problem-oriented, project-based assignments, classroom activities may be more fluid and unpredictable--teams may proceed at different paces or require different amounts of guidance. Thus, teachers may be called on to improvise more often and to frequently make use of opportunistic moments for advancing their instructional goals.

Afterword

In October 1996, we met with participating teachers to discuss the extent to which they were able to take lessons from the mini-sabbatical into their regular teaching. We were very encouraged by reports of six teachers who attended this meeting. Two teachers in the medical magnet high school had become more involved in the work-based learning part of that program. One teacher taught his students how to be observers in the workplace and provided some structure to the daily journals that they kept. Previously, students wrote journals, but these were not used in any systematic way to help them reflect on their work experiences. This teacher also reported becoming "more conscious about keeping out of the way" and letting students work on their own.

The other teacher at the medical magnet high school also reported change in several aspects of her teaching. For example, she decided to let the students work in groups to develop criteria for their own laboratory assignments in science class. In some respects, the students' criteria were more challenging than her own had been, yet the students seemed most willing to meet high standards that they had set for themselves. This teacher also reported "backing off" and letting students work more on their own. This seemed to be working well even for the weaker students, who still show an eagerness to learn. Finally, this teacher reported rewriting her curriculum to include more projects. Both teachers in this school reported a desire for more staff development. They have had serious discussions with other teachers in the school about their mini-sabbatical experience and are attempting to find more planning time to work with interested teachers.

Three teachers at one of the transportation career academies reported working more closely than they had in the past. All teachers reported that they incorporated the curriculum unit developed during the mini-sabbatical into their regular courses. The English teacher had two new teaching assignments, which she believed the mini-sabbatical helped prepare

her for. The school newspaper had been "dropped in her lap." She organized the activities so the paper's editor-in-chief conducts the class, with the teacher providing support as needed. She also acquired two "sheltered" English classes for students transitioning from their native language to English. Since the classes were fairly large, she organized students into four-person teams and designated a leader for each. Although the students seemed a bit uncomfortable at first with this arrangement, the teacher felt the students were capable of working in a team situation. The mini-sabbatical training helped her realize the importance of having high expectations for students if you want them to achieve.

The only teacher-trainer in the group, in her role as coordinator of a new math, science, and technology magnet school, was still hopeful about incorporating some aspects of the mini-sabbatical into her teacher-training activities. She had not yet had the opportunity to do so because of other pressing business related to developing and expanding a new school. (The school added a grade level and half the school's teachers are brand new--many with emergency credentials.) Her intent, however, was to train her teachers as soon as possible. When we talked to her again a year later, she was back in the classroom and only making a little progress.

On the positive side, this teacher had maintained contacts with the worksite where she did her observation. The senior science students were assigned the "moon colony" project and employees from the DWP have agreed to act as "consultants" to the students. After teaching them the techniques she learned in the mini-sabbatical, she planned to have students do job shadowing for two days. Ideally, industry mentors should be involved resources to teachers on a continuing basis.

All of the teachers said they spent more time reflecting on their teaching and thinking about new ways to motivate students. Teachers also discussed barriers to change, both for themselves and for diffusing new ideas or modes of practice to other teachers in the school. Sometimes these were resource issues, such as getting books on the "approved" list so the school would pay for them. Several teachers felt that block scheduling might help advance teaching and learning integrated curricula, but only one school had this arrangement.

Teachers expressed frustration at institutional barriers to change. The English teacher who taught students how to write journal observations about their work placements, for example, could only do this for one year. To have time to participate in the work-based learning portion of the program and teach his regular classes, the school dropped one of his English class assignments but nearly doubled the size of the remaining two. The teacher eventually decided that his English classes were suffering because of the extra work, so this year he decided to no longer supervise journal writing.

The mini-sabbatical began with a premise about what teachers needed to know in order to teach in STC programs--knowledge about work and knowledge about designing classrooms and assessing students. It also began with the premise that any staff development process for teachers should adopt an adult teaching model, including such features as opportunity for reflection, collaboration, and active learning. Our pilot test indicates that the mini-sabbatical content and process, with some small modifications noted earlier, is an effective approach for changing teaching practice. We believe that our approach is a useful starting point for developing both inservice and preservice programs for teachers, particularly those involved in STC programs.

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APPENDIX A
MINI-SABBATICAL SYLLABUS AND READING LIST

Syllabus

This syllabus summarizes the scheduled activities of the mini-sabbatical. It is organized by day (i.e., by class meeting), and assumes a four-day week and six to eight hours of training time each day. The syllabus indicates the day's chief topic or activity, what you should read to prepare for class, and what you will do during class. The list of required readings is found after the description of daily activities. If an assignment is due (for instance, if journals will be collected) on a given day, that is indicated ***in bold italic***.

Week 1: Prepare for Worksite Observations

Monday - Activities 1.0-1.5

Read: Collins,Brown, and Holum, "Cognitive Apprenticeship: Making Thinking Visible"
Classrooms that Work, Summary and Chapters 3-6
Journal: Fifteen minutes on topic

Tuesday- Activities 1.6-1.9

Read: Collins and Fredericksen
Journal: In response to provided prompts

Wednesday - Activity 1.9, continued

Journal: In response to discussion questions about in-class presentation
Due: Practice fieldnotes
Due: Journal entries from Week 1

Week 2: Observe Worksites (worksite locations to be arranged by mini-sabbatical staff)

Monday - Activity 2.1, Offsite Fieldwork

Journal

Tuesday - Activity 2.1, Offsite Fieldwork

Journal
Make fieldnotes

Wednesday

Journal
Summarize fieldnotes

Thursday - Activity 2.1, Offsite Fieldwork

Journal
Make fieldnotes, conduct interviews

Friday - Activity 2.1 (conclusion), Activity 3.1

Journal
Write: Begin summary of authentic practice
Due: Journal entries from Week 2

Week 3: Design Curriculum

Monday - Activities 3.1-3.3

Read: *Getting to Work*: Module 2, "A Day in the Life of a Tour Manager for Handicapped People," Sections 1, 3, 4, 6, 8, 16
Write: Finish summary of authentic practice
Journal
Due: Copy of fieldnotes from Week 2

Tuesday - Activities 3.4-3.5

Read: *Getting to Work*: Module 4, "A Practical Guide to Alternative Assessment"
Journal
Due: Summary of authentic practice

Wednesday - Activity 3.5

Journal

Due: Explanation of curricular approach

Thursday - Activities 3.5-3.6

Journal

Due: Draft curriculum design and assessment plan (presentation to peers and faculty)

Week 4: Finish Curriculum and Plan Assessment

Monday - Activities 3.5, 4.1

Journal
Read: Bullough and Gitlin

Tuesday - Activities 3.5, 4.2

Journal

Wednesday - Activity 3.5, continued (move to classroom site)

Journal

Thursday - Activities 3.5, 4.3

Journal

Due: Curriculum design presentation

Week 5: Teach Curriculum

Monday - Activities 5.1-5.6

Revision Log
Journal

Tuesday - Activities 5.1-5.6, continued

Revision Log
Journal

Wednesday - Activities 5.1-5.6, continued

Revision Log

Journal

Thursday - Activities 5.1-5.6, continued

Revision Log
Journal
Due: ***Journal entries for Week 5***

Week 6: Teach and Assess Curriculum

Monday - Activities 5.1-5.6, continued

Revision Log
Journal

Tuesday - Activities 5.1-5.6, continued

Revision Log
Journal

Wednesday - Activities 5.1-5.6, continued

Revision Log
Journal

Thursday - Activities 5.1-5.6, continued

Journal
Videotape
Due: ***Final presentation of curriculum design and assessment (to peers and faculty)***
Due: ***Journal entries for Week 6***
Due: ***Revision logs for Week 6***

Reading List

A day in the life of a tour manager for handicapped people. (1989). Excerpt from D. W. Howell, *Passport: An introduction to the travel and tourism industry.* Cincinnati, OH: South-Western Publishing Company.

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Case studies are Summary and Chapter 3, pp. xiii-xxiii and 21-59; Chapter 4 (English), pp. 60-82; Chapter 5 (Electronics), pp. 83-98; and Chapter 6 (Industrial Arts), pp. 99-104.

APPENDIX B
TEACHERS' CUMULATIVE EVALUATION OF MINI-SABBATICAL

Name: _____ Teacher ID Number: _____

1. *Learning the Classrooms that Work Model:* The conceptual framework on which the design and coaching activities of the mini-sabbatical depended were derived from RAND research on "classrooms that work." Please evaluate the usefulness of the following activities for helping you understand this research:

		Not at all helpful				Very helpful
A.	Reading the "Classrooms that Work" report (Summary and Chapter 3)	1	2	3	4	5
B.	Presentation and briefing slides (e.g., Mr. Price's English vs. landscape classes)	1	2	3	4	5
C.	Zulu Love Letter Pin and discussion	1	2	3	4	5

D.	Case studies and discussion ("Jigsaw" format)	1	2	3	4	5
E.	"Cognitive Apprenticeship" reading (AFT article)	1	2	3	4	5
F.	"Five Traits of Good Teaching" article, discussion	1	2	3	4	5
G.	Journal entry ("Write a letter to your colleague")	1	2	3	4	5
H.	Coaching from and discussions with your peers	1	2	3	4	5
I.	Coaching from and discussions with project staff	1	2	3	4	5

2. *Worksite Observations:* Please evaluate the usefulness of the following activities in preparing you for worksite observations during Week 2:

		Not at all helpful				Very helpful
A.	Presentation on observation methods	1	2	3	4	5
B.	Practice observation at RAND and discussion	1	2	3	4	5
C.	(MTA only) Group meeting with mentors	1	2	3	4	5

How helpful were the following activities in helping you complete and summarize the observations of Week 2?

		Not at all helpful				Very helpful
D.	Phone conversation with staff on first day	1	2	3	4	5
E.	Coaching/assistance from staff	1	2	3	4	5
F.	Midweek day of debriefing and writing at RAND	1	2	3	4	5
G.	Writing fieldnotes	1	2	3	4	5
H.	Writing the "authentic practice summary"	1	2	3	4	5
I.	Journal entries related to fieldwork	1	2	3	4	5

3. *Curriculum Design:* Please evaluate the helpfulness of the following activities and resources during the two weeks of instructional design:

		Not at all helpful				Very helpful
A.	Presentation on approaches to designing curriculum (Module 2 materials on thematic vs. integrated curriculum)	1	2	3	4	5
B.	Presentation on assessment	1	2	3	4	5
C.	Coaching/discussions with peers	1	2	3	4	5
D.	Coaching/discussions with project staff	1	2	3	4	5
E.	First presentation of curriculum design (at RAND) and peer review	1	2	3	4	5
F.	Second presentation of curriculum design	1	2	3	4	5
G.	Resources at RAND: computer, Internet	1	2	3	4	5
H.	Resources at RAND: materials (e.g., xeroxing, supplies)	1	2	3	4	5
I.	Journal entries related to design work	1	2	3	4	5

4. *Summer School:* Please evaluate the usefulness of the following activities and resources for helping you with the implementation of your instructional design and with experimentation with teaching methods:

		Not at all helpful				Very helpful
A.	Videotaping and discussion	1	2	3	4	5
B.	Coaching/discussions with peers	1	2	3	4	5
C.	Coaching/discussions with project staff	1	2	3	4	5
D.	Preparing for final presentation	1	2	3	4	5
E.	Journal entries related to teaching and implementation	1	2	3	4	5
F.	Presentation and discussion related to Action Research	1	2	3	4	5

5A. What are the most important ways in which your professional practice changed in the course of the mini-sabbatical?

5B. For each of the changes identified above, what do you think were the critical moments or experiences during the mini-sabbatical that contributed to this change?

5C. In retrospect, what might have helped you accomplish the changes you achieved more easily or what might

have enabled you to make additional changes that you hoped for?

5D. What is the likelihood that you will incorporate these changes (if you made any) into your day-to-day professional practice?

5E. Generally, is there anything else the project staff (and, indirectly, the project's funders) should know about designing and implementing a professional development activity such as the mini-sabbatical?

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[1] For further reading on adult learning theory, see Brady (1986), Candy (1991), Knowles (1980), Ramsland (1992), and Rivera (1987).

[2] In a few instances, the mini-sabbatical incorporated direct teaching to convey information. These teaching sessions took the form of briefings, with ample time for discussion and questions.

[3] For detailed discussion of the CTW model, see Stasz et al. (1992).

[4] Assessment principles are drawn from a current project for NCRVE, "Which Alternative Assessments Hold Promise for Vocational Education?" Brian Stecher, one of the project leaders, participated as an instructor in the mini-sabbatical. Mini-sabbatical curriculum materials were drawn from Stecher, Rahn, Ruby, Alt, and Robyn (1997).

[5] The mini-sabbatical's *Teacher Training Guide* (Ramsey et al., 1997) provides details for implementing the mini-sabbatical.

[6] The high school housed one of the transportation career academies where three participating teachers worked.

[7] We also videotaped each teacher several times during class time. The videotapes were viewed daily by the group of teachers to provide specific feedback on implementation of the curriculum and to generate discussion about the instructional methods, student engagement, and other topics determined by the teachers. Overall, seven teachers found this feedback very useful (rated 4 or 5 on the evaluation form). Although these tapes could be used to track changes in teaching in some detail, this was not our purpose.

[8] The mentor at this site did not seem to understand the requirements of the observation. He wanted the teacher to do specific tasks for him rather than let the teacher observe work and workers in his department.

[9] We selected illustrative teacher quotations for this report and did not attempt to represent all the teachers in each reporting instance. All teachers, however, submitted journals and completed the evaluation form.

[10] At the Transportation Career Academy Program, student internships occurred over the summer. At the Medical Magnet High School, teacher involvement primarily consisted of visiting worksites to check student attendance. Teachers did this on a rotating basis.

[11] One teacher wrote about this in his journal. At first, he felt annoyed at having to participate in a group presentation rather than finish his work on his own: "But I think I've developed this from my education environment. As a teacher, I am accustomed to working solo--this is not to say that cooperative work is less desirable, but each person here has his/her own theme."

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