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ABSTRACT

This handbook, which is one in a series of handbooks designed to help tech prep practitioners replicate successful materials, projects, or programs that have been developed by Partnership for Academic and Career Education (PACE) consortium members, explains the process of integrating a tech prep curriculum. The introduction briefly describes the structure of the PACE consortium. Discussed next the nature and objectives of curriculum integration, benefits of curriculum integration to students and teachers, and the link between curriculum integration and tech prep. The various models and types/levels of curriculum integration are outlined, and three model projects/programs in curriculum integration from the PACE consortium are discussed as possible integration models. Concluding the handbook are general guidelines for developing curriculum integration activities. Appendixes constituting approximately 50% of this document include the following: sample integrated lesson plan form, section from "Partners in Progress," a PACE staff development activity to train occupational and academic faculty to integrate their curricula, and a newsletter from one of the three model PACE curriculum integration projects. (MN)

PACE "How To" Handbooks for Tech Prep

Integrating the Curriculum

by
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PACE "How-To" Handbooks: Integrating the Curriculum

Table of Contents

PACE "How-To" Handbooks: Integrating the Curriculum

Introduction

PACE "How-To" Handbooks are developed through funding by one of nine model Tech Prep Demonstration grants awarded by the U.S. Department of Education. The two-year grant provides funds for specific dissemination and technical assistance activities. The official name of the federal program through which the grant was awarded is the "U.S. Department of Education Demonstration Projects for the Integration of Vocational and Academic Learning Program (Model Tech Prep Education Projects)". The grant is administered locally through Tri-County Technical College in Pendleton, SC.

The handbooks are intended for Tech Prep practitioners to use in order to replicate successful materials, projects or programs that have been developed by PACE Consortium members.

PACE (The Partnership for Academic and Career Education), established in 1987, is a business and education consortium involving the seven school districts of Anderson, Oconee and Pickens counties; local businesses and industries; the Anderson County and Oconee County Business and Education Partnerships; Tri-County Technical College; Clemson University/College of Education; The Career and Technology Center; and the National Dropout Prevention Center at Clemson University. A coordinating board provides leadership for implementing Tech Prep programs in the 16 high schools, 4 career centers, and 1 technical college in the PACE Consortium service area. A small administrative staff, housed on the campus of Tri-County Technical College, provides assistance and support to all participating schools.

This handbook will answer the following basic questions about curriculum integration:

- What is "curriculum integration"?
- Why should we integrate the curriculum?
- How will students benefit from curriculum integration?

- How will teachers benefit from curriculum integration?
- How does curriculum integration relate to Tech Prep?

Other sections of the handbook will describe actual curriculum integration projects and provide guidelines and tips for practitioners to follow in order to begin similar activities and projects.

Questions and Answers About Integration

What is Curriculum Integration?

"Curriculum integration" is a phrase generally used by educators to refer to efforts made in linking academic and occupational content and skills. These efforts may take various forms, but the goal of educators is the same: to help students understand the "real-world" relevance of academic material/skills and to reinforce the importance and rigor of occupational skills and information.

Why Integrate?

Virtually all student-centered educational reform movements articulate one common goal: students must be able to transfer information and skills gained in the classroom to their "real lives," whether at work, at home or in the community. Working to connect what students learn with how they can use that knowledge will help motivate students in school and prepare them for the demands of a rapidly evolving workplace. In a global economy where employers are crying out for workers who can solve problems and think critically, the ability to apply theoretical knowledge provides a real competitive edge for a potential employee.

How Will Students Benefit?

One of the most acclaimed concepts in educational reform initiatives today is "active learning"--classroom strategies that engage and motivate the student in such a way that true learning takes place. Aiding students in obtaining a broader view of the curriculum in order to see how information fits and works together as well as how it can be applied is one way to facilitate active learning in the classroom.

How Will Teachers Benefit?

Teachers benefit from curriculum integration activities in a number of ways. First, the process of designing integration activities allows teachers to work together, often for the first time. This process builds mutual respect as teachers learn more about each other's disciplines and work toward common objectives. Research also indicates that teachers can expect to benefit from integration activities through increased student motivation and participation.

Perhaps one of the most important benefits that is realized from integrating the curriculum is the positive schoolwide atmosphere that results from teachers working together to reinforce common concepts and goals.

How do Curriculum Integration and Tech Prep Connect?

A primary objective of the PACE Tech Prep initiative is helping students successfully blend rigorous, relevant academic studies with occupational courses that will become a strong technology base. It is this blend of academic and occupational studies that will provide the best preparation for mid-level technology careers, those careers that offer so much promise to the "neglected majority" targeted by Tech Prep programs. Integrating the curriculum will enhance the classroom experiences of students in Tech Prep programs by building on this concept. In addition, many employers in the PACE service area as well as across the nation have stated that new employees need strong critical thinking and problem-solving skills, skills that are enhanced through curriculum integration efforts.

Models, Types of Practices, and Levels of Curriculum Integration

Models

Models of curriculum integration vary from fairly uncomplicated efforts that can be initiated by individual teachers to very complex projects that can involve several departments and even to school-wide curriculum restructuring.

Moving from simple to complex, here is a sampling of curriculum integration models:

1. Integrating additional academic content into occupational courses through individual or collaborative teacher efforts.

2. Enhancing academic courses to make them more relevant to the "real world" through the use of occupationally oriented applications (e.g. applied academics).

3. Modifying both academic and occupational courses so that they are more coordinated and aligned in terms of content and teaching methodologies.

4. Instituting senior projects or exhibitions that require students to use a variety of both academic and occupational skills and concepts.

5. Developing occupational clusters within a high school which specify the academic and occupational courses required to prepare students for work or further study. In this approach, traditional academic and occupational departments may be reorganized around general cluster areas.

6. Implementing "career academies" that target specific occupational clusters (e.g. public service or finance) and that require high levels of teacher collaboration and curricular alignment, block scheduling, and strong ties with the business community.

7. Designing polytechnic high schools or magnet schools which feature one or more occupationally oriented "majors" supported by strong academic curricula which are highly integrated and often taught contextually in relation to the occupational major.

Types/Levels of Integration

Type: Cooperative Efforts
Occupational and academic teachers...

Level 1: Learn about each other and ask for/receive help from each other.

Level 2: Plan together, exchange information about teaching practices and about students they have in common.

Level 3: Assist each other by dovetailing instruction coordinating schedules, and reinforcing concepts collaboratively.

Type: Curriculum Strategies
Occupational and academic teachers...

Level 1: Develop a coordinated curriculum by planning joint assignments, projects, and instructional sequences.

Level 2: Change approaches to the delivery and content of instruction.

Level 3: Develop class projects which involve coordinated content, collaborative teaching, and input/participation from the business community.

Type: Instructional Strategies
Occupational and academic teachers...

Level 1: Infuse appropriate academic/occupational content into routine class activities; encourage students to identify, share, or develop examples of both academics in occupational content and occupational content in academics.

Level 2: Teach cooperatively by giving joint assignments, grading projects collaboratively, simultaneously covering common content, using the same or similar teaching strategies, and/or team teaching.

Level 3: Incorporate input, resources, or direct participation from community and/or business representatives as enhancements to Level 2 activities.

(Information compiled by Diana M. Walter, PACE Executive Director, from Schmidt, J.R.; Finch, C.R. and S.L. Faulkner, **Teachers' Roles in the Integration of Vocational and Academic Education**. Berkeley, CA: National Center for Research in Vocational Education, 1992.)

Model Projects/Programs in Curriculum Integration: Examples from the PACE Consortium

Model 1: Westside High School/Ryobi Motor Products

In the spring semester of 1993, Mrs. Mary McAlister, Communications for the Technologies teacher at Westside High School, Anderson, SC, received an unusual request from her school's business partner, Ryobi Motor Products, Anderson, SC.

Among its many diversified products, Ryobi manufactures several of the Craftsman label tools for Sears. As a part of Ryobi's efforts at continuous improvement, they review their instruction manuals routinely. This time, a panel of marketing experts decided that the manual to the electric drill, a very popular consumer item, needed to be revised to improve customer satisfaction. They needed novice drill users to evaluate the instruction manual and make recommendations for improvements.

Enter Mrs. McAlister's Communications for the Technologies class. Because Mrs. McAlister had cultivated a close relationship with the school's business partner through other projects, representatives from the company were already familiar with her and her classroom methods. She was delighted to have the opportunity for students to participate in a real-life situation that arose from a routine business process instead of a teacher-designed hypothetical situation. In addition, students were enthusiastic about providing a real service to a leading industry in the community.

Ryobi provided all necessary equipment, and students began enthusiastically attempting to put together and use new drills by following the instruction manuals. They quickly discovered and noted problems ranging from too-small print to unclear explanations of how to hold the drill. They also reported some confusion as a result of inconsistent terminology and undefined technical terms.

The result of the exercise? Ryobi engineers were provided with the feedback they needed from a true group of "novices" in order to reorganize and rewrite the instruction manual for the Craftsman hand-held drill. Students were fully engaged in a satisfying "real-world" exercise that allowed them to learn a little more about the inner workings of an industry and a great deal more about the importance of clear, concise writing. The school-business partner ties were

strengthened, and the grateful company awarded $500 to Westside's English department to spend as they wished.

Suggestions for Similar Projects:

1. No matter what your subject area, cultivate your school's business partner. Meet with the business contact at least once a semester to brainstorm ways that you can work together in order to enhance your students' classroom time. Think beyond money--consider ways to involve employees from your business partner as guest speakers or tutors. Discuss the possibility of shadowing opportunities for your students or for the company to participate in "Career Day" activities. In working with your business partner, try to identify "real world" learning projects that will integrate some level of technical knowledge and skills, teamwork, and/or problem-solving into the content of your course. (An activity like the one described above is most likely to come up if you already have a close relationship with your school's business partner and they feel comfortable working with you.)

2. Consider doing the same exercise on an unsolicited basis. Students can reap virtually the same benefits by re-designing or rewriting a product or document that is in common use at home. Good candidates for rewriting include standard warranties, instructions and contracts. Re-designed products or rewritten documents can even be sent to the original author or manufacturer with a cover letter explaining the project.

Model 2: Teacher Exchange Program in Anderson School Districts One and Two and the Career and Technology Center

The Career and Technology Center in Williamston, SC is a comprehensive career center shared by two school districts--Anderson School Districts One and Two. In the fall of the 1991-92 school year, the administration of the Career and Technology Center reached an agreement with the three high schools it serves. The agreement set forth a plan to "bridge the gap between academics and career education" as part of the districts' Tech Prep programs. Their primary objective was to "maximize existing professional personnel by having them share experiences; develop constructive dialogue; and eventually design ways to reinforce mathematics science, communications and occupational curricula."

In October 1991, the advisory committee agreed on a plan that would match curricula at each high school and the Career and Technology Center that shared emphases on significant competencies. Matching an academic and an occupational program this way, they reasoned, would provide reinforced, relevant learning and further develop career awareness among students. In addition, the committee discussed, these efforts would result in a "bonding" of school faculties that would bridge the traditional gap between occupational and academic educators. The programs chosen to be matched were

Career and Technology Center	**District High School**
Environmental and Industrial Technology	Physics (Belton-Honea Path High)
Cosmetology	Biology (Wren High)
Medical Careers	Biology (Palmetto High)
Graphic Communications	Journalism (Wren High)

In the fall of 1992, the project was launched with the initial meetings of the Medical Careers teacher, Mrs. Peggy Wright, and the Biology teacher at Palmetto High School, Mr. Lawton Williams. Working closely together, they first outlined concepts that were shared in their curricula and could thus be reinforced by a connection between the two programs. After identifying six common competency areas, they went on to visit each other's classes to observe one another's teaching methods and students.

They then decided on units that they would team teach by visiting each other's classes as guest instructors. After several such visits, the two faculty concluded that the exercise had been very beneficial to their students and that students had responded very favorably to having a guest instructor. The project continues to grow, with faculty sharing more ideas about innovative classroom methodologies and shared student projects.

Suggestions for Similar Projects

1. This type of project can be done on either a small or large scale.

Facilitating numbers of teacher partnerships like the ones described requires a great deal of commitment on the parts of all institutions involved, and it also involves a good deal of planning time.

However, this type of project is one of the easiest curriculum integration efforts to manage on a small scale. Two teachers who are interested in working together, with the approval of their school's administration, can simply begin the process on their own by identifying common competencies or themes in their respective subject areas. Appendix A contains a sample lesson plan form for an integrated lesson plan that could be used to plan such activities.

2. Another variation of this type of activity involves academic and occupational teachers teaming up in order to shadow an individual in the workplace. They may then use their experience to develop integrated lesson plans. More on this type of activity is contained in Appendix B, a section from a handbook to a curriculum integration project called "Partners in Progress," designed by PACE and the B. J. Skelton Career Center, Pickens County School District in Easley, SC.

Model 3: Tri-County Technical College/Jupiter Space Station

When Comet Shoemaker-Levy slammed into Jupiter July 16-20, 1994, a group of students from Tri-County Technical College were listening. While astronomers around the world, both professional and academic, were watching the collision through high-powered telescopes, this group of students "listened" to the variations produced by the collision in the sound waves that are routinely emitted by the planet. They were able to record these soundwaves on a computer-driven radio telescope developed by the group as part of a college class–Jupiter Space Project.

The students represent a cross section of both academic and technical programs at the College. Participating were students in computer technology, business technology, physics, astronomy, and industrial electronics technology.

The project began with a small group of interested computer technology students who needed an additional project for a programming class. The instructor, Dr. John Bernard, told them of an article he had read describing the sound waves emitted by Jupiter and the upcoming collision with Shoemaker-Levy. He half-jokingly suggested to the students

that they write a computer program to run a fully automated radio telescope. The students took the project and ran with it, and in June 1993, the project was launched.

Since the beginning of the project, student enthusiasm has been infectious, and over the course of the project over 30 students have participated in 9 self-directed work teams that designed, constructed and tested the radio telescope. The project newsletter is included in Appendix C. Some exciting opportunities resulted from the project. Besides challenging students to apply theoretical concepts in very practical ways, the project also required students to submit papers to the South Carolina Academy of Science. Six students had papers accepted and were able to present information on various aspects of their activities. One student received recognition for the best paper in the annual meeting. Another student, on the basis of his experience on the project, was accepted from a pool of 4000 applicants to participate in a NASA Life Science training program at Cape Kennedy.

The ultimate goal of the Jupiter Space Station project is to have a completely automatic, unmanned radio-telescope system that books jobs, schedules them, executes them, bills the user, and returns the collected data to the user for study and review. The project continues, and plans are underway for collaborating with local high school Physics for the Technologies classes.

Suggestions for Similar Projects

1. This is obviously a very complex project, one that required numerous students and instructors to participate, some outside funding (a mini-grant from the College), many extra hours, and an entire college course section devoted to the activities. It is also a long-range continuing project. However, the fundamental pieces of the project can be duplicated:

   - Identify a fascinating topic or a real need in the school or community--some idea that students are genuinely enthusiastic about. (You need an element of fun, or students will quickly lose interest no matter how worthy the project.)

   - Think big--not impossible, but extremely challenging.

- Involve other teachers and classes.
- Work in teams, and let students truly experience team management and problem-solving.
- Set lots of intermediate goals so that students will have a sense of accomplishment to keep them going.
- Involve students in every step of the decision-making process
- Publicize! Give students the chance to get some good PR from their involvement through articles in the college or local paper, photos on a bulletin board, or by writing their own newsletter and distributing it. It is especially important that they receive recognition from the school administration.

General Guidelines for Developing Curriculum Integration Activities

1. Work within the confines of your setting. If you have limited resources, consider what you can do by simply partnering with an academic or occupational teacher. If you have more facilities, equipment and planning time, think big!

2. Remember that the bottom line of a curriculum integration project is to transform what happens in the classroom into more relevant and participatory, engaging instruction.

3. Develop a close relationship with one or more business partners.

4. Encourage your school administration to schedule common planning periods that permit teachers to meet and brainstorm integration activities.

5. Look for curriculum materials that follow an "applied" educational philosophy that reinforces the relevance of theoretical concepts.

6. Consider requiring students to design projects of their own that exhibit their mastery of concepts and that require them to apply theoretical material.

7. Reinforce integration activities with career awareness activities like shadowing or career days.

8. Consider teaching thematic units that will allow collaboration among two or more teachers and classes.

Appendix A

Sample Integration Lesson Plan Form

VERSION A

INTEGRATED LESSON PLAN - COMMUNICATIONS

Course_____ **Unit**_____ **Teacher**_____

See other side for information and directions.

Communications Concept Week:_____ Day:_____	**Mathematics Task** Teacher:_____ Week:_____ Day:_____	**Science Task** Teacher:_____ Week:_____ Day:_____	**Occupational Task** Teacher:_____ Week:_____ Day:_____	**Other Task Area or Supporting Activities**
Outcomes				

Ground Information: The concept of integration basically means forming connections between different subjects or disciplines. The idea is to purposefully develop connections subject a[illegible]o that each one reinforces the other. As a result, learning becomes more me[illegible]ful and relevant, and students improve their abilities to transfer learning fro[illegible]e situation er. (An important skill for academic succes as well as for success the "real world!") While so[illegible]types of curriculum integration can be fairly complex, this exercise is intend[illegible]introduce ept at the classroom level.

Directions: 1. Start by identifying a concept from your own subject area that you would like to have reinforced through other disciplines. Determine when you plan to teach that concept (i.e., week and/or day).

2. Then meet with the teachers from one or more other subject areas and identify tasks or activities from those area(s) that could reinforce the concept you want to teach. (You may have to discuss this with several colleagues to identify appropriate tasks or activities. NOTE: It's not always necessary that the activity involve a field trip or a visit to another class. You could, for example, simply use written materials or documents that you've found from other disciplines or real-world situations to teach or reinforce your concept.)

3. Design or plan the activity, especially if it involves a field trip or visiting another class. Document on your chart when the activity will take place and indicate, if appropriate, the order in which activities will occur.

Examples:

Mathematics Concept	Communications Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
teading charts and graphs **Outcomes** -students will gather real data, develop various forms of charts and graphs, analyze data, and prepare written and oral reports.	(3) Work with the English teacher; have students write paragraphs in English class explaining and analyzing information from the graphs they've developed.	(1) Visit Chemistry class and participate in lab where students are identifying pH levels of various household products; design appropriate charts based on data collected.	(2) Visit Food Science class when they begin planning for advisory committee luncheon; identify foods that will be served and de[illegible]mine fat/cholesterol levels. Design appropriate charts based on data collected.	

Communications Concept	Mathematics Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
'ersuasive writing **Outcomes** -students will develop a survey instrument, administer it, and analyze he results to determine best concepts on which to base writing activity. -students will conduct research in he library and guidance office to btain additional information needed o write their brochures. -In teams, students will write sections of a brochure, using persuasive vriting skills, that describe why students should enroll in Cosmetology. -the brochures developed by each eam will be [illegible]o the Cosmetology lass for possible use in future promotional materials.	(3) Analyze responses from student/teacher interview process. Calculate the percentages of responses in various categories to determine the most common, least common answers.		(2) Visit Cosmetology program,; interview students and teacher to determine why Cosmetology is a good program and why other students should be interested in enrolling.	(4) Conduct research on job opportunities and salary ranges for licensed cosmetologists. (1) Design instrument for interviews.

VERSION A

INTEGRATED LESSON PLAN - MATHEMATICS

Course_____ **Unit**_____ **Teacher**_____

See other side for information and directions.

Mathematics Concept Week:_____ Day:_____	**Communications Task** Teacher:_____ Week:_____ Day:_____	**Science Task** Teacher:_____ Week:_____ Day:_____	**Occupational Task** Teacher:_____ Week:_____ Day:_____	**Other Task Area or Supporting Activities**
Outcomes				

Background Information: The concept of integration basically means forming connections between different subjects or disciplines. The idea is to purposefully develop connections subject areas so that each one reinforces the other. As a result, learning becomes more meaningful and relevant, and students improve their abilities to transfer learning from one situation to another. (An important skill for academic success as well as for success the "real world!") While some types of curriculum integration can be fairly complex, this exercise is intended to introduce the concept at the classroom level.

Directions: 1. Start by identifying a concept from your own subject area that you would like to have reinforced through other disciplines. Determine when you plan to teach that concept (i.e., week and/or day).

2. Then meet with the teachers from one or more other subject areas and identify tasks or activities from those area(s) that could reinforce the concept you want to teach. (You may have to discuss this with several colleagues to identify appropriate tasks or activities. NOTE: It's not always necessary that the activity involve a field trip or a visit to another class. You could, for example, simply use written materials or documents that you've found from other disciplines or real-world situations to teach or reinforce your concept.)

3. Design or plan the activity, especially if it involves a field trip or visiting another class. Document on your chart when the activity will take place and indicate, if appropriate, the order in which activities will occur.

Examples:

Mathematics Concept	Communications Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
-Reading charts and graphs **Outcomes** -students will gather real data, develop various forms of charts and graphs, analyze data, and prepare written and oral reports.	(3) Work with the English teacher; have students write paragraphs in English class explaining and analyzing information from the graphs they've developed.	(1) Visit Chemistry class and participate in lab where students are identifying pH levels of various household products; design appropriate charts based on data collected.	(2) Visit Food Science class when they begin planning for advisory committee luncheon; identify foods that will be served and determine fat/cholesterol levels. Design appropriate charts based on data collected.	

Communications Concept	Mathematics Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
-Persuasive writing **Outcomes** -students will develop a survey instrument, administer it, and analyze the results to determine best concepts on which to base writing activity. -students will conduct research in the library and guidance office to obtain additional information needed to write their brochures. -In teams, students will write sections of a brochure, using persuasive writing skills, that describe why students should enroll in Cosmetology. -the brochures developed by each team will be given to the Cosmetology class for possible use in future promotional materials.	(3) Analyze responses from student/teacher interview process. Calculate the percentages of responses in various categories to determine the most common, least common answers.		(2) Visit Cosmetology program,; interview students and teacher to determine why Cosmetology is a good program and why other students should be interested in enrolling.	(4) Conduct research on job opportunities and salary ranges for licensed cosmetologists. (1) Design instrument for interviews.

VERSION A

INTEGRATED LESSON PLAN - SCIENCE

Course_____ **Unit**_____ **Teacher**_____

See other side for information and directions.

Science Concept Week:_____ Day:_____	**Communications Task** Teacher:_____ Week:_____ Day:_____	**Mathematics Task** Teacher:_____ Week:_____ Day:_____	**Occupational Task** Teacher:_____ Week:_____ Day:_____	**Other Task Area or Supporting Activities**
Outcomes				

Background Information: The concept of integration basically means forming connections between different subjects or disciplines. The idea is to purposefully develop connections between subject areas so that each one reinforces the other. As a result, learning becomes more meaningful and relevant, and students improve their abilities to transfer learning from one situation to another. (An important skill for academic success as well as for success the "real world!") While some types of curriculum integration can be fairly complex, this exercise is intended to introduce the concept at the classroom level.

Directions: 1. Start by identifying a concept from your own subject area that you would like to have reinforced through other disciplines. Determine when you plan to teach that concept (i.e., week and/or day).

2. Then meet with the teachers from one or more other subject areas and identify tasks or activities from those area(s) that could reinforce the concept you want to teach. (You may have to discuss this with several colleagues to identify appropriate tasks or activities. NOTE: It's not always necessary that the activity involve a field trip or a visit to another class. You could, for example, simply use written materials or documents that you've found from other disciplines or real-world situations to teach or reinforce your concept.)

3. Design or plan the activity, especially if it involves a field trip or visiting another class. Document on your chart when the activity will take place and indicate, if appropriate, the order in which activities will occur.

Examples:

Mathematics Concept	Communications Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
Reading charts and graphs **Outcomes** -students will gather real data, develop various forms of charts and graphs, analyze data, and prepare written and oral reports.	(1) Work with the English teacher; have students write paragraphs in English class explaining and analyzing information from the graphs they've developed.	(1) Visit Chemistry class and participate in lab where students are identifying pH levels of various household products; design appropriate charts based on data collected.	(2) Visit Food Science class when they begin planning for advisory committee luncheon; identify foods that will be served and determine fat/cholesterol levels. Design appropriate charts based on data collected.	

Communications Concept	Mathematics Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
Persuasive writing **Outcomes** --students will develop a survey instrument, administer it, and analyze the results to determine best concepts on which to base writing activity. --students will conduct research in the library and guidance office to obtain additional information needed to write their brochures. --in teams, students will write sections of a brochure, using persuasive writing skills, that describe why students should enroll in Cosmetology. --the brochures developed by each team will be given to the Cosmetology class for possible use in future promotional materials.	(3) Analyze responses from student/teacher interview process. Calculate the percentages of responses in various categories to determine the most common, least common answers.		(2) Visit Cosmetology program,; interview students and teacher to determine why Cosmetology is a good program and why other students should be interested in enrolling.	(4) Conduct research on job opportunities and salary ranges for licensed cosmetologists. (1) Design instrument for interviews.

VERSION A

INTEGRATED LESSON PLAN - OCCUPATIONAL

Course_____ **Unit**_____ **Teacher**_____

See other side for information and directions.

Occupational Concept Week:_____ Day:_____	**Communications Task** Teacher:_____ Week:_____ Day:_____	**Science Task** Teacher:_____ Week:_____ Day:_____	**Mathematics Task** Teacher:_____ Week:_____ Day:_____	**Other Task Area or Supporting Activities**
Outcomes				

kgroun[illegible]nformation: The concept of integration basically means forming con[illegible]ns between different subjects or disciplines. The idea is to purposefully dev[illegible] connections n subject [illegible] so that each one reinforces the other. As a result, learning becomes more me[illegible]ingful and relevant, and students improve their abilities to transfer learning fro[illegible]one situation ther. (An important skill for academic succes as well as for success the "real world!") While some types of curriculum integration can be fairly complex, this exercise is intended to introduce ncept at the classroom level.

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Mathematics Concept	Communications Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
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Communications Concept	Mathematics Task	Science Task	Occupational Task	Other Task Area or Supporting Activities
Persuasive writing **Outcomes** --students will develop a survey instrument, administer it, and analyze the results to determine best concepts on which to base writing activity. --students will conduct research in the library and guidance office to obtain additional information needed to write their brochures. --in teams, students will write sections of a brochure, using persuasive writing skills, that describe why students should enroll in Cosmetology. -the brochures developed by each team will be given to the Cosmetology class for possible use in future promotional materials.	(3) Analyze responses from student/teacher interview process. Calculate the percentages of responses in various categories to determine the most common, least common answers.		(2) Visit Cosmetology program.; interview students and teacher to determine why Cosmetology is a good program and why other students should be interested in enrolling.	(4) Conduct research on job opportunities and salary ranges for licensed cosmetologists. (1) Design instrument for interviews.

Integrated Lesson Plan Form

Version B

Teacher's Name _____ **Subject** _____

Week of: _____

Course Competency Being Taught:

(What you expect students to be able to do after the lesson.) **OBJECTIVES**	(How you will teach the objectives and the materials you will use.) **PROCEDURES AND MATERIALS**	(How you will evaluate or assess the objectives.) **ASSESSMENT**	(How you will reinforce these subjects) **INTEGRATED ACTIVITIES**
The Student Will:	____ Lecture Materials:	____ Written Test	**COMMUNICATIONS**
	____ Demonstration Materials:	____ Work Sheet	**MATH**
	____ Student Practice Materials:	____ Instructor Evaluation Observation to preset standard.	**SCIENCE**
	____ Small Group Activity Materials:	____ Practical Test	
	____ Field Trip or Collaborative Activity Materials	____ Technique Check Sheet	**OTHER** (Occupational or other academic.)
	____ Other _____ Materials:	____ Other _____	

Developed by:
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September 1992

Appendix B

Section from Partners in Progress

PARTNERS IN PROGRESS

... A staff development activity for occupational and academic faculty

Director's Handbook

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II. Resources Required

The "Partners in Progress" activity is relatively inexpensive to implement. However, vocational directors should anticipate the following costs:

- one substitute day for the occupational teacher
- one substitute day for the academic teacher
- transportation for faculty to and from the work site
- lunch
- materials
- (optional) one substitute day for follow-up/planning activities for the occupational teacher
- (optional) one substitute day for follow-up/planning activities for the academic teacher.

Depending on local budgets and policies, some or all of the above costs may be covered through staff development funds or Tech Prep grants, or they may be partially absorbed by the participating teachers themselves (such as transportation and lunch costs). If the activity is arranged during a regularly scheduled in-service day, costs for substitute teachers can be avoided.

III. Setting Up the Activity

A. *Selecting the Faculty*

Each vocational director will, of course, need to determine fair and effective ways of selecting occupational faculty to participate in the "Partners in Progress" activity. (Academic faculty should be selected after the occupational faculty have been chosen.) Some issues to consider in selecting participants, particularly the first few teachers, might include the following:

- Which faculty have the greatest need to observe current and/or innovative techniques or practices in the field?
- Which faculty would be most likely to translate shadowing experiences into improvements in their teaching activities?
- Which faculty would be the most enthusiastic and credible supporters of the program to help other faculty become interested in participating?
- Which faculty would be most "open-minded" to pursuing partnering activities with academic colleagues?

After the occupational faculty member has been selected, the academic partner should be identified. The most obvious criterion for selecting an appropriate academic partner is one who teaches an applied academic course. In selecting an appropriate academic partner, the vocational director may choose to discuss some possibilities with the high school principal(s). The questions listed above may be helpful in deciding which teacher could benefit most from the experience. In some cases, the occupational teacher may have someone in mind who would make an excellent partner for the shadowing experience. If so, the appropriate contacts could then be made to invite that person to participate.

B. *Defining the Expectations and Outcomes for Faculty*

The outcomes of "Partners in Progress" and the products or activities you expect of participants should be made clear to the faculty early in the planning process.

You should identify the type of documentation you will require of faculty and determine when the necessary materials should be submitted. Some possible outcome documents include

- completed lesson plan forms illustrating activities or materials from the shadowing experience;
- completed evaluation forms;
- an outline of an in-service activity for other faculty at your school and/or the home school of the academic teacher;
- a written description of a planned student activity including timeline, resources and expected outcomes;
- an article for the school/district newsletter or other appropriate publication.

There are two major reasons for requiring some type of outcome documentation from participating faculty. One is that it will help ensure that some type of worthwhile change or impact actually occurs. The other reason is that it helps project an appropriate image for this experience to faculty—the activity is not a chance for a "day off," but rather a professional development opportunity that is expected to improve some aspect of the teaching/learning process. (Requiring documentation, or "proof" of worthwhile outcomes, does not have to be excessive or burdensome for faculty.)

In addition to what you will require of faculty, you might also consider whether or not faculty will receive any type of recertification "points" or credit through the district office. If this is possible, you should complete whatever processes are required in order to provide participants with recertification credit. As you explain requirements of the activity to faculty, describing the conditions for recertification credit will also be an important point you will want to discuss.

C. *Selecting the Shadowing Site*

The selection of an appropriate shadowing site is critical to the success of the activity. Many occupational faculty will probably have several possibilities in mind right away. If not, vocational directors can help identify an appropriate site and contact person through one of the following sources:

- district or program vocational advisory committees
- business partnership chairperson or district industrial coordinator
- county business and education partnership director
- PACE Speakers Guide or PACE Counselor/Industry Liaison
- local chamber of commerce
- county personnel association chairman

The vocational director should review a list of potential sites to ensure that all under consideration would provide a worthwhile experience for participants. (For example, an automotive instructor might list as a possible site a small, local dealership operated by someone with whom he/she is very familiar. The vocational director might encourage the teacher to investigate other possible dealerships that would have a larger, more computer-driven service department as a way of providing the teacher with access to the latest techniques.)

Once several possible sites have been identified, it might be helpful for the vocational/academic faculty partners to collaborate in identifying the site that would best meet their respective needs.

D. *Making the Contact*

After one or more suitable shadowing sites has been identified, the occupational faculty member, or yourself as the vocational director, should contact an appropriate individual at the business and make arrangements for the shadowing activity. It is important that the activity be fully explained to the business contact and that the role of the business person be made clear. Some possible roles of the business person in the shadowing activity might be to

- plan activities that will illustrate the latest equipment or techniques in the field;
- allow shadowing teachers to participate actively in tasks that will help expand their understanding of relevant processes or techniques;
- provide written materials, sample documents or other items that will illustrate the use of appropriate academic skills needed to perform certain tasks;
- provide opportunities for teachers to ask questions, discuss trends in the use of technology related to the particular field, or gather information on other areas of professional interest.

E. *Preparing for the Shadowing Experience*

Most faculty will know the procedures they should follow to prepare for a "non-teaching" day. If you feel reminders are necessary concerning the required paperwork, arrangements for substitutes, or other procedures, it might be helpful to provide reminders well ahead of the scheduled activity date.

In order to maximize the shadowing experience, faculty should be encouraged to do some advance planning. To facilitate this type of planning, a sample checklist is included in APPENDIX A.

Under the "just in case" category, you should have the name and telephone number of the business contact person handy, just in case someone should need to get in touch with one of the participating teachers during the shadowing experience.

IV. Conducting the Activity

Conducting the shadowing experience should be relatively easy, assuming all the advance planning was completed appropriately and that there are no unforeseen difficulties. (Example: A business contact person calls in sick!)

The intent of "Partners in Progress" is that participating faculty and the business sponsors will enjoy the opportunity to share ideas, explore new approaches, and discuss issues of mutual professional interest.

V. Evaluation & Follow-up

All participating faculty should complete an evaluation form and return it to you. The results of the evaluation can be invaluable to you in planning future "Partners in Progress" activities. A sample evaluation form is included in APPENDIX B.

If you choose to require lesson plans of participating faculty, two versions of integrated lesson plan forms that faculty could use are included in APPENDIX C.

If you feel it is necessary to remind faculty that letters of appreciation should be sent to the business contact person, you should be sure that the reminders are given in a timely manner.

Appendix C

Jupiter Space Station Newsletter

Jupiter Space Station News

Issue III Editor: John D. Bernard, Ed.D March 1994

Tri-County Technical College Computer Technology Department
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Announcement...

On March 26, 1994 at 11:04 EST on 18.365 MHz, the Jupiter Space Station Radio-Telescope captured radio emissions from the planet Jupiter. The Space Station targeted the planet using control software developed by students in Computer Technology, control hardware developed by EET students, and a radio hookup by a student in the Arts and Science Division. These radio waves are believed to be caused by magnetic disturbances on the planet Jupiter's surface in tandem with the Galilean moon Io.

Congratulations..

Doug Starwalt, Project Leader of the Radio Team, has been chosen by NASA from an applicant field of 4000 students to attend a Life Science training program at Cape Kennedy, Florida. Doug will be working in the Shuttle Hanger during the launch this summer. Doug translated his Jupiter Space Station experiences into a once-in-a-lifetime experience. His personal application essay is enclosed for you to read.

College Support...

We are in debt to a number of faculty and students for their support over the last six months. Thank you goes to Gene Kesterson, Jim Culbertson, Franklin Smith, and Barry "The Tool Man" Sanders of the IMT Department; Paul Tankersley and Gary Spangenberg of the IET Department, Glenn Bischof, Ron Talley, and Bill Larsen of the EET Department; Lee Barnwell of the Science Department; Curt McKinney of the Machine Tool Department; and Floyd Wilcox of the AMC.

SCAS Papers!

The South Carolina Academy of Science is preparing for our Special Focus Session for presentation at the Annual Meeting of our papers! This meeting is scheduled for Friday, April 15 at USC - Aiken. Tri-County will have a van to drive the students down leaving the parking lot at 7:00 a.m. and returning that evening between 6 - 7 p.m.

from the Director

We are quickly closing on some hard deadlines to finish this JSS project by semester's end. Our goal is to have the automatic, unmanned version by April 29. There will be a demonstration at the May 14 Group Gathering. We now have the Jupiter "Music" to play at the South Carolina Academy of Science Meeting. The COBOL classes will be finishing the booking and report management programs in April.

Again we have been invited to present our Two Year College work at the Annual Meeting at the National Astronomy Radio Observatory in Greenbank, WVa on June 4-7.

Observe the final calendar below. You folks are doing good, solid work.

Calendar...

April 6	Semi-final Draft of SCAS Paper Due in morning.
April 7	Revised Version of your software due in morning.
April 15	SC Academy of Science USC - Aiken
May 14	Completion Demo/Picnic At Radio-Telescope Site Family Invited

Plans...

Project team reports follow in this issue. The Project Director is integrating the code, sending it along with the Newsletter to Project leaders and having it and have it ready to be picked up by the front four computers in the PK 118 Lab.

Project leaders should then plan to meet with me to get updated specifications and to discuss their progress.