

A DOSE OF REALITY

Twelve Steps in Developing “Real-World” Lesson Plans



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Introduction

Imagine developing a curriculum that could answer the age-old student questions, “*Why do I need to know this?*” and “*What is this good for?*”

To enable teachers to answer these questions for their students, the Illinois Mid-South Regional Partnership Coalition and Southern Illinois business and industry joined forces to produce classroom materials that demonstrate real-world applications.

The first effort was to develop materials in *mathematics* for grades K–14, materials that show a strong connection between the mathematics concepts being taught in the classroom and the mathematics concepts being used in Southern Illinois business and industry. The mathematics problems were divided into appropriate grade levels: 1–4, 5–7, 7–12, 11–14, and 13–14, with overlap where needed.

The second materials-development effort involved classroom materials in *communication*. These also were to demonstrate a clear connection between communication as taught in the classroom and real-world communication that occurs daily in business and industry.

The end product of each effort was a three-ring binder of lesson plans designed for easy classroom use by teachers. The materials demonstrate forcefully the real-world applications of mathematics and communication in the workplace, relating them specifically to businesses and industries in Southern Illinois—businesses and industries known by name to both teachers and students. Thus, the final published materials enable students to see the connection

between what they are learning in the classroom and how they will apply that knowledge outside of school.

We have seen an overwhelmingly positive response to *Real-World Mathematics Problems* and *Real-World Communications*, the published books now available through CCI Publishing, as we have distributed them to instructors and to the businesses involved. Because of this, I was asked to share the process we followed in developing the products. It should be stated at the very beginning that the input from business and industry was the cornerstone of our success.

This outline of the process is designed to encourage you in your efforts to involve businesses in your community in helping you develop real-world lesson plans that teach the concepts and skills those businesses require of their employees.

In the broader perspective, with the help of businesses and contact persons all over the United States—and through our combined efforts—we can develop a network of real-world lesson plans that serves students nationally, perhaps even globally. I sincerely hope you will think about how you can contribute to making learning relevant for our students by working with your own business community and adding to our initial endeavor.

Betty Musgrave
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Steps in Developing Real-World Lesson Plans

Following are the steps used by the Mid-South Regional Partnership Coalition and participating businesses in the process of developing *Real-World Mathematics Problems* and *Real-World Communications*. The steps are applicable to any similar curriculum-development project.

STEP 1 --- ***Gather employer input***

Involve local employers in the project by asking them to identify occupational, academic, and workplace skills pertaining to their occupational areas. This is an activity in which your Tech Prep and School-to-Career coordinators and staff members can be a big help. Using this model—which we will refer to as the *Tech Prep model*—we begin the process of identifying business and industry needs by establishing relationships with local businesses via Tech Prep organizations in the community.

Another model involves forming focus groups to gather input from community leaders on the needs of area employers. The *focus group model* is most effective when the groups work in conjunction with trained facilitators and when each group has an assigned recorder. As in the Tech Prep model, focus groups obtain information on the community’s labor market needs and what employers would like to see changed or strengthened in the curricula of local schools. However, the focus group model can have a broader scope than the Tech Prep model, which focuses on existing courses of study that support industry.

STEP 2

Determine local employer needs not being addressed in your curriculum

Identify employers who are willing to serve as experts in occupational areas related to their businesses. These could include employers of industrial technicians, engineering technicians, business managers, nursing personnel, medical laboratory technicians, radiology technologists, respiratory therapists, biomedical electronics technicians, agribusiness managers, child care directors and administrators, manufacturing technicians, automotive technicians, horticulture technicians, computer technicians, and other kinds of technicians.

Form a panel of employers and ask them to describe what they expect from technicians and other employees in the occupational areas for which you are developing Tech Prep courses of study.

As you ask the panelists to identify the academic, occupational, and workplace skills needed by employees in their businesses, keep the following points in mind.

- As used here, the term *academic skills* encompasses the general academic knowledge—in mathematics, science, and English, for example—needed by employees in a given occupation.
- *Occupational skills* are specific to the equipment and processes used in a given occupation; they are often hand skills.

- *Workplace skills* are necessary for effective job performance in general—punctuality, teamwork, neatness, and cooperation, for example.

To record the information provided by the panel of employers, use a court reporter and/or stenographer, a tape recorder, and a video camera. Because, like students, the instructors and other adults with whom you will later share this information have different learning styles, it is useful to be able to present your findings in different media (print, audio, and video).

STEP 3 _____ ***Analyze employers' needs by occupational, academic, and employability skills categories***

From the panelists' input, make a list of each of the three types of skills needed (academic, occupational, and workplace). Analyze the lists, determine the most frequently identified skills of each type, and prioritize needs for improvement. Now, pull together the different working groups and begin the process of developing the lesson plans.

STEP 4 _____ ***Select the area of need that you will address in the lesson plans***

From the transcripts of your meetings with employers, list identified occupational, academic, and workplace skills. Determine which employer needs were most frequently identified and invite the employers who identified them to be involved in the process of developing applicable lesson plans. For example, employers in Southern Illinois told us that their entry-level employees and job

applicants were frequently unable to apply math concepts or to communicate effectively on the job. They told us that both of these skills—mathematics and communication—were at the top of the list of areas needing improvement. Thus, in Southern Illinois, those two areas became the focus for our real-world lesson plans.

STEP 5 _____ ***Engage an experienced consultant—or discipline expert—to oversee development of the lesson plans***

Selecting an experienced consultant or discipline expert is one of the most important steps in developing a quality product. If you do not know how to find an expert in the field of study you are addressing, consult curriculum-development experts. Good places to start your search are state boards of education, the Association for Career and Technical Education (www.acteonline.org), High Schools That Work (<http://www.sreb.org>), and CORD (<http://www.cord.org>).

The person selected as your consultant should agree beforehand on a fee and a schedule for project completion, making sure that the schedule fits within the designated fiscal year in which the expenses are to be paid. Discuss with the consultant the responsibilities he or she will assume and make sure these are understood and agreed to before the project begins. To ensure the development of a quality product, the consultant should be involved through all stages of the process. These include:

- attending the employer presentations to instructors
- training the volunteer writers to prepare correctly formatted drafts of the lesson plans

- coordinating the writing of the lesson plans
- critiquing the lesson plans
- meeting periodically—either in person or by videoconference—with the instructors to provide training and give guidelines to the entire group
- planning a portion of the interactive time to talk one-on-one with writers to discuss lesson plan presentations, formatting, or rewrites
- using e-mail for quick communication with both the writers and the coordinator/director of the consortium
- keeping writers motivated and on schedule
- editing, proofreading, and assembling the lessons into appropriate grade-level divisions
- working with the coordinator/director to develop the acknowledgment page and other front matter for the finished product
- preparing specification requirements for publishing so that bids can be solicited
- attending the celebration that begins the dissemination of the publication

STEP 6

Select a core group of employers to give examples of problems and/or scenarios that may be used in developing lesson plans for grades K–14

Contact the businesses that responded to your inquiries about their needs. Try to speak with high-ranking officials, preferably CEOs; you must have their support and approval to proceed with the project. Share the results of the analysis you conducted in steps 3 and 4, and identify the issues your partnership plans to address. Tell the participating businesses that the end product will be a set of lesson plans that contain real-world problems and scenarios that they, the businesses, will have provided. Ask whether they agree with your needs analysis. If they do not, determine whether you should reassess or tweak the analysis accordingly or eliminate those businesses from your list of potential core group members. (Remember, the purpose of this process is not to exclude any business but to identify businesses that represent the areas of greatest need.)

Ask each business in the core group to send a representative to a workshop to share five examples of mathematics concepts and skills that are used in the workplace. For example, a representative of a business in the home-building industry might bring examples of skills needed by carpenters or electricians or roofers. A representative of a bank or other financial institution might bring examples pertaining to long-term investment options or estate planning. A manufacturer of household appliances might bring examples pertaining to metalworking. A CD distributor might bring examples pertaining to pricing strategies. There are many possibilities.

Plan a full-day workshop during which each employer representative will be allotted about 30 minutes to present problem examples and discuss them with the participating educators. The examples presented should reflect occupational areas in which current employees need additional training and/or in which incoming applicants are deficient. The employer representatives should present their examples to both academic and career and technology educators from appropriate fields (e.g., mathematics and communication).

Tell the CEOs of the participating businesses that your partnership plans to develop and publish a book of real-world problems and/or scenarios for grades K–14 and that you would like to use the names of their companies and their companies' representatives. Explain that your purpose is to *help students see the connection between work and school*, and to do so by referring to local businesses known by name to both students and teachers. Everyone involved should understand that the purpose of the project is to bring students to the realization that what they are learning in school has real value, not just in some indefinite future but immediately and in their own communities.

When team members visit a participating business, they should take a form for the CEO (or delegate) to sign, giving permission to use the business's name and to provide contact information (in print or via the Internet) for a representative of the business. Having this signed document at the beginning of the project is critical. If you cannot get the form signed at one business, move on to another business. The refusal of even one business to sign off will delay your project or perhaps stop the printing of your book.

STEP 7

Set up the workshop

In organizing the workshop at which the business representatives will present their problem examples to the instructors, you must accomplish a number of things:

- contacting the participating businesses' CEOs or other high-ranking officials
- motivating the appropriate teachers and instructors from the primary, secondary, and postsecondary levels who will form part of the project design team to attend the workshop
- structuring the day so you have around 10 company presenters (Each presenter should be allotted about 30 minutes; you should also allot 30 minutes each for the coordinator of the consortium and the consultant to speak.)
- preparing an agenda that will be circulated to attendees and presenters
- acting as host—selecting your venue carefully (perhaps an area resort or a community college campus); addressing the participants (setting the stage for the day, introducing the presenters, or introducing the first presenter and having each one introduce the next); arranging light refreshments for the morning and afternoon and a full meal at lunch time

Make sure each presenter brings at least one set of hard copies (to be archived as masters) and, if possible, a disc containing the same information. The originals can also be used as reference materials by the teachers involved in developing the lesson plans. The lesson-plan developers should understand that their goal is to determine how to teach or reinforce the concepts illustrated by the

examples, at every grade level and with each grade building on the one preceding.

STEP 8 --- ***Select your design team***

You will need several lesson-plan developers for each grade level, and they will need the assistance of other teachers. For the workshop, you may want to invite any teachers who are interested in the project, even if it is clear at the outset that some of them will not be members of the design team. A gathering of teachers from every grade level gives you a larger pool from which to draw. When the team has been selected, bring together the design-team teachers from every grade level for the first couple of meetings. Having every grade represented will enable the group as a whole to brainstorm about how best to present the concepts identified by the employers. Having the higher-grade-level teachers at the meetings will also help the lower-grade-level teachers see what they must do to prepare students to progress to the next grade levels.

The first task of the design team is to select the two businesses with which it will work, preferably businesses that participated in the workshop. If this is not practicable, the team should contact other businesses of their choice and visit them, preferably twice. Following these visits, have the lesson-plan writers get back together and relate their experiences at the businesses they have visited. At this time, the writers should tell what concepts they will address in their lesson plans and identify the perspectives from which they will write.

The members of the writing team will determine whether they want to work alone or initially in groups and then branch off and write on their own. It is especially beneficial to bring the writers back together after they have written their lesson plans and let the writers present the plans to each other before they are published. Toward the end of the project, it is easy to let this step slip by. Also, you and your group will benefit greatly from having your own celebration before everyone sees the end product.

STEP 9 --- ***Consider offering incentives to members of the design team***

Since this project requires a considerable amount of work, consider whether you should offer incentives to members of the writing team. The incentives could be stipends or university graduate credit.

If you choose to offer stipends, consider these questions:

- How much will the stipends be?
- When will the partnership pay the stipends?
- Will you pay for only the lesson plans that are published?
- Are all lesson plans worth the same dollar amount regardless of the length, complexity, or originality?
- Will you pay stipends for more than one lesson plan based on the same employer's problems?
- Will you pay stipends for lesson plans based on the writer's family business?

- Will you pay stipends for a lesson plan that only changes a few details from another lesson plan?

In lieu of—or in addition to—offering stipends, you can arrange for a university to offer graduate credit to participating instructors. Depending on the local education agency structure, instructors may be able to use this project to fulfill professional development requirements and/or improve their pay scales.

Settle these issues prior to the first meeting with the design team.

Draw up and distribute at the first meeting a policy statement, a list of the writers' responsibilities, and list of the writers' goals. Remember, the challenge to your writers is to write effective K–14 lesson plans that lead to understanding of the concepts that underlie the occupational examples presented at the workshop.

Be sure to focus on developing lesson plans in only one academic area at a time. The process may seem simple, but maintaining clarity, focus, and grade-level appropriateness requires considerable time and thought.

STEP 10 _____ ***Develop guidelines for writing, critiquing, and rewriting; prepare the lesson plans for publication***

The partnership coordinator and consultant should work with instructors to agree on a lesson plan template. The type of software to be used to generate the plans should be specified in the writers' list of instructions. In general, you should require that a hard copy and a disc copy be provided to both the coordinator and the

consultant at the same time. (The coordinator’s copy should be archived in case the other copy is lost or destroyed.)

The consultant and coordinator should set up a listserv for communication by e-mail among the members of the design team, the consultant, and the partnership coordinator. Communication between the coordinator and the consultant is as crucial as communication between the consultant and the design team.

Two of the most important things for the consultant, coordinator, and partnership to do are to agree among themselves and to confirm to the writing team that the consultant has the final say on what is publishable and what is not. Each writer is expected to write (and, where appropriate, rewrite) lesson plans that are acceptable *to the consultant*.

STEP 11 _____ ***Obtain permission to use copyrighted materials; publish the product and register the product with the U.S. Copyright Office***

The lesson-plan writers will occasionally find it useful to include copyrighted material. Consequently, make sure they are aware that copyrighted material—if it does not fall under “fair use” (see <http://lcweb.loc.gov/copyright>)—can be used in the final product only with written permission from the holder of the copyright. The writers are responsible for obtaining that permission.

There are several ways to have the product bound, but the most practical is as a three-ring notebook, which allows teachers to add or remove pages. If you want to have your book copyrighted, your consultant should be able to give you directions on how to register your work with the U.S. Copyright Office. (Downloadable forms

are available at the web site given in the previous paragraph.) You should also check with your grant guidelines on this process.

Your consultant should be responsible for the foreword, acknowledgment of the people involved (business representatives, writers, and others), waivers, organization and proofreading of the book, and obtaining bids for publishing.

STEP 12 --- ***Celebrate, train teachers, and disseminate the product***

Completion of the book should be announced at a formal celebration. Have the consultant and the design team members share something about their experiences in working on the project. Each member can serve as a panelist, sharing a small part of his or her lesson plan. Members of the media should be invited. The event should include an autograph session. Make sure team members have a book for each of the employers with whom they worked. Also, everyone attending the celebration should leave with a book. Allow school representatives to sign for and take enough books for their schools.

Plan a time for training the teachers and instructors who will be using the lesson plans. Divide the group into teams and let them work a few math problems or communication lessons for each grade level and then report to the large group. This process of training should work in all areas. It is beneficial to have all grade levels of instructors in the same room at the same time.

A Final Observation

Perhaps, after reading the steps outlined above, you have been challenged to go to your partnerships or consortia and convince them to try this in your community. You will have a wonderful, rewarding experience ahead of you, and you may have helped one student at a time make a difference for a lifetime.