DOCUMENT RESUME

ED 440 099 SP 039 149

AUTHOR	Madfes, Tania J., Ed.; Shulman, Judith H., Ed.
TITLE	Dilemmas in Professional Development: A Case-Based Approach to Improving Practice.
INSTITUTION	WestEd, San Francisco, CA.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, DC.
REPORT NO	DPD-99-01
ISBN	ISBN-0-914409-00-X
PUB DATE	2000-00-00
NOTE	80p.
CONTRACT	R168R50018
AVAILABLE FROM	WestEd, 730 Harrison Street, San Francisco, CA 94107-1242 ($24). Tel: 877-493-7833 (Toll Free); Web site: http://www.wested.org.
PUB TYPE	Opinion Papers (120)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	*Case Method (Teaching Technique); *Case Studies; Curriculum Development; Elementary Secondary Education; *Faculty Development; Group Discussion; Group Dynamics; Inservice Teacher Education; Teacher Improvement

ABSTRACT

This publication presents a case-based approach to improving teaching practice, offering informal conversations between isolated educators who were brought together to share their problems and air concerns via the use of cases. An introduction offers an overview of professional development cases, explaining what cases are and how to get started. This is followed by eight cases with facilitator notes: (1) "Your Project Will Get a Black Eye!" (Judi Wilson); (2) "Managing Misconceptions" (Linda Hagelin); (3) "What To Do About Rob?" (Diane Demee Benoit); (4) "Through the Eyes of a Participant" (Stephanie Wald); (5) "Girls in Science: Full Partners" (Patricia Kudritzki); (6) "Sink or Swim" (Hector Timourian); (7) "Partnering Is Such Sweet Sorrow" (Jeffrey S. Bryant); and (8) "Critical Moments" (Liesl Chatman). A final section, "Facilitating a Case Discussion" (Judith H. Shulman), discusses: the preparation and process; constructing a case-based professional development curriculum; preparing to lead discussion; dynamics of the group process; leading the discussion; the opening; core of the discussion; closing the discussion; and discussion stages and struggles. (Contains 12 references.) (SM)

Dilemmas in Professional Development

A Case-based Approach to Improving Practice

Edited by
Tania J. Madfes
and
Judith H. Shulman

WestEd
Improving education through research, development, and service

About WestEd

WestEd is a nonprofit research, development, and service agency dedicated to improving education for children, youth, and adults. Drawing on the best from research and practice, we work with practitioners, policymakers, and others to address critical issues in education and other related areas.

In addition to our work across the nation, WestEd serves as the U.S. Department of Education's designated Western Regional Laboratory, serving Arizona, California, Nevada, and Utah. The organization has offices in Arizona, Massachusetts, Washington, DC, and throughout California. Its headquarters are in San Francisco.

For more information about WestEd, visit our Web site at http://www.wested.org; call 415/565-3000; or write:

WestEd
730 Harrison Street
San Francisco, CA 94107-1242

This project was supported by the WestEd Eisenhower Regional Consortium for Science and Mathematics Education through contract number R168R50018 with the U.S. Department of Education, Office of Educational Research and Improvement. Its contents do not necessarily reflect the views or policies of the Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the United States Government.

Dilemmas in Professional Development

A Case-based Approach to Improving Practice

Edited by
Tania J. Madfes
and
Judith H. Shulman

WestEd®

Improving education through research, development, and service

Table of Contents

Case Authors*

Diane Demee Benoit
Education Director
San Francisco Zoological Society

Jeffrey S. Bryant
Education Program Curator
Monterey Bay Aquarium

Liesl Chatman
Executive Director
Science & Health Education Partnership Program
University of California, San Francisco

Linda Hagelin
Instructor, Teacher Programs
Monterey Bay Aquarium

Patricia Kudritzki
Teacher
Aptos Middle School (San Francisco) and Triad Project, UCSF

Hector Timourian, Ph.D.
Training Coordinator
Teaching Opportunities for Partners in Science (TOPS)

Stephanie Wald
Teacher
All Soul's Catholic School (South San Francisco)

Judi Wilson
Regional Director
California Science Implementation Network
and San Joaquin County Office of Education

** Positions and organizations at time of authorship*

Preface

In 1982 I made one of the biggest professional changes of my life. After 15 years teaching high school mathematics in the San Francisco Unified School District, I moved to the district office and took on a completely new assignment. I became a professional developer, helping math and science teachers improve their skills.

It was a rewarding experience, but also an isolating one. While teachers are on their own in the classroom, I thought, at least they have the lunchroom. I realized quickly that as a professional developer I was truly a sole–practitioner, often preparing and conducting teacher–trainings with no colleagues at all. I constantly found myself *learning by doing*, usually without the benefit of mentorship or support by peers who knew the context and players involved.

Combined with that lack of collegial support, there was, and still is, next to no formal professional development for those of us whose work it is to help teachers improve their skills. From a training and support perspective, professional developers are an unaddressed group, lacking the workshops and case–based professional enrichment that has proved so successful for classroom instructors.

As a professional developer, project director and network leader, and subsequently as director of the Science Education Academy of the Bay Area (SEABA), I gradually became aware of the strength of using cases — brief but vivid accounts of teaching events written by other teachers — to provide a forum for discussion. Pioneered by WestEd, the case-based approach had proven remarkably helpful in teacher instruction and staff development. This method, as it turned out, held potential for professional developers as well.

Through SEABA, for example, I worked closely with educators from science museums, zoos, aquariums, county offices of education, government agencies and universities. While not typical professional developers, these educators shared with others in the

field the experience of feeling isolated in their work. Often on their own at their sites, they managed multiple responsibilities including teacher training, program development and work with young students.

One of my responsibilities was to provide forums to help these people do their work better, yet the typical professional development offerings for classroom teachers did not meet the needs of this group, nor did commercially–sponsored management workshops designed for those in the business world.

I decided to try gathering these isolated educators together and, with the use of cases, help them share their problems and air concerns in an informal setting. Even if solutions did not emerge, suddenly isolation had turned into rich and engaging dialogue.

The effectiveness of these informal conversations inspired the creation of *Dilemmas in Professional Development: A Case-Based Approach to Improving Practice.*

Support and guidance for the development of these cases were graciously contributed by Judy Shulman, Director of the Institute for Case Development at WestEd. Judy's expertise in both the use and creation of cases, as well as her experience in professional development at large, enabled a group of educators to divulge some of their most troubling professional encounters and turn them into the compelling and useful stories in this volume.

Thanks to Judy's encouragement, and to WestEd writer Jim Johnson's editorial assistance, all of our original case writers were able to persevere and meet deadline.

Most of all, I am indebted to our eight authors for sharing their dilemmas with all of us. We hope you find this casebook useful in your own work.

Tania Madfes
Senior Research Associate
WestEd

Introduction to Professional Development Cases

Why Cases?

- Donna came into my office and dropped a quiet bombshell: "Since Bonnie has joined us as a scientist on our staff, there's so much tension at staff meetings. She doesn't respect me and the rest of the institute staff as science educators. I don't think I want to be part of the staff any longer." Donna was the sixth staffer to share these feelings with me in the past five months.
- Watch the goldfish breathe," Sandra enthusiastically urged the small groups of teachers clustered around a number of jars containing the fish. "The fish takes oxygen out of the water ... of course ... WATER IS H_2O, ISN'T IT?" I felt as though I had been hit by a truck. Sandra had stated a common misconception held by children. No one said anything. The lesson proceeded while I agonized over what to do.
- As Jose continued talking I realized he had not followed any of the instructions for developing a lesson. After about 10 minutes, I realized I couldn't let him go on. "What is the basic concept you want to teach?" I asked. "Science," he responded. I asked him what grade level he had prepared the lesson for. "All children," he replied. I kept asking if he had followed the instructions I had given on how to prepare a lesson for this exercise. Jose said he was too old to do things he didn't want to do and didn't want to learn to do things differently.

Common to each of the excerpted cases above (which follow in their complete form) is a professional developer presented with a tough situation he or she has to handle alone — and quickly.

In the first scenario, the author wears a managerial hat, not wanting to see a valued co-worker leave her job due to friction with an unpopular new staff member. In case number two, a staff developer must decide how to handle a misconception without embarrassing the teacher in front of others. The third case raises another set of

questions, about what to do when participants in a volunteer program don't follow instructions and are hostile to learning.

But these initial interpretations are only the tip of the iceberg. In group discussion, cases can be powerful springboards for identifying *many* issues that may arise during an on–the–job dilemma.

For example, while case number one brings up managerial questions support providers often face in their relationships with participants, subordinates and program funders, this case may also stimulate role-play discussion to explore how members of a team can work together productively. The author in case two faces the question of how to handle a misconception made during a presentation by a teacher, but this scenario also brings up questions about when teachers should intervene in peer– or student–teaching situations and how to identify misconceptions without inhibiting learning. The professional developer in the third case is also confronted with how to "correct" someone without offending them, but this account may also lead to discussion about how to work with volunteer "experts" and whether it is important to acknowledge their experience by including them in setting goals.

Each case in this collection provides an opportunity to examine a number of issues as they occur in the real world of teacher development. The chart on the next page provides easy reference for locating specific issues within each case and across cases.

What is a Case?

Cases are candid, dramatic, highly readable accounts of events or series of events that offer a problem-based snapshot of an on–the–job dilemma. Read alone, they offer an almost virtual experience of walking in another's shoes and the opportunity for self–reflection. In group discussion, they are especially powerful, allowing different points of view to be aired and examined. For professional developers, whose work involves supporting and assisting others, case-based discussion is an antidote for isolation, one that can often seed valuable support networks.

During the past decade, education professionals have paid increasing attention to the use of cases as one of the most promising ways to reform teacher education and staff development (Sykes & Bird, 1992; Shulman, 1992). Staff at WestEd have been active participants in this reform effort, developing casebooks, leading case discussions, conducting seminars and coordinating national conferences.

Our experience and research suggest that case discussions can help participants bridge theory and practice. Discussants learn how to spot issues and frame problems in

Issues in Professional Development Cases

CASE TITLES	ISSUES							
	Workshop Delivery	Instructional Strategies	Workshop Follow-up	Methods of Teaching Science	Program Admin. & Support	Personality Issues	Working with Scientists	Equity Issues
Your Project Will Get a Black Eye		■	■		■	■		
Managing Misconceptions	■	■	■	■				
What to Do About Rob?	■	■		■		■		■
Through the Eyes of a Participant	■	■		■		■		■
Girls in Science: Full Partners		■		■				■
Sink or Swim	■	■		■	■		■	
Partnering is Such Sweet Sorrow					■	■	■	
Critical Moments	■	■	■		■	■	■	■

ambiguous situations, interpret situations from multiple perspectives, identify crucial decision points and possibilities for action, and recognize potential risks and benefits inherent in any course of action.

Based upon the success of case–based work with classroom teachers and school administrators, the WestEd Eisenhower Regional Consortium for Mathematics and Science (WERC) examined how the "case idea" could be expanded to serve those providing and managing professional development for science and math teachers. The WERC Case Initiative brought together science educators from informal science organizations, systemic initiative projects, county offices of education, school districts and school sites. These leaders learned about the case process and then learned how to craft their own cases.

The work of the professional developer in science and mathematics education involves interacting with teachers, administrators, scientists, mathematicians, volunteers and members of one's own staff — whether they be peers, supervisors or subordinates. The various quandaries described in *Dilemmas in Professional Development* arise during those interactions, but would also prove useful for those outside the math and science arena. The questions posed by the authors deal with relationships, ideology, personalities, assumptions and roles. The authors describe real experiences that they found to be disturbing or otherwise challenging in their own work.

In our field tests, professional developers engaged in meaningful discussions about these cases. They explored complex, messy and often delicate issues for which simple answers do not exist and found the cases to be authentic accounts of situations they could relate to and understand. The discussions allowed participants to examine their own practices by engaging in discourse with others who may have had different points of view but similar areas of responsibility.

Through meaningful discussion, participants became their own *change agents,* taking risks and supporting each other as they analyzed the issues, generated new ways of approaching situations and reflected on what they had learned.

Getting Started

Knowing how to elicit productive case discussion is the key to helping participants get the most out of this development opportunity. This volume offers guidance to facilitators and is specifically focused on enhancing the analytic opportunities that arise in discussion of these professional development cases.

The section at the back of this book titled *Facilitating a Case Discussion,* written by Judith Shulman, offers a general introduction to facilitation methods. In it you will learn about preparing a case-based curriculum of which discussion is only a part, studying cases with an eye for nuance and layers of meaning, planning the physical space and managing the dynamics of the discussion.

Our experience suggests that the more knowledgeable a facilitator is about the issues in a case and the more she can anticipate the variety of participant responses in a case discussion, the greater the odds that rich discussion and learning will take place. Accompanying each case are notes for the facilitator, which incorporate analyses of the issues embedded in the narrative and sample discussion questions. The notes draw upon almost two years of field testing with different groups at conferences and case institutes.

Facilitators should study both Shulman's guide and the notes following the cases before working with a group. Think about what you want to happen during the discussion and why you chose this particular case for this group. What will you tell the group when you introduce the case? What leading questions will you have in reserve in case the conversation needs to be reinvigorated? How will you close the session?

Also important is allowing participants ample time during discussion to reflect on the cases and to share personal experiences. Then, after you have conducted the discussion, reflect upon what transpired. Think about both the process and the outcomes. Make

notes for yourself, so that the next time you facilitate a case discussion you can benefit from your own learning.

Facilitators should also consult the annotated *Table of Contents* and the table, *Issues in Professional Development Cases*. Select a case that will best serve the group with which you are working and the purpose for which you want to use a case as a catalyst for discussion.

When you have selected the case(s) you will use, make a copy for each participant. The cases have been formatted for easy duplication and utilization in workshops. When you purchased this publication you received our permission to duplicate up to 30 copies of a case for use in your own work.

If you have comments about the cases or the facilitator notes, or want to share with us what you have learned from the use of the cases, please write to us at *tmadfes@WestEd.org*. We hope that this book will provide you and your groups with tools for rewarding group discussion and interaction. The result can be a powerful experience in professional development.

Cases
and Facilitator Notes

Case One

Your Project Will Get a Black Eye!

by Judi Wilson

Regional Director, California Science Implementation Network and San Joaquin County Office of Education

Mary, one of my Lead Teachers, seemed like a tiger ready to pounce. I had just walked into the room and, as regional director of a science network for teachers, felt pleased to see how well the presenters were working with our Lead Teachers. They were planning staff meetings at their respective elementary schools to review this year's successes and failures as participants in the California Science Implementation Network (CSIN). Mary leaned toward me with a pained look on her face: "If you don't work something out for my fellow teachers, your project will get a black eye like you won't believe!" My pleased look melted as I sat down at the table and heard Mary's dilemma.

She was caught in a bind between her administrator's expectations and CSIN requirements. As Network members, teachers at the participating school can receive university credit for implementing one strand — physical, earth or life — of conceptually based science in their classroom and for participating in pedagogy and content sessions provided by the program. Some of the events are offered on schoolwide staff development days.

Each participating school designates a Lead Teacher as the main point of contact who receives intensive training to take back and use at the

school site, holding workshops and modeling lessons to help implement improved science instruction. In that role, Mary had worked with her principal the previous August to create an Action Plan allotting the required staff development time to the CSIN program. Now in March, as the year neared its end, Mary's principal had reneged on his commitment. At the last minute he decided that his staff would attend a day–long session on the new math materials recently adopted by the district instead of the science pedagogy sessions that Mary had been trained to conduct and had painstakingly planned. This meant that teachers who registered for university credit wouldn't be able to fulfill their obligation for the required hours.

I took this turn of events as a personal blow, and thought, "Oh, no! He's done it to me again!" This is the principal who was absent from the administrator training at the summer institute. This was also the principal who didn't show up for the one required Saturday meeting. Yet this principal was eager for his school to be a member of the network and had actively recruited a Lead Teacher from his staff. Impulsively I thought "Get this school OUT of the network for the next year!"

After mulling it over a while, I tried to look at the situation from the principal's view. I sensed that this principal wanted it all: a stellar science program, a cutting edge math program, and any other innovative program that presented itself for the school to adopt. I knew, from my days working as a curriculum specialist with content areas other than science, that there loomed a sense of the "quick fix" in approaching school reform in general. The California instructional materials cycle allows little time for implementing one set of content materials before introducing a new curriculum framework and brand new materials in another content area. Add this to the current media frenzy about school reform, and a principal can easily become overwhelmed with a bewildering array of curriculum innovations to choose from. I am also aware of the research on school change that points out the difficult situation for schools tackling multiple reforms at the same time.

I remembered Michael Fullan's warning to schools who engage in *add–onitis* or *projectitis* — the tendency to become more consumed with the quantity rather than the effectiveness of curriculum efforts.

I also evaluated my position as network leader. Who do I support here? Often I am taken into the confidence of principals as well as teachers and frequently I mediate between the two when problems arise. I must often straddle the line between supporter of each as I attempt to make the program work. Ann Lieberman and Milbrey McLaughlin have written about networks as powerful vehicles for school change as well as the interesting "multicultural" role of network leader, who needs to be comfortable in the world of both teachers and administrators, the classroom and boardroom.

What should I do about Mary's dilemma? Compromise the requirements for university credit? This was an option I didn't even have the authority to adjust. Should I approach the principal? Evidently Mary had already confronted him with the problem he was creating, but he remained firm in his decision and mumbled something about not being able to "fit it all in." Do I simply do nothing, knowing that several members of Mary's staff will not get the credit they expect? I wasn't exactly sure what Mary's "black eye for the project" meant, but I knew I didn't want it!

In retrospect, I should have seen this coming. There had been plenty of signals. Mary's principal had called her into the office and told her the school would be emphasizing math instead of science for the year, so all Mary's plans for implementing the science program would have to take second place to math. At one of the first network meetings Mary wondered aloud to me why she spent two weeks of her summer preparing to be a Lead Teacher at her site.

I remembered another revealing incident. Although the network is composed entirely of teachers, administrators also receive training because their informed support is crucial to the often tricky process of

school change. This required attending a meeting in January. Few principals are eager to give up a Saturday for this event, but most come. When Mary arrived with the rest of the Lead Teachers and Administrators and discovered that her principal was not there, she said dejectedly, "Oh, well, why should I be surprised? You know he doesn't really care about all the work I've put into science as a Lead Teacher at our school. Here I've given up a Saturday, but I can't even fully participate in the sessions that require a school team because my principal doesn't see the value of this." I listened to her comments with a tinge of guilt. A week earlier I had run into her principal. I reminded him of the meeting, acting upbeat and friendly, and said I hoped I'd see him there. "Oh, that meeting," he said, "I figure I've heard all I need to hear about CSIN." From that comment, I guessed correctly that he would not be attending. Should I have warned her of this?

Now near the end of the year it was all coming to a head in the forfeiture of university credit. I thought for a long time about what to do about Mary. She had been working hard in the program and had fulfilled her responsibilities as a Lead Teacher throughout the year. Mary took some important first steps toward leadership at her school and capably ran the CSIN staff events there. She stood up in front of the entire Lead Teacher group — all 100 of them – to share a parent science event she designed, an idea many teachers found useful. Despite complaints about the time she needed to devote to the Lead Teacher role, Mary hung in there, attended all events, and made some new friends, too. Now her principal's lack of support seemed to be undoing all this. What was my role as a regional director? What could I do to support Mary, yet not alienate the principal and still meet the requirements for university credit?

I finally decided to support Mary by suggesting a compromise. We planned several after-school meetings as a way to compensate for the staff development day that the principal took away. On the up side, this enabled the teachers to receive their university credit. On the

down side, the after-school time was less than optimum; it was grudgingly attended and generally lacked the quality of the originally planned event.

As I reflect on this experience, I feel compelled to examine my role as a nurturer of Lead Teachers. As Michael Fullan says, schools are in the midst of "multiple simultaneous innovations." I'd like to mandate that science reform through CSIN should be one of the most important, but in the real world that certainly won't work. There is much competition for school–site staff development time with teachers. How can I be more proactive to help create an environment for program success?

I believe administrative support is a key to the success of a teacher leader. Over and over again I have seen teachers blossom and grow because an administrator provided support and shared authority. Others, like Mary, seem well on their way to burn out, negativity and cynicism, which researchers on school change point out are the results of schools constantly adopting unrelated, short-term innovations. I am not really sure how to assist teachers who face the challenge of an unsupportive administrator.

Facilitator Notes
Your Project Will Get a Black Eye!

Questions and Issues

The staff developer (Judi) in this case was caught between a rock and a hard place. After providing verbal support for the CSIN project, recruiting a Lead Teacher, and supporting staff to participate in the network all year, a principal made it very difficult for these teachers to complete the necessary requirements for the program and receive the promised university credits. This case has many dimensions and can be used with many audiences — staff developers, teachers, administrators, and policy-makers.

Major Issue Clusters

Importance of principal support

If there is one thing that all school reformers agree on, it's that the principal is central for making change happen. Principals can make or break a reform effort, especially when the reform competes with other district initiatives. The principal in this case provided support for the CSIN project and encouraged his teachers to participate. But he undermined the success of the program by ignoring the initial professional development institute and reneging on his commitment to let teachers attend all in-service sessions. From the perspective of a staff developer, this principal could be considered a "bad guy" for destroying the success of her project. But it's important to look at this case from the principal's perspective. Why would a reasonable principal renege on his commitment to teachers? He must know this would create dissension among his faculty. Why risk this? What other pressures does he face in his role? How does/should he deal with multiple curriculum reform initiatives when they all compete for the same resources and time?

What's at stake for Mary, the participating teachers, and other potential teacher leaders?

As one pilot discussion group noted, there was an "emotional undercurrent" among the teachers and Mary. The teachers were angry that they could not finish their requirements and get the promised university credit. And Mary was angry that she did not receive more support and recognition for her efforts. She was afraid of "losing face" with the other teachers, but thought she had no power to change the principal's mandate. Is there something that the teachers and Mary could have done to prevent this problem? What are the tradeoffs for each proposed strategy? How might this type of situation influence any teacher's motivation to be a Lead Teacher for a reform effort?

What can/should staff developers do to encourage stronger principal support?

Some reformers invite — and often insist on — teams of teachers and principals at in–service institutes. This is a sensible tactic, because there is a greater likelihood that principals will understand what is at stake in the reform and be more inclined to endorse the necessary professional development. The dilemma is, however, if a principal decides that he cannot be at an institute, as happened in this case, do you deny the professional development opportunity to teachers who want it? What are some other ways to encourage stronger support from principals? Some participants in our pilot discussions suggested that staff developers should work with superintendents as well as principals. What are some risks and benefits of this approach?

What can staff developers do to support teachers "who face the challenge of an unsupportive principal?"

In this case, Judi's solution to her immediate problem was to suggest a series of after–school meetings to compensate for the missed in–service day. This was clearly a compromise to deal with the situation at–hand. But she asks several larger questions. In her role as regional director of a reform project, who are her immediate clients? She is often called upon to mediate problems by both principals and teachers. What could she have done to prevent this situation? What can she do proactively to prevent similar problems in the future? Are there principles of action that can apply to all reform efforts?

Keeping science in the forefront

All reformers agree that change takes time; there are no short cuts to substantive changes in teaching. Yet in the current reform climate, principals and teachers are faced with potential reforms in all of the curricular areas — especially in reading and mathematics. How can staff developers, principals, and teachers focus enough time on changes in science teaching, when they are faced with both a "quick–fix" mentality and the constant pressure to raise reading and mathematics test scores?

Case Two
Managing Misconceptions

by Linda Hagelin
Instructor, Teacher Programs, Monterey Bay Aquarium

"Watch the goldfish breathe," Sandra enthusiastically urged the small groups of teachers clustered around a number of jars containing the fish. This was Sandra's moment. She was part of a team from her school that had completed the summer teachers' institute training at our aquarium. Each year, the aquarium provides groups of teachers two intensive weeks of science workshops, including field experience, lectures from scientists, and classroom activities. There are follow-up weekends during the school year, and an expectation that the teachers will share their experiences with colleagues in an in-service workshop. I am a K–8 science teacher who works on the aquarium staff to produce these summer institutes. I was delighted to be invited to the workshop Sandra and her team were presenting at their school, since staff attendance is in no way required.

Things had gone quite well up to this point, with interesting and engaging activities presented by other team members. Sandra was the least confident member of her team. She had very little science background, but was enthusiastic about her summer experience at the aquarium. I joined a group of her colleagues gazing closely at the movements of the goldfish. "Notice how the fish opens his mouth, takes in water, closes his mouth, and the water is forced over the gills,"

she continued. "The fish takes oxygen out of the water ... of course ... WATER IS H_2O, ISN'T IT?"

I felt as though I had been hit by a truck. Hadn't this concept been clearly taught during the institute Sandra attended? It was dismaying that this teacher thought the fish was getting oxygen by breaking up molecules of water. This would mean that the water in the ocean, lakes and rivers of the world was disappearing because all the fish were breaking down water to extract the oxygen? Sandra had stated a common misconception held by children. She had misunderstood the fact that the oxygen from the atmosphere is readily DISSOLVED in water, and it is this dissolved oxygen that fish and other aquatic animals take in through their gills.

No one said anything. The lesson proceeded while I agonized over what to do. I didn't come as a supervisor, but even as a supervisor my dilemma would be the same. "If not addressed, how many students might be taught this misinformation?" I asked myself: "How much damage does it do to let the misstatement go unchallenged?" There were 12 teachers attending who would return to their classrooms to possibly teach the misconception to hundreds of children. But how do I correct a misstatement in front of Sandra's peers without humiliating her? I decided to try a subtle approach. During the question/comment time at the end of the workshop, I shared an "idea" about ways to show students that fish breathe oxygen that is dissolved in water. I emphasized that it is a concept that's often misunderstood, since we can't "see" oxygen dissolve the way, for example, sugar does. I tried to highlight the fact that gases dissolve in water as many solids do, we just can't see the gas. When the session was over I left feeling there must be other ways to handle this kind of problem.

Facilitator Notes
Managing Misconceptions

Questions and Issues

Hearing someone give the wrong information or seeing an inappropriate activity unfold usually places the observer in a very uncomfortable position. The incident described by Linda — a staff developer — is similar to that encountered by teachers watching students in a peer teaching situation or by supervisors of student teachers during an observation. The simple question posed by the author is how do you correct someone without offending them and/or embarrassing them in front of others, yet there are many larger issues within this seemingly short case that lead to rich discussion for teachers and professional developers.

Major Issue Clusters

The role of misconceptions in learning

Using misconceptions as a teaching tool can be very effective; but identifying the misconceptions that others hold is not always easy. As program planners and staff developers we must decide how and where to address misconceptions, what to do to help people unpack preconceived ideas that may be incorrect and inhibit real learning from taking hold, and how to help participants think through their own understandings. Our experience shows us that it often takes longer to unpack misconceptions than the time we allocate, so it is not surprising that teachers like Sandra leave an institute still holding on to their old ideas.

Conversation in our pilot discussions often centered around who really held the misconception, what was that misconception, and whether lack of knowledge is the same as misunderstanding. When participants wondered about Linda's understanding of the science concepts as well as Sandra's, an opportunity was provided for a short science lesson to clarify the particular concepts in the case.

How do we plan for quality control in our own professional development programs, especially those designed in a training–of–trainers mode?

Many participants wondered whether it's necessary to test teachers' knowledge before they participate in providing professional development to others. Such an assessment might have prevented Sandra from giving incorrect information; yet, what kind of assessment would have been appropriate? What methods are available for trying to ensure that concepts and pedagogy that people learn in our professional development programs are subsequently taught correctly to students or other teachers? What is our obligation for trying to ensure that protocols followed in training-of-trainers workshops are followed out in the field?

What follow-up services need to be provided to those who participate in professional development programs, especially in training–of–trainers activities?

In reading the case we are not sure what guidance has been provided to Sandra for sharing her experiences with her colleagues. Did she have an opportunity to practice and perfect a lesson under the supervision of the Institute staff? We wonder exactly what follow-up activities the Institute provides, other than the weekend sessions, and what those weekends include. We can't help but ask ourselves if there are differences between providing direct service to teachers and to those expected to share what they learn with others. If there are differences, then must those programs be designed differently? Must they both include follow-up support, and, if so, are there good models for such follow–up activities?

What might have been the best way to handle the incident?

This case was written almost eight years after the actual incident because the dilemma is still bothering the author. Even today, she is not sure she handled it correctly and is wondering whether and how supervisors, teachers, and staff developers comfortably deal with correcting someone publicly without causing embarrassment or prideful injury. Was there a way that a safe environment could have been created so that Sandra's misconceptions could have been corrected on the spot and the incident turned into a teachable moment?

Case Three
What to Do About Rob?

by Diane Demee Benoit
Education Director, San Francisco Zoological Society

It was a chilly December morning. The workshop started as usual at 8.30 a.m. with 30 teachers huddled at the front gate waiting to be let in. Hurrying to the gate, I tried to pick out familiar faces while mentally preparing for the "curtain to rise." Workshops are as much about good showmanship and presentation as they are about good science teaching.

As an education director at a major zoological park, I am responsible for communicating the Zoo's conservation mission through developing focused exhibits for the public, preparing zoo guides for their tours with children, creating educational materials and more. But it's doing teacher workshops I often find the most rewarding.

Knowing that the most successful workshops entertain as well as educate, I rehearse and run through the day's program forwards and backwards. At the same time, I keep in the back of my mind the importance of remaining flexible. Each rain forest workshop is different because each group of teachers comes with different expectations and interests, and with varying levels of knowledge in the biological sciences. This is what makes our workshops a dynamic exchange of information between presenter and participant. But it's also why, despite all my planning and its built-in flexibility, there is always something that surprises me.

An hour and a half into the workshop, I was satisfied that we were on schedule and that the teachers were learning and enjoying themselves. They had built a three–dimensional rain forest, placing animals into its different layers according to their adaptations. The day was fast–paced, but not hectic; the biology content seemed perfectly balanced with the hands–on activities that modeled how concepts could be applied.

Then, during the coffee break, a tall teacher named Rob anxiously approached me: "Diane, I'm glad I finally got to meet you and take this workshop. I've been teaching this subject for a number of years and have some ideas to share and questions to ask the other teachers. Will there be an opportunity for teachers to share what they're currently doing in their classrooms?" I was excited that Rob had ideas because that is how I learn new things as well. I assured him that we had allocated time at the end of the workshop for this very purpose.

Later, during our lunch break, Rob approached me a second time. "I just want to confirm that sharing ideas will still be possible," he said. "Teachers need to provide their students with action steps they can take to promote conservation." I was thrilled. Often what's missing in classroom teaching are real life applications. I replied that we were running right on schedule and that I recognized how important sharing time between teachers is because when isolated in the classroom they don't have that opportunity. Rob would have his chance.

The afternoon went smoothly. Everyone was enthusiastic. We had covered all I had planned. I could now relax and learn new things from the teachers. It was their turn to share. I asked if anyone had some extension activities to offer. Rob was the first to volunteer, saying that he wanted to discuss the teacher's role in promoting environmental activism among students and other teachers. The problem, Rob declared, is that students don't believe individuals can make a difference in solving a global problem. He asked the group if they had any ideas about activities that would empower students. Several people suggested recycling aluminum cans (because bauxite ore is mined in

the tropics and this is a major component of aluminum cans) or raising money to purchase rain forest acreage. I mentioned the Zoo's fundraising to build an environmental center in Madagascar to teach Malagasy children about their tropical forests. Rob seemed dissatisfied. Everyone was trying to be helpful but no one could quite figure out what Rob was after. Several teachers recommended rain forests as a topic for an integrated curriculum.

By now Rob was more visibly frustrated. He stood up and turned to face the other teachers, making his tall frame a "human wall" that separated me from the group. He proudly announced that his junior high classes had undertaken a letter writing campaign targeting a multinational corporation. They had written to numerous retail outlets notifying them of this company's bad environmental practices, adding that the students and their parents would not purchase products from that corporation. "If all teachers got together we might be able to influence our districts to join us in this campaign," offered Rob.

He paused, expecting a response from the other teachers. They were perplexed; some seemed stunned. Most weren't even in his district. During this lull in the conversation I "dove in." I tried to validate Rob's concerns about environmental activism. I observed that letter writing was an important tool, but stressed that there are always two sides to any issue. A teacher's responsibility is to present the facts based on sound scientific methods and stimulate critical thinking among students. I suggested students write to companies that are seeking more environmentally sound practices, because positive reinforcement for corporations is often neglected. After my remarks, I tried to redirect back to the teachers since this was their "sharing time." I asked if anyone else had something to share about activities or ideas for an integrated unit using tropical rain forests as the topic. The teachers were silent, collecting their thoughts, sensing that Rob was poised to "jump in" once again.

He did, pressing on with his solicitation. As he spoke I was watching the clock, trying to think of a way to stop him without being rude.

The workshop activities were complete so I didn't feel that Rob was taking time away from me, but I didn't want him to make the workshop end on a sour note. I was bewildered that the other teachers, almost all women, let Rob control their sharing time.

Feeling myself becoming annoyed, I thought back on my past experiences working with men. Before becoming an educator in the zoo, I worked for the California Department of Fish and Game. At that time wildlife management was a career dominated by men. While the two men I worked with on a daily basis were my colleagues and friends, the "old–timers" (who were focused on "game" species rather than endangered species) did not take women very seriously. My being a petite, mixed Asian woman, who came from liberal Berkeley, California, may have made them feel even less comfortable with me. It was through these experiences — working alongside and sharing information with a "difficult" audience — that I gained confidence in my teaching abilities.

So here was this imposing man who reminded me so much of other men I had encountered over 15 years ago. But Rob was a puzzle in a puzzling situation quite unlike anything I had encountered at other workshops. He was a "bully," but his intent was honorable and he had a point. His passionate plea stirred our empathy, which made it hard to just cut him off. He seemed desperate; everyone wanted to help, but we couldn't understand what he wanted. Finally, Rob was a dedicated teacher just like the others in the room, and he patiently waited all day and followed along with the agenda until this specific time set aside for teachers to share their ideas. Rob was sharing, but he was also monopolizing. I expected the other teachers to jump in if they had as much "passion" for and confidence in their own ideas, but they didn't. I appreciated Rob's mission but was uncomfortable with his approach.

Case Four
Through the Eyes of a Participant

by Stephanie Wald
Teacher, All Soul's Catholic School

The rain forest workshop was moving along at a rapid pace; it had been carefully orchestrated to pack the day with useful information and activities. After an informative slide presentation and lecture on rain forest ecology and biodiversity, the other teachers and I engaged in activities we could use in our classrooms. For example, we used cut–out pictures of rain forest animals, consulted with our group to decide which layer of the rain forest to place them into according to their adaptations — such as forest floor, understory, or canopy — and then placed the pictures in the rain forest diorama. After lunch we toured the Zoo with a docent who provided us with information on the rain forest animals to be seen at the Zoo. This was followed by a game of "Rain Forest Jeopardy" to review what we'd learned.

I am the only science teacher for the junior high students in a small Catholic school that has one class per grade level and 30 to 38 students per class. I also serve as the science resource teacher for kindergarten through fifth–grade teachers. So I'm always looking for more to add to my "bag of tools," ways to expand my knowledge and acquire ideas that will energize my students. Workshops like this one, given by the San Francisco Zoo, have been an invaluable resource during my four years of teaching. They allow me to participate in new teaching activities, observing the dynamics and preparation required for using

them with students. Equally important, they provide an opportunity for teachers to network, share valuable ideas, talk about problems, and perhaps improve activities they're currently using in their classrooms.

It was getting close to the end of the workshop, the time allotted for sharing ideas with the other teachers. The facilitator opened the discussion for sharing extension activities. The first teacher to take advantage of the opportunity was a middle school teacher, Rob. At first, Rob seemed genuinely interested in hearing other people's suggestions. He asked if we had any ideas about projects that would make students environmentally responsible. Some teachers suggested putting students in charge of aluminum can and paper recycling programs in the school. Rob did not seem satisfied with these suggestions. He asked the same questions again.

Someone else suggested providing students with a forum to discuss environmental issues. This did not satisfy Rob, either. He had some idea of his own in mind — a letter writing campaign. The teachers agreed this was an important method for voicing concerns. But these supportive responses still were not enough. As Rob persisted in his questioning, I saw the clear similarity between what was going on here and interactions in my own classroom when one student monopolizes the class discussion. This is a difficult but important situation for a classroom teacher to control because all students' ideas matter and everyone has the right to an opportunity to express their thoughts and ask questions. From my perspective, Rob was seeking support from all the teachers for his letter writing campaign and wanted us to follow his example.

The workshop facilitator redirected the conversation back to sharing extension activities. A few teachers volunteered ideas like recycling that linked curriculum areas. Rob quickly steered the topic back to his letter writing campaign. He declared that teachers needed to put pressure on school boards to establish districtwide policies regarding environmental education. At this point, Rob's passionate persistence

prevented other teachers from participating in sharing. I had ideas I wanted to offer, but felt that it was pointless to even attempt to voice them knowing that Rob was still seeking attention. The facilitator interrupted Rob and said that because time was running out, all interested parties could continue this discussion after the workshop.

I was really disappointed that we weren't going to hear and discuss other people's ideas. As I drove home I felt frustrated and angry. I wondered what would have happened if it had been a female teacher that persisted in the questioning and rallying for support. Rob was one of two or three male teachers at the workshop and he was rather tall. There were 27 or 28 females, most of them primary–level teachers. Although his tone of voice was not intimidating, his determination seemed to discourage other teachers from making suggestions. I realize I have a tendency to back down when dealing with male teachers who are passionate about their ideas. I give in or avoid confrontation if it's an issue I don't feel strongly about. My own idea of modifying the large scale rain forest model into a three-dimensional student-sized poster into which students could put their own carefully researched animals and plants was lost in Rob's persistence to get his idea across. In my mind, my more small–scale idea became less important to share. I left wondering how many other teachers felt the same way?

Facilitator Notes

What to Do About Rob?
and
Through the Eyes of a Participant

Questions and Issues

These two cases describe the same incident from different perspectives. They deal with the dilemma of what to do when someone — in this situation, a tall male teacher — dominates a workshop at the expense of other participants, and all attempts to curb his behavior fail. What to do About Rob? *tells the story from the facilitator's perspective, and* Through the Eyes of a Participant *portrays a participating teacher's view. Depending on your purpose, the time allotted for discussion, and makeup of your group, you can use either one case or both for your analysis. In our pilot, the groups appeared to prefer having both perspectives for their discussions.*

Major Issue Clusters

Gaining insight into the actors

Rob is characterized differently by each of the writers. Stephanie describes him as a "passionate" teacher with a specific goal: "to enlist the support of teachers for his letter-writing campaign" and not, as was directed, to share with other teachers. This made Stephanie angry because his persistence prevented others, including her, from sharing their experiences. Diane used the terms "bully" and "monopolize" to describe Rob's actions, but she was also "thrilled" by his desire to share and "stirred" by his "passionate plea." She depicted herself as "annoyed" with this behavior and "uncomfortable" with his approach. How do you account for these differences? What were Stephanie and Diane's respective goals for the workshop? (Probe for differing views on the importance of the sharing/networking time).

Dealing with domineering individuals

Most of us who have taught in a classroom or an in-service seminar have been confronted with domineering individuals. In fact, Stephanie draws a parallel between what happened in this workshop with what she sees in her classroom. What do you do when you are faced with a similar situation? How did Diane handle Rob's behavior? Can you think of other tactics she could have used that might have been more productive? What are the risks and benefits of each?

Both Diane and Stephanie recognize Rob's passion for his cause. Like Diane, several participants in our pilot were pleased to see his enthusiasm and wished that more of their colleagues would be as excited about scientific concerns. But Rob's approach clearly alienated many teachers in this case. How might you channel Rob's energy more constructively? How can you utilize individuals like Rob in your professional development seminars?

Gender/status issues

Both Stephanie and Diane, as well as several teachers in our pilot, speculated that gender and status issues affected this case. Diane notes her own past discomfort in working with dominant men; she wonders why the other teachers didn't "jump in [to stop him] if they had as much passion and confidence in their own ideas." How do you analyze the situation? What might have happened if Rob were a woman?

Stephanie feels that some teachers might be silenced by perceived status differences since most participants were primary teachers. Status differences are problematic in any group endeavor because they can cause inequitable participation. How might you intervene so that participants feel equally comfortable to make contributions? What are the tradeoffs for each proposed strategy? Whose responsibility is it to ensure equity, the facilitator or group members?

Political advocacy: A boon or bane for professional development in science?

Several teachers in our pilot questioned whether Rob's mission was appropriate to discuss in a science in-service seminar. Others were pleased to see a teacher actively involved with environmental issues, trying to persuade his colleagues to deal with "real world concerns." What do you think? Provide a rationale for your response.

Case Five
Girls in Science: Full Partners

by Patricia Kudritzki
Teacher, Aptos Middle School (San Francisco)

When teachers talk about improving learning in "inner city" schools, it's basically code for dealing with the effects of chronic poverty, social injustice, and the breakdown of the family. We're always looking for strategies to better meet the challenges that stare us in the face — low reading levels, poor self–esteem, problem behavior. By the time my students reach middle school, many aren't buying into their own education. An important part of my job is to find ways to make learning science exciting, to build on the resilience and curiosity students bring with them. But another challenge, every bit as important, gets lost in these efforts — to fully include girls. As I recently discovered for myself, we're conditioned not to see how our own teaching perpetuates inequities in the classroom.

Teachers have worked hard to enrich the science culture at my school. Two years ago a fellow science teacher, a local university research scientist, and I considered the notion of an after–school science club. One of the ideas we kicked around was applying to the Triad project which sponsors all-girls science clubs. This program is funded by the National Science Foundation as a vehicle for research on gender equity issues and strategies both inside and outside the science classroom. But we all agreed that the idea of ONLY girls was too limited. We didn't

see the need for this type of support for the girls. My colleague and the research scientist went ahead with the coed club but were disappointed in the small number of girls who joined, and the even smaller number who stayed. Meanwhile the scientist shared a book with us that would bring about permanent changes in our thinking.

The book, Myra and David Sadker's *Failing at Fairness*[1], presents two decades of classroom research that indicts the American school system for maintaining second class citizenship for females. The pivotal data in their research were SAT scores that showed girls falling 50 points behind boys. The book reveals that the uneven distribution of teacher time, energy, attention, and talent radically shortchanges girls' education and their futures. Girls lose out in classroom discussions and in opportunities to participate in hands-on science because teachers fail to utilize strategies that offset the more assertive behavior of the boys. In the middle school years, girls start a downward spiral of lowering self-esteem, declining achievement, and consequently the loss of future career opportunities.

Last spring when I read *Failing at Fairness* and learned how teacher strategies discount girls I felt awful, worse than awful — more like a traitor. In my sixth-grade science class I often called on the first, most eager hands (boys), and acknowledged blurted–out remarks (boys), particularly if I deemed them insightful, on–target, or inspiring. I randomly called on bright girls, predominantly those who didn't raise their hands, to encourage them to speak. However, I didn't always give them time, if they faltered, to collect their thoughts.

Was I off base! These learners were not getting validated, much less a chance to shine. I didn't underestimate their intelligence or comprehension, but I wasn't giving them a chance to be successful in the classroom.

As the school year was coming to a close I began to wonder how I could find out if girls felt they received support as science students.

I chose to take an informal survey of my sixth–grade honors class because girls in that class were so successful academically. These girls achieved in many areas: they placed in science fair competition, dominated the "A" range, and wrote the most thoughtful and articulate science essays. Yet not one of the 14 girls felt supported by parents, teachers, or peers in their efforts in science class, compared to 70 percent of the boys who felt supported. Only one girl expressed an interest in science, whereas two out of three boys did. This survey was a wake-up call!!

Over the summer the coed science club partners, another scientist interested in gender equity, and I submitted an application to sponsor a girls Triad Club at our school. I included data from my informal survey in our application and eagerly waited for a response. Before the start of school this year, we learned we had been selected.

I also started off early this year addressing the gender issue. Having reread *Failing at Fairness* and then *School Girls*[2] by Peggy Orenstein, I wanted to do some more research of my own. I put the gender issue to my students, giving an open essay assignment (from Judy Logan's chapter in *School Girls*): "What would it have been like for you to grow up as a member of the opposite sex? How would your life have been different?"

The girls' essays were filled with envy for the boys and regret about how their parents (especially their dads) treated them as inferior and less capable. They longed for more responsibility, more opportunities, and a wider range of acceptable behaviors. Many of the boys' essays were dismal, ranging from disdain to "I would kill myself if I had to be a girl."

I shared papers anonymously with the class and we discussed what we had unearthed. What are gender roles? This discussion empowered the girls to express their resistance to the stereotypes: Barbies, pink, helplessness, giggling, etc. Hearing their own words read aloud, some of the boys expressed concern about the insensitivity of their comments. When I read a girl's paper about wishing her dad would let

her work with him in his workshop, one boy leaned over to another to say in a stifled whisper, "Can you imagine not being able to use tools?"

During classes I worked on altering my own strategies. I discouraged blurting–out. I gave extra time to allow several hands to rise after a question. I gave girls I called on time to collect their thoughts and then I drew them out. I encouraged girls to take an active role in group work and in the use of materials for hands-on activities. Above all, I worked on silent messages: maintaining eye contact, modeling assertive behavior, listening carefully in order to make the speaker feel more important. This effort is a work in progress, yet I have seen significant changes already.

I took what I had learned from the books and from my classroom as the foundation for the girls' science club. I recruited 17 girls from my classes to join. At the club meetings the format typically began with a pre–activity brainstorming on the day's topic, followed by a hands–on activity in groups of two to four (e.g., dry ice experiments, flower dissection under the microscope, building an electronic buzzer, frog dissection activities). Overarching investigative questions were posed. Groups used a worksheet as a guide for the activity and one of the Triad adults, a scientist or a teacher, acted as a coach. At the close, groups reported out their responses to the questions. In the pre–activity and in the report–out discussions, the same behaviors I had observed in the coed classroom were evident. More assertive girls called out answers, although they were not necessarily the outspoken girls in the classroom. We (the four club leaders) worked to encourage participation and not to validate dominating behaviors. In the activities, the more aggressive girls in some groups monopolized the materials. We were concerned about encouraging all girls to be active participants — both to reflect their active and intuitive minds and to contribute to the overall learning experience in the club.

I noticed that several of the girls who were engaged and enthusiastic when I worked with them during activities never voluntarily spoke out at meetings. Although obviously learning, these girls were not

displaying behaviors that *Failing at Fairness* deemed crucial to their success. I had many questions: Is it essential for girls' success in science to increase their whole-group participation? Did the behavior in the girls' science club environment point to a personality as well as a social issue? Is the male model of public assertiveness the one we want the girls to emulate?

Epilogue

The girls' science club has been one of the most powerful learning experiences that I have participated in. Not only for me, but also for the girls. We found out from a survey of the eight middle school clubs and through some in-depth interviews that 86 percent of the girls felt that the experience with the scientists had made an impact on their lives. Working with the scientists dispelled some major misconceptions they had about what scientists are like and what they do. The girls were also very appreciative of the all–girl environment. One of the eighth graders wrote in a thank you note to the scientists, "You have been like sisters to us."

There have been dramatic changes in many of the girls. Anita, for example, blushed and stammered when called on at the beginning of the year. Her fragmented responses were barely audible. After a year participating in the girls' science club, she volunteered to introduce a Triad-sponsored wildlife assembly in front of the entire sixth and seventh grades. "Trust me," she said to the audience of her peers, "join the girls' science club. I used to be quiet in class, now I have more self-esteem and I speak out."

I am eager to see the impact on the girls as many of them continue on for a second year in a supportive science environment. I have no doubt they will blossom and set a high standard for female performance in the science classroom and beyond.

[1] Sadker, Myra and David *Failing at Fairness*, Simon & Schuster, New York, 1994.
[2] Orenstein, Peggy (Ed) *School Girls*, Doubleday, New York, 1994.

Facilitator Notes
Girls in Science: Full Partners

Questions and Issues

This case is about a teacher's action research project on gender equity within her own middle school classroom. Patricia Kudritzki shows us how to use data as a tool to define problems and create solutions as she reflects upon what she learned about bias, gender stereotyping, and cultural role assignments, as well as what she learned about her own assumptions and behaviors.

All groups who have discussed this case have found it to be both authentic and disturbing. Most participants say that gender equity is an issue they had never before thought of as a problem. Following the discussion, they tell us of new insights about differences in female and male behaviors as well as insights about their own behaviors. During pilot testing, a very experienced group of female teachers involved in a gender equity summer program told us they were aghast when the case made them think about their own behaviors in the classroom; they had believed they were providing more support and opportunities for girls than they had themselves as students and now found they were perpetuating the same atmosphere they wanted to change.

We have found that deep discussion touches on many sensitive issues. In all groups the conversation has produced personal stories from both men and women about bias, as well as incidents of racial stereotyping compounding gender stereotypes. For some people, the memories are so painful that they have opted out of the discussion.

This case is extremely useful for groups of classroom teachers, professional developers, and program administrators. The purpose of the case is not merely to raise awareness of equity issues but, more importantly, to discuss whose responsibility it is to do something about implicit/explicit biases we find in classroom settings.

Major Issue Clusters

Gender-specific behavior and expectations

The achievement gap between boys and girls, documented in numerous reports over the last few years, has provoked much discussion and raised many questions. These same reports provide a backdrop both for the case and for the case discussion participants who are familiar with their findings and recommendations. Participants are especially interested in exploring the following questions: Are there indicators for success based on gender bias that may cause cultural conflicts as well? Do we overtly value behaviors traditionally assigned to males and is the male model of public assertiveness the one we want girls to emulate? When does gender stereotyping begin? Do we have and should we have different behavior and learning expectations for girls and boys? What classroom models do we need to create that will produce critical inquiry skills for all students? How does subject matter impact gender specific behaviors or does it? How do we get girls to recognize subtle pressures to accept certain roles, especially those provided through the media?

For those familiar with the urban setting of the case, assumptions about the ethnic/racial composition for Patricia's classroom provide rich discussion about the possibility that different races and ethnic groups might have different gender issues that impact the classroom. It is interesting to note that in several groups, African American educators stated that the gender issues are quite different in the African American community: girls seem to be succeeding academically and it is the boys who are in need of special attention.

It is also interesting to note that when there are males in the discussion group the dynamics change. Some males appear bewildered with the effect the case seems to have on women. Some women find themselves taking a passive role because of the men. Many times it is the males who provide the richest examples of attempts to encourage girls to be more active in their own learning. And always, the question arises about whether we (males and females) will ever be able to see the issues from the same perspective.

Changing behaviors and attitudes

Teachers need more information about gender bias in order to break through their own cultural barriers and truly understand the impact these issues have on student learning and performance. Currently the emphasis in science is for all students to have equal access and equal opportunity. Can we really provide for this? Strategies that engender equal access and equitable treatment for all are needed, but questions about what these strategies are and how teachers learn to use them effectively need to be raised.

Although the girls' science club in the case provided an opportunity for girls to take more active roles in their own learning, is it necessary to have single gender classes and clubs to change attitudes and behaviors or can it be done in a mixed classroom?

Whose responsibility is it?

We are still a long way from dealing effectively with fundamental issues about how we view ourselves as teachers and how we view society. Several questions can be raised to explore these issues: How do we recognize our own biases and change them? Whose responsibility is it to help teachers examine their biases as they manifest themselves within instruction? What types of professional development best encourages self-reflection followed by action? How essential is it to explicitly raise gender issues rather than just trying to change teacher behaviors? How are teachers who are in the process of making changes that will create more equitable learning environments best supported? A related and potentially volatile issue sometimes evolves as: Where do we draw the line in teaching so as to be sensitive to cultural and religious issues — whose issues do we need to be sensitive to and whose do we not "worry" about?

Case Six
Sink or Swim

by Hector Timourian, Ph.D.
Training Coordinator, Teaching Opportunities for Partners in Science (TOPS)

What do you do when you're in charge of a workshop and a participant quits in the middle saying, "I know how to teach science; I do not need to learn how to teach the way you want me to."

I am a scientist who has been engaged in science education for over 20 years. After my retirement, I helped form the TOPS (Teaching Opportunities for Partners in Science) program. We select, train and place retired scientists and engineers in elementary schools to help teach science. In preparation for their year–long school placement, the scientists are required to attend a four-day summer institute. One of our goals here is to have the scientists get caught in the excitement of discovery by participating in very simple hands–on science activities. From my experience, I know that the most important thing the scientists can do is validate the students' sense of wonder and help them learn how to learn. I've found that scientists are more likely to help children make the connection between doing and learning science if they themselves first participate in similar kinds of activities. During the four days, scientists are introduced to the meaning behind the jargon of education. Once they get through the vocabulary, scientists usually understand the concepts of constructivism and accept the importance of discovery learning and

hands-on activities using developmentally appropriate materials. Jose was an exception!

In one summer institute, I had given an assignment designed to help participants tailor their scientific knowledge to the grade level and interest of students. Working in pairs, the scientists were to develop a lesson on a subject not in their own field of expertise. This was to be a hands–on lesson, and I had asked them to prepare it using the schools' adopted science materials and teach it to their colleagues who were to role play as students. I had asked them to prepare all aspects of the lesson: locating hands-on materials, explaining what the students were expected to know ahead of time, and then helping the students carry out the activities. Part of the assignment was to define an appropriate grade level for each lesson. Most important, they were to identify one concept for the students to learn. A major goal was to help them understand the importance of teaching one scientific concept at a time. The assignment was due the next day, so the partners had an afternoon and evening to get together and to scrounge around for the materials. Before making the assignment, we spent some time reviewing the evidence that supports how children learn science best — through hands–on activities. We also discussed how the lecture format was not necessarily appropriate or effective in elementary school.

The next day, each pair of scientists had 30 minutes to teach their lesson. Most of the teams did quite well with the assignment. For example, one of the lessons dealt with the concept of density as taught to kindergarten students. The lesson was called *Sinkers and Floaters* and the main intent was for students to discover that objects could be sorted by whether they sank or floated. The pair in charge of this lesson brought a number of objects the students were to test and buckets full of water so that everyone was able to participate. The presenter started by asking the students to predict which objects would float and which would sink. One of the (scientist) students asked, "What does predict mean, is it just like guessing?" This led to rich discussions about how they would explain to students about

predicting and the role of predictions in the scientific method. Everyone got into the act, and soon they realized they had to use language and concepts that kindergarten children understood.

Not all the presentations went this well, and one just got out of control. Jose did not want to work as a team member, but instead said he wanted to prepare a lesson by himself. I allowed him to do this because I know it's difficult to get some people to comply completely. I was not about to force Jose into compliance. I was more interested in having him go through the process of developing a suitable lesson for a specific grade level. He actually showed up just in time for his own presentation so he didn't have the opportunity to see the others. He brought a number of objects he had collected — pieces of wood, rocks, plants, a stuffed eagle, ice and hot water in a thermos, a candle — and placed them on a table. He then started to lecture. He told how the universe is made out of atoms and how all the objects he had in front of him were made out of atoms. He then explained how some of the objects were living and others, nonliving. Then he explained about living objects that were dead and therefore called organic. As he continued talking, I realized he had not followed any of the instructions for developing a lesson.

After about 10 minutes, I decided that I could not let him go on. I tried to confront him in a gentle way by reminding him of the assignment. I asked him, "What is the basic concept you want to teach?" "Science," he responded. I asked him what grade level he had prepared the lesson for. He said, "All children." I kept asking him if he had followed the instructions I had given on how to prepare a lesson for this exercise. I was concerned not only about his presentation, but how the other scientists were affected.

Jose said that he was too old to do things he didn't want to do and didn't want to learn things differently. He conveyed the feeling that perhaps the training and the emphasis on hands–on was not necessary,

since he had learned science by the lecture mode and not by hands–on experimentation. He just left and later dropped out of the program.

After this happened, it was difficult to get the group to continue with the assignment the way I had planned. It was especially difficult for me, when another scientist started to *teach* his lesson talking from a view–graph without involving any one else. "Is he going to start another lecture?" I wondered. "How can I intervene without having him quit? If I let another lecture go on, can I keep the integrity of the program that emphasizes participatory learning?"

Facilitator Notes
Sink or Swim

Questions and Issues

The case describes tensions that can arise in a professional development program around the use (or absence) of models. We are asked to think about what to do when a participant doesn't follow our instructions and how to handle behavior that is disruptive to a group. In this case, Hector, a retired scientist, is training other scientists to work as classroom volunteers. In similar situations, it may be an experienced teacher who takes the position that he/she already knows the best way to do things and becomes disruptive to the intended professional development process. Often teachers see themselves as victims of staff development, having no say in the content or format of a mandatory workshop. Those conducting the mandatory sessions find themselves facing unreceptive and sometimes hostile audiences. Exploring both perspectives is key to rich discussions about effective professional development.

Major Issue Clusters

What do you do when a participant refuses to engage in the planned activities of a staff development workshop?

In this case, Jose was not willing to follow the directions for the assignment: he would not work with a partner, he did not choose a single science concept for a specific grade–level audience, and he did not observe other scientists giving model lessons. Although he brought objects to his presentation, he proceeded to lecture, using the objects as visual aids rather than hands–on materials. Hector was worried that Jose would have a negative impact on the other scientists. Should he have stopped Jose before he finished his presentation or was there another way to handle this? What if Jose had been allowed to finish and a debriefing had followed? In short, when do you "cut your losses" and lose one to save the group?

This situation is similar to the one described in *Managing Misconceptions*. We ask ourselves, how do you correct someone without offending him or her? How can you turn the situation into a *teachable moment?*

Change is hard

It appears that Hector may not have provided a good model for the scientists by using a lecture mode and expecting an interactive, hands-on lesson as a result. We try to understand whether convincing evidence has been used to get participants to consider why more active learning strategies should be employed with elementary students, after all, the scientists were all successful learners in the more traditional lecture–lab–memorize mode. We question whether there is evidence that one type of instruction is really more successful than another. We wonder about effective models for challenging fixed notions of *the only way to do it* and whether we should expect teachers to accept new practices without proof of effectiveness. Research suggests that change creates a decrease in one's comfort level and confidence, and causes stress, so even if we have the evidence, what else must we do to get buy-in for making change to practice? And if people decide to make change, what type of support can we provide to minimize the stress?

Change is hard. In one discussion group, some participants defended Jose's actions, stating that Hector was too rigid and controlling. They went on to say that both Hector and Jose were feeling threatened, and neither of them was open to change.

Using volunteers in the classroom

In this case, Hector is working to prepare content-specialists (scientists) to work as volunteers in elementary classrooms to "help teach science." There are many volunteer programs that provide valuable services to schools and classrooms. Discussing the attributes of these programs is a useful line of inquiry for program developers, administrators, and classroom teachers. What kind of screening process would be helpful in selecting appropriate volunteers? Would such a process have identified Jose as a potential problem? How do we acknowledge the expectations of the volunteers and of the classroom teachers? When bringing non-educator volunteers into classrooms, what type of training and how much of it is necessary for the volunteers? What kind of professional development might help teachers to work more effectively with volunteers?

Building on participants' experience

How do you model the type of instruction you want others to use without disparaging their previous practices? In trying to prepare the scientists to work in classrooms, Hector concentrates on instructional strategies and asks the scientists to prepare lessons outside of their field of expertise. Does this request serve to minimize the scientists' expertise and ways of knowing science? How important is it for professional developers

to acknowledge the experience of participants by including them in setting goals, creating agendas, and relating their own interests to the topics at hand? Could Hector have utilized the scientists' early excitement about science by having them reflect about how they became interested in their own specialty areas? Would this acknowledgment of previous experiences have served as a way to engage all of the participants in learning new things?

Case Seven

Partnering is Such Sweet Sorrow

by Jeffrey S. Bryant
Education Program Curator, Monterey Bay Aquarium

Donna came to my office to return some books and asked if I had time to talk. She dropped a quiet bombshell. In summary she said:

> Even though I only do it part-time and it doesn't pay as well as my regular job, my work as a member of the institute staff for six years was something I always looked forward to, enjoyed, and felt good about. I knew I was making a difference for kids, for teachers, for science education and for the environment. All those things are important to me. They rounded out my experience as a full-time teacher and as a person. But I think it's time for you to find someone to replace me on the staff.
>
> I think my feelings began to change after we started bringing the professors into the institute as more than guest speakers. Since Bonnie has joined us as a scientist on the staff, there's so much tension at staff meetings. We seem to spend most of our meeting time defending the way we do things against her questions and criticisms. She doesn't respect me or the rest of the institute staff as science educators. She doesn't respect the institute participants as experts about how their students learn best. I don't think I want to be part of the staff any longer.

Donna and I work for the Monterey Bay Aquarium. The aquarium's exhibitions feature accurate representations of the physical features and life in the marine ecosystems of Central California. It opened to the public and began offering free hands-on and tour programs for grade K–12 students in 1984. I coordinate and direct the aquarium's teacher institutes that focus on hands-on and thematically integrated science learning.

I was saddened, but not too surprised by Donna's tale. Of the eight staffers who had worked together for four years before we started adding university professors to the institute staff team, Donna was the sixth to share these feelings with me in the past five months. It was not yet clear whether the "problem," if there was a single one, lay with individual personalities, with "cultural" differences between educators and scientists, or with my failure as a manager.

My conversation with Donna happened in the middle of our seventh year together of developing, delivering and refining 20–day intensive institutes in marine and aquatic sciences for K–12 teachers. We had spent two weeks each summer and two days each quarter of the school year working with teachers. Between sessions, we would meet with the rest of our team to reflect on program evaluations and refine our approach.

In the fifth year we reviewed the literature of science education and school reform and decided that we would serve teachers and students better if we integrated more mathematics, technology, and physical and Earth science into the institute curriculum. Most of the original institute staff had biology backgrounds, so we needed to bring in additional expertise. We also wanted to provide K–12 teachers with more opportunities to participate in research projects alongside real scientists.

We decided to enrich both the institute content and the participants' direct experience with science and scientists by bringing university

professors/researchers in science, math and computer science onto the teacher institute staff. We tried a variety of methods ranging from seeking advice from a panel of professors, to having professors present lectures and engage in discussions about their work, to having the teachers spend all day in the field learning from researchers about their projects. We continued to schedule those individual researchers and activities that received high ratings on the institute evaluations. We even added Bonnie, a retired oceanography researcher/professor, to the staff so she could contribute to all phases of institute development and delivery. This final model was so attractive to the major funder of our program, that we committed to having Bonnie on our staff as part of our proposal for the next four years.

Bonnie was knowledgeable, enthusiastic, well–liked by the participants, committed to using hands-on inquiry, and even spent time visiting schools to learn more about classroom realities and student behaviors. I welcomed Bonnie's contribution and included her in team meetings, treating her as a member of the staff despite her contractor status.

After my conversation with Donna, it was clear to me as institute director that we had to make a difficult decision. Despite our many discussions, experiments with varying levels of involvement for scientists, and months of experience dealing with Bonnie's particular contributions and idiosyncrasies, no clear "best" resolution was apparent.

I puzzled over the relative importance of the contributions made by Bonnie and other staff from the perspectives of staff, participants, and our funders. If I let Bonnie go and decreased the level of participation by scientists, how would I maintain the scientific quality of the program's content? Bonnie was named in a current funding proposal as part of the institute team. If I let her go, how would the funders reviewing our proposal respond? If I kept her on staff, I would lose other key staff whose expertise and experience with the institute and with institute participants' day-to-day classroom and school–site realities were a strength of the program.

I was feeling the prick of both horns of the dilemma. Egos would be hurt by whatever decision we reached. As program manager, I faced the challenge of successfully integrating the culture of the university scientist with the culture of the teacher. Over the course of three years I experimented observed, problem-solved and agonized over "Bonnie" issues with various staff members and institute participants. She brought much strength as a content expert and as an effective hands-on activity developer and presenter. She stimulated the rest of the staff to look at content in the context of systems.

Bonnie was much more direct than teachers when she raised questions. She did not hesitate to question traditional practices. Her desire to discuss practice lengthened staff meetings and required additional meetings. She had some unconventional ideas about what was appropriate and possible for younger students. Other staff felt criticized by her open approach to reflecting on our practice as science teacher educators. Her ego–free ability to analyze and modify our methods of instruction made others, whose primary identity was as educators, uncomfortable and defensive. They felt threatened and disrespected. Bonnie also expected to be paid at a rate similar to university professors, which is more than double what other staff earned. Some mix of these differences made staff uncomfortable and left them feeling confronted, defensive, undercompensated and frustrated by their own nonconfrontational behaviors.

I was in an uncomfortable position, moving toward either excusing Bonnie from her role as a full member of the team or continuing to lose other vital team members and their contributions. Without compromising the confidentiality of anyone's communications with me, I could tell Bonnie about the situation that was evolving and excuse her from continued participation on the team so I could save the team. With complete honesty, I could decrease the embarrassment for Bonnie and others by telling her that finances did not permit me to pay her at the rate she was requesting.

If I asked Bonnie to leave the program, would she and I remain peers who could share mutual respect and candor? Would she still be willing to advise me about physical oceanography and another institute we were planning with a different staffing model?

I also wondered if this situation was the result of the particular personalities involved or the differences between teachers who are trained as generalists and scientists narrowly trained as specialists? Is it possible to create a team where educators and scientists function as equals? How could we develop an alternate plan that might work better? And finally, what type of orientation and team building are necessary to successfully prepare teachers and scientists to work together?

Facilitator Notes
Partnering is Such Sweet Sorrow

Questions and Issues

After the sixth staff member tells Jeff that she can't work with the scientist any longer, he considers how to best maintain the programs for teachers and how to keep everyone — the staff, the scientist, and the funders — happy. Although the stated question posed by this case is: What should Jeff do next? *the situation provides a focus for discussing several issues for managers and those who work in collaborative groups.*

Major Issue Clusters

How do group dynamics contribute to the problem described in the case?

Most people who discuss this case want to know: how much do individual personality and communication styles contribute to the problem; why was the staff so threatened by Bonnie (was it her style, knowledge base, or popularity with the clients); and what role does pay inequity have in creating tension? Though we can't find evidence for answering these questions, interesting discussion about some of the more general issues proves interesting. Status and credentials affect group dynamics in general and in this case, it's fruitful to examine how self-perception may have impacted the interaction of those involved. Could the differences in cultures between teachers and scientists be a contributing factor? Is it a matter of personal style (tact versus getting to the relevant questions) or training (teachers as generalists and scientists as specialists) or roles (scientists as truth seekers and teachers as peacemakers) that has created disharmony?

How can a manager successfully integrate new members into a working group?

For a group to be able to function effectively and efficiently, members usually need to hold a common vision. How does that vision get created? In this case, we wonder whose vision it was that framed the work and whether it was a shared vision. As we

find ourselves in more and more collaborative working groups, we notice that different norms exist for each of these groups. Clearly it seems that the institute staff had a group norm prior to Bonnie's addition to the team. What could Jeff have done to ease Bonnie's introduction to the group? Should he have set the stage for discussions and agreements on ways of working together for the group when Bonnie was hired and what might have been some strategies for doing that? Should he have mediated and helped to establish better relationships once he was aware of the problem — and again, what might be some strategies? Whose responsibility is it to train new members of a group in the already established group norms or do the norms need to be changed when the group configuration is altered? Clarifying and making public the different roles of group members is important to the harmonious workings of a team. Sharing the expectations and needs of each member of a group is also helpful when it may later be necessary for diverse viewpoints to be integrated into a group decision; but when and how does this get accomplished so that no one is alienated?

What is the role of reflective practice for professional working groups?

As we get to know our colleagues better — both professionally and personally — our understanding of "where they are coming from" is usually made clear and our ability to work together is hopefully enhanced. But how do we ensure that the groups we are part of continue to improve their working relationships and productivity? In this case, we do not know what (if anything) the institute staff has done to grow as a group and learn from their practice. What kinds of activities could/should they have engaged in as a group to make sure that they continually refine their methods and increase their self-knowledge? How does a group plan for including formal debriefing and reflection activities as part of a way of working together and then how does it go about making those sessions most productive?

Walking in someone else's shoes

Most of the discussion groups have wanted to begin with a focus on Jeff's role, attitude, and actions/inactions but it is also important to look at the situation from Bonnie's perspective. One of our pilot groups used role playing to highlight these different perspectives. Role–playing is often a particularly useful technique as it forces people to take roles other than that of the author's. After identifying and discussing the key issues, five participants were asked to respond to questions by playing the roles of Jeff, Bonnie, Donna, and two other members of the teaching staff, while several other participants played the roles of outside consultants. Two separate scenarios were created. In the first, the facilitator asked everyone to go back to when the initial decision was made to include a scientist and Bonnie was identified as the best person to fill that position. Jeff, Bonnie, and the teaching staff were asked about their expectations. The consultants then provided some guidance to the assembled parties about how to mold this new situation into a good working relationship that would benefit all — including

the clients. In the second scenario, the parties were asked to put themselves at the point where the written case ends and to talk about next steps. The role playing activity proved to be enlightening. It moved the discussion to a more general application of good practice from one of "he should have," "she should have." The conversation then naturally shifted to a discussion of "What did you learn from this case that will impact your own work?"

Case Eight
Critical Moments

by Liesl Chatman
Executive Director, Science & Health Education Partnership Program, University of California, San Francisco

The moment I said it, I wanted to take it back. The last thing that Cynthia, one of our program's strongest volunteers, needed to hear was a critical comment from me. Not after the stressful week that we'd both had.

I was observing two dedicated young volunteer scientists, Cynthia and her teammate Ann, who were facilitating one of our university workshops for teachers. Through efforts like this, our Science & Health Education Partnership, or SEP as we call it, works to support high quality science and health education for all students in San Francisco's public schools. SEP is an outreach program based at the University of California, San Francisco, a graduate institution concentrating exclusively on biomedical science. On this Saturday Cynthia and Ann were presenting Baylor College of Medicine's well-designed *BrainLink Curriculum in Neuroscience*. Our workshop approach involves the two scientific communities in active learning together: teachers learn about scientific inquiry and scientists learn the craft and art of teaching.

Cynthia and Ann are each exceptionally talented doctoral students at UCSF. They speak their minds, set high standards, and show great promise both as scientists and, in my opinion, as teachers. And they are extraordinarily motivated. While succeeding in demanding

graduate studies, Cynthia and Ann find time to volunteer in several of SEP's programs. Besides BrainLink, they are both active in the Women's Triad project, which explores strategies for equity in coeducational and all–girl settings. It's called Triad because it fosters partnerships between middle school girls, women teachers, and female graduate or postdoctoral scientists. As the hub of the project, teams of scientists and teacher sponsor school–based science clubs for girls, with accompanying workshops for the adults throughout the school year. The teachers learn about science, teaching strategies, and research on gender education. The scientists commit to the project for a full year, devoting 20 to 30 hours per month in planning, working at the school site with teachers and girls, and attending adult workshops. Cynthia and Ann work on the same Triad team, which the program staff, evaluator, and fellow participants all concur, has been doing an outstanding job. Cynthia and Ann have even become strong advocates for the school, writing letters of support during a critical schoolwide review conducted by the district. Cynthia, in particular, has boundless energy and is what I like to call an "Ace Volunteer." In addition to BrainLink and Triad, she's worked with elementary teachers in the City Science summer institutes and had a long–standing partnership with a middle school teacher. Cynthia is an outstanding volunteer.

I stopped in to see the Saturday BrainLink workshop while on my way to another meeting. The coordinator had suggested that I see the program in action now that it was up and running. I knew that the workshop was designed and planned by a collaborative team, but I guess I hadn't realized how much Cynthia and her teammate Ann had been involved. Here they were, ably doing the lion's share of the presentation to a group of teachers representing a mix of elementary, middle and high schools, with slightly more women than men.

Cynthia and Ann were doing a solid job of modeling the activities that teachers could use in their classrooms with everyday materials. They had teachers actively learning in cooperative groups, the materials were well–organized, and both were facilitating with skill. When

responding to teachers' questions, they more often than not replied with another question to extend the learning. When the hands–on portion was finished, Cynthia brought everyone back together to reflect in a whole-group discussion. This enabled her to facilitate some adult–level learning in the content area.

Watching from the back of the room, I noticed that four or five men appeared to be dominating the discussion. As the Triad project director, I'm particularly interested in these dynamics, so I started observing more closely. What I saw matched the behaviors found in gender research studies: these men didn't follow the norm of raising their hand and waiting to be acknowledged. They asked questions which they often answered themselves, and held the floor for relatively lengthy periods of time. I also observed that there were a few all–female groups whose members did not say anything during the whole–group setting.

Cynthia's teammate Ann introduced the next activity and the teachers worked in their groups again. Watching each table, I noticed that women grouped with the men who had been so dominating were not actively participating. They weren't talking, and they weren't manipulating the materials as much as the men were, a pattern also reflected in research findings. I mentioned this to a colleague who was also observing this part of the workshop. She told me she had noticed the same thing.

When Cynthia led the debriefing, the same four or five men again dominated. As facilitator she was in the hot seat, directly dealing with the men. I could sense her frustration as she tried unsuccessfully to move on to the next subject. Her frustration was all too familiar to me; as a former teacher, I've been in exactly the same situation. What strategies would I be using if I were up there in Cynthia's shoes? "Ugh," I thought to myself, "this is exactly what we're trying to help people with in the Triad project. How effective were we being in our own workshops?"

During the lunch break, I was thinking out loud with Ann about the dynamics I'd just observed. "Did you notice that those guys were dominating the discussion?" Ann responded quickly. "Yes, and I was really bothered by it." Ann then went over to Cynthia and shared my comment, asking Cynthia what they could do about it. I could see Cynthia begin to seethe, but it was too late. "I know, I know," I heard her say through clenched teeth.

It was all too clear that my comment had pushed her over the top. She was being critiqued by the director in midstream about something she was keenly aware of and probably felt that she should have been able to address; however, she didn't have the strategies at her command to do anything to correct the situation. As a result, she felt powerless, and now with my comment, probably embarrassed. I regretted saying anything to Ann, feeling I should have made a mental note instead.

"I think I need to take a break from volunteer activities for a while," Cynthia said to me in an exasperated voice. "This is exactly what Triad needs to help us deal with." I tried to downplay the issue with Cynthia, but there was no time. I looked at my watch. I wanted to stay but couldn't be late for my meeting with the President of the National Academy of Sciences. I drove away very much preoccupied, thinking about all the time Cynthia had spent volunteering during the past month: the VIP presentation, this workshop and all the preparation it had entailed, and her ongoing gender work. I winced, thinking about the timing of my observation, and felt suddenly weary. I knew, though, what we would be working on during our next gender workshop.

Facilitator Notes
Critical Moments

Questions and Issues

Building strong relationships with staff so that feedback can be constructively provided and graciously received is an ongoing challenge for classroom teachers, trainers, and managers. The dilemma is how to provide the feedback without incurring resentment or damaging relationships, because sometimes even an off-hand comment can lead to unanticipated consequences. When Liesl observes a staff member's difficulty in handling a group of male participants during a workshop, she is unaware of the impact of her remarks. The dilemma of providing critique is related to the cases, Managing Misconceptions *and* Sink or Swim. *Issues of gender and access in this case are similar to those found in* What to do About Rob?, Through the Eyes of a Participant *and* Girls in Science: Full Partners.

Major Issue Clusters

Examining the situation from multiple perspectives

Both Liesl and Cynthia were frustrated by the same situation, and apparently neither had the skills to effectively deal with it. What are these skills? Whose responsibility is it to make sure that program staff are provided with the tools they need to do their work effectively? What program evaluation might be needed?

In one pilot discussion, participants were asked to identify with one of the characters and share their understanding from that point of view. By identifying with someone in the case, discussants felt they were able to view both main characters in a more positive light, and also to see the different perspectives of the situation. Those who identified with Liesl commented: "She spoke out at the wrong time. I've done that." "Liesl interpreted the situation the way a coach should; but leadership also has a responsibility to act thoughtfully." Those who identified with Cynthia related: "I knew it was going badly and I wish I knew what to do to stop it. I had no solution." "I

would be wishing someone would step in and help." "I can relate — she's involved in so many things!" This early role identification enriched the discussion and analysis that followed by highlighting the importance of being able to *walk in another's shoes.*

What are accepted norms of communication among colleagues?

In this case there were several communication problems. Liesl's comments about Cynthia were told to Ann, who then repeated them to Cynthia. We wonder exactly what was said in this interchange and can't help but speculate about this indirect message from the "boss" and the relationship between Cynthia and Ann. Would the results have been different if Liesl had spoken directly to Cynthia? When can you be direct with those you supervise? We see that Cynthia knew there was a problem in the workshop but didn't talk to Liesl directly about it — would this direct communication have produced a remedy for the situation? What is the impact when the supervisor is asked for help and what happens if he/she is not able to provide what is needed? After the comment was made, Liesl left for another meeting without speaking to Cynthia to follow up on her observation — does this *hit and run* contribute to Cynthia's feelings? What were the options once the statement was out on the table? What could Liesl have done? What is effective communication from coaches? from peers? Is it ever appropriate for an observer to offer critique?

The above questions consumed discussants who found themselves deeply engrossed in the dynamics of the personalities and the particulars of the case. All of these questions can lead to larger issues concerning modes of group behavior and assumptions made about the impact of our actions upon peers and supervisees.

When and how best can constructive critique be provided?

How does feedback change a situation and what type of feedback is most productive? As Director of the program and Cynthia's boss, was Liesl acting out of turn to express her concern about the group dynamics? Certainly she should never have made comments about Cynthia to Ann and clearly she regretted that her comments reached Cynthia so quickly. What then would have been appropriate action on Liesl's part? Does the feedback do anything to change the situation? How does a supervisor provide feedback in a helpful, constructive way? What mechanisms can a workgroup institute so that feedback can be provided and received constructively for individuals and the program?

How do you handle "dominant males" and encourage more active participation from the female participants in a workshop?

What Liesl saw happening in the workshop (dominance by males) is exactly what she and her staff were focusing their efforts on in their work with classroom teachers through another project. Liesl's comment was prompted by her observation that the males were dominating whole group discussion and workshop activities. This

phenomenon happens often in professional development activities as well as in classrooms. Having it occur in a program that is dedicated to leveling the playing field for girls is even more dramatic. We wonder about the strategies that Cynthia and Ann have learned through their involvement in the Triad program. Did they learn some strategies for structuring workshops that serve to encourage more equal participation by males and females? If so, what are these strategies and how effective are they for dealing with dominators? We further wonder whether strategies for use in K–12 classrooms will work with adults.

What kind of professional development do we owe to the people who work in our own programs?

Because Cynthia is having such a difficult time with the males in the group and Liesl does not seem to have any intervention strategies to offer, we wonder about the training provided to the volunteers who work in this program. The program staff has scientific content knowledge so they are well–suited to work in this environment, but are they well–grounded in presentation methods, facilitation techniques, group problem solving strategies, and accessibility issues? How much support do they receive from coaches or mentors? What mechanisms exist to make sure they are competent in their role of workshop leader?

Discussing the specifics as they relate to this case helps us analyze our own situations. If we are program managers, how do we provide for the growth of our own staff? If we are part of a professional development team, how do we enhance our skills and continue to grow professionally? What options are available to provide for continuous learning when budgets are tight and time is at a premium?

Facilitating
a Case Discussion

Facilitating a Case Discussion

by Judith H. Shulman

WestEd

This chapter was adapted from "Facilitating a Case Discussion." Facilitation Guide to Groupwork in Diverse Classrooms *edited by Judith Shulman, Rachel Lotan, and Jennifer Whitcomb. 1998. We thank Teachers College Press for permission to use this chapter.*

Preparation and Process

Much can be learned just by reading cases. But a good facilitator can expedite that learning by prompting a group to examine the case's issues in ways that readers by themselves might not. Far more than a lecture, case discussion enlivens content and helps participants internalize theory. Still, the idea of facilitating such discussion can be intimidating: when you don't do all the talking, you relinquish authority and therefore can't be entirely sure how the session is going to go.

This concern is heightened when the cases are problem focused — as all these cases are — and the authors are honest about the dilemmas they face in their work, the surprises that occur, and the reflective questions they ask themselves about how they handled the situation.

Constructing a Case-based Professional Development Curriculum

Ideally, case discussions don't take place in isolation; they are part of a case-based curriculum — a whole course or program built around the use of cases and including additional readings about the issues being addressed. Case discussion becomes more meaningful when supporting materials explain the general principles exemplified by

the case. Conversely, the specific real people and situations detailed in each case add flesh and blood to otherwise nebulous concepts.

One of the problems in professional development workshops is the tendency to provide prescriptions and *how–to's* without providing opportunities for participants to link the prescriptions to analyses of specific situations. Without analyses for people to work through, the learning that takes place is disembodied and therefore easily forgotten.

Cases, by contrast, can introduce an individual educator and setting, bringing that world to life in all its complexity. Those reading and discussing the cases can use the specific situation as a vehicle for questioning their own practices and for reflecting on their own values, attitudes, and experience. Because it provides complexity and a meaningful context, the case can function as the hub of the staff development wheel.

Though reading or discussing a single case can be beneficial, it is the sustained use of cases in group discussion that spurs change. A group often needs to discuss at least four cases to acquire the comfort level, equity of participation, and analytical skills that allow discussion to move to more insightful levels. Moreover, the transfer of insights and knowledge to practice doesn't really happen until reflective practices are internalized.

Preparing to Lead Discussion

Careful preparation is critical to leading case discussions successfully. You'll need a thorough knowledge of the case as well as clear ideas about how best to use the facilitator notes to guide the sessions.

Reading the case. To facilitate a discussion effectively, one cardinal rule applies: You must have a good grasp of the case and its nuances. This is true for any case, but it's especially crucial when delicate subject matter is involved. The only way to develop deep familiarity is to read the case several times. The following suggestions will help guide your reading:

- *As you begin, take note of your first impression.* What excites you? What bothers you? With whom did you relate? Subsequent readings may change your answers to these questions, so it's important to jot down your initial reactions to use as diagnostic tools. Initially they help you gauge your values and empathic response to the case. Later they may be key in helping you understand participants' starting points in the discussion.

- *Since each case has many layers of meaning, each reading yields more information and understanding.* As you read, ask yourself "What is this a case of?" and "What are the different ways to interpret this case?" Also note the descriptive words, key phrases, and dialog used, especially early in the case, as the author introduces people or events.
- *Reread the case with specific objectives in mind.* Use one reading to identify teaching and learning issues and another to look for sociological impact — for example, how will events described in the case affect this teacher's capacity to contribute to the school community? A third reading can focus on the author's role — what professional issues are at stake? The more perspectives you have on the case, the better equipped you'll be to prompt broad–ranging discussion, thus reinforcing the idea that there is no one "right answer." Try to keep group participation balanced. Should one person's viewpoint tend to dominate, your suggestion of another lens to look through can draw out participants whose knowledge and experience make them identify with the case in an entirely different way.
- *Look for pressure or stress points in the case* — instances when a staff developer is confronted by angry teachers, puzzled by a dilemma, or experiencing doubt or remorse about his actions. These events serve as teachable moments in the discussion. If you prompt discussants to explore different interpretations of an event, they may come to understand why the crisis occurred. This insight can help them avert a similar situation in their own work.
- *Look for subtle cues.* Cases like *Sink or Swim* overtly raise an interpersonal problem with a particular person. But a deeper understanding of facilitator and scientist actions requires examining the narrative's details, perhaps making paragraph-by-paragraph notations. In many of the cases, information about individuals' perspectives is couched in subtle details. The group needs to look beneath the surface of what occurred. What might have happened if the author had perceived Jose differently? What might Hector have done, and how might the scientist have responded?

Using the facilitator notes. The facilitator notes are resources designed to help you plan each case discussion. As analytic interpretations, they alert you in advance to potential problem areas. They examine key issues and sometimes add information not provided by the case's author.

Though the facilitator notes are structured to help you analyze specific issues and provide examples of probing questions, they are not designed to give you a particular pathway for moving a group through the case. Instead, they are meant to help you make your own plan for discussion, from which you can deviate as you

ascertain the group's direction with the discussion. Anticipating this, you can use the notes to identify stages of discussion and plan probing questions that enable participants to view the case through different lenses. Just as you customize case selection and sequence, you'll want to tailor questions to suit the profile of your particular group.

Planning the physical space. The arrangement of the physical space for discussions can either encourage intimate participation or discourage it. We have found that a U-shaped arrangement with participants seated at tables on the outside of the U works best. This arrangement enables participants to maintain eye contact with one another during a discussion and allows the facilitator to move within the circle at will. We ask participants to write their first names on the front of a folded index card and place it on the table in front of them. We also place either a board or easel with chart paper at the head of the U for recording major points made during the discussion. This enables participants to see how the discussion is progressing.

Providing adequate time. It takes time to peel away the surface layers of the cases and get to the underlying problems. If you allow two hours for case discussions, you should have adequate time to delve deeply into most of the cases. But what if you have only an hour to an hour and a half? This doesn't mean you shouldn't try to discuss any cases, but you *will* have to plan your time accordingly. One suggestion is to distribute the case before the actual discussion and ask participants to read it carefully, jotting down questions and noting issues *before* the session. The practice of coming to a session prepared to discuss a case is desirable even if you don't have a time crunch.

If you're pressed for time, it's important to keep one eye on the clock. It's easy to become caught up in one section of the discussion and run out of time before you complete all the parts you had planned. Stopping a discussion before you can bring it to closure is often more harmful than cutting short a particular section midway through the discussion.

Dynamics of the Group Process

A successful discussion requires a climate of trust, acceptance of differing communication styles, and clearly defined roles and ground rules.

Establishing trust. Successful case discussion can take place only in a climate of trust. How can you help ensure that participants feel safe enough to risk exposing their opinions to others' judgment?

You'll need to consider many factors: physical setting, use of space, seating arrangement, your style of leading discussion, and group size. Perhaps most important, however, is the life experience of group members. Each participant brings to the group her personal values, attitudes, and beliefs — both conscious and unconscious. Trust will be affected by unspoken concerns, such as fears of being perceived by peers as an inadequate teacher who has problems in her classroom.

The clearer the structure and the more secure you are in the role of facilitator, the better the chances of developing a safe climate and productive discussion. Whenever possible, create groups that include individuals with differing life experiences so participants can learn from each other.

In a group with well-established trust, the case discussion provides diverse participants a chance to reveal more of themselves and be better understood. In some instances a catharsis occurs and must be handled delicately. It is also important for the facilitator to be aware that established roles among members of a given group may create an obstacle to open discussion because of people's fixed opinions about each other.

Communication styles. Since people have different cultural values about communicating, it's important to note that participation may be unbalanced. Case discussion asks us to think about our reactions to characters in the case. The degree to which people are willing to reveal their values or beliefs is often a function of their style of communication.

Some participants will find it easy to talk openly and debate the topics; others won't. Some will be aggressive; others will hold back until they hear the rest of the group's opinions. Some will want to speak first; others will need prodding to speak at all. Some will disagree openly, others indirectly. These styles reflect not only personality, but culture. In classrooms we often subscribe to a particular model of communication — that you speak up when you disagree. However, to some cultures and individuals, it may be inappropriate to express disagreement.

As the facilitator, you must create a cross-cultural climate, which requires encouraging a variety of opinions through questioning and framing differing perspectives for examining the case. It also means watching people's body language so you won't lose the chance when a quiet person is about to say something. You can step in and gently silence interrupters. ("Susan hasn't had a chance to share her ideas about the story, so let's give her that time.")

Rules and roles. To establish a climate that is supportive of meaningful discussion, it's crucial that all participants understand the goals of the discussion, ground rules, and role of the facilitator.

Case discussion goals. A first step in leading a discussion is presenting the goals of the case seminar:

- To frame and reframe problems in each case
- To explore and analyze multiple viewpoints in each case
- To connect issues in the cases with participants' professional situations and develop a repertoire of strategies to use in dealing with such issues
- To stimulate collaborative reflection and strategic introspection of one's own practice
- To develop collegiality and a shared understanding among participants

Ground rules for participants. Participants must overcome the notion that there is only one acceptable way to analyze each case. Instead, the aim is to foster an ethos of critical inquiry that encourages multiple interpretations, conflicting opinions, and equal participation. Clear ground rules can help set the stage for this kind of discourse:

- Respect each member's contribution and point of view and listen carefully.
- Do not interrupt! Wait for speakers to finish their statements before responding.

Role of the facilitator. To support these ground rules, facilitators should:

- Ensure equal and full participation by keeping track of those who want to speak and making sure each has a chance.
- Encourage quiet members to contribute and tactfully redirect those who dominate.
- At suitable points, synthesize key ideas; help clarify those that are misunderstood.
- Model candor, courtesy, and respect, and remind participants of ground rules whenever necessary.
- Avoid being the adviser each time someone makes a comment. At times be a blank screen, offering others the opportunity to respond.

Leading the Discussion

Although you may have more expertise than the group you are working with, as *facilitator* you should not assume the role of expert during a case discussion. Rather, your

responsibility is to elicit alternative perspectives and help participants analyze them. You should take the stance of an active listener, reflecting by your words and body language that you heard, understood, and accepted what the speaker communicated. You should also have at your disposal a set of probing questions that help expose, clarify, and challenge assumptions and proposed strategies that participants raise during the discussion (see Facilitator Notes for examples of questions).

If members in your group appear to accept ideas before reflecting on different perspectives, you may offer other perspectives for their consideration. Your goal, however, is not to lead them to a specific point of view, but to help them come to their own conclusions about what is the best course of action. One of the most difficult aspects of leading case discussions — especially for new discussion leaders — is the possibility that participants may leave a meeting with what appears to you to be the wrong point of view. You may feel compelled to give the "correct" answers, as if there is one best solution. Instead, try not to show impatience with participants' views. Changing beliefs takes time, and being told what to believe is rarely effective. Individuals come with their own set of experiences that help shape their beliefs. They need time to evaluate these during case discussions and later in their own work. The cases in this volume are constructed and sequenced so that participants and facilitators have numerous opportunities to revisit the same issues *(see* Issues in Professional Development Cases *on page 3).*

The Opening

When beginning a new group, remember that group members may need to get acquainted. Field testing showed that allowing time for participants to introduce themselves, or even using a simple icebreaker, sets a comfortable and warm climate and pays off later. If a group is going to meet several times, it is worthwhile to allow substantial time during the first session for getting acquainted, going over rules and roles, and discussing the purpose of using cases.

How do you begin a discussion? Your opening questions are important; they set the tone and scope of the entire discussion. Experimenting with ways to make your openings as flexible and participatory as possible should be one of your goals.

One opening approach is to establish facts by asking one or two people to summarize what actually happened in the case, then asking others to join in. Asking for the facts of the case is a comfortable way to enter the discussion because it enables everyone to begin the discussion with a shared sense of what happened and emphasizes the importance of differentiating fact from interpretation. Sometimes, however, participants become frustrated with this exercise and want to jump right in and get to the provocative issues.

If this happens, you will have to judge how important it is to establish facts before delving into larger issues. You can always return to the facts by asking factual questions throughout the discussion and referring back to the text periodically to gather evidence.

Another way to open a discussion is to ask participants to work in pairs for five minutes to generate key issues and questions raised by the case and record their results on a board or easel chart paper before fleshing out any issues. (If you want to begin with facts, you can use this approach after the facts have been established.) There are many advantages to this approach: (1) participants can refer to the list during the discussion, making sure that all points were addressed; (2) you and the group acquire a sense of the range of interpretations before discussion begins; and (3) you convey the idea that there are many ways to look at the case, thus ensuring that the discussion doesn't become fixated on a single view. This approach works especially well when you meet with a new or particularly large group because all members become engaged immediately in discussing the issues. The pair work also serves to break the ice for those who are hesitant to talk in large groups and makes them more inclined to speak up in the larger setting than they might otherwise be.

After completing the list of issues and questions, ask the group to decide where they wish to start the discussion. This sends a subtle message that you respect the group's agenda and won't impose your own. Some discussants report that this gesture was important; it appears to empower some to speak up who might otherwise remain silent.

A third approach to beginning the discussion is to provide a focus question and immediately examine a key issue. If you choose this tactic, be sure to consider your opening question carefully, because it is likely to set the tone for the entire discussion. The advantage of starting with a focus question is that the discussion usually gets off to a lively beginning. The tradeoff is that it may prevent some participants from bringing up their own issues. It may also convey the perception that you have a fixed agenda for the discussion.

Core of the Discussion

Once the initial focus of the discussion is established, we suggest the following discussion components:

Analysis. Analyze the problem(s) from the viewpoints of the different actors in the case, using the notes as a guide to the analysis. Adequate analysis often takes at least half the discussion.

Evaluation. Examine the author's strategies for handling the problem(s).

Alternative Solutions. Generate alternative strategies for handling the problems, making sure to consider the risks, benefits, and long-term consequences of each.

Principles of Practice. Formulate some generalizations about good practice based on this case discussion, prior discussions, participants' experience, and their prior theoretical understanding.

"What Is This a Case Of?" Moving up the ladder of abstraction, link this case to more general categories; rich cases are, by nature, "of" many things.

Though this pathway appears to be linear, in reality, discussions rarely follow such a straight path. One aspect of the discussion, however, should follow sequentially. We emphasize the necessity of adequately analyzing the issues in the cases — from a variety of perspectives — before evaluating how the author handled the problems and generating alternative strategies. In our experience, educators sometimes make quick judgments and begin generating alternative solutions before adequately analyzing the problems.

In a typical discussion, the initial focus is on the particularities of the case and an analysis of what happened. In the diagnosis of what went wrong, participants' comments often reflect personal experience and theoretical understanding: "The leader didn't adequately take advantage of Bob's contribution to the group"; "Hector didn't prepare the scientists adequately for their group task"; "Judy didn't intervene early enough." Experienced educators and managers with similar experience often enrich the discussion with stories of their own.

The effectiveness of the analysis depends to a great extent on your repertoire of questioning techniques that encourage reflection. Different types of questions (e.g., open-ended, diagnostic, challenging, prediction, and hypothetical) serve different purposes. The Facilitator Notes in this volume contain numerous examples of types of questions. As facilitator, you should be prepared to follow participants' responses with probing questions that deepen their reflection. When participants begin to ask questions of one another, rather than continually orienting their remarks toward you, this is a sign of growth among the group.

Ethos of inquiry. One of the most important tasks of the facilitator is to create an ethos of inquiry — a group spirit that is not limited merely to exchanging opinions, but rather leads to substantive learning. Accomplishing this task requires remembering that the focal point of a case discussion — the personalized narrative — can be both a hook and a pitfall. The detailed individual story draws people in and prompts them to share their own stories, especially since they often just left their classrooms. But this level of discussion can be so absorbing that the group fails to realize that the point is to

generate principles, or sets of practices, or new ways of thinking that can be tested across cases and in other settings.

The facilitator's challenge is, first, to build an ample world of ideas for the group to explore, then to move discussion up and down a ladder of exploration: up to higher principles, back down to very discrete practices, then up again — in other words, to repeatedly move from the level of opinion swap to the desired level of applied knowledge. How do you do that? How do you get people to deduce principles from experiences they're discussing, to move away, come back, then generalize again?

- *Try not to become emotionally involved in what's being said.* You will be more effective if you keep some distance and continually analyze how the discussion is going. Pay particular attention to equitable participation.
- *Periodically tie up loose ends, summarize what's been learned, and move along to the next increment.* This keeps group members from repeatedly coming back to the same point or digressing so far that their talk no longer relates to the case.
- *After evaluating how an author in the case dealt with a particular problem, ask what alternative strategies could have been used and analyze the risks and benefits of each.* Such questions can inspire people to make judicious changes in their own situations.
- *At opportune moments, ask participants to come up with generalizations or principles based on this and other case discussions and their experience.* This develops their capacity to transfer what they learn from the analysis of a particular case to similar situations they are likely to meet in their own work.
- *Bear in mind that you are teaching the skills of case analysis.* Ultimately, you are moving participants toward applying what they're learning to their own behaviors, but only in-depth analysis allows that learning to occur, and the skills required take time to develop.

The possibility of establishing a true ethos of inquiry is enhanced if you structure the case-based curriculum. As explained above, this involves assigning other readings that play off the issues and questions embedded in each case. When discussion takes place in such a structure, the group will not be confined to talking only about what they think happened in the narrative or their personal values or beliefs, but can explore other people's ways of looking at a given topic.

Your larger goal is to extend this approach beyond the single case discussion to the entire course or curriculum. Over time, discussion will have covered a family of cases, which then can be crisscrossed, or compared with each other. At the end, you should be able to engage participants in framing guiding principles that they now feel would

apply, not just to incidents like those in the cases, but to any setting where similar issues come into play.

The greatest challenge of the case approach is that each discussion is different and takes on a life of its own. At times the discussion may appear at an impasse, or participants may be ignoring information you feel is key to understanding the case's problems or dilemmas. At such times you need to shift the topic. One way is to say you've spent a lot of time discussing a particular topic, then ask about viewing it from another perspective (give an example). Another tack is to play devil's advocate, then introduce the missing issue as a counterpoint.

Or you might elicit questions about a quote from the case. Occasionally it may be useful to push ahead a discussion by giving a two- or three-minute mini-lecture based on the Facilitator Notes or other scholarly sources. (This can be risky if it is perceived as too directive; it may also limit discussion.) Another strategy is to incorporate activities such as role playing and/or discussion in structured small groups, which can offer a welcome change of pace.

Be sensitive to the possibility that there may be tension between your agenda for a case discussion and the group's. This requires a delicate balance. If you merely follow where the participants want to take the discussion, you abrogate your role as a leader; but if you stick to your discussion plan without letting participants move in a direction they prefer, you communicate that you are in control and they might hesitate to bring up their issues and concerns. One way to get around this dilemma is to look for opportunities to build on participants' ideas, rather than raising new ideas yourself. Also, remind them that in your role as facilitator, you will challenge their ideas and push them to defend their views, regardless of their position. Ultimately we are trying to move participants from reflection to problem solving and a willingness to investigate their own practice.

Closing the Case Discussion

Another major challenge is helping participants synthesize and reflect on what they learned from the entire discussion. Participants should have the opportunity to identify new understandings as well as unresolved conflicts and questions before the discussion is over.

One approach is asking participants to reflect on the case and respond to the question "What is this a case of?" This question, which began as a suggestion from Lee Shulman, is the theme that weaves through all our casework. It asks participants to characterize a

particular case in relation to other cases, to their own experience, and to the conceptual or abstract categories with which they are familiar. Shulman suggests that it is a way of encouraging participants to move between the memorable particularities of cases and the powerful simplifications of principles and theory (L. Shulman, 1996).

> *.... the key move made in teaching with cases occurs when instructor and students explore the question "What is this a case of?" As they wrestle with this question, they move the case in two directions simultaneously. They connect this narrative to their remembered (personal) experiences or to vicariously experienced cases written or recounted by others, thus relating this particular case to other specific cases. They also connect this narrative to categories of experience, to theoretical classifications through which they organize and make sense of their world (pp. 208–209).*

In our experience, closing a discussion with "What is this a case of?" has been extremely valuable in helping participants move away from the particularities of a specific case and begin to identify the variety of categories that the case represents. Please note that rich cases are usually "of" many things. Often what they are "of" depends upon the nature of a particular discussion and the experience of its participants.

Other ways of bringing the discussion to closure include asking the group to spend a few minutes doing a "freewrite," responding to such questions as: What did you learn from this case discussion? Do you have lingering questions? What part of the discussion did you find most challenging? How can you relate what we discussed to your own experience? Some people appreciate the opportunity to synthesize their thoughts in writing before sharing them with the larger group.

Another approach is to divide the group into pairs to share what they learned, relate it to their own experience, and brainstorm what they would do differently. After the pairs meet, bring the group back together and ask one member of each pair to report key ideas they discussed.

A final tactic is simply to ask what principles and/or generalizations participants can generate from this and other discussions and what questions remain unanswered. Record this information; you may want to compare it with a previous list of principles.

Discussion Stages and Struggles

No group achieves a climate of trust without a series of struggles. Facilitators need to be aware that groups undergo developmental growth. Along the way, people shift roles

and become more at ease with differences of opinion. Part of your job is to create a nonjudgmental climate that supports this progression.

The group's comfort level is directly related to your own. As your skills develop, your confidence grows and your anxieties diminish. Your equanimity then sets a tone supportive of people whose opinions may differ strongly from yours. Providing informal opportunities for socializing also helps establish warmth that carries over into the discussions.

Once established, a climate of trust may lead a group member to make a personal revelation in the course of explaining his reaction to a case. Such moments can be fragile; your support and the respect of the group are crucial. Such moments can also be breakthroughs, moving the group to a deeper level of discussion and creating strong group bonds.

We noted earlier that people participate in different ways, which may be related to racial and ethnic perceptions and roles. As the facilitator, you play a strong part in determining who dominates the discussion and who is not contributing. Take time to examine that role. This requires a sort of self-diagnosis, using questions analogous to those used in searching for meaning in a case. Immediately after reading each case, you asked, "What did I feel about the story? What did I really like or not like?" Then step back and ask, "To whom do I find myself asking questions? Do I have favorites?"

Be aware of how your style of communicating influences your responses to participants' behaviors: who do you feel is getting carried away and who do you feel comfortable with? Your responses allow or impede productive discourse. In short, your best diagnostic tool for knowing whether the group is progressing toward nonjudgmental discourse is your own comfort level.

The case discussions in *Dilemmas in Professional Development* offer those who support the work of teachers insights into more effectively doing their own work. But that potential can be realized only through each group's process of reflection. If successful, the group may become a microcosm of what we're trying to accomplish in our classrooms: to reach a place where inquiry, reflection, respect, and equal participation are the norm.

References

Barnett, C., Goldenstein, D., & Jackson, B. (1994). *Mathematics teaching cases: Fractions, decimals, ratios, and percents — Hard to teach and hard to learn?* Portsmouth, NH: Heinemann.

Christensen, C. R., Garvin, D. A., & Sweet, A. (Eds.). (1991). *Education for judgment: The artistry of discussion leadership.* Boston: Harvard Business School.

Mesa-Bains, A., & Shulman, J. H. (1994). *Facilitators guide to diversity in the classroom: A casebook for teachers and teacher educators.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Shulman, J. H. (Ed.). (1992). *Case methods in teacher education.* New York: Teachers College Press.

Shulman, J. H. (1996). Tender feelings, hidden thoughts: Confronting bias, innocence, and racism through case discussions. In J. Colbert, P. Desberg, & K. Trimble (Eds.), *The case for education: Contemporary approaches for using case methods* (pp. 137—158). Boston: Allyn & Bacon.

Shulman, J.H., Lotan, R.A. & Whitcomb, J.A. (Eds.) (1998) *Facilitators Guide to Groupwork in Diverse Classrooms: A casebook for educators.* New York: Teachers College Press.

Shulman, J. H., & Mesa-Bains, A. (Eds.). (1993). *Diversity in the classroom: A casebook for teachers and teacher educators.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Shulman, L. S. (1996). Just in case: Reflections on learning from experience. In J. Colbert, P. Desberg, & K. Trimble (Eds.), *The case for education: Contemporary approaches for using case methods.* Boston: Allyn & Bacon.

Silverman, R., Welty, W. M., & Lyon, S. (1992). *Case studies for teacher problem solving.* New York: McGraw-Hill.

Sykes, G., & Bird, T. (1992). Teacher education and the case idea. In G. Grant (Ed.), *Review of research in education* (pp. 457—521). Washington, DC: American Educational Research Association.

Wassermann, S. (1994). *Introduction to case methods teaching.* New York: Teachers College Press.

Wassermann, S. (1995). *Serious players and primary schools.* New York: Teachers College Press.

Improving education
through research, development,
and service

ISBN: 0-914409-00-X

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

REPRODUCTION BASIS

☐ This document is covered by a signed "Reproduction Release (Blanket) form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

☒ This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").