Special Session - Team Training to Promote Constructive (not Destructive) Conflict

Ray A. Luechtefeld and Steve E. Watkins
Senior Members, IEEE
Department of Engineering Management and Electrical and Computer Engineering
University of Missouri-Rolla
Rolla, MO 65409-0370 USA
luechtef@umr.edu  573-341-7241, steve.e.watkins@ieee.org  573-341-6321

Abstract - Advancing technology increases the need for engineering students to perform effectively on multidisciplinary teams. While conflict is a normal, and even necessary, component of team dynamics, if not managed effectively it can lead to destructive (rather than constructive) outcomes. An Action Science approach to group and individual effectiveness can help teams handle conflict constructively. This session uses a “Teach the Teacher” approach to give participants a basic understanding of skills underlying the approach. It provides practice in Action Science through a set of learning modules. These skills can be brought back and integrated into the participants’ courses to provide student teams effective ways to handle conflict.

Index terms – Action Science, conflict, constructive controversy, team skills.

INTRODUCTION
As technology advances and projects become more complex there is a greater need for future graduates in engineering, computer science, and technology to work on multidisciplinary teams. While there will always be conflicts in teams based on interpersonal differences, different work values, and competing priorities, difficulties are further exacerbated in multidisciplinary team work. When team members approach a project from the perspective of different disciplines, inevitable conflicts arise from dissimilar viewpoints, differing values, and the need to manage tradeoffs between various objectives. How these conflicts are negotiated can have a great impact on the success of a project. Ideally, competing views are discussed thoroughly and integrated so the team can create an optimal product. All too often, however, this does not happen, and conflict within a team becomes destructive, resulting in reduced sharing of information and lower performance.

CONTEXT
Research on group and team performance has shown that some conflict improves team decision-making and effectiveness. In particular, a form of conflict called “constructive controversy” has been shown to improve team performance [Tjosvold, 1995]. Constructive controversy results in higher productivity, win-win outcomes, and the free communication of diverse perspectives.

Unfortunately team interaction skills are often not adequately addressed in engineering education, and teams are often simply expected to “learn by doing”, in what turns out to be a process of trial and error. This session provides and illustrates a relatively brief, structured approach to team skills training based on “Action Science” (an approach to group and individual effectiveness) [Argyris, Putnam, & McLain-Smith, 1990].

The learning modules that are the basis of this session were originally developed as a method to teach Action Science skills [Rossmoore, 1984]. They have been linked to increased team levels of constructive controversy in a small-scale study [Luechtefeld, Watkins & Rajappa, 2004] with only four hours of instruction (provided by a Graduate Research Assistant) spaced over the course of a semester. Additional research has shown that even very limited exposure to a subset of the training (a portion of a one-hour exercise) can result in significant increase in levels of constructive controversy and performance during the exercise [Rajappa, 2004].

I. OVERVIEW OF THE SESSION
A “teach the teachers” approach is used, with the intention of providing an experience and set of skills that each participant can bring back to his or her classroom and customize according to the needs of a particular situation.

The session will begin with a very brief overview of constructive controversy and the outcomes associated with it. This will be followed by a brief summary of the theory behind learning and action that underlies the Action Science approach.

The majority of the session will consist of an interactive dialogue that will give the participants an occasion to practice Action Science skills from a set of learning modules. Discussion will provide opportunities to evaluate and reflect on their own and others’ performance. The session will use role-playing to illustrate and apply different approaches to typical team conflicts that arise. Participants will be asked to
provide examples of team conflicts they have observed and some of these examples will be incorporated into the session for the participants use in practice and reflection.

**GOALS**

The team training process used in this workshop will provide a model for behavior that can be used to give student teams a foundation for developing effective ways to handle conflict. The goals of this workshop is to provide participants 1) the information needed to provide effective team conflict training to their students, 2) a set of basic skills that they can build on in the future in order to be able to model them to their students, and 3) experience with the tensions and difficulties that are typically faced by those encountering Action Science for the first time, so that they may feel more comfortable when helping their students with these issues.

**WHAT PARTICIPANTS CAN EXPECT TO LEARN AND EXPERIENCE**

Participants will practice an Action Science approach to resolving team conflicts. They will be part of a discussion that reflects on their own and others’ dialogue during role-plays and exercises. Participants will learn specific concepts and actions that can be incorporated into their own courses.

The session will encourage participants to take an open, inquiring stance during the discussion and to reflect on how their own actions may not be perceived as open or inquiring by others. Due to social norms, students (and faculty) often find it difficult to share negative reactions or surface disagreements. When underlying conflicts are finally surfaced, the emotion of the moment can inhibit an objective assessment of the situation. Action Science advocates openly sharing perceptions and perspectives and then honestly testing the validity of what has been shared. Sensitivity to these issues during the session will help participants take useful knowledge back to their student teams.

Topics in the interactive session will include: Paths to Learning, observation and inference, advocating a position clearly, effective inquiry, causality and team dynamics, public vs. private dialogue and confrontability.

**REFERENCES**


**AUTHOR BIOGRAPHIES**

RAY LUECHTFELD received his Ph.D. from Boston College in Organization Studies. He holds an M.B.A. from the University of Minnesota and a B.S.E.E. from the University of Missouri-Rolla (UMR). He is currently an Assistant Professor in Engineering Management at UMR. His research interests include approaches to organizational learning and effectiveness, simulations and games for learning and research, action research and Action Science, and facilitating group learning. He is a member of IEEE and ASEE.

STEVE E. WATKINS received a Ph.D. from the University of Texas at Austin in 1989. He is a Professor of Electrical and Computer Engineering at the University of Missouri-Rolla where he directs the Applied Optics Laboratory. His research interests include optical sensing, smart system applications, and engineering education. He was a 2004 IEEE-USA Congressional Fellow, was a visiting physicist at the Phillips Laboratory (USAF) at Kirtland Air Force Base and was a visiting scholar at the Basic Research Laboratories of NTT in Japan. He is a member of IEEE, SPIE, OSA, and ASEE.