

Group meetings of scientific interdisciplinary groups: benefits and challenges to learning

Nir Esterman, Abstract of MSc thesis, submitted 2005,
Weizmann Institute of Science

Abstract

The group meetings of scientific research groups were previously reported to be central for generation of ideas and conceptual change of group members as well as for distributed reasoning between group members. However, despite the importance of the learning that occurs during group meetings, relatively little is known about the specific benefits to learning and the challenges to learning in group meetings. Since contemporary scientific research is becoming increasingly more interdisciplinary in nature, training interdisciplinary scientists is expected to become an integral part of scientific research in the future. In this work, interdisciplinary group members' views on the benefits of their group meetings and the challenges to teaching and learning during interdisciplinary group meetings were characterized. The subjects of the research were the participants of group meetings of an interdisciplinary scientific research group in the field of systems biology in an academic research institute. The research method used here was a qualitative-constructivist approach based on a thematic analysis. In depth interviews were used as the primary sources of information and direct observations of the group meetings as secondary sources of information. Weekly group meetings were reported by the group members to be very beneficial to the scientific progress of this research group, especially due to the interdisciplinary nature of the group. The group meetings were found to be an effective learning environment in which new knowledge and approaches are acquired. The initial disciplinary identity that one acquires during his or her academic education was found to strongly influence the way one acquires knowledge in and about other disciplines. This influence can be at least partly explained by the differences between the knowledge structures of those disciplines. The active involvement of the group leader in the group meetings

was reported by the group members to be crucial in order for the benefits that were described here to occur in an interdisciplinary research group. It is suggested that physicists will be taught biology with an emphasis on organizing principles and that the training of biologists will include a stronger emphasis on qualitative skills and system thinking skills. It is also suggested that scientific presentations should be considered as a tool for learning at the K-12 level, during the process of science projects and not only when they are finished.