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Transforming Student Groups into Teams

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Abstract

The use of teams dominates the information system development process. Characteristics of teams have been identified that are indicative of self-managed teams. Knowledge of team operation and teamwork is important for IS students to possess. An educational strategy is proposed to assist students in IS programs in understanding the nature of teams and self-management techniques.

Introduction

The considerable interest in new organizational forms is evidenced by a recent special issue of Organizational Science (Fulk & DeSanctis, 1995) on the subject. A frequently mentioned strategy for implementing these new forms is teams. One of the areas where teams are being used is in information systems development (ISD) (Abdel-Hamid & Madnick, 1991, Ford & McLaughlin, 1992, Phan, et al., 1995).

Information systems (IS) educators need to prepare students for these emerging organizational environments. The IS'95 curriculum guideline notes that graduates should have the ability to lead and facilitate teams (Cougar, et al., 1995). Others have noted the importance of including teamwork instruction in IS and business education (Alavi, et al., 1995; Fellers, 1996).

Although the importance of teaching students how to function effectively in teams is well established, how to accomplish this has not been as widely discussed. Fellers (1995) discusses how to facilitate cooperative learning, including how to implement student teams, but little attention has been paid to how to turn these groups of students into effective teams. In this paper we develop recommendations on how to facilitate this transition.

Teams in ISD

Teams are increasingly important in today's workplace (Gordon, 1992). Teams are equally important to IS. Not only must IS's support teams (Barua et al., 1995), but teams

are widely used as an organizational form for ISD (Abdel-Hamid & Madnick, 1991). As the use of ISD teams increases, IS educators must prepare students by teaching teamwork skills.

A particular type of team, the self-managed team, has recently received a great deal of attention (Cohen et al., 1996; Guzzo and Dickson, 1996). These teams are semi-autonomous--the output expected from them is specified by management, but the internal means of producing this output is not. As the middle management organizational layer continues to shrink these teams may become increasingly important. As a result, in this paper we focus on self-managed teams.

Since we can expect many students to be involved in a variety of work teams in the course of their career, learning effective teamwork skills is an important part of IS education. Group projects are popular in IS courses such as systems analysis and design and database administration. These cooperative activities can facilitate learning important skills, both technical and interpersonal (Fellers, 1995). However the IS literature has paid little attention to the critical differences between groups and teams. In order to prepare students to work in teams, cooperative learning activities should use a team, rather than group, approach.

Industrial psychology researchers are in the process of refining the definition of a team. While no dominant definition of teams has emerged there is a set of characteristics that can be used to determine whether a confederation is closer to the group or team end of the continuum. The work of several of these researchers was employed in constructing the list of identifying characteristics which follows (Cummings, 1978, Larson & LaFasto, 1989, Stevens & Campion, 1994, Cohen, et al. 1996, Guzzo & Dickson, 1996). While it is beyond the scope of this paper to discuss each of these characteristics in detail, the interested reader will find good discussions in (Larson & LaFasto, 1989, Cohen, et al. 1996, Guzzo & Dickson, 1996).

In general, a team: 1) consists of more than two people, 2) these interdependent individuals have complementary technical and teamwork knowledge, skills and abilities (KSA), 3) has total discretion in allocating certain resources, including its labor, 4) has members whose individual compensation is at least partially based on team productivity, 5) works towards the individual goals of its members, 6) is recognized as a distinct social entity within a larger social context, and 7) has a definable product.

Next, we discuss recommendations for ensuring that cooperative learning activities are completed by teams rather than groups.

Changing Student Groups into Teams

Many organizations use teams over a portion for their ISD efforts. In order to prepare students for this emerging environment IS educators should undertake to ensure that, as much as possible, students who join efforts on projects act as teams rather than groups. By providing IS students with opportunities to work in teams and instructing them in the

nature of successful teamwork students should gain insights which will serve them well in their IS careers.

While developing techniques for ensuring that student groups act more like teams, we used two main criteria in evaluating a technique. The most obvious criteria is the technique's chance of being effective. Less obvious, but still important, is the ease with which the technique could be implemented. A technique which has a high probability of being effective is not useful if implementing it requires excessive resources. We were able to identify a number of techniques that, if employed, should provide students with valuable experience in working in ISD teams.

Size: Since teams generally have three or more members (Larson & LaFasto, 1989), IS educators can simply make sure that their student teams consist of three or more members. One caveat, however, is to realize that some students may drop a course. Team sizes of four or five will provide a buffer against the impact of a member dropping and will also not be so large as to encourage social loafing or provide excessive opportunity for unmanageable interpersonal conflict.

Complementary KSAs: Standard course material may be sufficient to ensure that teams have complementary technical KSAs. Evaluating technical KSAs of all class members prior to forming teams would be helpful, but may not be pragmatic for many situations, so we cannot include such evaluation in our recommendations. One step that can be taken to at least simulate complementary technical KSAs and interdependence, is to require students to make task assignments within the team. We recommend that the instructor review these assignments in order to ensure that the students understand the dimensions of the project and to encourage compliance.

It would be dangerous to assume that all students possess complementary teamwork KSAs. In order to provide at least some level of consistency we recommend that the students receive instruction in successful teamwork. (Materials suitable for this purpose are available from the authors.)

Resource Control: As discussed previously, we recommend that teams assign project tasks to individual members and that these be handed in to the instructor. However, the instructor should not intervene and change individual task assignments. The instructor should take an advisory role, providing insight into what tasks might be necessary and how long these might take, but should refrain from mandating task allocations. By the same token teams should be free to plan their own meeting times and agendas, although the instructor should provide advice when asked.

Individual Rewards: To meet this criteria we recommend making team assignments a significant portion of an individual's course grade. Otherwise the individual student may not feel motivated to do their part in ensuring team success. There is some concern for the possibility of some students acting as "free riders" and relying on their teammates to carry them. In order to minimize this possibility, part of the team grade should come from confidential peer evaluations of individual performance.

Individual Goals: In order to gain a degree of goal congruence between the individual and the team assignments should be designed to allow members to meet their goal of learning the course material. Instructors can encourage cross-utilization of skills so that all team members gain experience in critical areas. For example, in a database design project the instructor might encourage the team to have two members construct the original conceptual data model which the remaining members then inspect. This affords all team members an opportunity to apply their knowledge of conceptual modeling. Such recommendations do not violate the resource allocation requirement--the team is still free to assign the tasks to particular members.

Distinct Entity Within a Larger Context: While this is true by the very nature of having the project teams exist within the social context of the class, we recommend reinforcing this by assigning short, in-class assignments that are completed by teams. We also find it useful to have the teams present their solutions to the rest of the class. These activities identify the teams within the class and also afford additional opportunities for the teams to coalesce and for the students to practice their teamwork skills.

Definable Product: Teams have a definable product (Sundstrom, et al. 1990). The nature of a course project ensures that the teams can define their product. Instructors should endeavor to make product expectations as clear as possible.

Field Study

The study will consist of two groups. In both, the instrument developed by Fellers (1996) will be administered to undergraduate and graduate students in a variety of IS courses. The instrument will be administered at the end of the semester. The control group will only experience teamwork --they will not receive explicit teamwork training. Subjects in the treatment group will receive training in teamwork. Also, the instructors for the treatment group classes will follow the suggestions outlined in this paper. Differences in the responses of the two groups will be analyzed.

Conclusion

Teams have become vital to current organizational functioning. They are also widely used in information systems development. We propose that IS students receive instruction on the nature of teams and teamwork. To facilitate this, we offer a series of techniques for the IS instructor.

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