Technology Assignments Using Team-Based Learning

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INTRODUCTION

Educators face an increasingly difficult task in preparing students for today's information technology and/or information systems (IT/IS) jobs. The foundation must ensure that students master solitary tasks such as programming and logical design. However, the reality of IT/IS jobs requires that students must also be prepared to deal with increasingly complex design projects and work in teams made up of peers who come from many different business disciplines and bring the requirements of multiple organizational functions. As a result, IT/IS educators must design their courses to give students experience working in teams and on problems that reflect the complexity of the business environments in which they will be employed.

Lecture-based IT courses expose students to the conceptual foundation that students need, but do not assure that students either retain the course knowledge or that they can actually apply what they have learned to solve the kinds of problems they will face in their future jobs. Team-based learning (TBL), by contrast, is specifically designed to ensure that students both master critical content knowledge and develop the skills needed to work in interdisciplinary teams and apply course concepts to solve complex problems. The focus of TBL is on what the students are *doing* in the classroom and how they are learning from their experiences. With TBL, the majority of the content coverage occurs through students' individual preclass study and the majority of class time is used for lab and/or team assignments that require students *use* the technology to research, critically compare, and decide on an alternative, and then defend their solutions. As a result, TBL is ideally suited for teaching technology oriented management classes such as management of information systems, analysis and design, or e-commerce, in which students must go beyond passing the content exams and develop the ability to work effectively as a member of an interdisciplinary team and apply IT/IS concepts to solve complex business problems.

The purposes of this article are to outline the key principles and practices of TBL, how they can be applied in developing technology oriented team assignments, and why TBL consistently produces a wide variety of student outcomes that are rarely achieved with other approaches for using small-group assignments and activities. To be practical and meaningful, we will use management of information systems business classes as examples throughout.

The TBL method has four essential principles:

1. Groups must be properly formed and managed;
2. Students must be accountable for the quality of their individual and group work;
3. Students must receive frequent and immediate feedback; and
4. Team assignments must promote both learning and team development.

To be effective, the team assignments must meet conditions:

1. Significant problem,
2. Same problem,
3. Specific choice and,
4. Simultaneous report.

Examples of effective assignments using the 4 Ss for information systems will be given.

KEY PRINCIPLES AND PRACTICES OF TEAM-BASED LEANING

TBL differs from other forms of small group work in two very significant ways. First, the majority of the group assignments are completed *during class time*.

As a result, much of the responsibility for "covering" the content occurs through students' individual study and peer teaching. Second, TBL relies on developing groups into self-managed learning teams. As a result, implementing TBL requires using permanent and purposively formed groups and explicitly designing assignments to accomplish two purposes: deepening students' learning and promoting the development of high-performance learning teams.

Groups Must be Properly Formed and Managed

In forming the groups, the instructor must manage two important variables. One is ensuring that the groups have adequate resources to complete assignments that are so sufficiently difficult that they can not be done by even the most talented individual in the class. Thus, the groups should be relatively large (5-7 members), as diverse as possible, and have approximately the same level of resources to draw from in completing their assignments (Michaelsen, Knight, & Fink, 2004). The other is avoiding establishing groups whose membership characteristics are likely to interfere with the development of group cohesiveness. Thus, the instructor must 1) form the groups and 2) use an approach that avoids either a previously established relationship between a subset of members in the group (e.g., boyfriend/girlfriend, fraternity brothers, etc.) or the potential for a cohesive subgroup based on background factors such as nationality, culture, or native language. (For specific methods for grouping students see www.teambasedlearning.org; Michaelsen et al., 2004, p. 39-40; Sweet, 2007.)

To ensure that groups have the opportunity to develop into learning teams, they should be formed at the beginning of the course and kept together throughout the semester. Only when students work together over time can their groups become cohesive enough to evolve into self-managed and truly effective learning teams (Michaelsen et al., 2004, Chapter 4). Over time, trust and understanding build to the point that members are willing and able to engage in intense give-and-take interactions without having to worry about being offensive or misunderstood.

Students Must be Accountable for the Quality of their Individual and Group Work

In traditional classes, there is no real need for students to be accountable to anyone other than the instructor.

Figure 1.