Assessing Group Learning Courses in Construction Management Technology

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Introduction

The need for college students to be actively involved in their own learning has received wide acceptance[1]. The value of teamwork and ability to solve problems in group environment for engineering and technology students is undeniable. Specifically construction is an interconnected process. The construction engineers and managers work cooperatively with many professionals and workers to implement design into reality. So it is logical to teach construction students group environment.

Assessment is the process by which evidence for congruence between a program's stated goals and objectives and the actual outcomes of its programs and activities is assembled and analyzed in order to improve teaching and learning [2]. Although classroom teachers have been testing students on their mastery of subject matters for centuries, there is a growing concern that traditional classroom tests are frequently used as summative evaluations to only grade students and not as effective feedback tools. Assessment of students' learning is considered as both a means and an end [3]. However, tests are effective ways to bound goals and objectives of the course. Research suggests that students concentrate on learning whatever they think will be on the test. As McKeachie and his colleagues observe whatever teachers' goals and no matter how clearly they present them, students' goals are strongly influenced by tests that determine grades [4]. No matter how clear the teacher is about the "big picture"; students are unlikely to share the view unless tests and other assessment measures point them toward it.

Learning in Team

A team is a group of people actively cooperating in an organized way to achieve a goal. . Learning in groups depends upon the synergy in a group. The assumption is the whole is more than the sum of the parts. Learning from each other and supplementing each other's strong attributes is the key in learning in groups. The relative effectiveness of different environments has shown the superiority of the learning in groups[5]. Students working in cooperative learning groups, relative to the other situations learn more. They also have more positive attitudes regarding the subject area. In a group environment students are more likely to acquire critical thinking skills, cognitive learning strategies and process skills that are essential in the work place[5]. As a team becomes involved in a lesson, the different information, perceptions, opinions, reasoning, theories, and conclusions of the members lead to disagreement. With constructive

management such controversies promote questioning, an active search for more information, and finally a restructuring of knowledge. This cooperative process results in greater mastery of the subject matter, retention of materials learned and more frequent use of critical thinking and higher level reasoning[6].

Active Learning for Construction Students

Meta-cognition is a term used by cognitive psychologists to describe students' understanding of their own learning skills, performance, and habits[7]. Two broad aspects usually included are (1) awareness and knowledge of self-as-a-learner, and (2) self control and self-regulation of cognition. The ability of students to monitor their learning while it is in process to see if they really do understand the lecture or text. Examples of monitoring strategies are self-questioning, paraphrasing and summarizing. These monitoring activities help make students more active participants in their own learning and give them more control over their learning. The learner or the students are central focused. The students are confronted with tasks to complete, a time deadline, teammates, and instructor who wander around asking questions.

Most of the construction students are traditionally tactile learners. The hands-on approach in learning usually is the method of choice for the construction students. Engineering and technology courses always contained learning-by-doing components. However, to maximize the student's natural talents many construction courses are taught as "active learning in a group environment". The classes are typically divided into teams of three students. The teams are continuously involved in problem solving in the classroom, supplemented by short lectures. The students use various assessment tools and techniques as part of the learning process.

Assessment: A Learning Component

Assessment provides an environment for constant improvement. The essence of assessment is that it asks students to create something of meaning. A good assessment incorporates complex thinking and problem solving, addresses important disciplinary content, invokes authentic or real-world applications and uses tasks that are instructionally meaningful. Learning is not only a one-way transmission of information from teacher to students. Meaningful instruction engages students actively in their learning. Learning to be meaningful and effective it must have clear visions. Assessment is a key part of this vision. The good teachers constantly assess how their students are performing, gather evidence of the progress and problems, and adjust their instructional plans accordingly. The students in the construction courses continuously participate in group assessment, giving the instructor an opportunity to adjust the goals and instruction methodology. For example, in Construction Methods and Materials course, repeated references to lack of adequacy of the textbook promoted the instructor to provide additional handouts and increase frequency of short lectures and subsequently change the text in the following semester. So assessment in true sense is not only the evaluation of performance of the students, but the evaluation of the course as well as the instruction. Assessment is one component of the Teaching-Learning-Assessment-Improvement loop.

Individual Assessment in Group Environment

Individual accountability is a key factor in any learning and assessment environment. The ultimate goal of the program is to prepare each of the students for a professional construction position. Each student is monitored and assessed frequently. Individual accountability is promoted by keeping the teams small, by rotating the roles of the team members, and by giving short quizzes at the end of every session. To promote positive interdependence, individual quiz grades are averaged or summed to obtain a grade for the team that eventually affects every member of the team.

Peer Assessment

Peer evaluation and assessment is a part of the United States higher education for a long time. However, using peer evaluation or students are quite uncommon. At Farmingdale construction students are able to evaluate their peers in terms of their input for successful assignment completion. It is not only the peers' capability or their understanding of the subject matter but also their role of helping other students to learn. So, such assessment says more about validity of cooperative learning than just evaluating individuals.

Self-Assessment in Group Environment

In any course students are likely to learn more if they are capable of clearly articulating their goals and making connections between those and course goals and requirements[1] . Self-assessment is crucial to learning progress. Most students do have learning goals, although they may find it difficult to articulate them. The information about students' goals can be very useful to teachers in planning and continuous improvement.

Tools of Assessment in Group

To validate learning in groups, a number of specialized tools are needed. These tools must have enough depth and breadth that will help accurately assess learning of the teams and their numbers. The main characteristics of these tools are their multidimensional input in the assessment process. Farmingdale's Construction students use these to evaluate their peers, evaluate themselves as a group as well as individual successes or failures. The faculty uses them to do the same for their students, individually and in group performance. The following is a brief discussion of these tools as used in the Farmingdale Construction courses.

Assignment Assessment Form

The purpose of this form is to evaluate the assignment and use it as a learning tool. These forms are filled up by the individuals and given to the team leader, who in turn assemble some of the common concerns and takes a few minutes to review with the team members before placing them

in the team portfolio. The instructors randomly select some of the assignment forms for their review.

Learning Journal

This is a free format self-assessment and learning tool. Students are required to write at least half a page (more is encouraged) summary of events at the end of each class. Here students could write down any relevant matters to the days' assignments and topics. They may also write their feelings of the class assignment or group members, any improvement, the observed, suggestions and perspective. A copy of the journal page is placed in the team portfolio. The original is kept in the student's own portfolio. Because of its true free format no specific aspects or questions are asked to the student except mentioning the date and the main topic of the day.

Weekly Report

The team leader, with the help of members, is responsible for completing this report. The purpose of this form is to assess the team's performance for the week. It also helps evaluate the assignments for the group. This report is given to the instructor weekly, the instructor must briefly comment on the report and then it is returned to the team to include in the team's portfolio.

Peer Evaluation Reports

Each member of the team evaluates other members of the team weekly. The purpose of this report is to get an insight of the team members of each others strength and weaknesses for given assignments.

Weekly Quizzes

This is traditional testing component of the overall assessment package. Construction students need to be trained in the technical context area thoroughly. The quizzes are kept short and relevant. The subject matter and topics are covered from the previous week's learning assignment.

Portfolio Review

There are two types of portfolios considered for the overall assessment. The team portfolio is kept by the team leader, where most of the reports and quizzes are kept for the whole semester. The individual portfolio is basically the individual's learning journal, but individual students are free to add any other relevant papers that may help the instructor to help evaluate comprehensively.

Conclusion

A key to learning is a well designed assessment process. The assessment, however, has no value

without student's actual learning of the subject area. So a well designed lesson plan and a well developed series of problems is actually the foundation of the assessment. As mentioned before the assignment must be supplemented by short and focused lectures. The assignment must be designed so that the students must spend some time outside the class working in teams. The other main component is individual student's preparation before coming to the class. The syllabus given at the beginning of the course must contain the relevant reading assignment for the students. One of the purposes of this non-traditional approach is to make the student more responsible for their learning. The experience has shown that the "free loaders" and slackers in the group are dealt within the group.

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Biography

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