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# BIM and FM: The Portal to Lifecycle Facility Management

# Teaching for Collaboration: Bringing our Practice to our Teaching

By Nancy Jordan, PhD and Lamar Henderson, RA

TEACHING FOR COLLABORATION IS RELATIVELY NEW TO our discussion concerning the education of students in the building industry and each of us pictures something different in its practice. For some, it begins with the traditional lecture—moving from theory to its application. Once students understand the relationships between the ideas and facts and their applications, they are assigned a collaborative project in order to use this imparted knowledge. These projects and assignments can take the form of case studies, simulations, discussions and topic research, to name a few. They can be short in-class tasks or much longer out-of-class activities. Practitioners are not only concerned with academic objectives, but also with the development of social skills, and are known for using the most structured techniques. For them, teaching for collaboration is “the instructional use of small groups so that students work together to maximize their own and each other’s learning” (Johnson et al. 1990).

## PROBLEM-CENTERED COLLABORATION

Departing radically from this perspective are practitioners who make problem-centered instruction fundamental to teaching for collaboration (Boomer et al. 1992; Mayher 1990; Jordan 1995). Rather than building with facts and ideas and then moving to application, they begin with problems. Instead of asking students to listen, observe and answer teacher questions, arguably a passive role, these practitioners ask student to be active learners—inquirers who can form their own challenging tasks and questions.

The following beliefs guide their thinking: 1) learning is a constructive and creative process; 2) learning is problem solving; 3) learning needs to be meaningful and experienced-based; and 4) learning is social and collaborative. In essence, for these practitioners, the learners need to set their own goals, solve their problems and develop their skills, ideas and knowledge in collaboration with others.

As teachers, along with their students, they take on various roles—expert, participant, facilitator and most importantly, learner. These practitioners see classrooms, workshops, labs and workplaces as learning communities. Every learner is important and has something to share, to learn. As one student has explained, “everyone in here is a teacher and I can learn from everyone.”

## WORKPLACE COLLABORATION

For most of us, it is much easier to imagine the more structured collaborative process mentioned first. It’s what most of us have experienced in our lives as students. Yet, the workplaces that we entered after leaving our formal studies have been ordered

quite differently. Our “real world” work has probably been more connected with the second perspective—collaboration based on problem solving.

In order to program, design, build and maintain architecture, as professionals in the field, we problem-solve and collaborate with many others. On one hand, we might be involved in construction sequencing necessitating our collaboration with a general contractor, sub-contractors, a construction loan originator, an owner, an insurance agent, a project manager, consultants (interior designers, sound system experts or landscape architects), material suppliers, and so on. On the other hand, our project might be facility management planning, requiring us to collaborate with a facility manager, an owner, renters (commercial), building engineers, a real estate manager, consultants (such as those listed earlier), maintenance staff and others.

Our success in either scenario, and in all of our projects in general, depends on how well we negotiate and problem-solve with all stakeholders involved in the particular jobs. Throughout any of our successful projects (and to maximize our achievements), we have probably worn the hard hat of expert, participant, facilitator and learner with all stakeholders taking on similar roles. For us, to build is to problem-solve, to collaborate is to learn. It would seem that the centrality of the collaborative process and its use in the practice of “real world” architecture should inform our teaching. If so, what would this collaborative process look like in the classroom?

## CLASSROOM COLLABORATION

Up front, readers need to understand that creating classrooms (workshops, seminars, discussion groups) that foster collaboration and problem solving can be wonderfully rewarding for teachers and students, but they can also be full of challenges and dilemmas. There is also no single “right” method for teaching for collaboration. Teaching evolves based on the needs of the students, their questions, their different ways of knowing and their experiences.

Planning is the foundation and begins with choosing a general theme for investigation. Topics usually develop from these themes and reflect patterns of thinking, goals and concepts common to bodies of knowledge in a particular field and are usually reflected in the course curriculum.

Let us take you inside our planning as we structure a class assignment around bathroom design. First, we need to consider important questions and multiple points of view (see **FIGURE 1**). Planning with others can help facilitate a richer perspective. Based on our questions, such as the ones found in **FIGURE 1**, we then choose the materials and activities. Notice that the arrows



show how the questions, materials, activities and the sharing with students continue to inform each and every decision and choice that are made. For example, we could decide to share the theme with the students by creating various centers in our classroom to exhibit artifacts (plans, renderings, walkthroughs, material lists, etc.) with each exhibit representing different types of bathroom designs that reflect time, purpose and place. Students would then be given the opportunity to explore the different exhibits and to write down questions and thoughts that the displays generate for them. Their questions and thoughts can be posted on the exhibits (or in a digital format) which can then be used to generate more questions and thoughts from other students.

Instead of beginning with artifacts that we collect, we could tell the students the theme and ask them to brainstorm everything that they already know about bathroom design answering the following questions: What do we know? What do we want to know? Or, we could visit bathrooms in different buildings on our campus and ask our students to explore the spaces—noting their thoughts on paper. Regardless which we choose, the purpose of these activities is to generate questions and discussions that are broad and include multiple perspectives.

Students would then choose questions and topics that they are interested in investigating. Small groups are formed around a question or similar questions. Each student then chooses which

group to join and topics for investigation are decided. For bathroom design in particular, students might form groups around a particular purpose and place for the bathroom and then design one. Groups then make plans for their topic investigation and/or design. As teachers, we check in with the groups and collaborate by asking our own questions based on their plans and adding ideas that the group might not have considered. We have found that students begin to ask us questions—questions that are important to their topics. When they ask the questions, they listen to the answers, and this is the best time for us to teach.

Starting with the broad theme of bathroom design, the work has now narrowed for each group. They have picked their topic and/or design purpose and place. Each student now picks a particular aspect to investigate or design which contributes to the group's work as a whole. All students might work on the overall design, but each would specialize, based on their own particular skill-set and expertise. One student might take on the plumbing while another focuses on the electrical. Another student might be in charge of the finances, and another one might take on finding the best materials for the design and its purpose.

Students then research their topic, consulting reference materials, models and practitioners in their field—and us, their teachers. Throughout the topic investigation and design process, as students switch their hard hats—from expert, to participant, to facilitator, and to learner, it's important that they bring their work to share with the whole class—the class community.

And finally, in order to culminate the area of study, the students could possibly put their investigations/designs into action by developing a full model of their bathroom—computer simulation, an actual bathroom, etc. Choice is crucial here. We have found that when students are responsible for their choices they usually exceed our expectations with their culminating projects (FIGURE 1 describes this entire process). And student success, as with “real life” projects in the field, also depends on how well each student negotiates and problem-solves with the other students involved in their particular project.

## A LARGER AGENDA

While we use teaching for collaboration because we believe it helps students learn more effectively, we also believe that it promotes a larger educational agenda, both for our students and for practitioners in the field. First, students are more actively involved in their own learning, with other students, with faculty and with practitioners in the field. Collaborating is both socially and intellectually involving. Second, students learn cooperation, teamwork and leadership skills as they encounter difference, building the capacity for tolerating and resolving disparity. Third, students learn civic responsibility.

Through dialogue, deliberation and consensus-building out of differences, students build the habits that foster participation in and responsibility to the larger community. And fourth, students begin to develop their identities as professionals as they solve problems, make judgments and decisions, and take on the responsibilities of creating, managing and building projects. These skills learned through teaching for collaboration can only benefit the building industry and the lifecycle of architecture.

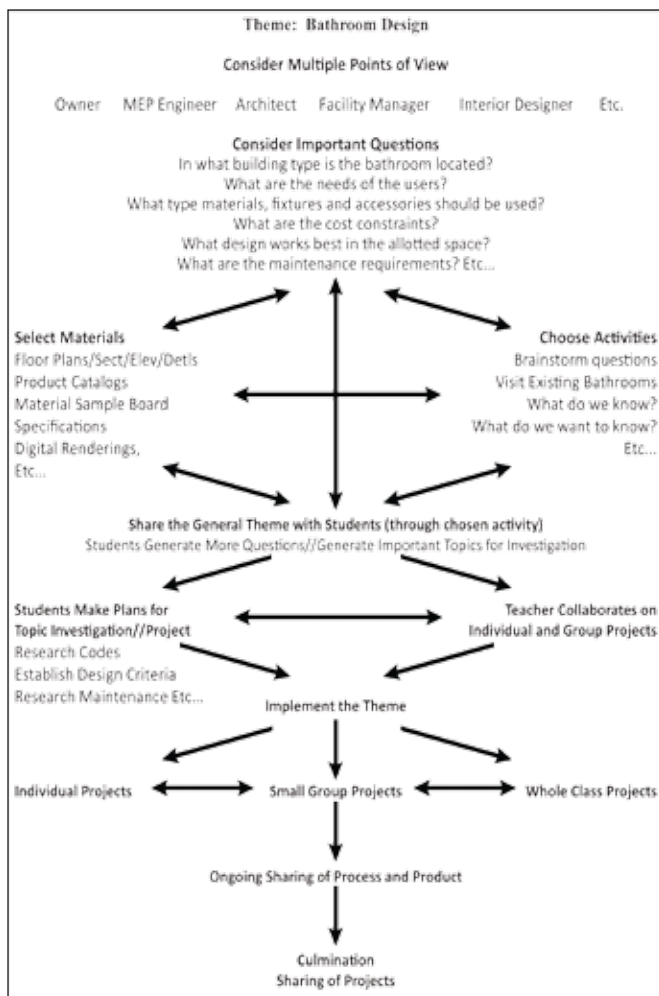


Figure 1.

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