BESTEAMS Advanced Project Management Module

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BESTEAMS Module Implementation Plan (MIP)
Advanced Level Project Management Module

Topic: Working Through Breakdowns & Completing a Project

I. Introduction/Motivation for Module Instructor

This is one of three advanced level BESTEAMS teamwork training modules for engineering students and faculty members. The three modules address personal knowledge, interpersonal effectiveness, and project management in a team setting.

This module is presented in two parts. BESTEAMS recommends teaching Part I, “Working through Breakdowns,” early in the semester and Part II, “Completing a Project,” as students are nearing the end of the term. Instructors are encouraged to consider the class’s maturity and integrate individual class characteristics into the lesson.

Even experienced team participants may encounter breakdowns during the course of their projects. This lesson, building closely on the Introductory and Intermediate Project Management modules, teaches students how to identify project breakdowns (as opposed to personal breakdowns or interpersonal conflicts) as well as resolve them. An important distinction exists between the Project Management domain versus the Personal Knowledge and the Interpersonal Effectiveness domains. In Project Management, the focus is on the successful completion of the project, while personal growth and satisfaction are secondary goals. Subsequently, a breakdown is defined as something that goes wrong within the project that results in stakeholder dissatisfaction. In this case, a stakeholder includes anyone with a vested interest in the project.

In this module, BESTEAMS identifies six causes of project breakdowns (Gido & Clements, 1999):

- Work scope
- Resource assignments
- Schedule
- Cost
- Priorities
- Group dynamics/individual differences

Why is it important to identify breakdowns? Team members may find it tempting to ignore the situation in hopes that time will solve the problem(s). However, the reality is that external stakeholders (professors, clients, etc.) are expecting a product within a certain timeline. Ignoring the breakdown may jeopardize the completion of the project. Acting to identify the problem causing the breakdown, and then solving that problem, will also help prevent future breakdowns (Gido & Clements, 1999).

Part II of this module addresses completing a project. BESTEAMS recommends offering this material toward the end of the semester, when the end is in sight for students, or as a lecture after the project has been graded and returned.

This section emphasizes the difference between finishing a project, which often means handing in the final product, and completing a project, which involves extensive evaluation and recommendations for improvement (Martin & Tate, 1997). By formally closing out a project, individuals and teams learn how to capitalize on their strengths as well as correct their mistakes in the future. Furthermore, this offers a chance for guided reflection as the project winds down. This is corroborated by Tuckman’s model of
team development (forming, storming, norming, performing). After much research, Tuckman and collaborator Jensen added a fifth phase, “Adjourning,” which essentially recognizes the need individuals have for closure after working closely together on a project (Famous models, n.d.). For more information on this team development model, see the Introductory Interpersonal module.

**Expected Outcomes of the Module**

As a result of implementing this module, it is expected that students will experience multiple positive outcomes that will enhance their understanding of project management, with consequent improvement of their team skills.

*Module Part I (slides 1-18)*

Students will:
- Gain insight into how to identify a breakdown is occurring
- Gain insight into the primary sources of breakdowns
- Gain insight into resolving breakdowns

*Module Part II (slides 19-27)*

Students will:
- Gain insight into how to close out a project
- Gain insight into how participating in closure activities improves future team performance

**II. Delivery Plan Part A: 50 Minute Class Option**

A. Introduce the module and objectives of the lesson (slides 1-2). Assimilators appreciate this introduction because it helps to clarify the long-term value of the material. Likewise, Accommodators, who tend to get excited by new ideas, will be anxious to try out these strategies.

B. Focusing question (slides 3-5): How do projects progress over time? This focusing question asks students to graph their expectations before hearing the instructor’s view. This is an appropriate activity for students to complete individually. Assimilators may prefer this approach, for they tend to dislike group work. Divergers will also appreciate it, for it allows them to integrate their own experiences with the module’s material. Most students will diagram a direct relationship between the amount of time spent on a project and the progression toward completion (slide 4). However, experience tells us that reality is seldom that tidy. Rather, a project’s course may include both windfalls and setbacks, resulting in an unpredictable path (slide 5). These setbacks may be temporary issues (i.e., waiting for a lab to become available or for a part to be delivered), but they may also indicate a larger issue: a breakdown.

C. “Understanding breakdowns” exercise (slides 6-7). This activity asks students to consider the definition of breakdown before they are provided with the answer. Accommodators will appreciate this activity, for their learning preference is to discover new ideas for themselves. The instructor may notice that students identify breakdowns solely with negative connotations.

The second slide (slide 7) offers a diagram to help students visualize how breakdowns occur. Within every project, there are three levels: the team, the task, and the external stakeholder(s). Breakdowns usually occur in the interaction between two of these. For
example, the team may not be communicating effectively with the external stakeholder, or it may be solving the wrong task. However, problems within each level may also cause breakdowns. To illustrate, an interpersonal conflict may escalate to a point where a project breakdown occurs. Understanding the relationship between these levels is important for avoiding breakdowns, and solving them once they occur.

D. Post-Breakdown review (slides 8-9). Depending on class length, this section may be presented as a discussion or in lecture format. Divergers would appreciate the opportunity to brainstorm a list, while Assimilators would prefer hearing the teacher explain the effects of a breakdown. Either way, students should be prompted to consider their traditional methods for handling breakdowns, including ignoring the problem, confronting it, and approaching a teacher. If students are unsure about how to identify a breakdown, they should ask themselves: “Do I dread working on this project?” If the answer is yes, chances are good that a breakdown in occurring. Students should be reminded that breakdowns are from the project perspective, not the personal perspective.

E. Lecture on the sources of breakdowns (slides 10-15). Instructors should remind students that some conflict on projects is inevitable. Subsequently, learning the proper tools for solving the problems effectively is more important than perpetually trying to avoid them. The following slides outline the six sources of breakdowns, as well as provide examples of each type. Assimilators will appreciate this lecture, for they like to know what the experts think. Likewise, Convergers will appreciate the examples, which integrate theory and practice.

1. Work scope (slide 10). A variety of conflicts can arise when team members disagree about how much effort should be put into a particular task. Alternately, conflicts may arise between project levels. For example, the team members may misunderstand the level of detail required by the external stakeholder, resulting in a breakdown.

2. Resource assignment (slide 11). Students should be encouraged to remember the distinction between time and effort in project management (as discussed in the Introductory Project Management module) when assigning resources to team members. Whereas it may take two weeks of “time” to receive shipment on certain materials, it may take very little “effort” from the team member assigned to that task. Similarly, teammates should be assigned tasks that are within their technical capabilities.

3. Work schedule (slide 12). Breakdowns may occur when team members disagree regarding the sequencing of tasks, the length of time to complete a task, or the identification of milestones.

4. Budget (slide 13). Depending on the nature of the project, this slide may not be applicable to all student project teams. However, even if students do not have a budget for this particular project, the instructor should remind them that professional engineers must take into account the possibility that cost conflicts will cause a breakdown. For example, if a cost estimate is substantially lower than reality, but this is not discovered until the project is nearly complete, who should pay for the cost overruns? The project team? The client? Convergers will enjoy finding the one “right” answer to this problem.
5. Competing priorities (slide 14). This situation may cause a breakdown if a team is comprised of members who feel differently regarding acceptable grades or amount of effort put into the project. Other competing priorities may include disagreement over the value of the customer, or tension regarding how much time to devote to the project when outside commitments (e.g., a different class’s assignment) arise.

6. Group dynamics/individual differences (slide 15). This breakdown source refers to the structures that exist for the project that can lead to individual differences. For example, team members may disagree about the appropriate method of communication (email versus phone calls), meeting time and place, or level of paperwork.

F. Resolving breakdowns (slides 16-17). Identifying the breakdown is not sufficient. Students must also learn to solve the problems that lead to a breakdown. Why? If the problem is not resolved, it is destined to repeat itself, leading to dissatisfaction. In contrast, solving the problem encourages ownership over the project, and teaches students to develop long-term solutions.

Slide 17 offers a number of questions designed to help students identify the sources of their breakdown. More importantly though, it reminds team members that solving a breakdown from one source may have consequences for the other potential breakdown sources. Subsequently, once students have identified the problem behind the original breakdown, it is imperative that they revisit all other potential sources of trouble to protect against future problems. Solving one problem but turning it into another problem may result in project failure.

G. Summary (slide 18). Conflict is good? Yes! Conflict can help ensure smoother team functioning and result in a better project. Students should be reminded of the lock and key analogy. If a lock has six tumblers, it will only open smoothly when all of them are aligned. Though the door may be forced, that could just as easily break the lock. Congruently, ignoring breakdowns may result in a weaker, and less satisfying, product. However, responding to them professionally will allow the project to unfold freely. Likewise, resolving breakdowns enables students to develop important professional skills.

III. Teaching to the learning styles

A. Quadrant 1 (Diversers): Driven to learn by asking the question “why?” (In this case, “why is this information important to me?”)

Focusing question: Diversers tend to feel comfortable in a classroom that provides opportunity for them to share their own perspective as well as understand those of others. Giving them a moment to incorporate their own experiences with the upcoming task allows them to buy into the module’s goals.

Identifying breakdowns: This activity encourages students to listen to each other and gather information, exercises which Divegers prefer. It also allows teams to work together, providing an interpersonal harmony Diversers find appealing.

B. Quadrant 2 (Assimilators): Driven to learn by asking the question “what?” (In this case, “what is a project breakdown?”)
**Post-breakdown review:** Assimilators prefer to do this activity on their own, because they are uncomfortable with multiple forms of authority. They might particularly dislike this activity if a brainstorming session were to ensue.

**Lecture on the sources of breakdowns:** Because Assimilators tend to think linearly, they will appreciate the orderliness of a chronological lecture that addresses all the main points of breakdowns. They also are comfortable learning what the experts think on a particular subject.

C. **Quadrant 3 (Convergers):** Driven to learn by asking the question “how?” (In this case, “how can this material help me better understand myself or my abilities?”)

**Introduce the modules and the objectives:** Clearly identifying the learning objectives of the module appeals to the Converger’s need to understand the rationale behind teaching a particular lesson.

**Breakdowns caused by budget problems:** Considering real life problems and developing the right answer appeals to these learners. Convergers are particularly good at integrating theory and practice.

D. **Quadrant 4 (Accommodators):** Driven to learn by asking the question “what if?” (In this case, “what if I used this information about myself to my advantage on my team? What would I do or how would I act differently?”)

**Understanding breakdowns:** Accommodators prefer this type of activity that allows them to develop an answer before hearing the expert opinion, for it allows them to “get to the doing” instead of listening in a traditional lecture-style format.

IV. **Delivery Plan B: 90 Minute Class Option**

A. Debriefing activity (slide 20). This slide asks students to consider what typically happens when they hand in their final project. Typical answers are included on the following slide. Divergers will appreciate the opportunity to share their thoughts, and Convergers will wonder when the class will move away from the talking and on to the “action” stage.

B. Finishing a project versus completing a project (slides 21-24). There is a very explicit distinction between finishing a project and completing one. When individuals finish a project, they generally turn it in and move on to the next item: “out of sight, out of mind.” There are drawbacks to this method though. As creatures of habit, we tend to repeat our experiences, so the mistake we make at one job or with one individual will often occur the next time we find ourselves in a similar situation. When negative history repeats itself, it is because we failed to learn the first time we experienced it.

To avoid this repetition, students must learn how to complete a project. The instructor should show students slide 22 and encourage them to consider what it might mean to complete a project (as opposed to finishing a project). This is a particularly important concept in the engineering classroom, for students are expected to learn and grow from the new concepts they are encountering, and the new tasks they are practicing.

Once students have considered the answers to the question, the instructor should show them slide 23, which offers the key component to completing a project: evaluation. Learning to
assess the project after it has concluded is vital to ensuring personal and project development. Assessment should occur on a number of levels. First, there must be some self-evaluation, where the student (honestly!) evaluates how he or she performed. Second, the student should evaluate the team process. Third, the team should meet to review the experience and note the lessons learned. Finally, the professor assigns a team grade. See the end of this packet for commonly used BESTEAMS assessment forms.

Completion (slide 24). Completing a project well takes time and courage, but it also provides for a much richer and worthwhile learning experience, and teaches lessons that are much-needed in the professional world.

C. Identifying categories for evaluation (slide 25). This slide offers discussion points for teammates to work from as they evaluate their experience. Though performance is listed first, equally important are the relationships with stakeholders and an honest discussion of how well the team communicated. Before winding down, teams should clearly identify the lessons learned, as well as how these will be incorporated into future actions.

D. Participating in the completion exercise (slide 26). There are a couple of ways this exercise may be completed. Depending on the maturity level of the class, the instructor may ask teams to develop an agenda which takes them through the talking points of the completion exercise. Another less sophisticated option is to show students the slide, which provides prompting questions.

E. Integrating external stakeholders (slide 27). Showing this last slide is optional. If students have been working with external stakeholders, an important task for the instructor is to ensure stakeholders are contacted so they can provide feedback on the team project. If a student or entire team behaved poorly with the client, or produced a shoddy product, this evaluation should be recognized and incorporated into the project completion and final grade. If this contact between instructors and external stakeholders will occur, students should be notified from the start of the term.

V. Class Adaptation Strategies

A. Size: Depending on the class size, the “understanding breakdowns” activity may be adapted to accommodate larger or smaller classes. In a large lecture, students may write the answers down for themselves or the professor may ask students to answer his or her prompting. In smaller courses, placing students in their project teams to discuss this may begin to help them consider how they will work through breakdowns as a team. Similarly, the “completing a project” prompt may be used as an individual writing assignment for large classes or as a discussion topic for small groups.

B. Content: If possible, course content should be integrated into the lesson. As students begin discussing breakdowns and project completion with their teammates, they should consider how they will practice these lessons throughout the semester.

C. Classroom culture: If the class has representatives of underrepresented groups, working through breakdowns and completing a project are especially important. Working through breakdowns should help make the classroom environment more hospitable, leading to the retention of women and minorities. When teams are completing a project, they will hopefully identify the contributions of those with different backgrounds as a team strength, which lead to a better product.
VI. Follow-up Materials

A. Homework: To ensure subject-matter continuity, the instructor should assign some type of assignment to be addressed during the next class. This may include a short reading section (see References at the end of this MIP) or a brief writing assignment.

B. Report Writing: If class time runs short or students do not appear to be taking the lesson seriously, the questions on slide 26 may be assigned as a short essay. This can also be assigned in levels, where individuals write their answers first, and then teams meet to answer the questions together.

C. Exam or Quiz Item: Short answer questions may include:
   - What is the difference between finishing a project and completing it?
   - What are the causes of breakdowns? How do you solve them?

VII. References


