

Encouraging Participation in a Management Accounting Classroom

Barbara Lamberton, Associate Professor of Accounting
Barney School of Business, University of Hartford

ABSTRACT

An ongoing challenge in the college classroom is to keep students engaged and encourage participation in class discussions. Storyboarding, a collaborative technique borrowed from the entertainment industry and business, has been used in the classroom to draw out responses from students who are typically reluctant to participate in class discussions. In addition, storyboarding can stimulate creativity, facilitate the sharing of information and enable teamwork. For decades, this technique has been a critical component in the creative process in the entertainment field. Historically, Walt Disney is credited with formulating the storyboarding process as a quick visual means of organizing ideas, developing stories and characters. This paper describes the use of storyboarding, with and without technology, in a graduate managerial accounting course.

Keywords: Class discussion, Student participation, Collaborative Learning

INTRODUCTION

Increasingly, business educators look to innovative teaching methods, such as active learning and the use of technology, to provide students with a transforming and exciting learning environment. According to seven principles of good undergraduate teaching (Chickering & Ehrmann, 1996; Chickering & Gamson, 1987), active participation of the student is critical to effective learning. The authors suggest that “sharing one’s own ideas and responding to others’ reactions sharpens thinking and deepens understanding.” The implication is that good teaching methods encourage active participation by all the students. Yet, more often than not, some students tend to dominate class discussions while others may be reluctant to speak their minds in front of their classmates. In *Tools for Teaching*, Davis (2009) suggests that the more reserved students may actually be “waiting for a non-threatening opportunity” to express their thoughts. Similarly, Davis suggests that the enthusiasm of students “who monopolize the discussion” can be carefully channeled in order to avoid having one or two students dominate class discussions to the exclusion of the rest of the class.

Technology has also been touted as a means to improve the educational process. In their book on building learning communities, Palloff and Pratt (2007) argue that computer technology is beneficial in encouraging student participation. Specifically, the authors suggest that the ability to communicate via computers is especially beneficial to students who are “...quieter than their peers and less likely to enter into a classroom discussion” p.9. It has also been suggested that current and emerging technologies may help stimulate creativity (Proctor, 2014).

The purpose of this paper is to describe storyboarding (with and without technology) as a tool for encouraging wider and greater participation in the accounting classroom. Storyboarding, a collaborative management technique, has been used by the entertainment field and many businesses to stimulate creativity and promote greater involvement and participation in the decision-making process. An adaption of the concept of brainstorming, storyboarding (Barr, 1988; Ragon & Kittleson, 1994), asks participants to use storyboards to communicate responses to specific questions using pictures and/or words. The storyboards document and present individual responses with these responses ultimately becoming an integral part of a group discussion. The process of creating the storyboards has been found to improve participant engagement (Dexter, 2016; Lillyman, Gutteridge, & Berridge, 2011). Storyboarding has also been found to be helpful in gaining consensus and acceptance of group decisions in a way that is non-threatening to individual participants (Barr, 1988). Davis (2009) suggests that requiring everyone to “jot down a response” as a prelude to discussion can be an effective means to “discourage students who monopolize the discussion” p.109.

This study also describes technology enabled storyboarding. Communication via computer has been found to result in greater participation by students who would otherwise be uncommunicative. The implication is the reticent student may find technology enabled storyboarding a relatively less intimidating environment.

STUDENT PARTICIPATION

Keeping students interested and engaged is increasingly a top priority and encouraging student participation is one important dimension of engagement that many academics find challenging. Those of us who have taught for a while have also noticed that today's students, to a larger extent than past student generations, expect far more than straight lectures from their instructors (Allred & Swenson, 2006; McCutcheon, 2015; Stapleton, Wen, Starrett, & Kilburn, 2007). Millennial students expect to be engaged and interact. The question often comes down to trying to understand student why some students are less communicative than others and what an instructor can do to help.

In a study of class participation and personality, Williams (1971) found some major differences between active participants and those who do not participate. Although he did not find personality characteristics such as introversion/extroversion significant, he did demonstrate a significant relationship between greater participation and the individual's sense of security. Specifically, active participants were found to have low levels of insecurity. Williams suggests that "one major deterrent to participation is the perception of personal threat" p.197.

Previous research also tells us that student participation is an essential part of the learning process and that the instructor can make a difference. In particular, research also tells us that making the student comfortable with class discussions needs to be part of any strategy to widen participation (Dallimore, Hertenstein, & Platt, 2006, 2010, 2013). This stream of research suggests that that cold-calling, which many consider problematic, can actually be quite effective. Specifically, the authors (Dallimore et al., 2006) suggest that professors "...warm up" their cold calls to ensure that students have a positive experience and that they fully benefit from participating in the discussion" p.373. In an extensive review of the literature Rocca (2010) concluded that participation is important and "...classroom climate is critical to higher levels of participation"p.204. Prior research also suggests students interacting with each other experience positive benefits for learning (Hertenstein, 1991). In a more recent study of the influence of participation on student performance in an accounting theory course, Ward and James (2015) found a significant relationship between participation and performance on virtually all assignments.

STORYBOARDING

The use of storyboarding in businesses and in the classroom represents an extension of the technique used by Walt Disney (Pallant & Price, 2015) as a means for generating and organizing creative input from a wide variety of participants. Although the purpose of storyboarding at Disney was to facilitate the development of film, both academics and non-academics have adapted the technique as an effective means to stimulate creativity, share ideas and/or facilitate consensus building in different settings (Atkinson, 2011; Barr, 1988; Kolod & Ungar, 2016; Mentzer, 2014; Ragon & Kittleson, 1994; Reeder, 2005). In settings outside of the entertainment field, storyboarding has successfully been used to generate and organize concepts and enhance collaboration (Atkinson, 2011; Barr, 1988; Fraser, 2003; Proctor, 2014). In reviewing five case studies, Fraser found that storyboarding was critical to project success by facilitating sharing of information and teamwork while fueling creativity. Barr (1988) reports how storyboarding was used at General Electric to deal effectively with design engineering challenges. Referring to the method as "a sophisticated form of brainstorming", Barr (p.45) concludes that storyboarding is a valuable technique for bringing together and documenting diverse perspectives for problem solving. Reeder (2005) suggests that storyboarding provides benefits for both industrial engineers and industrial engineering students.

In discussing the value of storyboarding for health education Ragon and Kittleson (1994) describe the method as type of brainstorming. According to the authors (Ragon & Kittleson, 1994), storyboarding provides organizations with the means to "... maximize team collaboration through an activity that is virtually void of criticism" p.15. By facilitating the organization and documentation of ideas, the storyboards themselves allow the process to be conducted over several time periods while giving participants a great deal of flexibility in how they communicate their thoughts. Typically, participants have the option to use pictures, words or a combination of both (Barkman, 1985; Ragon & Kittleson, 1994) as part of the process.

Storyboarding has also been found to be valuable for the education of nurses (Dexter, 2016; Lillyman & Bennett, 2012; Lillyman et al., 2011). Lillyman et al. (2011) found that storyboarding led to greater engagement of students and improvement of critical thinking skills. Similarly, Dexter also found student engagement enhanced through storyboarding.

Besides promoting creativity, storyboarding has also been found to dramatically increase participation rates even among normally reluctant participants while helping to build consensus. *In Creative Problem Solving for Managers*, Proctor (2014) describes the benefits of Storyboarding:

“Storyboarding is like taking your thoughts along with the thoughts of others and spreading them out on a wall as you work on a project or solve a problem. When you put ideas up on storyboards, you begin to see interconnections, how one idea relates to another, and how all the pieces come together. Once the ideas start flowing people ‘hitch-hike’ onto other ideas” (p. 234)

Traditionally, storyboarding has been accomplished by the use of “Pen and Paper” techniques. The “Pen and Paper” approach, however, has drawbacks such as problems with handwriting, keeping track of materials, and requiring a great deal of in-person meetings for the participants. In recent years, a number of companies have started to use technology, including using PowerPoint as an authoring tool to streamline and improve the efficiency of storyboarding (Atkinson, 2011). Technology is also expected to enhance the storyboarding process by providing an environment which is less intimidating for individuals who tend to be less communicative in a group setting.

Traditional “Pen and Paper” Storyboarding

The traditional storyboarding process begins with selection of a “topic” which can be as focused as one learning objective or as complex as a major group project. The materials needed before the process starts include large quantities of index cards in various colors and sizes, pens, push pins and masking tape. The index cards are needed to document each participant’s responses. There is also the need for a large textured wall or a large bulletin board for placement and replacement of the storyboards represented by index cards. Alternatively, post-it notes can be used in place of the index cards allowing the storyboards to be posted without the need for masking tape or push pins.

Using index cards or post-it notes and working independently, each student writes down his or her solutions/ideas related to a given topic. A separate index card or post-it note is used for each solution/idea. Once the topic has been introduced and each student has written responses, group discussion commences with each student explaining his or her solution to the others. (See Table 1 for a description of the typical phases involved).

Technology Enabled Storyboarding

Although there are other software packages that could be used as an authoring tool, PowerPoint was used since it is widely available throughout many campuses and it has been used successfully for storyboarding in businesses and non-profits (Atkinson, 2011; Kisak & Conrad, 2004). For that reason, this paper describes technology enabled storyboarding using PowerPoint as the authoring tool. Using PowerPoint for storyboarding has been suggested by several authors (Atkinson, 2011; Kisak & Conrad, 2004) as an effective means to facilitate the process. The use of PowerPoint eliminates the need to mount and spread out many index cards or post-it notes on a bulletin board or wall. An added expected benefit is that the student participants gain experience in the use of PowerPoint in a non-typical setting. (See Table 2 for a description of the typical phases involved).

THE STORYBOARDING ASSIGNMENT

Any number of managerial accounting topics can be adjusted to fit storyboarding, such as building an Activity-Based Costing (ABC) system (see Table 3) or designing a Balanced Scorecard. For example, for the ABC assignment, the initial emphasis is on generating as many potential cost drivers as possible. Each student’s list is then discussed in turn by the group and sorted. It is only in the final phases of the process that the group is asked to pare down the number of cost drivers and come to a resolution. It is crucial that the facilitator emphasize the importance of generating and discussing as many cost drivers as possible in the first few phases of the process. It is helpful to post a picture of smiley face or some other positive visual to reinforce the concept that the objective is to focus on identifying a large number of drivers. Later in the process, the groups will need to critically evaluate the drivers and come to one or more solutions. At that point, the facilitator removes the positive visual posted earlier or replaces it with something that suggests it is time to pare down the solutions.

OBSERVATIONS ABOUT STORYBOARDING

The course using storyboarding is required as part of the school's MBA program and is offered at night. Most students come to class after a full day of work and the challenge is to keep them interested and engaged. For a number of semesters, building an ABC system had been a topic and an in-class exercise for this class. The ABC system exercise was transitioned to "Pen and Paper" storyboarding with student performance (with and without storyboarding) being unobtrusively observed by walking around the room periodically. Although transitioning to "Pen and Paper" storyboarding resulted in an increase of only 2 more items over the exercise without storyboarding, there were a number of positive comments from students about the storyboarding experience. Several students mentioned that requiring everyone to participate by writing down the drivers kept them involved even in spite of being tired. Others stated that storyboarding helped them understand what we were trying to accomplish with ABC. Several students mentioned that they learned a lot from the interaction with the other students in coming to a final resolution. I also sought out students who had never participated previously and asked their opinions. Storyboarding seemed to provide a less stressful environment for them.

In subsequent semesters the ABC assignment was transitioned to the technology enabled approach. Students were asked to use PowerPoint as an authoring tool to keep track of their lists. The results showed that the number of items listed increased by 7 over the "Pen and Paper" storyboarding. Comments were quite positive with students expressing the same type of positive comments observed with "Pen and Paper" storyboarding. Storyboarding with technology, however, seemed better at creating an atmosphere that encouraged everyone to fully participate. One student stated that working on the computer was far less intimidating than jumping into a class discussion dominated by one or two people. In addition, unexpectedly, a number of students indicated that they felt that the exercise helped them improve their PowerPoint skills.

CONCLUSION

Previous research indicates that student participation is a critical component of the learning process and instructors can make a difference by employing certain teaching methods and strategies. Many students find active participation intimidating and/or threatening to some extent. Millennial students, in particular, expect more interaction and less of lecture format as part of the learning process. Storyboarding, a technique adapted from the entertainment industry, is suggested as a way to create a more inviting experience in which students feel free to express their opinions and exchange thoughts with others in the class. Traditionally the technique has been implemented using a "Pen and Paper" approach, which although effective, has some drawbacks that can be overcome with technology. Technology enabled storyboarding, therefore, is suggested as the way to encourage student participation and enhance collaboration.

REFERENCES

- Allred, C. R., & Swenson, M. J. (2006). Using Technology to Increase Student Preparation for and Participation in Marketing Courses: The Random Selector Model. *Marketing Education Review*, 16(1), 15-21. doi:10.1080/10528008.2006.11488932
- Atkinson, C. (2011). *Beyond Bullet Points: Using Microsoft PowerPoint to Create Presentations That Inform, Motivate, and Inspire* (3rd ed.). Redmond, WA: Microsoft Press.
- Barkman, P. (1985). The Storyboard Method: A Neglected Aspect of Organizational Communication. *Bulletin of the Association for Business Communication*, 48(3), 21-23.
- Barr, V. (1988). The Process of Innovation: Brainstorming and Storyboarding *Mechanical Engineering: The Journal of the American Society of Mechanical Engineers*, 110(11), 42-46.
- Chickering, A., & Ehrmann, S. (1996). Implementing the Seven Principles: Technology as Lever *AAHE Bulletin*, 49(2), 4.
- Chickering, A., & Gamson, Z. (1987). Seven Principles for Good Practice in Undergraduate Education. *AAHE Bulletin*, 39(7), 5.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2006). Nonvoluntary Class Participation in Graduate Discussion Courses Effects of Grading and Cold Calling. *Journal of Management Education*, 30(2), 354-377.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2010). Class Participation in Accounting Courses: Factors That Affect Student Comfort and Learning. *Issues in Accounting Education*, 25(4), 613-629.
- Dallimore, E. J., Hertenstein, J. H., & Platt, M. B. (2013). Impact of Cold-Calling on Student Voluntary Participation. *Journal of Management Education*, 37(3), 305.
- Davis, B. G. (2009). *Tools for Teaching* (2 ed.). San Francisco, CA: Jossey-Bass.
- Dexter, Y. (2016). Storyboarding as an aid to learning about death in children's nursing. *Nursing Children and Young People* (2014+), 28(5), 16.
- Fraser, S. W. (2003). Project storyboards: catalysts for collaborative improvement. *International Journal of Health Care Quality Assurance*, 16(6/7), 300-305.
- Hertenstein, J. H. (1991). Patterns of participation. In C. R. Christensen, D. A. Garvin, & A. Sweet (Eds.), *Education for Judgment: The Artistry of Discussion Leadership*. (pp. 175-191). Boston, MA: Harvard Business School Press.
- Kisak, A. Z., & Conrad, K. J. (2004). Using Technology to Develop and Distribute Patient Education Storyboards Across a Health System.

- Oncology Nursing Forum*, 31(1), 131-135. doi:10.1188/04.ONF.131-135
- Kolod, L., & Ungar, B. (2016). A Collaborative Journey The Learning Commons. *Teacher Librarian*, 43(4), 22-27.
- Lillyman, S., & Bennett, C. (2012). Using storyboarding to gain appreciative reflection in the classroom. *Reflective Practice*, 13(4), 533.
- Lillyman, S., Gutteridge, R., & Berridge, P. (2011). Using a storyboarding technique in the classroom to address end of life experiences in practice and engage student nurses in deeper reflection. *Nurse Education in Practice*, 11(3), 179-185.
- McCutcheon, R. S. (2015). A Fun Method of Engaging Students in the "Capitalism vs. Socialism" Discussion. *Journal of Private Enterprise*, 30(2), 117-120.
- Mentzer, N. (2014). holding students accountable IN TEAM PROJECTS. *Technology & Engineering Teacher*, 74(3), 14-20.
- Pallant, C., & Price, S. (2015). Storyboarding at Disney. In C. Pallant & S. Price (Eds.), *Storyboarding: A Critical History* (pp. 45-62). London: Palgrave Macmillan UK.
- Palloff, R., & Pratt, K. (2007). *Building Online Learning Communities- Effective Strategies for the Virtual Classroom* San Francisco, CA: JoseyBass.
- Proctor, T. (2014). *Creative Problem Solving for Managers: Developing Skills for Decision Making and Innovation* (4th ed.). New York, NY: Routledge.
- Ragon, B. M., & Kittleson, M. J. (1994). Storyboarding: A program planning tool for health education. *Wellness Perspectives*, 10(4), 15.
- Reeder, K. (2005). Using Storyboarding Techniques to Identify Design Opportunities. *Technology Teacher*, 64(7), 9-11.
- Rocca, K. A. (2010). Student Participation in the College Classroom: An Extended Multidisciplinary Literature Review. *Communication Education*, 59(2), 185-213. doi:10.1080/03634520903505936
- Stapleton, J. L., Wen, H. J., Starrett, D., & Kilburn, M. (2007). Generational differences in using online learning systems. *Human Systems Management*, 26(2), 99.
- Ward, T. J., & James, K. L. (2015). Student Participation and Performance in a Graduate Accounting Theory Class *Academy of Educational Leadership Journal*, 19(2), 143-157.
- Williams, R. L. (1971). Relationship of Class Participation to Personality, Ability, and Achievement Variables. *The Journal of Social Psychology*, 83(2), 193-198. doi:10.1080/00224545.1971.9922462

Table 1 “Pen and Paper” Storyboarding

- 1. Generation of solutions/ideas.** Working independently, each participant writes down all the possible solutions/ideas related to the story or topic with each solution/idea being written on a separate index card or post-it note. If the class period is short this phase can be assigned as homework. The emphasis at this point is on generating many possible solutions/ideas and 100% participation. A critical element of this phase of Storyboarding is to encourage each participant to focus on the quantity rather than the quality of solutions/ideas. As a consequence, this approach prevents one or two highly vocal individuals from dominating the generations of solutions/ideas. The class is split into groups of between 4-6 students to facilitate discussion. The cards or post-it notes are collected and posted on a wall or bulletin board and form the basis for group discussion, the next phase. The facilitator often places a large smiley face picture prominently on the board reiterating that at the stage we want as many solutions/ideas as possible.
- 2. Group Discussion.** Each solution/idea that was recorded on an index card or post-it note is reviewed with each participant explaining his or her solutions/ideas to the group. Understanding the concept behind each solution/idea is critical for success in the next phase which requires an appreciation of the similarities and differences among the solutions/ideas.
- 3. Sorting.** Based on further group discussion, the cards are sorted into similar categories. The emphasis is on finding solutions which seem to cluster on similar concepts. Each clustering of similar cards is given a separate title to distinguish it from the others and communicate its general meaning. The title for each cluster of similar concepts is recorded on a larger, different color index card or post-it note called a header card.
- 4. Group Review.** At this stage, the group reviews the clustering of concepts and decides to do further sorting, adding or deleting cards as needed. The facilitator often removes the smiley face picture from the board signaling that the time can come to be critical. Some facilitators will actually place a frowning face on the board at this point.
- 5. Pare down the solutions.** The group selects a limited number of solutions. This phase may require a multi-stage voting process to achieve a consensus. Depending on the topic and assignment it may require a number of computations as well.

Table 2 Technology Enabled Storyboarding

- 1. Generation of solutions/ideas.** Working independently and using PowerPoint, each participant documents all the possible solutions/ideas related to the story or topic under consideration. Participants are instructed to create a separate slide for each possible solution/idea using the title section of the slide. This phase of the process can be assigned as homework. Alternatively, creation of the slides can be accomplished in class using a computer lab setting or by asking students to bring laptops or tablets with PowerPoint to class. Similar to the approach with “pen and pencil” storyboarding, the class is split into groups of between 4-6 students with the facilitator emphasizing that the goal is to enumerate as many ideas/concepts as possible. Typically, students submit slides using a collaboration tool such as Groups in Blackboard. Some students elect to use SKYPE to facilitate dissemination and discussion of ideas.
- 2. Group Discussion.** Each solution/idea is reviewed with each participant explaining his or her solutions/ideas to the group. Understanding the concept behind each solution/idea is critical for success in the next phase which requires an appreciation of the similarities and differences among the solutions/ideas.
- 3. Sorting.** Based on further group discussion, the slides are sorted into similar categories. The emphasis is on finding solutions which seem to cluster on similar concepts. Each clustering of similar slides is given a separate title to distinguish it from the others. Participants are encouraged but not required to include visuals (clipart, pictures, drawings) for the heading of similar concepts to help communicate its general meaning.
- 4. Group Review.** At this stage, the group reviews the clustering of concepts and decides to do further sorting, adding or deleting slides as needed. The facilitator signals that the time can come to be critical.
- 5. Pare down the solutions.** The group selects a limited number of solutions. This phase may require a multi-stage voting process to achieve a consensus. Depending on the topic and assignment it may require a number of computations as well.

Table 3 Activity- Based Costing – Using Storyboarding

- 1. Generation of solutions/ideas.** The students read a short narrative (See Appendix A) about a company that is contemplating changing their cost system and is encouraged to identify as many cost drivers as possible.
- 2. Group Discussion.** The class is split into groups of between 4-6 students. Each participant explains his or her list to the group. No cost drivers are eliminated at this point.
- 3. Sorting.** Each group decides to sort the drivers into categories, such as unit, batch, product or facility sustaining. Again, no cost drivers are eliminated at this point.
- 4. Group Review.** At this stage, the group critically evaluates the list adding or deleting drivers as needed. Sometimes additional information is added at this point to aid the group in this phase of the assignment.
- 5. Pare down the solutions.** The group collaborates on a solution. This phase requires computations of the various alternatives under consideration.

Appendix A Building an ABC System in PW&M Kitchen Manufacturing

PW&M manufactures two models of a kitchen appliance, the Gourmet and the Standard. The company started many years ago with the Gourmet appliance and added the Standard model two years ago to meet demand for a less costly product. Ever since the addition of the Standard, the controller has received complaints from product management and production that the cost allocations between the two products are highly inaccurate and do not reflect actual resource usage. Having heard about activity-based costing (ABC), the controller asks your help in determining if ABC makes sense for this plant. Currently, the plant uses a single cost driver system aggregating all the overhead accounts into one big cost pool and allocating based on machine hours. The Table 1 represents the overhead costs that are expected for next year for each department.

Table 1
Expected Overhead Costs by Department

Receiving	\$80,000
Engineering	180,000
Material Handling	240,000
Power	60,000
Setups	168,000
Maintenance	160,000
Shipping	70,000
Depreciation (on production equipment)	\$120,000

Part One- List as many cost drivers as possible.

Part Two- Review your list with the group. No drivers should be eliminated at this time.

Part Three- Sort each of the cost drivers listed as unit, batch, product and/or facilities sustaining. No drivers should be eliminated at this point.

Part Four- Work toward resolution. The controller decided that more information was needed and provided you with the additional information in Table 2. Using this new information please select one cost driver for each of the eight departments. Write a short note to the controller summarizing your thoughts about the accuracy of the current, single driver system versus the system you just built.

Table 2
Activity level/Cost Driver Forecast

	Standard	Gourmet	Total
Number of order received	1,000	1,000	2,000
Machine hours	10,000	20,000	30,000
Engineering labor hours	5,000	3,000	8,000
Number of setups	60	40	100
Maintenance hours used	2,000	4,000	6,000
Kilowatt hours	15,000	30,000	45,000
Shipping hours used	2,000	4,000	6,000
# of parts received	15,000	20,000	35,000
# of material moves	4,000	2,000	6,000

Part Five- Pare down the solutions. Are you up for a challenge? The controller wants to know if there is any way to get the same level of accuracy as shown in an eight-driver system with fewer drivers?

SOLUTION

Part Four- The expected eight- driver system is as follows:

Receiving	# of parts rec'd
Engineering	Eng. Labor hrs.
Material Handling	# of material moves
Power	Kilowatt hours
Setups	# of setups
Maintenance	Maintenance hrs. used
Shipping	Shipping hours used
Depreciation	Machine hours

Part Five. -A five-driver system is just as accurate as the eight-driver system. This is accomplished by aggregating into one cost pool the departments that have a 1/3, 2/3 resource usage pattern. Note: some students suggest just using # of orders which provides close, but not identical, allocations as the eight-driver system. This usually leads to a discussion of the order entry function versus production.