Active Learning Using Debates
in an IT Strategy Course

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Abstract

Professionals working in technology fields face continuing challenges, not only to remain current with the latest technologies but also to understand the complex problems their company and IT organization faces. These challenges constantly change as technology evolves and are dependent on organizational factors. Lectures and discussions of case studies can help students understand the decisions made in a specific case, but students must also learn to apply what they learn from specific cases to more general situations. This paper discusses the use of debates to foster active learning in an IT strategy course. In the debate activities, students research the debate topic, identify key points supporting both sides of the topic, present their research in a debate format, and develop material to help others address the topic in other situations. These activities allow students to develop skills for discovering knowledge, thinking and acting strategically, understanding context, and extemporaneous speaking. This paper provides discussion to support the use of the debate activity, details of the activity structure, and student feedback on the debate activities.

Keywords: IT Strategy, Active Learning, Experiential Learning, Debates, Pedagogy

1. INTRODUCTION

An IS/IT education program has many goals. One is for students to learn about current technologies and develop the skills needed to create programs, databases, servers, networks, and other technical components. Students also need to learn concepts such as system analysis and project management that allow them to connect components into a functional IS system. Finally, students need to put technology into the larger context of the organization for which they work by learning about IS strategy, management, and related topics.

At the same time, students need to develop skills in communication, critical thinking, and complex problem solving. We expect them to integrate "ways of knowing, being, and interacting with others into the capacity for self-authorship."(Baxter Magolda, 2001, p.xvi)

Developing these skills is an important part of an upper level IT strategy course. IT strategy is closely coupled to the strategy of the larger organization, so IT professionals need to understand the complex problems that the larger organization faces along with the complex processes involved in building and maintaining IT infrastructure. IT professionals work in an ever changing environment that requires them to think critically about how to make use of new and evolving technologies. Throughout the process of developing and implementing an IT strategy, the IT professional needs to communicate with a wide range of people in other parts of the business to gather information and explain choices and decisions needed to develop a robust IT strategy.

Instructors use many approaches to address these challenges. Case studies can be used to explore the details of a specific situation, but it can be a challenge to find recent cases covering all of the topics in a course. Students can be

assigned to research and present on a topic. This will challenge a student to learn about a topic, but it can be difficult for students to identify key points. While presentations are a good opportunity to develop communication skills, I find that students are not always ready to respond to questions and discussion of the topic. This paper explores the use of debates as an active learning approach that prompts students to explore a topic, identify key points, and present their findings in a more dynamic environment.

2. LITERATURE REVIEW

A challenge in teaching students to think strategically about IT is that while all organizations have access to the same technology components, each organization presents a different context for their use. Students can be taught how to use common tools, techniques, and frameworks, but also must learn how to think critically about each specific situation they encounter.

Looking at the educational goals of the IT strategy class in the context of Bloom's taxonomy, debates offer a way to move students from lower order to higher order cognitive skills (Armstrong, n.d.). Reading material, class discussions, and case studies can help students understand and apply the tools and techniques covered in the course. Debates require students to use higher order cognitive skills to analyze information about the debate topic, evaluate the points that best support both sides of the debate, and create material to support their side and refute points from the opposition.

Active Learning
The use of debate assignments connects to the idea of active learning. Active learning focuses on efforts to have learners be active participants in the learning process. While all learning requires learners to take action, Bonwell and Eison (1991, p.iii) suggest that "to be actively involved, students must engage in such higher-order tasks as analysis, synthesis, and evaluation." They further define active learning as "instructional activities involving students in doing things and thinking about what they are doing."

There are many reasons to use active learning. Studies show that students prefer it over traditional lectures and that it helps promote thinking and writing skills (Bonwell & Eison, 1991).

The teams presenting the two sides of the debate will be actively developing the knowledge needed for the assignment, and will need to think about what they are doing. In addition to learning about their side of the debate topic, they will also need to think about how to support their position and refute points made by the opposition.

One challenge of implementing active learning is the "active" part. Active learning exercises often work better in a classroom with multiple projectors, reconfigurable furniture, and other tools to support collaboration (Connolly & Lampe, 2016). Debates are closer to traditional lectures and will work well in most classroom configurations.

Debates
There is a long history of the use of debates in education starting with the ancient Greeks and continuing through the middle ages. Debates and rhetoric were required parts of the curriculum in colonial American colleges (Combs & Bourne, 1989). However, with this long history, there is limited discussion of the use of debates in the IS/IT curriculum.

Today, student led classroom debates can be found in many fields for a variety of purposes, many of which apply to the IT curriculum. As expected from an active learning approach, debates are often seen as a way to engage students in course material, develop critical thinking and communication skills, and promote mastery of course content. Debates are also used to engage students in thinking about broader issues facing a professional field (Rubin, 2008).

Studies on the use of debates have found a number of positive outcomes. A study involving upper level marketing students focused on oral communication skills and found significant improvement in students' confidence in their oral communication skills and comfort in public speaking (Combs & Bourne, 1989). The majority of students also enjoyed the debates and wanted to see them used in other courses. Students felt the debates were a better format for learning, especially for understanding both sides of controversial issues and reduced concerns about possible instructor bias.

Darby reports on an upper level/graduate course in Dental Hygiene where debates were used to explore complex, controversial topics facing the dental and healthcare fields in the United States (Darby, 2007). Findings include that students developed competencies in research, preparing logical arguments, active listening, asking

questions, and forming their own opinions. Additionally, "students report that the experience is FUN!" (Darby, 2007, p.10)

Debates have been used in a management course as a way for students to develop a critical view of topics and as a way to integrate skills like teamwork, communication, and presentation (Walker & Warhurst, 2000). Evidence showed that students developed critical perspectives on the debate topics and valued involvement in the teaching process, with one student noting self-authorship of learning: "This was an opportunity to interrelate with the subject itself and let the lecturer stand back for a while; and let us actually teach other (Walker & Warhurst, 2000, p.41)." This effort also looked to involve students more in the teaching process through peer assessment of the debate activities but found that students were ambivalent about peer assessment.

Research on the use of debates identifies a number of concerns. Several authors mention concerns about reinforcing a bias towards seeing the two sides discussed in the debate as the only possible positions when issues may have multiple points of view (Kennedy, 2007; Darby, 2007; Combs & Bourne, 1989; Budesheim & Lundquist, 1999). This can be addressed by following the debate with a class discussion of other viable solutions and assignments where students use knowledge from the debate in new contexts.

Another concern with debates is that they may reinforce a student's existing beliefs rather than prompting an unbiased examination of both positions (Kennedy, 2007; Wiggins & Forrest, 2005). Some studies report success in avoiding this by assigning students to support a position inconsistent with their initial opinion (Kennedy, 2007). Another potential solution is to select debate topics about which students have little knowledge.

Debates are potentially confrontational. For example, imagine IT students debating on Mac or PC. Kennedy (2007) reviews several perspectives on possible solutions. Some feel that confrontation could help students learn to manage conflict. Some address this concern by grading participation rather than which side won to reduce the stakes of the debate. Another consideration is that students will have different comfort levels with confrontation, and cultural considerations should be considered (Tumposky, 2004).

3. DEBATE ACTIVITY
Activity Structure
Debates were used in an upper level IT course that addresses a number of topics covering IT strategy and management of an IT organization. The goal of the debates was to have students apply the knowledge gained in the course to questions that IT organizations face. This class was recently added to the curriculum and all students working toward a bachelors' degree in either our Information Technology or Health Information Technology programs are required to take the class. Students take the class in their junior or senior year and must complete a prerequisite course covering project management and systems analysis.

The literature on debates covers a range of different approaches and formats, but the discussion is most focused on student engagement and learning, with limited analysis of how the actual debate formats that are used. The format used in this case was informed by the literature, but also considered the length of the class meeting and class size.

Debate teams were setup with three to four (3 – 4) students per team to support two or three debates depending on the course enrollment. Course enrollment has varied between twelve (12) and nineteen (19) students.

During the course, each debate team addressed one side of one debate and participated as individuals in the audience for the remaining debates. The debates were held in the later part of the semester to ensure that debate teams and audience members had several weeks to prepare for each debate. This also allowed time to cover a number of concepts that students might find useful in developing arguments for the debate. These topics included the wide range of activities in an IT organization, cost/value assessments, managing and prioritizing IT requests, aligning IT activities with the goals and activities of the larger organization, and IT governance. Students also learned about the ITIL (formerly Information Technology Infrastructure Library) service management framework and the idea of a project management office (PMO).

To prepare for the debate, each debate team researched the debate topic and identified key points for the debate. Each team submitted a briefing book that provided an overall discussion of the topic that would help a person not familiar with the topic to understand the topic and why it is being debated. The briefing book also contained three to five (3 – 5) key points that the

team could use to support their position and material to rebut the points the team expected the opposing side to present. The teams formatted the briefing book as a reference that could be distributed to the audience after the debate.

The individual students in the debate audience conducted audience research to prepare to assess the debate and participate in a post-debate discussion. Like the briefing book, the audience research included an overall discussion of the topic and three to five (3 – 5) major points that the student expected the debate teams to address, with at least one point for each of the two positions being debated.

In class on the day of the debate, a coin toss was used to determine which debate team would go first. The teams then alternated for two rounds to present key points supporting their position. Teams were allowed, but not required, to use visual material to support their points. Each team was allowed five minutes for the first point and three minutes for the second. Next, there was a five-minute break to allow teams to prepare their rebuttal. Each team was allowed three minutes for rebuttal. To reduce the pressure on the speakers, the time limits were treated as guidelines and were not strictly enforced. Questions from the audience and a general discussion followed the formal debate.

During the debate, the audience assessed both debate teams on four criteria: organization and clarity, use of research, use of rebuttal, and presentation style. The full assessment rubric can be found in Appendix 1.

Following the debate, all students completed an individual assignment to develop consulting notes. This assignment put students in the position of an IT management consultant who would work with an organization to determine how to address the debate topic in their specific situation. The consulting notes would be an internal document used to organize a discussion with the client. Students identified three key criteria that would be assessed for each client and discussed how different responses from a client would influence the recommendations for how the client should address the topic. Students also identified an example organization and used their consulting notes to provide a recommendation for the client. In one case, a debate occurred during the last week of the semester, so a shorter follow up assignment was used.

Debate Topics
The first time debates were used in the class, only two topics were needed. A third topic was added to address a larger enrollment in a later semester.

The first debate topic was the question of how IT resources (hardware, software, people, and funding) should be organized in a company. One team supported Centralization – All IT resources should be centrally controlled and managed. The other team supported Decentralization – While some IT resources may need to be centrally controlled and managed, there is value in allowing other units of the organization to control and manage some IT resources. To help students research the topic they were also told that decentralized IT can also be called "distributed IT," "shadow IT," or "rogue IT."

The second debate looked at the question of how quickly or slowly organizations should adopt cloud computing. One team supported rapid adoption – organizations should act rapidly to adopt cloud infrastructure and software solutions. The other team argued in favor of slow adoption – organizations should take a slow, cautious approach in adopting cloud infrastructure and software solutions. To constrain the debate, only software-as-a-service (SaaS) and infrastructure-as-a-service (IaaS) were considered and students were provided with several examples of each, including cloud services used by the university.

The third debate topic was added in response to a larger enrollment the second time debates were used in the course. This debate addressed the question of vendor partnering and built on a discussion from the course textbook (Austin et al., 2016). The text uses a novel like format to follow a business leader unexpectedly thrust into the role of Chief Information Officer (CIO) at a fictional financial services company.

Chapter seven (7) of the text, which is discussed in the sixth week of the course, introduces the Infrastructure Replacement (IR) project. The project resulted from a consultant recommendation to replace obsolete middle and back-end systems with specific recommendations to use a cross-functional team with hands-on leadership from a senior business manager. The chapter discusses progress by consultants that has cost $3 million to date, with little to show. At the end of the chapter, the CIO decides to fire the consultants.

Two weeks before the end of the semester the class returns to the IR project in Chapter fourteen (14) – "Vendor Partnering" – where three

potential off-the-shelf vendor solutions are discussed. Details of the technical features of the different solutions along with background on each of the vendors are presented. There is also a discussion of different approaches for structuring the vendor contract. This vendor selection served as the topic for the third debate. One debate team was assigned to argue in favor of "ServoLith" – a very large vendor offering a fairly complete solution. The other two vendors were smaller but offered potentially more complete and flexible solutions and the second debate team selected one of these and argued in favor of it.

The audience was asked to develop points supporting both ServoLith and one or both of the other vendors. Students struggled a bit with finding relevant resources other than the text, so a few weeks before the debate I provided links to several articles that analyzed the causes of several large IT project failures. This debate took place near the end of the semester, so a shorter follow up assignment where students ranked the three potential solutions, discussed the strengths and weaknesses of each, and discussed their overall final decision was used.

4. RESULTS

The debate activities were developed and used the first time the new course was taught in 2017. Student reactions were assessed during the in-class debate sessions and through a brief end of the semester survey. Some students also made comments on the debates in weekly journal entries and final reflection assignments that were required for the course.

The first time the course was taught, there were twelve (12) students enrolled in the course when the debates took place. Two debates on IT organization and cloud computing were held and all debate teams had three members. I did not know what to expect, but students readily embraced the debate assignments. In addition to the required preparation, several debate teams developed pamphlets supporting their cause that they distributed on the day of the debate and one team even had theme music to support their arguments.

For both debates, teams were well prepared and readily engaged in a lively back and forth. Teams identified most of the relevant points for both topics and made connections to material previously discussed in the class. The debates provided a great preparation for the post-debate discussion.

At the end of the semester, students responded to a short survey about the debate topics, the overall debate activity, and other aspects of the class. Ten (10) of the twelve (12) students (83%) in the class responded. The survey used a five-point Likert scale ranging from Strongly Agree to Strongly Disagree. The debate related questions were:

1. I found the debate about whether IT should be centralized or de-centralized helpful in learning about how the organization of IT affects its ability to work effectively with the business units it supports.
2. I found the debate about how quickly or slowly companies should adopt cloud technologies helpful in learning about how organizations should approach new technologies.
3. I found the debate format to be a useful way to explore the two topics (IT organizational structures and cloud computing) that were discussed.
4. Overall, I enjoyed the debate activities.

Although one response was neutral for all of the questions, there were at least seven (70%) strongly agree responses for each question. These results match the enthusiasm that was seen in class during the debates and the quality of work seen in the consulting notes assignment completed after each debate.

With the positive response to the debates, they were retained the next time the course was taught. A larger enrollment required the addition of a third debate topic as previously discussed. All of the debate assignments were reviewed and minor updates were made to improve consistency across all of the debates.

Again, the students readily embraced the debate activities. The third debate about vendor partnering seemed especially popular and without prompting from the instructor the debates teams, encouraged by the audience, engaged in several additional rounds of rebuttal. For the consulting notes assignment following the IT organization debate and especially the cloud computing debate many of the students in the class used their current employer as the example.

A more detailed end of the semester survey was used to assess student perspectives on the debate activities. The survey questions can be found in Appendix 2. Students were asked to complete the survey in class during the last week of the semester and thirteen (13) of the nineteen

(19) students (68 %) of the students completed the survey.

For the first three questions about the value of the debates for the learning about concepts covered in the course all of the questions had average responses between 4.0 and 4.2 using a five (5) point Likert scale (Strongly disagree – strongly agree), showing that students clearly saw the value of the debates.

For the next questions about the effort needed to participate, on a seven (7) point scale, the average for effort as a debate team member was 5.5 and the average as an audience member was 4.9. This indicates that both activities required an effort, but the effort was not excessive. It is not surprising that participating as an audience member took less effort. Based on comments from students, some of the debate teams faced challenges common to group work including free riders and problems coordinating the work.

Question six (6) asked, using a seven (7) point scale, whether students saw a connection between the debate activities and activities that they may do as a working IT professional. Two responses were neutral and the rest saw a connection, with an average response of 5.3.

Questions seven (7) and eight (8) again used a seven (7) point scale and asked how much the students enjoyed the debate activities. For participation as an audience member, the overall average was 5.0 and only one student indicated they did not enjoy being in the audience. The average for participating as a debate team member was slightly lower – 4.5, with two students not enjoying participating in a debate team. Again, the common challenges of group work may be a factor here.

The final question asked students if they would like to do debate activities in future courses. The average response on a seven-point scale was 4.5. Three students indicated they would not want to do debates in the future, but two students "very much" favored doing debates in future classes. A challenge with this question is that several of the students in the class graduated at the end of the semester.

5. DISCUSSION

Students clearly saw the value of the debate activities. In addition to the overall good quality of work seen in the assignments that were part of each debate, I observed that several students made an effort during the debate and the following discussion to share information with the class based on their unique experiences. One student with an interest in IT security shared great insights in both the IT organization and cloud debates. Another student working at a local insurance company shared specific details about how the nature of the business and security concerns favor a centralized approach to IT delivery and great caution in considering cloud computing.

Students actively participated during the in-class debates both as debate team members and audience members. In both semesters where the debates activities were used I noted that students who were clearly engaged with the course material but were reluctant to speak or ask questions during class were active participants in class with their debate teams. This may demonstrate an increase in confidence as expected from previous research (Combs & Bourne, 1989).

From the instructor's perspective, the debates offered a nice change of pace. Rather than having to find relevant content for a topic, prompt students to review the content, and lead an in-class discussion I could hand this task over to the students. I still had to prepare for the in-class discussion, work to engage the audience members during the transition from the debate to general discussion, and introduce topics that were not brought up during a debate, but it was rewarding to see students take more ownership of the learning process. This debate approach worked well for the selected topics.

There is an opportunity to improve some aspects, especially the group work aspect of participating as a member of a debate team. In listening to student concerns about the group work in the debate teams, the concerns expressed were not specific to the debate activity but were similar to comments expressed about other group assignments in the course. Rather than address these in the debate activities I plan to review my approach to all group assignments in the course.

6. CONCLUSION

The debate activities proved to be a productive way to use active learning concepts in this class. Debates provided a way for students to build their own initial knowledge on a topic rather than receiving this from the instructor. Students engaged in the activities and met my expectations for learning about the debate topic and connecting it to other material addressed in the course. In addition, they enjoyed the

activities and after the first debate eagerly anticipated the remaining debates.

I believe that opportunities to use debates exist in many IS/IT courses including more technically focused courses like programming and database development. I think that one key to the success of the debate topics used was that there was no clear right answer. In the IT organization and cloud computing debates, the real answer was "it depends" which forced students to look for factors that would influence organizational decision making. While the vendor partnering debate was based on a specific situation with three viable solutions and many details, students were able to analyze a number of key factors relevant to any vendor partnering decision.

Debates could be used to explore the context of tools and practices used by IT professionals. In a programming course, students could debate the merits of different integrated development environments (IDEs) or even different programming languages. In a database course, the prime focus of the course could be SQL databases, but a debate could offer a way for students to explore NoSQL databases and learn their strengths and weaknesses.

7. FUTURE PLANS

I plan to continue to use the debate activities in the IT strategy course but will make some revisions. Most students have never participated in a class debate. I plan on revising the introduction to the debates to address this by providing examples and referencing a chapter of the text where the CIO character leads a meeting where two of his staff discuss traditional and Agile approaches to project management.

I plan to address concerns about the group aspects of the debates as part of reviewing all group assignments in the course. One activity in the course has students develop a student performance plan near the beginning of the semester with a review at the end of the term. This is based on employee performance planning and reviews that students may encounter as IT professionals. I plan to add a section for goals specific to participation in group assignments and have students do peer reviews to provide feedback that can be used when I work with individual students to assess their performance.

While I am happy with the current debate topics, I plan to continue to look for additional topics that would make suitable debate topics. These might replace one of the current topics but could also

allow me to vary the debate topics from semester to semester. I also plan to look at how debates could be used in other courses I teach and elsewhere in our curriculum.

8. REFERENCES

Armstrong, P. (n.d.). Bloom's Taxonomy. Retrieved June 11, 2018, from https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/

Austin, R. D, Nolan, R. L., & O'Donnell, S. (2016). The Adventures of An IT Leader. Harvard Business Review Press, Boston.

Baxter Magolda, M. B. (2001). Making Their Own Way: Narratives for Transforming Higher Education to Promote Self-Development. Stylus Publishing, Sterling, VA.

Bonwell, C. C. & Eison, J. A. (1991). *Active Learning: Creating Excitement in the Classroom*. ASHE-ERIC Higher Education Report No. 1. The George Washington University, School of Higher Education, Washington, D.C.

Budesheim, T. L. & Lundquist, A. R. (1999). Consider the Opposite: Opening Minds Through In-Class Debates on Course-Related Controversies, Teaching of Psychology, 26(2), 106-110.

Combs, H. & Bourne. G. (1989). The Impact of Marketing Debates on Oral Communication Skills, *Business Communication Quarterly*, 52(2), 21-25.

Connolly, A. & Lampe, M. (2016). How an Active Learning Classroom Transformed IT Executive Management, *Information Systems Education Journal*, 14(1), 15-27.

Darby, M. (2007). Debate: A Teaching-Learning Strategy for Developing Competence in Communications and Critical Thinking, *Journal Of Dental Hygiene*, 81(4), 78.

Kennedy, R. (2007). In-Class Debates: Fertile Ground for Active Learning and the Cultivation of Critical Thinking and Oral Communication Skills, *International Journal Of Teaching and Learning In Higher*, 19(2), 183-190.

Rubin, R. W., Weyant, R. J., & Trovato, C. A. (2008). Utilizing Debates as an Instructional

Tool for Dental Students, Journal of Dental Education, 72(3), 282-287.

Tumposky, N. R. (2004). The Debate Debate, *Clearing House*, 78(2), 52-55.

Walker, M. & Warhurst, C. (2000). 'In Most Classes You Sit around Very Quietly at a Table and get Lectured at…': debates, assessment, and student learning, *Teaching in Higher Education*, 5(1), 33-49.

Wiggins, S. & Forrest, S. (2005). Integrating Quantitative and Qualitative Approaches to Psychology Research Methods Teaching: The Example of a Classroom Debate, *Psychology Learning & Teaching*, 4(2), 90-94.

Appendix 1

Debate Assessment Rubric used by audience.

Criteria	4	3	2	1	Score
Organization and Clarity: Main arguments and responses are outlined in a clear and orderly way	Completely clear and orderly presentation.	Mostly clear and orderly in all parts.	Clear in some parts, but not overall	Unclear and disorganized throughout	
Use of Research: Reasons are given to support team's position	Very strong and persuasive arguments given throughout.	Many good arguments given, with only minor problems.	Some decent arguments, but some significant problems.	Few or no real arguments given, or all arguments had significant problems.	
Use of rebuttal: Identification of weakness in opposing argument.	Excellent response to arguments presented by opposing team.	Good response to opposing arguments.	Decent response, but some significant problems.	Poor rebuttal with little response to arguments presented by opposing team.	
Presentation Style: Tone of voice, clarity of expression, and precision of arguments kept audience's attention and persuaded them of team's position.	All features were used convincingly.	Most features were used convincingly.	Few features were used convincingly.	Presentation was not convincing and did not keep audience's attention.	
Total					

Appendix 2

End of semester survey questions used for the second class participating in the debate activities.

Please answer the following questions about the in class debates that looked at cloud computing, IT organization and vendor partnering. You were a member of a debate team for one debate and an audience member for the other two.

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I found the in-class debates helpful in learning how to research and understand multiple perceptiveness of issues facing IT organizations.					
I saw the value of the in-class debates for learning how to research issues facing IT organizations.					
I saw the value of the in-class debates for learning how to understand multiple perceptiveness of issues facing IT organizations.					

	Not Very Much 1	2	3	Neutral 4	5	6	Very Much 7
How effortful was it for you to participate in the debate as a debate team member?							
How effortful was if for you to participate in the debate as an audience member?							
How much did the debate activities help you understand what IT professionals do to understand complex issues?							
How much did you enjoy the debate activities as a debate team member?							
How much did you enjoy the debate activities as a debate audience member?							
How much would you like to do similar debate activities in future courses?							