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Collaborative learning and critical thinking skills: Effects of a debate-based pedagogy

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Abstract

The authors added debates in two adolescent psychology classes in the southern region of the United States that were heretofore a lecture class. There were approximately 45 students in each of the classes, including both undergraduate and graduate students, and debate teams consisted of four to five members. Each debate was allotted one class period (80 minutes): 60 minutes of debate time with the last 20 minutes reserved for questions and discussion from the entire class. Students took a survey before and after the debates, rating themselves on critical thinking skills. Based on their ratings, there was significant perceived improvement after participating in debates. Last, the authors conclude with providing future considerations and tips to other educators for implementing debates within their course.

Keywords: Debates, collaborative learning, critical thinking, pedagogy, college students.

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1. Introduction

While the utilisation of a debate-based teaching pedagogy has been successfully implemented across various disciplines, there has been no reference to the efficacy of the method within adolescent psychology in developing learning skills and dispositions of a critical thinker. The purpose of this article, therefore, is to examine the effectiveness of debates and their implementation within an adolescent psychology course in developing learning skills of a critical thinker. In doing so, the authors' objective is to contribute to the literature on the teaching of psychology and consequently provide further aid for other educators who desire to implement a debate-based teaching pedagogy to their courses to help students develop learning skills.

1.1. Literature review

The paradigm for success in today's classroom involves the student as agent, rather than as passive observer. For teachers who are accustomed to thinking of students as recipients of knowledge, it may be an adjustment to give students control and allow them to forge their own understanding of the subject matter. When students take an active role in their learning, they are making an investment that is not otherwise possible. Benefits include exploring attitudes and values, skill development, increased motivation, and more sophisticated thinking such as analysing, synthesising and evaluating arguments and information (Bonwell, 1996). Adler went so far as to say, "All genuine learning is active, not passive. It is a process of discovery in which the student is the main agent, not the teacher" (Alder, 1982, p. 50). There is a positive correlation between students' active engagement and grade point average, most notably with those who scored lower on the Scholastic Aptitude Test (Carini, Kuh & Klein, 2006).

The contributions of debates to learning can be numerous, and may include increasing students' positivity towards the subject (Carroll, 2006), fostering classroom participation and discussions (Elliot, 1993), cultivating oral communication skills (Kennedy, 2007), and promoting critical thinking (Landrum, 1991; Parcher, 1998; Roy & Macchiette, 2005; Tessier, 2009; Wiggins & Forrest, 2005; Kennedy, 2007). Scott (2007) found debates to be advantageous for promoting critical analyses of arguments and for fine-tuning writing skills. Debates can better facilitate discourse among students on controversial topics than on traditional class discussion (Fallahi & Haney, 2007), and have also been adapted for use in online courses with positive outcomes for both faculty and students (Park, Kier & Jugdev, 2011).

Classroom debates are commonly classified as a type of collaborative learning, although some refer to it as a cooperative learning exercise. These terms may be used interchangeably as both involve students working in a team and taking responsibility for the learning process. Meta-analyses have shown that using collaborative techniques can promote academic achievement and student retention (in technical programmes), and improve student attitudes towards the discipline. Prince (2004) and Lantis (2004) found that debates promote participants' perspectives on others' views and ideas. O'Kon and Sutz (2004) referenced that debate can advance critical thinking when students are assigned a position to defend whether or not it reflects their personal view on the subject. In addition, debating utilises higher order thinking skills found in Bloom's Taxonomy of learning outcomes, which help students develop the ability to analyse, synthesise (integrate) and evaluate the material by 'train[ing] the mind to think analytically and critically' (Vo & Morris, 2006). Faust and Paulson (1998, p. 4) included debates as part of their advocacy of active-learning strategies, pointing out that such approaches often result in "increased academic achievement and in enhanced social and psychological benefits to students."

In a class exclusively of lectures, many students do only what is required. They are content to attend the class with reading assignments unread. Their participation is negligible at best; in a class of 40 or more, students rely on others to engage the lecturer and carry the discussion for the entire class. Conversely, debates require all students to take part in the learning experience. Dundes (2001) found

that students who did not customarily join in class discussions showed a willingness to contribute their opinions in a debate experience.

1.2. Description of the pedagogy used

Musselman (2004) stated that the debate format empowers students and helps them develop speaking skills. She also noted the additional benefit that some students develop a leadership role upon realising that the instructor will not fill the gap, thus assisting quieter students by making sure their efforts are not dominated during the debate by more confident debate members. She is of the opinion that it is important to make students aware that the debate is less about winning, and more about understanding the material.

Debates are not without challenges. Moeller (1985) noted that some students experience anxiety at the prospect of public speaking. He recommended lessening these effects by giving clear expectations, meeting with individual teams, and using a grading scale with three categories: high pass, pass and fail. Another issue mentioned by Moeller involved 50-minute class sessions, which may not be long enough to allow for multiple debates in a class period. Time constraints make debates more suitable to smaller class sizes (e.g., 20–30 students) than to larger ones of 40 or more students (Moeller, 1985; Musselman, 2004). Scott (2007) also listed weaknesses that include inadequate research skills and students' lack of confidence in their speaking performance.

Bonwell (1996) referenced several factors that can discourage faculty from using active learning strategies: (a) active learning uses class time that might be used to cover other materials, (b) students might resist techniques other than lectures because they are more comfortable with passive approaches to learning, (c) preparing for new strategies can be more time-consuming than recycling lectures, and (d) instructors believe themselves to be good lecturers and think that students will learn more from their lectures than from active learning activities. But in one 5-year study where debates were part of the coursework, the authors surveyed 544 students and found that 78% reported that they believed they learned more from the debates than from a lecture-style format (Combs & Bourne, 1994).

2. Methodology

In this study, undergraduate and graduate students participated in debates in two adolescent psychology classes at a mid-sized university in the southern United States. Approval was granted by the institution's IRB before the research was conducted. The total number of students included in the study was 85. During the Fall semester, the class consisted of 44 students, with 39 enrolled as undergraduates and 5 as graduate students. In the Spring semester, there were 39 undergraduate and 2 graduate students enrolled, for a total of 41. Both classes met twice weekly for 80 minutes, and each debate required one class period to complete and process. There were 31 females and 13 males in the Fall class, and 25 females and 16 males in the Spring semester. In the total sample, 69 students self-identified as White, and five self-identified as Black/African American. The remainder chose not to identify their race. The average age within our participants was 20.35.

Traditionally, a lecture and discussion format, the debate portion of the class had several goals: a) to actively involve more students in classroom participation; b) to increase students' appreciation of the subject matter and c) to engage students in critical thinking by asking them to evaluate information and ideas presented in the debates. Because of the class size, teams consisted of 4–5 members on each side of the debate issue. Students were allowed 60 minutes for the actual debate, leaving 20 minutes at the end of class for questions and discussion by the entire class.

The debate constituted 25% of the students' total class grade. They received individual grades for their participation based on the following criteria: possible 25 points for resources (10 required, with 7 from peer-reviewed journals), possible 25 points awarded by their teammates' evaluation of debate preparation and presentation (team members were asked to fill out a form supplied by the instructor

for themselves and for each team member, using a scale from 0 to 100 to rate their own and each team member's success in completing assigned tasks, participating in meetings both in and out of class, and having an overall knowledge of the debate issues), and possible 25 points awarded by the instructor based on 50 facts from the student's resources pertaining to their portion of the debate that was required to be turned in on the day of the presentation.

The first semester debates were conducted, students were allowed to choose their teams first and then decide on a debate topic. The following were the some of the topics chosen:

- Should marijuana be legalised?
- Should corporal punishment be allowed in schools?
- Should the drinking age be lowered to 18?
- Should schools take a more active role in preventing obesity?

Problems arose when students had difficulty finding research to support the pros and cons of the argument, e.g., the pro argument of 'should the drinking age be lowered to 18?' Although many cite an argument for lowering the drinking age as "individuals can enlist in the armed services at 18", there is sparse research to support the wisdom of allowing individuals younger than 21 to legally drink alcohol, etc.

To negate this difficulty, the researchers presented a variety of topics for the second semester debates taken from Rye and Drysdale's (2009) *Taking Sides: Clashing Views in Adolescence*. These topics had been thoroughly researched and there were ample references for both sides of each argument. Students were not told the source of the debate topics, as the instructor wanted them to research their topic rather than rely on the resources in the book. The class was given a choice of 11 topics to choose from, or they could choose their own topic. If they chose the second option, they had to research both sides before deciding on it to ensure that there was adequate support for each side of the argument.

Sample topics for consideration in the Spring semester included: whether adolescents should take SSRIs for depression, whether the HPV vaccine should be mandatory for young adolescent girls and whether divorce or disruption in family structure during adolescence has a detrimental effect on development (Rye & Drysdale, 2009). For a more extensive list, see Table 1.

Table 1. List of questions/topics for classroom debates

Item	Questions/topics for classroom debates
1	Should adolescents take SSRIs for depression?
2	Do boys worry about body image as much as girls?
3	Should the HPV vaccine be mandatory for young adolescent girls?
4	Does sex on TV negatively impact adolescent sexuality?
5	Are social networking sites (e.g., Facebook) a cause for concern for adolescents?
6	Are girls bigger bullies than boys?
7	Should parental consent be required for adolescents seeking abortion?
8	Does a traditional double standard with respect to sexual behaviour exist among adolescents?
9	Does engaging in early sexual activity cause depressive symptoms in adolescents?
10	Does divorce or disruption in family structure during adolescence have a detrimental effect on development?
11	Should adolescents who commit serious offenses be tried and convicted as adults? (Rye & Drysdale, 2009).

This time, students chose the topic they were most interested in and were assigned either the pro or con side of the issue to argue. Teams were given two weeks to prepare for their debates, including some time during class periods to discuss their topics, to plan how they would present their arguments, and to practice debate skills.

The team who was debating the pro side of the issue began the debate by giving a two-minute overview of their argument, after which a debater from the con side did the same. A second (pro) debater raised a point and introduced research to support the point (one-minute time frame). A student from the con side then refuted the point if he had research to do so. If not, he raised another point with research to verify it. Using the 50 facts they had gathered individually, each side countered with a point until they had exhausted their most important points.

Their classmates took notes on the debate and gave their opinion as to which side gave the most convincing arguments. The last 20 minutes of the class period was devoted to questions posed to the debate teams by their classmates, and any additional points that the observers wanted to make.

3. Results

With the intent of examining the significance of a debate-based pedagogy, the researchers evaluated the results of an experimental group that utilised the debate format with those of a control group that implemented a traditional lecture-based format. The results of these groups were based off of the students' perceived ability of learning skills.

Using a self-report questionnaire with a 5-point Likert scale of: 1) to little or no ability, 2) to a limited ability, 3) to some ability, 4) to a considerable ability and 5) to a great ability, students were asked to rate themselves pre- and post-debate based on the criteria in Table 2.

Table 2. List of learning skills and dispositions of critical thinking

Item	Question/Learning skills
1	Separate factual information from inferences.
2	Identify inappropriate conclusions.
3	Understanding the limitations of correlational data.
4	Identify evidence that might support or contradict a theory or hypothesis.
5	Identify new information that is needed to draw conclusions.
6	Separate relevant from irrelevant information.
7	Learn and apply new information.
8	Interpret numerical relationships in graphs.
9	Use mathematical skills to solve real-world problems
10	Analyse and integrate information from separate sources to solve a complex problem.
11	Recognise how new information might change the solution to a problem.
12	Communicate effectively.
13	Think critically.
14	Think creatively.
15	Solve real-world problems.
16	Effectively learn on your own.
17	Analyse and critically evaluate other perspectives.
18	Make effective decisions.
19	Work effectively with others as a member of a team.
20	Ability to memorise information.
21	Engage in active learning as opposed to passively listening to lectures.
22	Getting involved in their community.

Raw scores were determined by totaling the response from each question. Independent sample *t*-tests were used to analyse pre/post differences finding significant ($p < 05$) progress across indicators.

Table 3 displays the specific learning skills that were indicated to be statistically significant in the difference of scores.

Table 3. Learning skills found to be statistically significant for debate-based pedagogy

Item	Question/ Learning Skills	Mean	Std. Dev.	Std. Error Mean	95% Confidence Interval of the Difference		t	Sig. (2-tailed)
					Lower	Upper		
1	Separate factual information from inferences	−1.00	1.48	0.43	−1.94	−0.061	−2.35	0.04
5	Identify new information that is needed to draw conclusions	−1.33	1.48	0.45	−1.99	−0.004	−2.24	0.05
13	Think critically	−1.00	1.13	0.33	−1.72	-.283	-3.07	0.01
16	Effectively learn on your own	−0.92	0.99	0.29	−1.55	−0.284	−3.19	0.01
17	Analyse and critically evaluate others' perspective	−0.58	1.44	0.41	−2.25	−.421	−3.22	0.01
18	Make effective decisions	-−0.92	0.67	0.19	−1.01	−.159	−3.02	0.01
19	Work effectively with others as a member of a team	−1.00	1.31	0.38	−1.75	−.083	−2.42	0.03
21	Engage in active learning as opposed to passively listening to lectures	−1.60	1.08	0.34	−2.37	−0.83	−4.71	.001

Table 4 displays the group statistics of the specific learning skills that were indicated to be statistically significant in the difference of scores.

Table 4. Group statistics of learning skills to be statistically significant for debate-based pedagogy

Item	Question/learning skills	Pre/post	mean	Std. dev.	Std. error mean
1	Separate factual information from inferences	Pre	2.50	1.168	.337
		Post	3.50	1.058	.226
5	Identify new information that is needed to draw conclusions	Pre	3.00	1.128	.326
		Post	3.50	1.012	.216
13	Think critically	Pre	3.00	.835	.246

		Post	3.73	.935	.199
16	Effectively learn on your own	Pre	3.17	1.030	.297
		Post	3.73	1.077	.230
17	Analyse and critically evaluate others' perspective	Pre	2.67	.888	.256
		Post	3.64	1.177	.251
18	Make effective decisions	Pre	3.00	.853	.246
		Post	3.45	1.143	.244
19	Work effectively with others as a member of a team	Pre	3.33	.888	.256
		Post	3.91	1.065	.227
21	Engage in active learning as opposed to passively listening to lectures	Pre	3.20	1.229	.389
		Post	4.54	1.021	.208

4. Discussion

These results suggest a teaching pedagogy that includes implementing debates appears to have an impact on students' perceptions of specific learning skills and dispositions of a critical thinker. Specifically, these findings indicate that when debates are implemented in teaching adolescent psychology, students' perceived growth and development in categorical, measurable learning skills and dispositions. While previous studies referenced empirical support for implementing debates across academic domains, this study pinpoints both the rationale for utilising a debate-based pedagogy and the ensuing advantages when teaching students adolescent psychology.

Two other questions had results that approached significant levels: 1) understanding the limitations of correlational data and 2) identifying evidence that might support or contradict a theory or hypothesis. The researchers propose that these items would likely have been significant, had the sample size been larger. Finally, 80% of students agreed that they would recommend this course or project to others, 92% said that they worked harder in this course or project than they did in a typical course, and 75% said that they were satisfied with the grade they expected to receive in the course. Hence, these findings also appear to add further evidence that promotes the utilisation of a debate-based teaching pedagogy in higher education.

5. Recommendations

Using debates proved to be an exciting and motivating factor in adolescent psychology courses and favorable results were shown in developing learning skills in students. It provided an opportunity for students to take ownership of the subject, to independently research the topic, and to teach their classmates new information. It also allowed students to work cooperatively in a research capacity while preparing for the debate.

The authors recommend giving class time consisting of 2 to 3 hours in total to allow students time to decide which points they want to emphasise, determine the order in which they want to present these points, and practice their presentation in front of their teammates. The authors would also encourage students to research the opposing arguments and prepare rebuttals to use if these arguments are raised. Last, if students choose to come up with original topics for debate, they should research these topics to ensure that there are adequate pros and cons to result in a good debate.

Furthermore, the authors recommend that future researchers explore both students' perceptions on their learning skills and dispositions of critical thinking with direct measures of learning. This is suggested as students' perceptions of their own learning skills may not be accurately assessed. For some students, the very act of participating in a course may impact them to perceive their learning skills as significantly improving. Thus, both student and instructor perceptions are potentially susceptible to multiple types of biases. Future studies should also include direct measures of learning,

which could be traditional examinations that address course competencies, structured instructor evaluations, use of assessment rubrics, or other direct assessments alongside the students' perceptions of their ability with learning skills. Future studies should also evaluate whether the skills set of the instructor may be better suited based on their personalities and abilities to a particular pedagogy. Finally, future studies could also examine different types of debate-based pedagogies to examine whether one style may be more effective than another.

6. Conclusion

In conclusion, students in the adolescent psychology class showed enthusiasm for incorporating a debate into the format. They were respectful to other debate teams, attentive during the debate process, and actively participated in the question-and-answer portion at the end of each debate. The students also reported that they believed the project improved their communication and public speaking skills. Based on the students' perceptions, they reported making significant progress on specific learning skills and dispositions of a critical thinker.

Overall, these results suggest when implementing debates into a teaching pedagogy for an adolescent psychology course, students considered their critical thinking and research skills to increase over time. Students were also enthusiastic about the debate process and referenced the belief that they worked harder in this course or project than they did in a typical course, which seemed to promote the concept of active learning. Finally, implementing debates in an adolescent psychology course was a worthwhile endeavour for the researchers and they would implore other educators to integrate this pedagogy into their future courses. As the development of learning skills and dispositions of a critical thinker are important in the broader aspect of success outside of the classroom, these findings appear to be noteworthy. If other educators desire to promote students' ability to critically think, problem solve, communicate, and collaborate, implementing debates may be a worthwhile technique to implement in their courses.

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