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Comparing two cooperative small group formats used with physical therapy and medical students

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This study compared ‘Structured Controversy’ (a semi-formal debate like small group activity) with a traditional open discussion format for medical and physical therapy students. We found that those students who had participated in Structured Controversy changed their personal opinion on the topic more than those who were in the Open Discussion groups. Students in the Structured Controversy group also commented more often that being ‘forced’ to explore both sides of the topic made a difference to their learning. We conclude that the time and effort invested in organizing the Structured Controversy experience for students is worthwhile because it encourages students to more seriously consider many aspects of an argument and helps promote sustained change of opinion.

Introduction

Context

Since September 2000, two of the authors, P.P. and B.R., have been coordinating joint learning sessions for their third-year physical therapy and medical students. They worked in collaboration and consultation with the lead author, M.D., an education consultant and faculty member at the College of Medicine, University of Saskatchewan, to plan active and cooperative learning opportunities for the students. One of a number of innovative teaching approaches adopted by the two instructors was ‘Structured Controversy’ (SC), a small group cooperative debate format. Cooperative learning generally has been found to promote critical thinking and learning in students (Johnson et al., 1985; Green & Klug, 1990; Ediger, 1996; Springer et al., 1999; Cuseo, 2003).

One of the authors, P.P., teaches the 30 final-year physical therapy students in the School of Physical Therapy at the University of Saskatchewan. Her course includes study of the legal,
ethical, social and economic factors which affect the role of the physical therapist as well as principles of health care management and organizational behaviour. B.R. teaches a third-year course for the 60 medical students. His course is designed to equip students with the scientific tools needed to understand occupational health, environmental health, population health, Canada’s health care system, clinical epidemiology, and preventative medicine.

Structured Controversy

The purpose of Structured Controversy—sometimes referred to as ‘Cooperative Controversy’ or ‘Structured Academic Controversy’—is to learn as much as possible by understanding the various arguments pertaining to both sides of the issue in question. During SC all students, working in teams during regularly scheduled class time, engage in a debate-like discussion about a controversial issue, arguing one position in Round 1 and then the other position in Round 2. The main value of SC lies in engaging the students in exploring, developing, and presenting arguments for a position with which they may not entirely agree. Notwithstanding the cooperative nature of this activity in this article we speak about the two ‘opposing’ teams arguing ‘against’ each other. We have used this language to help clarify the role and position of the teams. We do not encourage a confrontational, competitive, or combative approach in this activity although many students, in spite of our explicit briefing, ‘playfully’ talked about winning the debate.

SC has been used at all levels including higher education (Johnson et al., 1985; Green & Klug, 1990; Bredehoft, 1991; Overby et al., 1996; Hammrich & Blouch, 1998). We designed our SC activity with one notable innovation: we assigned student teams different opponents to argue against during the second round of the debates (D’Eon & Proctor, 2001). In a standard SC design, student teams take the other side of the issue for Round 2 but argue against the same team they heard and spoke with in Round 1. We call this traditional format ‘Single Switch’ since the only change is in arguing a different position. Our experience has been that under the Single Switch format students’ interest and energy levels drop off considerably in Round 2. We have observed that many of the same arguments were used again in virtually the same way with the same people. We addressed what we saw as a serious shortcoming of the typical SC by arranging for the students to argue against a different team as well as take a different position on the resolution, a ‘Double Switch’ format. Having new colleagues with whom to interact and learn from seems to re-energize students to participate more fully in Round 2.

Rationale

Our previous experience with graduate students from Community Health and Epidemiology and third-year physical therapy students using SC separately led us to expect certain outcomes (D’Eon & Proctor, 2001). We witnessed how the students seemed to be highly engaged and interested when participating in SC. We also noticed that the level of discourse was quite high, revealing fairly sophisticated thoughts and arguments about the issue at hand. As well, students generally reported that they enjoyed the SC experience and felt that they had learned as a result of having participated. We therefore assumed and later concluded that the SC was a better learning method for the medical and physical therapy students than what we had done in the past.
What we had not done was demonstrate in any objective way what we, as astute teachers, had observed. We felt a rigorous study was important especially since a small group of students was quite vocal in critiquing SC. We decided to proceed with a study that would evaluate SC, answer our questions, and confirm our confidence in this unusual and innovative small group cooperative learning activity.

Cooperative learning activities have been shown to be more effective than lectures using various outcome measures. Most active learning strategies will quite easily generate superior results to a passive lecture. Rather than unfairly and predictably compare SC to the common, ‘traditional’ lecture (a ‘straw person’; Halpern, 2001) we compared SC with a different cooperative group activity. We wanted to know that the significant amount of work associated with SC (organizing the teams, preparing and distributing the assorted reading packages, and conducting the activity in a smooth and efficient manner) was yielding something more than what could be achieved by using a simpler cooperative group format.

We chose to compare SC with another cooperative learning activity often used in higher education, the open discussion (OD) group. The OD format resembles what might be called a tutorless small group discussion. Working in small groups students present, explore, and develop arguments related to a controversial issue. This format is similar to the SC in that there is an issue to resolve and there are learners working together to formulate, analyze, and critique relevant arguments. Unlike SC, students in the OD groups do not take the role of advocating for both positions of the resolution nor do they partially change groups as in our form of SC. Students in the OD groups are not required to speak at all but may present their own views, summarize articles they may have read, and listen to what others say.

For both years of the study (fall of 2002 and 2003) we used the following resolution as the focus of discussion and debate: Be it resolved that ‘Private sector involvement must be significantly increased to save Canada’s health care system.’ We provided every student with one of eight short reading packages consisting of an article or commentary. By distributing a variety of different reading packages to students, we were able to create positive interdependence within each group, a key element of cooperative learning (Johnson et al., 1998).

We formulated four hypotheses in two domains of learning about the SC compared to the OD format. In the cognitive domain we thought that students working within the SC would learn more about the issue and would consequently change their original personal opinions on the resolution more than those who were in the OD. In the affective domain we hypothesized that the students who participated in the SC would manifest more interest in the issue even outside of class and that students would rate SC as more engaging and generally a better learning experience.

Methods

As noted above there were 30 physical therapy students and 60 medical students in each of the two years that we conducted the study (2002 and 2003). The average age of the students was mid-twenties. About 75% of the physical therapy students and about 50% of the medical students were women.

To collect the data we assigned each student a booklet with all of the questions and tasks for this study laid out in the order that they would be required. The booklet was identified with a
code number and placed inside an envelope labeled with the student’s name for easy distribution. Each student was randomly assigned to either the SC or OD format with proportional representation of both men and women and medical and physical therapy students. One week before the small group sessions (SC and OD) we distributed the consent forms, the reading materials, and the data collection booklets to all of the students in class. We explained that they were all required to participate in the small groups as part of the course and complete the various tasks but that we needed their permission to use the data for research purposes. They were all given a clear explanation of the study along with a consent form to complete. Only a very few students decided that they would not release their data to the study. All students were instructed to read the article they received in preparation for the small group session next class but were not informed as to which type of group they had been assigned. We ensured that students in both group formats (SC and OD) received identical reading materials. In every respect but the discussion format the SC and OD groups were treated in the exactly the same way.

Hypothesis one: students in the SC groups will outperform the OD students on an in-class assignment

To test our first hypothesis on increased learning we compared the two groups on an in-class assignment. The students were directed to create a list of the three best arguments both in favour of and against the resolution. This required more than simple recall of knowledge; it demanded an evaluation of arguments, a higher-order, problem-solving task (Bloom, 1956). The assignment sheets were identified with a code number to maintain confidentiality and were promptly marked by the instructors or assistants using a pre-determined and common marking guide. The maximum available score was a 10. We compared the two groups on the in-class assignment using an independent samples \( t \)-test.

Hypothesis two: students in the SC groups will change their opinions on the resolution more than students in the OD groups

For the second hypothesis regarding change of opinion we used a pre-test post-test method. One week before the small group sessions at the same time that they received the pre-reading package we asked the students to indicate the strength of their opinion on the proposed resolution by circling a number. We used a scale ranging from +5 (strongly in favour of the resolution) through +4, +3, +2, +1, 0 (not sure or neutral), −1, −2, −3, −4, −5 (strongly disagree with the resolution). Immediately after the small group sessions we asked each student for his or her opinion a second time. We asked a third time five days after the small group discussions because we anticipated that opinions might change with interaction, more information, and reflection outside of structured class times. The response forms were coded to match all the data and assignments to the same individual through a master list and were part of the booklet. The students were reassured of confidentiality in managing their data. We analyzed these data with the Wilcoxon Signed Ranks test and the Friedman test (Vogt, 1999). We also classified the magnitude of the changes of opinion: no change, change of only one point on the scale, and change of more than one point. We used a cross tab Chi-squared test to compare the SC and OD formats. We also allowed space in the booklet for open-ended comments which we analyzed.
Hypothesis three: students in the SC groups will talk and think more and longer about this issue outside of class than OD students

We compared self-reported data of outside activity to study the third hypothesis about greater interest in the issue. Five days after the small group sessions we asked each student to estimate how many times they had thought or talked about the resolution discussed in class and how many minutes they had spent thinking and talking about the issues since the small group sessions. This information we used to compare the two groups using independent samples t-tests.

Hypothesis four: students in the SC groups will rate the small group experience more highly than students in the OD groups

Finally, for the fourth hypothesis, immediately following the discussions we administered a set of questions to determine the students’ perceptions of quality of the small group formats. We combined these items to form an overall score for the activities and compared the two formats using an independent samples t-test. The survey questions are listed in Table 1.

Analysis of open-ended comments

We searched the written comments that students included on the data collection forms. We divided the forms into three groups: those that showed no change, change of only one point, and change of more than one point. We then read, summarized, and classified the comments for the group showing no change and change of more than one point. Though not every student commented and the comments were mostly short, the written remarks did provide us with some insights into the processes affecting the opinion changes.

Results

Surprisingly, of the four hypotheses, we found statistically significant differences for only one of them. This held true for individual years of the study and for the two years combined. We did not find any difference between the groups on learning measured by scores on the in-class problem-solving assignment. Over both years the mean score out of 10 for those doing SC was 8.5

Table 1. Questions for student evaluation of the small group formats at the University of Saskatchewan: Structured Controversy and Open Discussion

<table>
<thead>
<tr>
<th></th>
<th>Structured Controversy and Open Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>I enjoyed the small group activity in which I participated</td>
</tr>
<tr>
<td>2.</td>
<td>This activity helped me to realize that there were valid points of view on both sides of the issue</td>
</tr>
<tr>
<td>3.</td>
<td>I learned a great deal from what other students had to say about the issue</td>
</tr>
<tr>
<td>4.</td>
<td>This group activity contributed to my change of opinion</td>
</tr>
<tr>
<td>5.</td>
<td>I found it worthwhile to be able to express my opinion/to take one side of the issue and then the other</td>
</tr>
<tr>
<td>6.</td>
<td>I found it worthwhile to listen to the opinions of others/Changing groups in Round 2 helped maintain my interest</td>
</tr>
<tr>
<td>7.</td>
<td>I found it worthwhile to hear what others thought of my opinion/I learned from arguing the side of the resolution that was different from my own</td>
</tr>
</tbody>
</table>
and for the OD group it was 8.6. We did not find any difference in self-reports on how often or how long students spent outside of class talking and thinking about the topic of discussion. The mean number of times they thought or spoke about the issue was 5.26 and 4.54 for the SC and OD groups, respectively; the mean number of minutes spent out of class in such activity was 23.48 and 33.93 for the SC and OD groups, respectively. Neither did we find any differences between groups on their satisfaction with the small group discussion formats. The mean score on the seven items (with moderately strong reliability—Cronbach’s alpha of .773) that tapped into approval of the formats was 4.70 and 4.83 (maximum of 6) for SC and OD, respectively, an overall approval rating of about 50%. There were no statistically significant differences between the two cooperative small group formats on any of the variables except for changes of opinion on the resolution.

Opinion change

We noticed that those students who had participated in SC changed the strength of their opinion more than those who were in the OD groups comparing the initial opinion recorded before the exercise to their opinion five days after the discussions. We noticed that students in the OD groups were more likely to revert to their original opinions from an immediate post discussion shift. We also found that before the discussion students in SC and OD groups in each of the two years of the study expressed approximately the same strength of opinions on the resolution. Figure 1 gives a graphic representation of these data.

![Figure 1. SC and OD mean opinions for 2002 and 2003 before, after, and five days later](image-url)
Comparing two cooperative small group formats

First, in 2002, the OD students moved (from before the discussions, to immediately after, to several days later) from an average opinion on the resolution of −0.19 to −0.5 to −0.27. In the same year the SC student opinions went from −0.61 to −1.3 to −1.64. We applied the Friedman test to each group’s data to determine if there were differences in the patterns of the two groups. We found that there was no difference for the OD students on opinion 1 through 3 but that there was a statistically significant difference for the SC students ($\chi^2 = 6.618$, $p = .037$). See Figure 1 for a table and graphic representation of the data.

In the 2003 replication study we found that the OD students began with an opinion of −0.76 and moved to −1.09 and then back to −0.68. The SC students began at −0.71 and changed to −0.32 finally settling at −0.34. Using the Friedman test again we found no difference for the OD students but a statistically significant difference for the SC students ($\chi^2 = 8.489$, $p = .014$). Considering the large swings in the OD opinions back to the original position we investigated further and made pair-wise comparisons of the OD student opinions within each year from before the discussions, to immediately after, to several days later. Curiously, when we applied the Wilcoxon Signed Ranks test to the data for immediately after the discussion (−1.09) and several days later (−0.68) we found for this year a statistically significant difference between them ($z = −2.294$, $p = .022$). There was a marked change (a return) to the initial position a few days after the group discussions that was not likely due to chance.

We were not able to combine the opinion scores for the two years since the SC students moved in different directions having begun in quite the same spot. In 2002 their opinions became more negative (towards support for public funding of health care by about one full data point) moving from −0.61 to −1.64. In 2003 their opinions became less negative (towards support for private funding by about a third of a data point) moving from −0.71 to −0.34. The OD students in both years followed the same pattern: initially slightly favouring public administration, moving more in that direction after the discussion and then coming back very close to the initial mean opinion score.

We created three groups of students according to the magnitude of opinion change. Using a student’s own personal opinion as the starting point we sorted students into ‘no change’, ‘change of only one point’, and ‘change of more than one point.’ We counted change in either direction. We then compared the OD with SC group. We found a significant difference with more change of greater than one point experienced by the SC students, more ‘no change’ by OD students, and nearly equal proportions of change of only one point ($\chi^2 = 9.812$, $p = .007$). Table 2 contains a summary of the data.

<table>
<thead>
<tr>
<th>Small group format</th>
<th>Magnitude of opinion change</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No change</td>
<td>Change = 1</td>
</tr>
<tr>
<td>SC</td>
<td>26 (31.3%)</td>
<td>23 (27.7%)</td>
</tr>
<tr>
<td>OD</td>
<td>34 (56.7%)</td>
<td>13 (21.7%)</td>
</tr>
</tbody>
</table>

Comparing changes of opinion for Structured Controversy (SC) and Open Discussion (OD) formats on the resolution from before the discussion to five days after in three categories: no change, change of one point, and change of more than one point on the opinion scale that ranges from +5 to −5.
Student comments

There were many comments about learning both sides of the issue. Students in the SC group made this comment more than twice as often as the OD students whether they did or did not change their opinion (see Table 3). Related to this were many comments about having one’s own opinion reinforced. SC students commented more often about feeling ‘forced’ to explore both sides. As we had earlier observed, students in SC are placed in a position where they need to learn both sides to present convincingly. This element of SC was strongly supported by the student comments and may have played a large role in opinion change.

An overwhelming majority of comments about being challenged and forced to consider both sides of the issue were volunteered by students from those who changed their opinion compared to those who did not (26% and 2%, respectively). This came, as we noted earlier, from both SC and OD students. Furthermore, comments expressing confidence about having learned about both sides of the issue were much more prevalent among the students that had changed compared to those that had not (40% compared to 23%). Finally, we also noticed that many comments were made about how the discussion just reinforced the student’s own opinion. These comments were found slightly more often among students who had changed compared to those who had not (19% and 26%, respectively). The comments on the small group discussions most often volunteered by students who changed their opinions were about being forced to learn both sides and being confident in knowing the arguments on both sides.

Discussion

Learning

We found no difference between the two group formats on a relatively advanced problem-solving task that the students completed after the discussions. We had thought that because the SC seemed to be more engaging and active that perhaps there would have been more learning at that level. We were surprised to find that students from the different groups did equally well on the in-class assignment that required them to evaluate the arguments both for and against the resolution.

Perhaps our instrument was not sensitive enough to detect the learning that took place and other problem-solving questions that delve more deeply into understanding might reveal differences between the groups. The assignment asked for a problem-solving task: to evaluate the

<table>
<thead>
<tr>
<th>Number of students who commented</th>
<th>‘Learned both sides’</th>
<th>‘Reinforced my opinion’</th>
<th>‘Forced to learn both sides’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change &gt; 1</td>
<td>No change</td>
<td>Change &gt; 1</td>
<td>No change</td>
</tr>
<tr>
<td>SC</td>
<td>29</td>
<td>27</td>
<td>14</td>
</tr>
<tr>
<td>OD</td>
<td>13</td>
<td>34</td>
<td>3</td>
</tr>
</tbody>
</table>

Comparing comments from students about learning both sides, having their original opinion reinforced, and being ‘forced’ to explore both sides for both Structured Controversy (SC) and Open Discussion (OD) groups for both 2002 and 2003 all combined for those who changed more than one point and those who did not change at all.
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strength of the arguments and then list the top three arguments for and the top three against the resolution. As well, it might be that simple knowledge questions would be better answered by one of the groups. Our instrument (the in-class assignment) for measuring a difference in learning may be too blunt or too narrow. Furthermore, we made no attempt to assess the prior learning of the students. We assumed, because there were such large groups, that they began from the same place but we have no way to verify that. Further research in this area would do well to ensure that the evaluation tasks be completed before the pre-reading packages are assigned.

Opinion change

The strength of the students’ opinions on the resolution changed more in the SC group than in the OD groups when measured before the discussions and again five days after. By design we included the opportunity for students to register their opinions on the resolution before the activity, immediately after the activity, and then five days after the discussions. We anticipated that there would be some drift back to the originally expressed opinion. What was surprising was that students in both groups changed initially and then a drift back was observed predominantly with those who experienced the OD format. Clearly the changed opinion of those in the SC group was more lasting compared to those from the OD group.

The analysis of the comments seems to confirm our suspicions regarding the mechanism by which students in the SC groups changed opinions. Both themes (forced to learn both sides and feeling more confident) are more clearly and consistently present in SC students and among students from either group who actually changed opinions. It seems that the challenge (perhaps intellectual and emotional) of grappling with both sides of the issue was likely a factor in people changing their opinions either in the same or a different direction from their initial opinion.

Another interesting finding of this study is that the direction of opinion change for the SC students was different each year. In the first year the SC students moved a full point further towards agreement with public administration and funding of health care. In the second year there was a moderate move in the direction of supporting more private administration and funding. After the 2002 study we thought the direction of change might have been due to the reading that had been selected. It seemed that more of the articles favoured public funding. Two reasons contradict this explanation. The OD students received the same sets of reading material and did not change at all and, in 2003, the opinions of SC students moved towards private participation in funding and administration of health care even though exactly the same articles were used in both years. The readings were clearly not the only or even a major reason for the change of opinion.

Perhaps the different directions of change by the SC students can be explained by environmental factors. In the first year of our study (2002) the discussions took place around the time of the release of the Romanow Commission on the Future of Health Care in Canada (Romanow, 2002) which strongly supported public administration and funding. There was also an active medical student pro-public health care lobby group in which many of these same students were involved. In the second year, though the Romanow Commission was still topical, there was not nearly as much public discussion and media coverage as there had been the year earlier. Perhaps the political environment and the related strong personal opinions of some individual students influenced the opinion changes.
Nevertheless, we must underscore the fact that the learning environment was the same for the OD and the SC students in both years yet the SC format itself generated more long-term opinion change. In 2002 the initial direction of change was common to both SC and OD but in 2003 SC students moved towards private and OD students towards public funding. Similarly, with so many students randomly distributed to either format we have no reason to believe that more opinion leaders were placed in the SC group compared to the OD group. When we tested the starting points of the students’ opinions we found no significant differences between those in the different formats or between different years. If there were strong leaders and strong opinions in both groups (as we suppose) then SC provided a more favourable format by which such influence might be exercised. The environment and prior opinions of students may have affected the opinion changes but these were the same for both small group discussion formats and both years. Therefore, we are left with the conclusion that there appears to be a significant and meaningful difference in the impact of the SC format compared to the OD style discussion.

An explanation for the difference we discovered between the SC and OD group formats is found in the theories of Kurt Lewin (1965). According to Lewin, before people can change their behaviour (and opinions) their original views and behaviour patterns need to be shaken up, what he calls ‘unfreezing.’ In this phase people find that their opinions and behaviours are not productive and they begin to question themselves and even reject, to some extent, what they had previously believed. They then need to find an acceptable alternative to replace what was lost; this is ‘refreezing.’ This is similar to the theory of cognitive dissonance (Festinger, 1957). Because dissonance is unpleasant, people attempt to reconcile opposing views by changing opinions or gathering more information to support the original.

For OD students the ‘unfreezing’ seemed to be no less remarkable than for the SC students. However, it was the SC students’ opinions that refroze in the new position, either more strongly holding on to or moving away from their original opinions. The comments indicate that the OD students were not as confident in their new assessment of the arguments as were the SC students and they returned to the familiar opinions refreezing into the initial configuration. Could it be that the OD students had not internalized the opinion change but were just swayed by the group peer pressure? Could it be that the SC students had internalized their assessment of the arguments both for and against and therefore kept their new views? Our inquiry has helped us understand the eventual change in opinion but not the fluctuations observed in the OD students.

Many early theories that tried to explain opinion change focused on information processing only (Hovland et al., 1953) whereby the message had to be heard and remembered to produce attitude change. More recent theories consider the cognitive and affective responses that lead to favourable thoughts and attitude change (Zuwerink & Devine, 1996). We found no change in learning but a change of opinion and were naïve in thinking that greater learning would be closely associated with a change of opinion. In our post-study analysis we considered whether there might be non-cognitive factors acting here (Watts, 1984) or a different cognitive factor (Rucker & Petty, 2004) with either one or both acting to ‘unfreeze’ and even ‘refreeze’ the original opinions of the SC students.

Clearly, simply understanding the arguments is not the only factor in opinion change. Often individuals may completely understand the arguments and still not change (Watts, 1984). In this study we supported and measured understanding for both sides of the argument in both groups.
So why, then, did individuals in SC change their opinions? The answer may lie in the explicit debate style of SC and the act of counterarguing. Counterarguing is the generation of thoughts and ideas that counter or refute the advanced message. Failed counterarguing occurs when, in spite of attempts at counterarguing, attitudes become more favourable toward the advanced message than if there were no message. Successful counterarguing is said to have occurred when contrary thoughts are produced and there is less or no favourable attitude change towards the message than if there had been no message. Both failed and successful counterarguing often produce more certain (or stronger) attitudes, not necessarily different ones, for many types of arguments including real-world issues and ones for which individuals have prior familiarity (Rucker & Petty, 2004).

Counterarguing may account for the shift in opinion in SC. Both groups were exposed to the same messages (pre-reading and lectures) and both elaborated and processed the material equally (identical scores on the in-class assignment). The OD individuals were not expected nor encouraged to counterargue whereas those in SC were. Failed or successful attempts at counterarguing would then be reflected in changed scores on the opinion scale. We suggest that perhaps the counterarguing in SC led to ‘refreezing’ of new attitudes that then led to stable opinion change.

While it may be that individuals in SC were instructed to counterargue and did so as a part of the activity, those in the OD groups may have done so on their own. It is not uncommon when discussing important beliefs that people will spontaneously counterargue (Zuwerink & Devine, 1996; Rucker & Petty, 2004). Nevertheless, the SC format through its explicit format likely generates much more counterarguing than the OD format.

Furthermore, it is not just the generation of negative (or positive) thoughts that seems to make a difference in opinion change but the metacognitive activity—the reflection and realization that there are many or few such thoughts. It was the subjective perception of thoughts that led to attitude certainty in the Rucker and Petty studies (2004). In SC there would be a more objective perception of the thoughts because the counterarguing would be tested against a team of peers debating the other side of the issue. The SC format supports counterarguing, thinking about the counterarguing, and testing the arguments, all key elements in opinion change.

The role-playing aspect of the SC groups whereby teams argue both sides of the issue may also have influenced the opinion change. Watts (1984) reports the value of role play in attitude change towards disabled persons for empathetic college students. Our students may have had their first opportunity to argue in favour of the position that they would not normally defend and this might have caused some of them to think more favourably towards that position. Furthermore, such role playing may have created considerable (though vicarious) cognitive dissonance sufficient to have motivated some rethinking of old attitudes resulting in change or greater certainty.

Interest outside of class

The topic and the in-class activities generated considerable discussion outside of class for all students from both group formats. In a five-day period on average the medical and physical therapy students spent about half an hour spread over about five occasions engaged in thinking and talking about this topic. There was no difference between the two formats; each one generated
lively extra-curricular discussion. Further research should include a broader array of indicators for activity outside of class to capture any differences that our simple measures may have missed.

**Satisfaction with the small groups**

Students in both formats rated their experiences positively (midway between neutral and ecstatic). It seems that students did not, in assessing the quality of the learning experience, account for the very deep way that they were being affected. On the other hand, the questions that we asked may not have tapped into their sense of having been affected by the discussion; there simply may not have been an opportunity to note the quality of the discussion that affected their opinion. We think that to some extent the students were so engrossed in the SC style discussion and the issues that they did not notice that they were being affected by the format at all; they were just actively engaged and consequently refining their opinions.

**Conclusion**

The SC format cooperative group activity appears to be quite a different experience from the more traditional OD discussion. Not only is the process remarkably dissimilar but the one key outcome is unique. Although there were no differences between the two formats in performing a problem-solving task, in engaging the topic spontaneously out of class, and in student ratings of satisfaction with the small group formats, there was a statistically significant difference between groups in opinion change. The opinions of students in the SC format changed more from immediately after the in-class discussion to five days later. The opinions of students who engaged in the OD format changed initially but generally drifted back to the initial position five days later. This, we think, is a remarkable difference between the two formats.

The debate format of SC likely contributes to the opinion change that was observed in this study. There would have been more counterarguing, and hence more metacognitive activity surrounding that counterarguing, and more objective testing of thoughts in the SC discussions compared to OD. The role play aspect of SC, besides being the mechanism by which counterarguing occurred, would likely have created some cognitive dissonance and generated some thinking. The two-round debate structure of SC seems to hold many useful opportunities for thinking at different levels.

Though our explanation seems reasonable, further research would be helpful in this regard. Researchers could convene focus groups and conduct interviews to find out from students more precisely what they were experiencing when their opinions changed dramatically or did not change at all. The insights from these two groups might shed more light not only on the relationship between opinion change and the formats of the discussions, but about the opinion change generally.

We believe education is a process of helping students to become more informed and as a result to hold different, more reasoned positions on important issues in life and in their worlds of work (Pratt, 1998). Cooperative learning activities generally allow students to engage the material at a deeper level and help them to learn better (Cuseo, 2003). The SC cooperative learning format pushes this further and helps promote real and sustained change of opinion through metacognitive activity. We therefore feel that the incremental time and effort invested in providing the SC
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experience for students is not wasted. We also think that it would be worthwhile for other instructors to use SC and we hope that further research will continue to explore and help explain the unique contribution of the SC format to student learning.

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References


