DEBATE: A TOOL FOR TEACHING GRADUATE STUDENTS

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The introduction of a formal debate was used to stimulate discussion of neuroscience in our graduate program. The debate had several advantages for encouraging student participation. Several students actively participated in the debate: four debaters and five judges. Faculty coaches helped provide background knowledge and guidance before the debate but were not debaters. Faculty directed the judges in methods of evaluation but were not judges. It was felt that this method of teaching was not only fun, but also provided an opportunity to learn current topics in neuroscience, method of presentation, and critical evaluation.

METHODS

Topic
Graduate students and faculty were asked to suggest current topics for debate. The topic needed to have two clearly opposing opinions, each of which could be substantiated with valid research information. The expertise to direct the two sides of the topic needed to be available within the faculty. Once a list of topics was generated, the topic for debate was determined by ballot.

Teams
Each debating team consisted of a faculty member (coach), a first-year graduate student, and a senior graduate student. Teams were established 2 mo before the debate. The team members worked together to learn details of the topic and to develop a strategy of teaching objectives were 1) to encourage discussion among graduate students and faculty of current and controversial topics in neuroscience, 2) to teach critical evaluation, and 3) to involve as many graduate students as possible.
presentation of arguments and rebuttal. The degree to which each team prepared was set by the individual teams. In general, weekly meetings occurred.

The coaches were chosen because of their knowledge of the topic. Their role was to direct the students to the relevant areas of the neuroscience literature and to help with interpreting and understanding the theory and methodology of the topic. The student members were invited to participate on the basis of their interest and knowledge of the field. One restriction was that students and faculty from the same laboratory could not be on the same team.

Format

The format followed for the debate is shown in Table 1. The debate consisted of presentations (40 min), recess (15 min), open debate (10 min), and a question period (5 min).

**Presentation.** Each member of the two teams gave a 10-min presentation. It was suggested that the first speeches establish the definitions, terminology, and specific arguments of the topic. The second speeches were to focus on counterarguments.

**Recess.** There was a 15-min recess after the opening presentations. This served two purposes: 1) to allow the judges time to consider the debate and update their score cards and 2) to provide time for the teams to reconsider their arguments.

**Open debate.** There was a 10-min open debate after the recess. This time was used for free discussion by the two teams. The moderator assured that approximately equal time was given to each team.

**TABLE 1**

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<thead>
<tr>
<th>Format for the debate</th>
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<tbody>
<tr>
<td><strong>Time, min</strong></td>
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<tr>
<td>Affirmative 1st speech</td>
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<tr>
<td>Negative 1st speech</td>
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<tr>
<td>Affirmative 2nd speech</td>
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<td>Negative 2nd speech</td>
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<td>Recess</td>
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<td>Open debate</td>
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<tr>
<td>Question period</td>
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**Question period.** There was a 5-min question period, in which only the judges were allowed to ask questions.

After the formal debate, the judges adjourned to another room to make a decision on the winning team. During this time the debaters and coaches answered questions from the audience.

**Judges**

Five judges were chosen from the pool of graduate students and included new, intermediate, and senior students. The moderator and the coordinator met with these students to outline various methods of judging debates.

Two schemes were presented, following debating procedures outlined by Musgrave (1) and Wall (2). The first scheme was based on selecting elements of the debate that could be ranked on a 10-point scale. The list of elements used by the judges included such items as skill of analysis, organization, knowledge of subject, style, presentation of evidence, and ability to refute arguments. With the use of this procedure, the total number of points determined the winning team. The second scheme was based on the judges identifying the arguments presented by each team and how effectively the opposing team refuted these arguments. The judges were advised to tabulate the number of arguments raised in favor of the topic (i.e., advantages for the affirmative) and tabulate how effective the negative team refuted these arguments and presented disadvantages to the topic. With the use of this method, the winning team was based on the number of advantages and disadvantages left standing at the end of the debate.

The moderator and coordinator did not determine which procedure should be used by the judges, but merely made them aware of what they had to consider in making their judgments. Furthermore, the judges did not necessarily have to agree with each other on the procedure they would use beforehand, but they did have to account for their decision at the end of the debate.

During the debate, judging was done independently. The judges did not discuss their results with each other until after the final question period.
Other Considerations

Two other key players in the debate were the moderator and the time keeper.

The role of the moderator was to introduce the speakers, to assure that equal time was given to both teams during the open debate and question period, and to announce the winners of the debate. Heckling was not discouraged, but the degree of heckling was regulated by the moderator.

The time keeper indicated 5-, 8-, and 10-min time during the initial speeches. The time keeper was also required to keep the scheduling of the recess, open debate, and question period.

RESULTS AND DISCUSSION

The topic that was chosen for the first debate in neuroscience at Memorial University was “Resolved that long-term potentiation is exclusively a postsynaptic phenomenon.” As desired, the topic generated considerable discussion preceding and after the debate, and, therefore, we were satisfied that the first objective of this experience was reached. The second objective in using the debate format was to encourage critical thinking and evaluation. As described below, this occurred in two ways.

1) The debaters were required to think on their feet and respond to questions not only from the judges but also from their opponents. The initial speeches by the affirmative and negative team members tended to be rehearsed presentations, whereas the second speeches also included counterarguments to specific points raised in the initial speeches. During the recess, the teams took the opportunity to focus on specific points for further discussion during the open debate. The open debate was not a component that could be rehearsed, therefore, the discussion showed the degree to which the students were able to think quickly and criticize or respond to criticism of the topic. The students performed very spontaneously during the open debate, pursuing and responding to the arguments.

2) The outcome of the debate was the responsibility of the student judges. This meant that these students were required to follow the presentations and open debate and, during the question period, clarify any uncertainties about the issues raised. Students were quite willing to volunteer to judge the debate. However, after the first session with the moderator and coordinator, each of the judges recognized that there was considerable work involved in listening, evaluating arguments and counterarguments, and in ranking the presentations. After meeting with the moderator and coordinator they organized two subsequent meetings to exchange ideas on how to judge. The student judges were conscientious in evaluating the presentations and recognized the difficulties in comparing presentation style with content. In general, the question period was used to clarify points not to challenge the debaters. It was felt by both students and faculty that the absence of faculty as judges was an advantage and that the inclusion of faculty as judges would have diminished the involvement of the students in this endeavor.

This debate involved nine neuroscience graduate students out of a total of twenty students in our program. That is, nearly one-half of the graduate students in our program participated in the debate. Furthermore, the audience included graduate students from the neuroscience program and other programs, undergraduate students, and a broad range of faculty.

The purpose of the debate was to teach information about a current topic in neuroscience, teach critical evaluation, and actively involve as many students as possible. We felt that we met our objectives and are continuing to include this method of teaching in our program. As an added advantage, the debate was very enjoyable.

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References