Assessment of Collaborative Learning Techniques in Supplemental Instruction Sessions

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Abstract
The Supplemental Instruction (SI) Leaders completed a survey to assess the comfort and frequency of utilizing specified collaborative learning techniques in their SI sessions. Results suggest a wide range of comfort and frequency in using the 16 techniques outlined in the survey. Discussed are potential interpretations, implications, and recommendations for future consideration in the SI Program, particularly in terms of SI staff development opportunities.

Background

Context
The SI Program is housed within the Academic Success Center (ASC) at Iowa State University. Aligning with the office’s overall mission, SI enhances the academic development of students who attend SI sessions. The SI Program relies heavily upon the facilitation skills of SI Leaders, and these skills are developed through SI New Leader Orientation and ongoing staff development opportunities. SI Leaders are provided with 16 collaborative learning strategies in their SI Leader Training Manual, and they are encouraged to refer to these strategies when planning their sessions.

Need for Assessment
Assessment is needed to understand how comfortable and how often SI Leaders use the 16 collaborative learning techniques outlined in their SI Leader Training Manual, as well as understand the relationship between comfort and frequency of use in these techniques. Developing an understanding in these areas allows the SI Program Staff to better understand where to meet SI Leaders in terms of staff development efforts.

Stakeholders
Stakeholders include SI Program Staff, SI Leaders, SI participants, and all staff within the Academic Success Center.

Client
The client for this assessment was Craig Zywicki, Program Coordinator for Supplemental Instruction & Psych 131 at Iowa State University. His office is located in the Academic Success Center in 1060 Hixson-Lied Student Success Center. He can be reached at by email at czywicki@iastate.edu or by phone at 515-294-6624.

Focus of the Evaluation

Purpose
The purpose of this assessment was to determine SI Leaders’ comfort levels and frequency in using 16 specified collaborative learning techniques during their SI sessions.
Evaluation Questions

- How comfortable are SI Leaders using each of the 16 collaborative learning techniques outlined in their SI Leader Training Manual?
- How frequent do SI Leaders self-report using each of the 16 collaborative learning techniques outlined in their SI Leader Training Manual in their SI sessions?
- What relationships exist between SI Leaders’ comfort and frequency in utilizing the 16 collaborative learning techniques outlined in their SI Leader Training Manual?

Assessment Methodology

Evaluation Approaches
The creation of this assessment was influenced by the program-oriented and decision-oriented approaches to evaluation.

Design and Participants
This assessment was a utilization assessment that encompassed a cross-sectional descriptive design. The census of this study was taken from the entire population of 43 SI Leaders at Iowa State University in the spring semester of 2014.

Data Collection and Analysis
The data for this immediate assessment were collected quantitatively through a locally developed, paper-based survey, distributed at a SI Staff Meeting. The survey listed all 16 collaborative learning techniques outlined in the SI Leader Training Manual and asked participants to simply rate how frequent and comfortable they are in utilizing each technique. The evaluator analyzed the frequencies for both comfort and utilization of each collaborative learning technique to determine the comfort and frequency of SI Leaders using the 16 collaborative learning techniques outlined in their SI Leader Training Manual. A Pearson’s Chi Square test was also run to determine the relationship between comfort and frequency in utilizing the 16 collaborative learning techniques.

Assessment Results

Evaluation Question #1: How comfortable are SI Leaders using each of the 16 collaborative learning techniques outlined in their SI Leader Training Manual?
It is clear that there is a wide range of comfort in using the collaborative learning techniques outlined in the SI Leader Training Manual. The data range from a 92.9 percent rate of comfort on the highest ranked technique to a 2.4 percent rate of comfort on the lowest ranked technique. SI Leaders are comfortable using certain collaborative learning techniques outlined in their SI Leader Training Manual, but are uncomfortable using the majority of the outlined techniques. See Table 1 for a more detailed description.
Evaluation Question #2: How frequent do SI Leaders self-report using each of the 16 collaborative learning techniques outlined in their SI Leader Training Manual in their SI sessions?

There is a wide range of frequency in using the collaborative learning techniques outlined in the SI Leader Training Manual. The data range from a 95.2 percent rate of using the most frequent technique at some point in the semester to a 7.2 percent rate of using the least frequent technique. Half the collaborative learning techniques are used by the majority of SI Leaders at some point while the other half are used by less than the majority. All collaborative learning techniques outlined in their SI Leader Training Manual are used by SI Leaders, but some techniques are used much more frequently than others. See Table 2 for a more detailed description.

Durkee, P.
SI Collaborative Learning Techniques, Spring 2014
Iowa State University
Table 2

Evaluation Question #3: What relationships exist between SI Leaders’ comfort and frequency in utilizing the 16 collaborative learning techniques outlined in their SI Leader Training Manual?

A Chi-Square was conducted to find the relationship between comfort and frequency of use with each collaborative learning technique. With the exception of one specific collaborative learning technique, all other techniques demonstrated a significant relationship between comfort and frequency. See Table 3 for a more detailed description.

<table>
<thead>
<tr>
<th>Collaborative Learning Technique</th>
<th>Frequency of Using Collaborative Learning Techniques in SI Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Discussion</td>
<td><img src="chart1.png" alt="Bar Chart for Group Discussion" /></td>
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<tr>
<td>Clusters</td>
<td><img src="chart2.png" alt="Bar Chart for Clusters" /></td>
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<tr>
<td>Group Survey</td>
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<td>Turn to Your Partner</td>
<td><img src="chart4.png" alt="Bar Chart for Turn to Your Partner" /></td>
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<td>Think/Pair/Share</td>
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<td>Write/Pair/Share</td>
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<td>Individual Presentation</td>
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<td>Assigned Discussion Leader</td>
<td><img src="chart8.png" alt="Bar Chart for Assigned Discussion Leader" /></td>
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<td>Buzz Groups</td>
<td><img src="chart9.png" alt="Bar Chart for Buzz Groups" /></td>
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<tr>
<td>Round Robin</td>
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<td>Critical Debates</td>
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<td>Note-taking Pairs</td>
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<td>Assigned Discussion Leader</td>
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<td>Round Robin</td>
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<td>Critical Debates</td>
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<tr>
<td>Learning Cell</td>
<td><img src="chart33.png" alt="Bar Chart for Learning Cell" /></td>
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</table>

Percent of SI Leaders using collaborative learning techniques:

- At least once every 1-2 weeks
- At least once every 4 weeks
- At least once per semester
Table 3  
Chi Square: Comfort and Frequency of Utilizing Collaborative Learning Techniques

<table>
<thead>
<tr>
<th>Technique</th>
<th>Number of responses</th>
<th>Pearson Chi-Square</th>
<th>p</th>
<th>Cramer’s V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Discussion</td>
<td>42</td>
<td>53.37</td>
<td>&lt;0.001</td>
<td>0.65</td>
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<tr>
<td>Assigned Discussion Leader</td>
<td>42</td>
<td>43.52</td>
<td>&lt;0.001</td>
<td>0.51</td>
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<tr>
<td>Clusters</td>
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<td>51.74</td>
<td>&lt;0.001</td>
<td>0.56</td>
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<td>44.06</td>
<td>&lt;0.001</td>
<td>0.53</td>
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<td>Group Survey</td>
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<td>0.91</td>
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<tr>
<td>Turn to Your Partner</td>
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<td>28.78</td>
<td>&lt;0.004</td>
<td>0.48</td>
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<tr>
<td>Think/Pair/Share</td>
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<td>35.33</td>
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<td>0.46</td>
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<tr>
<td>Write/Pair/Share</td>
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<td>29.53</td>
<td>&lt;0.021</td>
<td>0.43</td>
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<tr>
<td>Note-taking Pairs</td>
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<td>34.54</td>
<td>&lt;0.001</td>
<td>0.54</td>
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<tr>
<td>Jigsaw</td>
<td>42</td>
<td>24.84</td>
<td>&lt;0.002</td>
<td>0.56</td>
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<tr>
<td>Individual Presentation</td>
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<td>36.14</td>
<td>&lt;0.003</td>
<td>0.46</td>
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<tr>
<td>Round Robin</td>
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<td>40.30</td>
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<td>0.50</td>
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<tr>
<td>Critical Debates</td>
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<td>&lt;0.122</td>
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<tr>
<td>Three-step Interview</td>
<td>42</td>
<td>51.89</td>
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<td>0.81</td>
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<tr>
<td>Learning Cell</td>
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<td>67.26</td>
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<td>0.75</td>
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<tr>
<td>Fishbowl</td>
<td>42</td>
<td>57.84</td>
<td>&lt;0.001</td>
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</tbody>
</table>

Discussion

Interpretations and Implications
The most comfortable and frequently used techniques appear to be very popular and feasible to use in SI sessions. The wide range of responses from SI Leaders can possibly be explained by the following: (a) The techniques SI Leaders find less comfortable tend to be more challenging and advanced; (b) The SI Program Staff unintentionally promote the comfortable techniques more than the less comfortable techniques; and (c) The lesser used collaborative learning techniques are perceived as less applicable for SI sessions. Such uncertainties require further inquiry and follow-up assessment activities. An overall implication of these results is that there is potential for further improvement of staff training and making SI Leaders more comfortable with a wider variety of collaborative learning techniques.
Recommendations

- Research other possible collaborative learning techniques for SI Leaders.
- Restructure SI New Leader Orientation and ongoing staff development activities.
- Increase the number of preparation hours SI Leaders are paid.
- Discuss collaborative learning techniques during one-on-one meetings with SI Leaders.
- Develop structured lesson plan worksheets for SI Leaders when planning SI sessions.

Limitations

Limitations for this assessment project included being conducted by an internal evaluator, finding gaps between response categories involving frequency of using the collaborative learning techniques, using self-reported data, and not separating new SI Leaders from returners.

Future Assessment Activities

All of the recommendations in this assessment are contingent upon future assessment activities. Further assessment activities must be done to learn more about why SI Leaders use certain techniques over others. Also, it is important to understand more about the progressive development of SI Leaders. This insight will help the SI Program Staff better know how to accommodate them in the staff development process, beginning with SI New Leader Orientation and continuing into staff meetings and workshops.

References


Collaborative Learning Techniques Packet (taken from SI Leader Training Manual)

Collaborative Learning Techniques

Group Discussion
Group Discussion is a general unstructured discussion of an issue or topic by the group. Individual members are free to contribute or not contribute.

Hints:
♦ This is the most common form of collaborative learning. It is also the form that requires the most skill to use successfully.
♦ Ideally, everyone is actively involved in the discussion and the discussion topic is of equal interest to all group members.
♦ When group discussion is successful, it is difficult to determine if there is a discussion leader.

Assigned Discussion Leader
One person in the group is asked to present on a topic or review material for the group and then lead the discussion for the group. This person should not be the regular group leader.

Hints:
♦ When assigning a discussion topic to individual members of the group, you may need to be prepared to allow a little time for the person leading the discussion to prepare for the discussion.
♦ This technique works best when everyone or nearly everyone in the group is given an assignment to be the “expert” on.

Clusters
In clusters, group participants are divided into smaller groups for discussion. They may also be allowed to self-select the small group they want to be in. After discussing the assigned topic, the cluster may report their finding to the last group.

Hints:
♦ Make sure that each group is provided flip chart paper or assigned a space on the blackboard.
♦ Allow time for each group to report back to the large group. You have to assign someone from each group to report back.
Buzz Groups

A variation of clusters, buzz groups are set up to brainstorm ideas as quick as possible. Ideas are always shared with the large group.

Hints:
- Small groups should always assign one person to be a recorder and one person to be a spokesperson.
- Create a list of ideas when shared with the large group. When sharing, recorders can cross out their small group ideas that have been shared.

Group Survey

Each group member is surveyed to discover their position on an issue, problem or topic. This process ensures that each member of the group is allowed to offer or state their point of view.

Hint:
- A survey works best when opinions or views are briefly stated. Be sure to keep track of the results of the survey.

Turn to your Partner and…(TTYP)

Group members work with a partner on an assignment or discussion topic.

Hints:
- TTYP’s would best when group participants who have already been provided with enough background on a subject that they can immediately move to a discussion with their partner without previewing or reviewing concepts.
- There is a variation on TTYP called “Think/Pair/Share.”

Think/Pair/Share

Group members think about a question/topic individually, then share their thoughts with a partner. Large group summarized sharing also occurs.

Hints:
- The goal of a think/pair/share is to allow participants time to think BEFORE they discuss. Research shows that when people are given time to contemplate an answer to a question, their answers differ from those they would give if they responded immediately.
When doing a think/Pair/Share, give participants a specific amount of time (30 seconds, 5 minutes, etc.) for the “think” portion.

**Write/Pair/Share**
Same as think/pair/share, but the student must develop a written response on their own before sharing.

**Hints:**
- The goal of a write/pair/share is to allow participants time to write something BEFORE they discuss with a partner.
- When doing a think/pair/share, give participants a specific amount of time (30 seconds, 5 minutes, etc.) for the “think” portion.
- This format works well for problem solving. In the pair step, partners can write a joint solution on the board to share with the large group.

**Note-Taking Pairs**
Students combine information from their individual notes to create an improved partner version.

**Hint:**
- Ask students to identify areas they were missing.
- Discuss as a large group inaccuracies or conflicts.
- Point out that this method should help improve note-taking skills.
- If notes get too dense, help students to see that simplifying note-taking may improve note-taking.

**Jigsaw**
In Jigsaw, group members are broken into smaller groups. Each small group works on some aspect of the same problem, question, or issue. They then share their part of the puzzle with the large group.

**Hints:**
- Jigsaws, when used properly, make the group as a whole dependent upon all of the subgroups. Each group has a piece of the puzzle.
- When using a Jigsaw, make sure you carefully define the limits of what each group will contribute to the topic that is being explored.
Individual Presentation
An individual presentation is an uninterrupted presentation by one person to the group. Group members present on a topic, question, or issue to the group. Unlike an “Assigned Discussion Leader” this is a formal presentation delivered to a captive audience.

Hint:
♦ Use of individual presentations should typically be used sparingly and only when independent research is required.

Round Robin
Generate ideas by speaking in order, moving from one student to the next. Use to structure brainstorming sessions and ensuring that all students participate.

Hint:
♦ A student can “pass,” but be certain to establish the expectation that you will return to him/her.

Critical Debates
Students take the side of an issue that is in opposition to their personal views, then argue that side of the issue. This method helps students develop critical thinking skills and challenges assumptions.

Hint:
♦ This method works well in dueling partners, or works well when a larger group is divided into two.
♦ Also can work as a “four corners” method or continuum line.

Three-Step Interview
Students, in partners, interview each other, then report what they learn to another pair. This method helps students network with each other and develop communication skills.

Hint:
♦ Useful as an icebreaker.
Learning Cell
Students develop questions individually, then quiz each other based on these questions. A facilitator can compile all questions for future use as practice quizzes/exams.

Hint:
- Encourage students to create quiz questions based on notes, books, and other resources.
- Encourage a variety of questions (based on Bloom’s taxonomy) for deeper understanding.

Fish Bowl
Form two concentric circles. The smaller, interior group discusses a topic, while the larger outside group observes.

Hint:
- Describe how this activity presents students with an opportunity to model or observe group processing behaviors.
- Reverse roles as needed.
- Rotate perspectives as an observer.