Abstract
Music has always played an important role in the learning process. In this research project, two study groups were used to collect data on the effects of music on problem solving skills in physics and mathematics. A total of 12 students from different backgrounds participated in the study. The hypothesis is that with music students will experience better mood and ask more questions compared to study groups without music.

Method
There are two study groups involved in this study: math 141 study group and physics 121-study group. The study groups are held on Thursday 5:00pm-6:00pm(Math 141) and Wednesday 8:00pm-9:00pm(Physics 121) every week. Generally there were around 5 students in each study group session. The study was 4 weeks long.

We would play pop music before the study group started for 5 minutes every other week (the first week, music was played). The music was played through laptops without speakers. We adjusted the volume of the music so that it was loud enough for everyone in the room to hear it clearly. The kind of music was Pop American music. Then before the study group started, we would ask students to do a survey.

Results
Number of questions that students brought to the study group session

<table>
<thead>
<tr>
<th>week/class title</th>
<th>Physics 121</th>
<th>Math 141</th>
</tr>
</thead>
<tbody>
<tr>
<td>week 1</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>week 2</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>week 3</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>week 4</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Average for the weeks with music</td>
<td>6.75</td>
<td>5.5</td>
</tr>
<tr>
<td>Average for the weeks without music</td>
<td>5.25</td>
<td>5.5</td>
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</tbody>
</table>

Survey Questions
1. How do you feel now? From a scale 1-10; 1 means very bad and 10 means very good.
2. How ready are you for this study group? From a scale 1-10; 1 means not at all and 10 means very ready.
3. How confident do you feel now? From a scale 1-10; 1 means not at all and 10 means very confident.
4. How energetic do you feel now? From a scale 1-10; 1 means not at all and 10 means very energetic.

Background
Since the day it was discovered by our ancestors, music has had a mysterious power on human beings. Lots of research has focused on the correlation between music and people’s academic performance. One well known study is the Mozart Effect: Rauscher et al. (1999) reported that brief exposure to Mozart’s piano music can temporarily increase spatial reasoning scores. According to Hodges and Connell’s research, Students who participate in formal music education have higher academic achievement scores than students who do not. Similarly, Kathryn Vaughn’s study indicated the correlation between music education and mathematical performance.

Physics study Group Data

Physics 141 Study Group

References