Using MOGCLASS in Group Music Therapy with Individuals with Muscular Dystrophy

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What is MOGCLASS?
MOGCLASS

- MOGCLASS (Musical mObile Group for Classroom Learning And Study in Schools)
  - Collaborative and multimodal music environment
  - Supports students music experience
  - Assists teachers in managing the classrooms
Student Interfaces

Hitter Interface

Slider Interface

Tapper Interface
Teacher Interface
Virtual Sound Space
User Scenario
Understanding of Muscular Dystrophy
Muscular Dystrophy (MD)

• progressive weakness and degeneration of skeletal muscles that control movement
• genetic
• no specific treatment to stop or reverse any form of MD
• prognosis varies according to type and progression of the disorder

Source: NINDS (2010)
Muscular Dystrophy (MD)

• treatment to alleviate presenting problems include:
  • Physical therapy
  • Occupational therapy
  • Respiratory therapy
  • Assistive technology
  • Corrective orthopedic surgery

Source: NINDS (2010).
Muscular Dystrophy (MD)

- most common form: Duchenne MD
- absence of dystrophin (protein involved in maintaining integrity of muscle)
- Only boys affected
- Onset is between 3 and 5 years
- Rapid progression
- Unable to walk by age 12
- Need a respirator to breathe

- Becker MD

Source: NINDS (2010).
Muscular Dystrophy and Music Therapy
Muscular Dystrophy and Music Therapy

• Limited research

  • Music Therapy seen as “appropriate treatment” for MD (Korson, 1958)

  • Transfer of skills from music therapy sessions to regular classes (Kennedy and Kua-Walker, 2006)

  • The use of songwriting with an adolescent with MD (Dwyer, 2007)
The Study
Research Questions

• Does assisted technology, MOGCLASS improve MD clients’ perception of success in music therapy group session?

• Does assisted technology such as MOGCLASS enhance MD clients’ enjoyment in music therapy group session?

• Does assisted technology such as MOGCLASS improve MD clients’ motivation in music therapy group session?
Methods

• Subjects

-- convenience sample, 4 individuals with MD, age 14-21 years of age

• Study Design and Procedure

-- Within-subject design, with acoustic musical instruments and MOGCLASS condition.

• Questionnaire Design

-- Two survey forms were created: (Form A) Client’s background form ; (Form B) Survey on perceived enjoyment, motivation, and success in playing instruments/MOGCLASS
**Form B**

<table>
<thead>
<tr>
<th>#</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>General</strong></td>
</tr>
<tr>
<td>Q1</td>
<td>I find playing musical instrument(s)/MOGCLASS interesting.</td>
</tr>
<tr>
<td>Q2</td>
<td>I feel the instrument(s)/MOGCLASS is easy to play.</td>
</tr>
<tr>
<td></td>
<td><strong>Perceived Motivation</strong></td>
</tr>
<tr>
<td>Q3</td>
<td>I would like to play musical instruments(s)/MOGCLASS during my free time.</td>
</tr>
<tr>
<td>Q4</td>
<td>I want to learn or practice new skills using musical instrument(s)/MOGCLASS.</td>
</tr>
<tr>
<td>Q5</td>
<td>I want to learn or practice new musical pieces using instrument(s)/MOGCLASS.</td>
</tr>
<tr>
<td></td>
<td><strong>Perceived Enjoyment</strong></td>
</tr>
<tr>
<td>Q6</td>
<td>I enjoy playing music in the group using instrument(s)/MOGCLASS.</td>
</tr>
<tr>
<td>Q7</td>
<td>I enjoy performing music for others using instrument(s)/MOGCLASS.</td>
</tr>
<tr>
<td></td>
<td><strong>Perceived Success</strong></td>
</tr>
<tr>
<td>Q8</td>
<td>I feel successful playing music in the group using instrument(s)/MOGCLASS.</td>
</tr>
<tr>
<td>Q9</td>
<td>I feel my contribution using instrument(s)/MOGCLASS is important to the group’s success.</td>
</tr>
</tbody>
</table>
## Session Plans

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Activity Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>0-5th min</strong></td>
<td><strong>5th -15th minute</strong></td>
</tr>
<tr>
<td><strong>16th – 30th minute</strong></td>
<td><strong>Session 1 &amp; 2 – using traditional instruments</strong></td>
</tr>
<tr>
<td>Breathing exercise and warm-up physical exercise</td>
<td>Instrument choice and structured playing with solo turn-taking</td>
</tr>
<tr>
<td><strong>Session 3 – using traditional instruments</strong></td>
<td>Rainbow Bell activity</td>
</tr>
<tr>
<td>As above</td>
<td></td>
</tr>
<tr>
<td><strong>Session 4 &amp; 5 – using MOGCLASS</strong></td>
<td>Instrument choice and structured playing with solo turn-taking</td>
</tr>
<tr>
<td>As above</td>
<td>Work on song “All About You” – add percussion parts</td>
</tr>
<tr>
<td><strong>Session 6 – using MOGCLASS</strong></td>
<td>Rainbow Bell activity</td>
</tr>
<tr>
<td>As above</td>
<td>Instrument choice and structured playing with solo turn-taking</td>
</tr>
<tr>
<td></td>
<td>Continue from previous week</td>
</tr>
</tbody>
</table>
Research Hypotheses

H1: MD clients have greater *perception of enjoyment* in music therapy group session using MOGCLASS

H2: MD clients have greater *perception of success* in music therapy group session using MOGCLASS

H3: MD clients have higher *motivation level* in music therapy group session using MOGCLASS
Data Analysis

• SPSS-WINDOWS

• Repeated measures ANOVA

• The instrument was between-subject factor
Graph of questionnaire results

Figure 1: Form B data
Results: Research Hypotheses

H1: MD clients did not consistently report a greater *perception of enjoyment* in music therapy group session using MOGCLASS.

H2: MD clients have greater *perception of success* in music therapy group session using MOGCLASS, though results were not significant.

H3: MD clients did not consistently report a higher *motivation level* in music therapy group session using MOGCLASS.
Discussion: MOGCLASS rated higher

For 7 out of 9 questions, MOGCLASS rated higher than traditional instruments, though difference not statistically significant. Possible reasons:

• device’s sensitivity was adapted to match subject’s physical ability (as programmed by designer)

  → subjects made sounds with a light touch/shake

• subjects were able to choose sounds based on options given, not limited by ability
Discussion: Traditional instruments rated higher

Whereby subjects rated traditional musical instruments higher than MOGCLASS, possible reasons include:

• Playing MOGCLASS = tapping on screen OR shaking device → boring, unrealistic

• MOGCLASS sounded same, no matter how it was played

• Traditional musical instruments provide instantaneous auditory and vibro-tactile feedback – while MOGCLASS produced only auditory feedback from the same loud speaker.
Discussion: Traditional instruments rated higher

• Slight delay in the sound produced by MOGCLASS → more difficult for subjects to locate their own sound(s).

• MOGCLASS was heavy (hand-held component weighed 115 grams).

• Subjects may have concentrated more on not losing grip on MOGCLASS, therefore reporting a lower level of enjoyment.
Discussion

• General rating of perceived enjoyment, motivation and success for both conditions were high.

• Subjects enjoyed group MT sessions (both conditions).

• Highest score was for enjoyment of making music in the group, for traditional musical instrument condition.

• Music Therapy is a highly appropriate treatment modality for individuals with MD.
Limitations of study and Recommendations

• Number of subjects was small (n=7); number of MD clients who completed all sessions was even more reduced (n=4) → Bigger sample size is needed

• In 1st MOGCLASS session, devices not yet fine-tuned to match subjects’ ability → MOGCLASS condition was not held constant, as opposed to traditional instruments that did not require any fine-tuning

• More Music Therapy and MD research needed!
References

