

**SMARTMUSIC:
Using Technology to Assess Rhythmic Ability
within Instrumental Music in the Elementary
School Classroom**

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Abstract

Technology has become an important tool for today's teachers within their classrooms. The music field is experiencing that same importance. One tool that has been developed is "SmartMusic". The purpose of this research was to measure students' progression with rhythm using SmartMusic as an assessment tool to see if it actually benefits the students or hinders their progress. Research tools used were questionnaires, pre and post performance tests, as well as performance quizzes. The research question for this topic is, SmartMusic; Can it Help Students to Progress in the Instrumental Classroom? Focus on: RHYTHMIC ABILITY.

It seems apparent that technology and computers will surround future generations. Music educators cannot afford to ignore these possibilities, though abandonment of traditional music pedagogy seems equally unwise.

(Buck, 2008, p. 3).

Section 1- Introduction

1.1 – Purpose for research

The use of technology in the classroom is a continuous integration in today's instruction. Technology for the music classroom has increased into more than just recording, but creating, analyzing, and assessing students' progress. SmartMusic is a new web-based tool used as an aid in assessing students' performances. As a music educator, the use of SmartMusic is both an interest and a concern.

SmartMusic is being implemented in school districts. Students must subscribe to the program in order for it to be used as a web-based tool. Students can send assignments to their teacher who can send responses back with critiques. The concern I feel is whether or not it is ethical to have students pay for a program if there is no proof of it being beneficial. This sparked my interest to research SmartMusic and its effects on students' progress. Buck (2008) suggests that the use of technology is apparent, but traditional education is just as important. In order to use SmartMusic successfully, Lee

(2007) found that students with prior musical experience progressed at higher performance levels with SmartMusic than students with low performance levels. As a Elementary music educator, using a program with students who are currently having their “prior musical experience” (Lee, 2007 p) is a concern when implementing the software as requested.

In order for a program to be beneficial to students, educators must implement it within their everyday instruction. Due to the fact that students must pay to use this program at home, and not being convinced of the programs success, I decided to conduct this research using the software during class instruction. Lee asked the question “Does using this technology in the classroom make a difference to student learning?” (2007). Buck felt that if the program is implemented properly within a methodology, it can potentially aid in student comprehension (Buck, 2008). Lee felt that educators and students need knowledge on the program before using it (2007). I feel educators need to use the program and teach it to their students before there can be success. I sought to find out if SmartMusic actually helps students to progress rhythmically.

1.2 – My Story

Throughout my childhood, I was surrounded by musical influences. My grandparents came from the “Swing” era. They always had music playing in their house. My father always played, and still plays his guitar and my mother used to play the clarinet in High School. We have many artists on both sides of the family as well as musicians. My older brother was a huge athlete. Everyone knew that my brother was going to be athletic (he still is). My interests, however, were unclear.

Entering my fourth grade year, I signed up for the Elementary Band. I knew I wanted to play the Clarinet from the start. Now, as a Music Educator, I am constantly finding new ways of engaging students in music and teaching them life skills through the fine arts.

Technology was not a huge part in my musical education because the use of it was a new concept. The only technology I was exposed to were tape records, then MP3 players, and one music course where I was exposed to an actual sound studio. It was until College that I learned how to use the Finale software program, composition software. SmartMusic is a recent tool for the music classroom. Its purpose is to assess students' musical performances, helping them to fine tune their skills and become stronger musicians. Though I was trained in the "old-fashion" structure of music lessons, that is teacher and student only, I am aware that technology is growing in society and that our students are a part of a fast-pace generation. If music instruction is going to exist in the future, then educators must be open to new methods. However, finding the right technological tools to use is my main concern. This prompted me to find out if SmartMusic actually helps students progress, or if it hinders it. If SmartMusic does not help students, can I actually expect my students, during these economical times, to pay for a subscription to it? And, if I do not support the program, can I find a way to use it within my instruction?

Section 2

Critical Review

2.1 Overview

In order for students to be successful at performing music, they need to have a strong understanding of fundamental skills. It is the educators' responsibility to ensure students have internalized basic counting, rhythms, and notation. With this in the students "tool box", they will more than likely have more confidence to play an instrument and progress. Certain factors must be taken into consideration when investigating student comprehension of music. The educator must have: an organized lesson/unit sequence, diagnostic strategies, and an understanding of technology, and SmartMusic.

2.2 Organized Pace – Sequence of Lesson

The organization of the lesson is crucial when setting out to educate students. Hale and Green (2009) give six principles for musical assessment. They refer to the actual structure and sequence of a typical lesson. They begin by discussing principle one, Begin with the End in Mind. They refer to Stephen Covey's book The Seven Habits of Highly Effective People (15th anniversary edition 2004) and Grant Wiggins and Jay McTighe's book Understanding by Design (2004). Both touch upon the idea of visualizing how you want the lesson to end and what goals must be accomplished. "The process starts by defining clear goals. After goals are established, assessments can be designed" (Hale and Green, 2009). This assessment process is an ongoing process. "Assessment is not just an afterthought at the end of the term. It is an ongoing process that must be intertwined with your instruction." (Hale and Green, 2009 p. 6). Moore

(2009) also refers to having a strong opening and closing to your lessons. “Arguably the most important parts of a class are its beginning and its end” (Moore, 2009). I do agree that in order to form a strong lesson sequence, the opening and the closing are the two most crucial components of a lesson. The opening engages the students in the lesson at hand, acts as a bell ringer for the previous lesson, and the closure ties everything together. Especially for instrumental lessons, where students in many districts are instructed once a week for a thirty to forty minute lesson, the beginning and ending of a lesson are imperative.

2.3 - Diagnostic Strategies

An important aspect of assessment is to actually have a successful diagnostic strategy to assess students’ achievement. Performance is one of the assessment strategies instrumental teachers can use to check for students’ understanding of musical concepts. If they can play it, there’s a good indication that they understand what they are playing, however, it cannot only be based on performance. Randall (2010) stated “Introducing better and more thorough assessment has empowered them, and erased the imaginary line between the kids who “can” and “can’t” do music well” (Randall, 2010 p 36).

Napolitano (2010) supports the use of data-based assessment in her class. “My goal is to collect an appropriate amount of meaningful data-without interrupting my teaching or causing me to cut out activities” (Napolitano, 2010 p 21). She accomplishes this through various methods. The integration of technology can be helpful when assessing student performance. Napolitano records her students’ performance and analyzes it later. “They are much more likely to perform well with this than when my grade book is out!” (Napolitano, 2010 p 21). Hale and Green (2009) discuss assessment

based on instant performance – sight reading, as well as an ongoing assessment during actual instruction. They feel that feedback given to students will help them to find their weaknesses and help them to become more self-sufficient diagnostic musicians. “The feedback you provide students should offer explicit information on how to close the gap between where they are now and the standard they are trying to reach”(Hale and Green, 2009 p. 3). This can only work if the teacher allows students “an opportunity to put your feedback to use so they can close the gap” (Hale and Green, 2009 p. 3).

Buck refers to a performance score as “MPS”, Music Performance Score; a score given to a students’ performance in an evaluation form (2008). He also used a TSS, Technical Skills Score (2008) which would relate to rhythmic accuracy. The performance test showed the students audiation understanding of the musical passage. Karas (2005) used sight reading as a performance test with 5th graders. Referencing Lehmann and Ericsson (1996), Karas explains that sight reading skills do not show a students ability to read music strongly, rather practice and self motivation does (2005).

2.4 – Technology

The use of technology in the music classroom is rising. Randall describes a teacher Melanie Wolfgang, who uses PowerPoint with clickers as a means to assess students’ immediate understanding (2010). Randall describes how teacher Ina Allen, who using a computer program where students can sing songs and after the performance is finalized, the students receive an assessment score (2010). Nardo (2009) also describes using a vocal-computer program called TUNEING to READING (2009). This program uses “real-time” pitch recognition which gives immediate feedback to the performer. The

program uses a headset microphone which allows the performer to listen, sing, and record (Nardo, 2009).

Biggs, Homan, Derick, Minick, and Rasinki describe another program called Carry-a Tune, which was found to provide positive feedback (as cited in Nardo, 2009). The study split 48 middle school students into two equal groups, one experimental and one controlled. The time line was 9 weeks where students had to perform tests and were given performance test scores. This was followed up by a 4-month assessment of the students' progress (Biggs et al 2008). Results showed an increase in performance scores for the students, showing a positive impact on the students' abilities (Biggs et al 2008).

2.5 –SmartMusic

In regards to the success of SmartMusic, Lee (2007), found that students with prior musical experience progressed at higher levels with SmartMusic than students with low abilities. Lee also felt that his results may have been affected by a rushed explanation of the SmartMusic program (2007). This seemed plausible within the current research due to the 5 week time frame. Lee (2007) feels that this is not an easy answer to find. Educators and students need knowledge on the program before using it (2007). SmartMusic also gives corrections after the performance, but it also records the students' performance and allows them to play it back so they can hear the mistake as well. Buck (2008) pointed out that a flaw with the SmartMusic program in regards to students' ability to count rhythms is that students do not catch their mistakes and continue to make the same ones. Adam Bell (2003) feels that traditional assessment only helps the student after the performance is finished and does not allow the teacher to assist in learning or help to make immediate corrections.

2.6 Question

With all of the research explanations on how technology can be used in the classroom, assessment strategies, and the flaw and benefits of SmartMusic itself, the question that was left unanswered was does SmartMusic actually help with students assessment of rhythmic abilities? In order to answer this, I focused solely on rhythmic ability. This way only one aspect was being investigated rather than many at once, which can lead to discrepancies in interpretation of data. The research that related most to this specific topic was Buck (2007) and Lee (2008), who really analyzed the effects of the SmartMusic program. Both of them could not give a definite answer as to whether or not the program worked. I felt that narrowing down the topic to rhythm only might help focus the research and hopefully find the answer to the SmartMusic question.

Section 3

Methodology

3.1 Sample

The participants were 5th grade second year instrumental band students at an Elementary school in the Central New York area. Out of (26) students, (14) students volunteered in the study which focused on SmartMusic and the effect it has on student rhythmical progress in the instrumental classroom. The sampling was convenience.

All 5th grade second year instrumental band students were invited to participate in an experimental study. Each student was given a consent form as well as parental/guardian consent (Appendix A). This consent form informed both parent/guardian and students about the research, what the students would be doing, and

the purpose it would serve. There were fourteen participants that returned permission slips signed by both parent/guardian and student. Students and parent/guardians were informed of the Pre-Post Performance Tests, as well as the Pre-Post Questionnaires that would be used to measure progress per student. The duration of this study lasted for four weeks. Information was also made clear that this participation was a voluntary research and would not hinder or aid in students grade in the class. Approval was obtained from SUNY Oswego's Human Subject's Committee, as well as the school district's administration (Appendix E).

3.2 Student Participants

The fourteen participants ranged from all instrumentations and musical ability. The participants were all Caucasian students. The gender was split with six boys and eight girls. The students were split into two groups, an Experimental group and a Control group. Each group contained seven participants. Participants were assigned to a group based on the number of their Instrumental lesson. Due to this, the control groups had higher level instrumental students than the experimental group. Students stayed in their normal lesson groups for this study so normal instruction could take place without any hindrance from the research. Those students that were not participating in the research but were in lesson groups with students that were participating in class but no data was recorded or used for this study. Those participants that were a part of the experimental group were exposed to SmartMusic during the study, while the control group had no interaction with the software as part of their instruction. Each student was tested as an individual to monitor their specific progress. Written below are descriptions of each participant based on study group, instrument, and musical ability.

Experimental

Katie – Flute, high musical ability. She is the strongest flutist in the school, as well as one of the top musicians in the band.

Kathy – Flute, high musical ability. She had grown in her rhythmic understanding and overall performance this year. She is hard working and has a mother who is a Music Educator.

Julie – Clarinet, low musical ability. She struggles with counting and fluid recognition of musical notation. She also performs limited practicing at home.

Jane – Clarinet, medium musical ability. She is capable of becoming a strong clarinetist, but had poor practice habits. She has an average understanding of rhythms and notation. She has begun to progress and practice at home recently.

Tom – Alto Saxophone, high musical ability. He is a hard working student. Overall he has a high ability with music, but has a tendency to mix up pitches while performing.

Dave – Alto Saxophone, high musical ability. He comes from a very musical family. He picks up new topics quickly, but has a tendency to rush the tempo when performing.

DJ – Trombone, medium musical ability. He started off with a slow progress level due to lack of practicing at home. During the study, his practice habits, as well as musical ability skyrocketed and are continuing to become stronger.

Control

Bob – Trombone, high musical ability. He has a strong understanding of reading music, but has sloppy habits with practicing and posture. He also has a tendency to rush the tempo during performance.

Ted – Baritone, high musical ability. He is a strong reader and performer. Recently his practice habits and digressed, causing his skills to weaken somewhat. However, his reading ability is still strong. He does have a tendency to rush the tempo during performance.

Natalie – Clarinet, high musical ability. She is a strong reader, but does have a tendency to rush the tempo during performance.

Kristi – Clarinet, high/medium musical ability. She is progress, but has some weakness with following notation. Her rhythmic ability is strong.

Kallie – Clarinet, high musical ability. She is a strong reader who picks up on new topics very quickly. She does have a tendency to rush the tempo during performance.

Susie – Clarinet, high musical ability. She is a strong reader. Out of the clarinets, she has the best feel for pulse during performance.

Dan – Clarinet, high musical ability. He is a very strong reader. However, he does have a tendency to rush the tempo during performance.

3.3 Instruments

Different tools were used in this experimental research. Through performance, a pre-test and post-test were administered as well as weekly performance checks and a pre/post questionnaire. The pre and post- performance test were used to measure progress of comprehension of rhythm. The questionnaires identified students' perception of understanding of music by having to write in the counts to musical passages as well as expressing their understanding of a passage which was acted as an interview based tool.

The questionnaire served as the personal information piece while the performance test served as the musical knowledge piece. Students were also asked questions about other passages, which acted as an interview based tool. The questionnaires were broken up into three sections. The first part asked the students, using two likert scales, if they understood a musical passage. The next question referred to the second musical example asking for a "yes" or "no" response to the comprehension of the passage. The third question asked the students to hand write in the counts for the first two measures of each passage, a task that is done throughout the school year and is prior knowledge to them (Appendix B).

Students had to sight read two passages on their pre and post performance tests. A score out of four was then given to each student. Karas (2005) used sight reading as a performance test as well with 5th graders. This score only measured the students' rhythmic understanding of the musical passages being performed. Buck refers to a performance score as "MPS", music performance score (2008). Each group performed these tests the same, without the SmartMusic program. This was done to eliminate any differences in the test and to gain an accurate pre/post scores. For the experiment group,

I used the Promethean board to project SmartMusic for better visual aid. The students were given the tempo in a count off form. The pulse was not continued while they performed. This was done with the second passage as well. Once a student performed both passages, the next student was administered their test (Appendix C).

In regards to the weekly mini-checks, each group performed the same exact rhythmic examples, all one a single-note pitch to eliminate any notation confusion that would hinder from examining solely rhythmic skills. The “MPS” (Buck 2008) score was out of a 4, same as the Performance Test. With the experimental group, the rhythms were inputted into the SmartMusic program and the students performed them using the program, while the controlled group looked at Flash Cards with the same rhythms printed on them with only be instructing them. Finale 2010 was used to input the eleven rhythmic examples. These Finale documents were then converted to SmartMusic, which allowed them to be used within the program. The mini-checks were the first actual encounter the experimental group had with the SmartMusic instruction method. On the evaluation forms, a section was placed for personal comments as the researcher if further explanation of a score was needed. Using sight reading is an old assessment tool and yet can be used through the technology of SmartMusic.

3.4 Procedure

Permission slips were given to both parents and students requesting for their informed consent to participate in the research (Appendix A). Students returned the slips to me prior to the research starting. Once these permission slips were returned, the research began. The pre-questionnaire was administered during the student’s lessons.

One student volunteered to collect all questionnaires and place them in an envelope titled “pre-questionnaire, experimental/control”. This way I was not exposed to any questionnaire to ensure anonymous responses. After the questionnaires were collected the participants performed their sight reading performance pre-test to identify their base-line score. This was done in front of each other, one and a time.

Throughout the study, the mini-performance checks were administered. These mini tests were documented on the evaluation from with their “MPS” (Buck, 2008). This was the first exposure to SmartMusic that the experimental group had. Every mini-check went in order of all of the eleven rhythmic examples. Weeks two and three split the eleven rhythmic examples with the first week assessing five to six, and the third week finishing the rest.

At the last lesson, day four of the study, the post-test and post-questionnaire were administered in the same manner as the pre-test and pre-questionnaire. The questionnaires were collected and placed in an envelope. The test was then administered to the students.

Section 4

Data Analysis/Results

4.1 Performance Grading

Grading was assigned out of a four for both Mini checks and Performance tests. A score of four meant the student performed with no rhythmic mistakes, a three the student had 1 rhythmic mistake, a two the student 2 rhythmic mistakes, and a one the student had 3 or more rhythmic mistakes. These scores were put into Excel format to

determine individual growth. A percentage was configured to show percent difference from base line to final score for both the experimental and control group as a whole. This was done to show progress growth within the groups.

The scoring for the mini checks were assigned similar to the performance tests. The same methods were used when analyzing data. Excel was used to determine growth of each group, as well as individual growth, shown in Figures 11 and 12. These scores were then compiled with the performance tests to show overall growth patterns on an individual basis, as well as within the groups.

4.2 Questionnaires

The quantitative results from the questionnaires were represented using pie charts and bar graphs. SurveyGizmo.com was used to create the graphs. These graphs showed the results per question, representing the percentages answered per group. Each test had separate graphs.

Section 5

Findings/Results

5.1 Questionnaires

Pre-Questionnaire

Both the experimental and control groups had to answer the pre-questionnaire (Appendix A). This questionnaire asks them three questions based on two musical passages. The first two questions asked them of their understanding, while the third question asked them to write in the counts for the first two measures of each passage. Below the results are separated by the Pre and Post-Questionnaires. On the left hand side

shows the results for the experimental group and on the right hand side shows the results for the control group.

Pre-Questionnaire

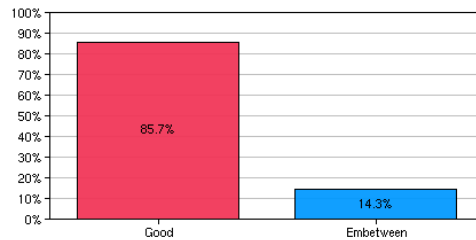
Experimental Group

Control Group

Question 1a Figure 1



Figure 3



Question 1b Figure 2

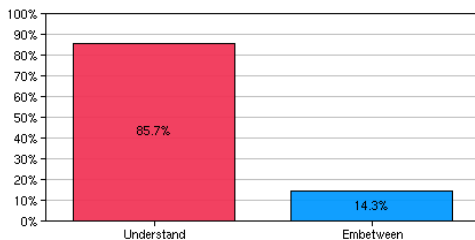
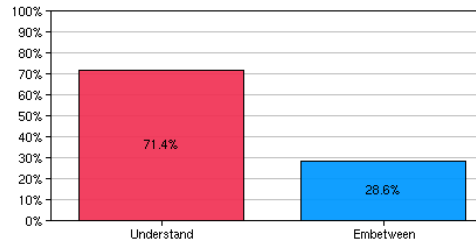


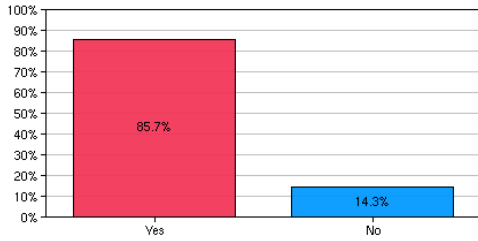
Figure 4



Within the experimental group, 100% of them felt they had a “Good” understanding of the first musical passage (Figure 1). However, when asked if they understood it or were confused, (6) participants, 86%, felt they Understood it, while (1) participant, 14%, was in between (Figure 2). This could be due to a lack of understanding with the two Likert scales for this question. Within the control group, (6) participants, 86% felt they had a “Good” understanding of passage one, while (1) participant, 14.3% said they were in between (Figure 3). For the next Likert scale to this question, (5) participants, 71.4% said they “Understood”, while (2) participants, 28.6% said that they were in between (Figure 4).

Question 2
Experimental

Figure 5



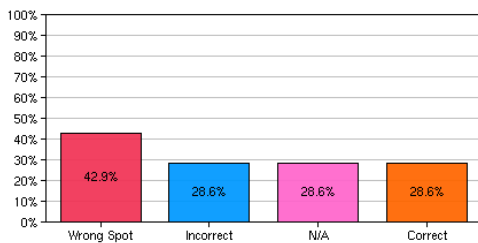
Control **Figure 6**



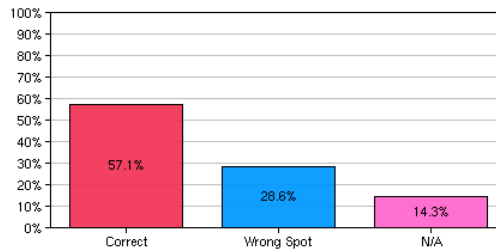
For the second question, the experimental group had 85.7%, (6) participants, answered “Yes” to being able to read the second musical passage with ease, while 14.3%, (1) participant, answered “No” (Figure 5). The control group showed that 100% of the participants said that they understood the second passage with ease (Figure 6).

Question 3a
Experimental

Figure 7

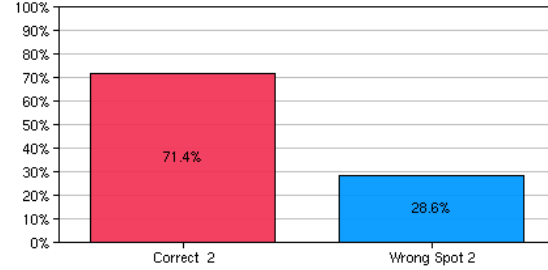
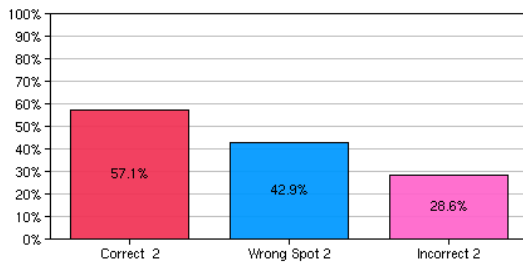


Control **Figure 9**



Question 3b **Figure 8**

Figure 10



For the third question, the experimental group had 28% filled in the counts correctly, 28% were incorrect, and the rest broke down to either not answering, or they placed the counts in the wrong spot for the first musical passage (Figure 7). The second musical passage only (2) participants answered incorrectly, while the rest either answered correctly or put the counts in the wrong place (Figure 8). The control group showed Question three asked them to write in the counts. Here it can be seen that, other than the few who placed the counts in the wrong spot for musical passage one, all others were correct except one person who decided not to answer at all (Figure 9). For musical passage two, most answered correctly except for (2) participants who answered incorrectly, and 33% had placed the counts in the wrong spot (Figure 10)

Post – Questionnaire

Experimental

Control

Question 1a



Figure 11



Figure 13

Question 1b

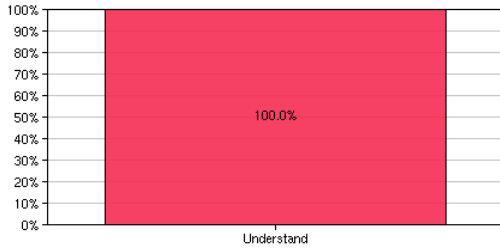


Figure 12

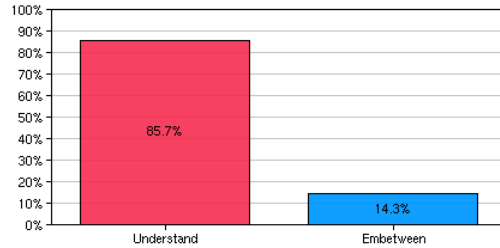


Figure 14

Within the experimental group, for question one, 100% answered “Good” to their comprehension of the passage, and 100% said that they “Understood” the passage (Figure 11 and 12). Within the controlled group, 100% answered “Good” to their compression on the passage (Figure 13) However, 85%, (6) participants, said they “Understood” it, while (1) participant, 14% said they were in between (Figure 14). Again, this shows that the two Likert scales for this question may have been confusing to the participants.

Question 2

Experimental

Control

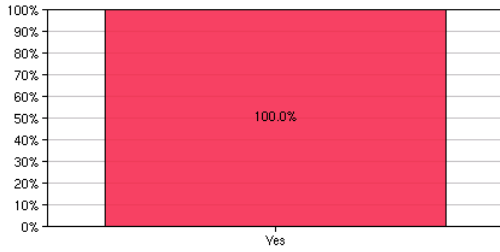


Figure 15

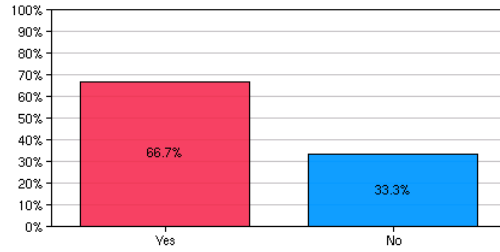


Figure 16

For question two, the experimental group showed 100% answered “yes” to understanding the musical passage (Figure 15). For the control group, (4) participants said “yes” to reading the passage with ease, while (2) participants said “no”. Only (1) participant did not answer the question. I found this strange due to question three (Figure 16).

Question 3a

Experimental

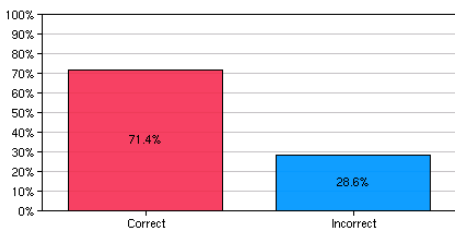


Figure 17

Control

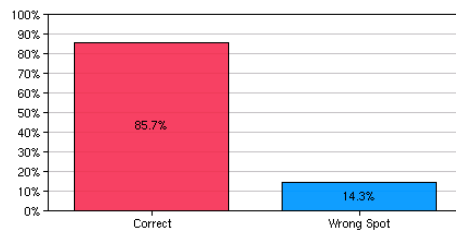


Figure 19

Question 3b

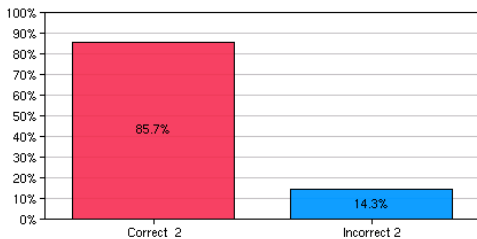


Figure 18

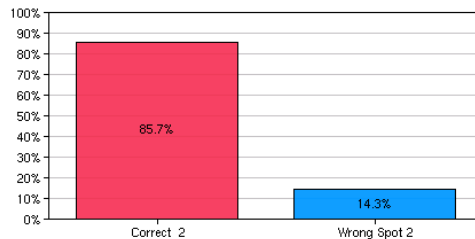


Figure 20

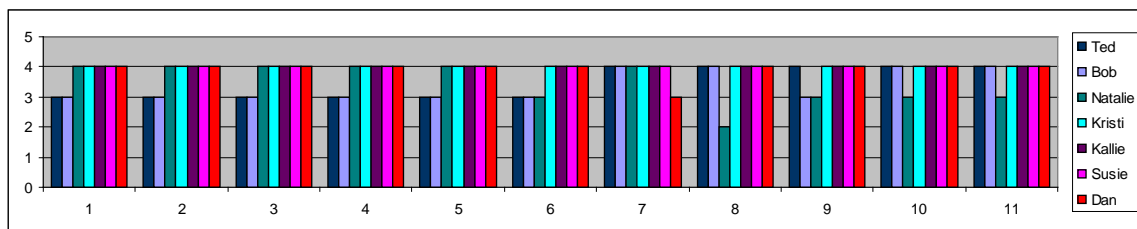
For question three, the experimental group showed (5) participants, or 71% answered correctly when writing in the counts for musical passage one, and (2) participants, 28% answered incorrectly (Figure 17). For musical passage two, 86% answered correctly, while 14% answered incorrectly (Figure 18). This shows an increase in understanding the proper counting of the musical passages, and shows a greater increase in comprehension. The control group showed (6) participants, 86% wrote in the counts correctly while only (1) participant, 14% answered in the wrong spot (Figure 19). For passage two, the same statistics were found. Question three seems to show that the participants understand the passages, and yet (2) of them answered that they could not read passage two with ease (Figure 20).

5.2 Performance Tests/ Mini Checks

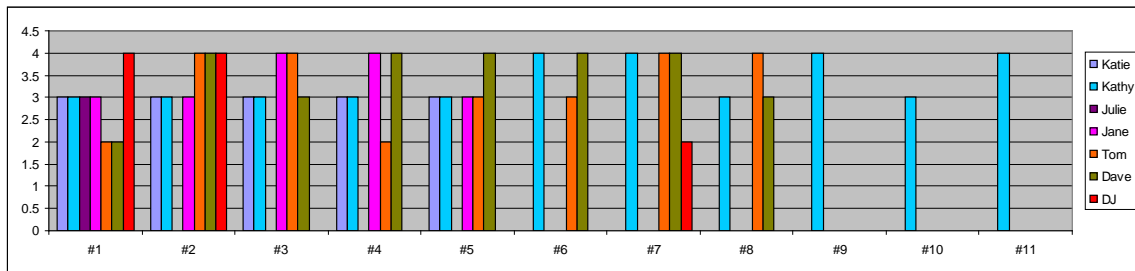
5.2a Mini Checks

The averages were taken from each student's all eleven rhythmic examples from the mini checks to map out their overall progress throughout the research (Figure 11 and 12).

Control – Figure 21



Experimental – Figure 22

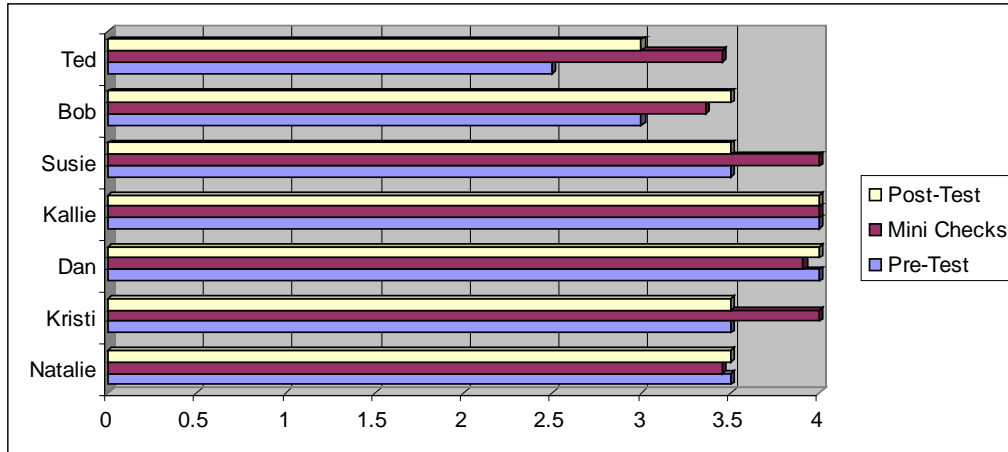


For the experimental group, the total average score was 3.4%, while the control group had a total average score of 3.7%. It is hard to assess true growth due to the experimental group where it can be seen that only a few students were able to complete all eleven rhythmic examples (Figure 21 and 22).

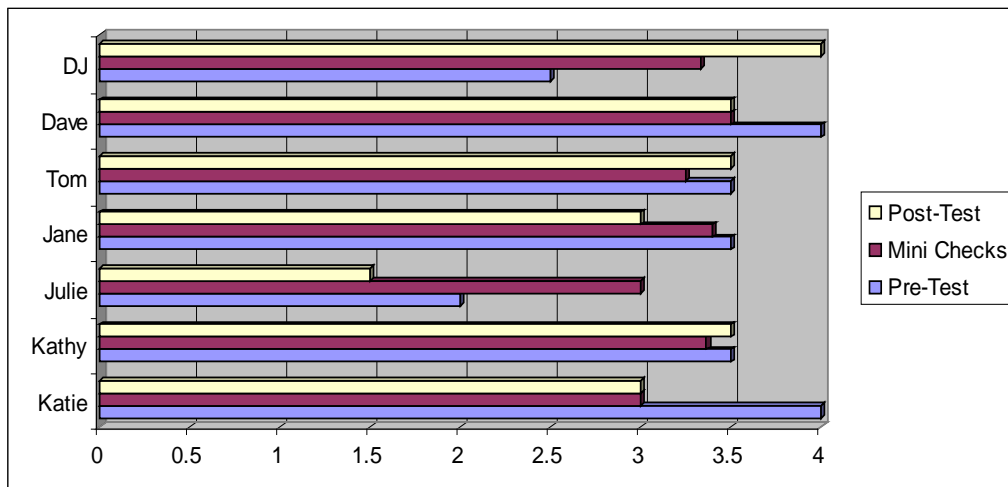
5.2b – Overall Performance

Overall, students remained consistent except for a few. DJ in the experimental group improved drastically from the pre-test with a baseline of 2.5 to a 4 for his post-test. Katie from the experimental group, however, seemed to digress on the post-test with a baseline of a 4 to a 3 for her post- test (Figure 23 and 24).

Control – Figure 23



Experimental – Figure 24



5.3 Interview

All of the students, except one during the Pre-Test indicated they had a full understanding of each musical passage during their Performance Tests, and yet the results show otherwise. Many of the points taken off on the students’ grades were based on pulse feel. When I filtered that out, there were only a few errors from the experimental group. Due to this, these results can be seen as not just interpreting rhythmic ability, but pulse-feel as well. Answering “yes” to the musical passages could be students’ fear of

answering “no” in front of their peers. One student answered “unsure”, and then explained the need to look at it one more time. If the interviews were done on a “one-on-one” basis or in written form, perhaps the correlation between their ability to play it versus their ability to understand it would be seen. Based on the results, the students, in general, may not have internalized the correlation of rhythm to pulse feel which comes from maturation of musical knowledge.

Section 6

Interpretation and Conclusion

6.1 Summary

The purpose of this research was to measure students’ progression with rhythm using SmartMusic as an assessment tool versus traditional assessment tools. With technology growing within the music field with such assessment tools as SmartMusic, I wanted to see if this program actually benefits students or if it’s just another “neat” tool. Through my research, I discovered a few conclusions; (a) there may be some validation for SmartMusic being a useful tool, (b) there may be validation that SmartMusic is not a useful tool, (c) technology is only useful when it is reliable.

6.2 Discussion

When looking over the research results, there is a growth in progress within the control (non-SmartMusic) group as opposed to the experimental (SmartMusic) group. However, there are a few students within the experimental group that showed noticeable

progress with their rhythmic ability. I used a pre/post performance test using Sight reading examples to check for student's rhythmic skills.

As a majority count, the overall progress shown within the experimental group was 80% (3.2/4), starting off with an average of 82% (3.28/4), while the control group was an 89% (3.58/4) and starting with an 85% (3.42/4). To me this shows little change in progress between each group. When looking at each student individually, the results show something else. Many of the students stayed about average, but certain student's results are noticeable.

Experimental

Katie – She began scoring a 100% (4/4) on her pre-test. After being exposed to the SmartMusic program, her post-test score was 82% (3.3/4), showing a significant decline. She did show a slight decline during her mini checks. When asked if she understood all of the performance examples prior to each test, she answered “yes”.

Dave – He began with a score of a 100% (4/4) on his pre-test, and yet scored an 87% (3.5/4) on his post-test. Joe also showed a slight decline during his mini checks. When asked if she understood all of the performance examples prior to each test, she answered “yes”.

DJ – David is one that shows huge progress. David scored a 62.5% (2.5/4) on his pre-test, and then scored a 100% (4/4) on his post-test. He also showed improvement through his mini-checks and improvement with an 82.5% (3.3/4).

Control

Everyone in this group stayed relatively average between their pre/post tests. One student stood out with a drastic change.

Ted – He began with a score of 62.5% (2.5/4) on his pre –test. He showed progress with his mini checks with an 86%. And with his post- test he scored a 75% (3/4), showing progress.

These results show that SmartMusic does have an impact on the student's rhythmic growth. The students Katie and Dave both showed a decline could be due to their lack of experience with the program. DJ's growth can be interpreted as SmartMusic helped him understand rhythm better, or he on his own found an understanding of it. With Ted, his scores tell me that he was possibly nervous during the test since his mini checks were noticeably higher. Buck (2008) pointed out that a flaw with the SmartMusic program in regards to students ability to count rhythms is that students do not catch their mistakes and continue to make the same ones. Perhaps that is the reason why students who started off strong, like Katie and Dave, digressed on their Post-test. This study shows that even without SmartMusic, a student can show gradual progress with rhythmic strength, where as the SmartMusic program needs adjustment time for students to SmartMusic before showing positive results conclusively. Lee (2007) felt that his results may have been affected by a rushed explanation of the SmartMusic program.

The questionnaires showed that the experimental group increased their ability in understanding rhythms as well as the control group. Even though of question three had possible comprehension issues, more students answered "yes" to the understanding of the musical passages in the post-questionnaire than the pre-questionnaire. This leads me to believe that the students gained confidence during the study. However, it does not show a different between SmartMusic being a better tool for students than without, due to the fact that both groups gained confidence.

6.3 Limitations

Time

The research results show that there is an impact on students when using the SmartMusic program. Unfortunately, I cannot determine whether or not it is truly a negative impact or a positive one. With only four weeks to conduct the research, it did not leave much time for the students to get acquainted with the program itself. Lee (2007) feels that this is not an easy answer to find. Educators and students need knowledge on the program before using it (2007).

Technology

One other limitation that I feel hindered the research was the unreliability of the technology working correctly. This cause time lose within the thirty minute lesson time, which in itself is a short amount of time with the students. Students such as DJ, the student who showed a huge increase with SmartMusic, did not have as much exposure to the program as others due to technical difficulties as well as attendance.

Human Flaw

Student attendance, lack of instruments, and tardiness were uncontrollable factors that hindered the research. There was difficulty having the experimental group finish all eleven rhythmical examples due to “human flaw”.

6.4 Conclusion

When looking at the results, SmartMusic does show an impact within student understands of rhythmic ability, whether it is a positive impact or a negative one. The negative impact seems to occur when students are not exposed to the program thoroughly. In agreement to what Lee felt, educators and students need knowledge on the program before using it (2007, p. 73). If students have a thorough understanding of the program, it may prove useful when assessing rhythmic ability, whether it's through the

excitement of using the program or the diligence of it. As seen with Claire and Joe, its impact caused their scores to drop from the Pre-Test to the Post-Test. Both students are strong musicians, yet the program gave them some difficulty. With David, his score increased dramatically, yet he was not exposed to the program as much as other students, so did the program cause the progress?

The fact of the matter is that technology is not going anywhere. Students are exposed to technology every day of their lives. For music education to move with “the times”, educators have to keep an open mind and utilize all forms of assessment strategies. This does not mean to force SmartMusic on students, but if it aids in students progress then why not? If it does not help the student, then as educators, we must find others ways of assessing our students. Buck (2008) said it best; you cannot escape traditional methods as well. Students learn in different ways, teachers still need to be in control of the instruction being taught and not solely rely on SmartMusic, but it is wise to utilize it as well. Teachers should make tools work for their instruction, not allow the tool to control their instruction. SmartMusic does impact their rhythmic ability and progress.

6.5 Recommendations for Further Research

Clearly SmartMusic has an impact on student’s rhythmic growth. Further research is needed to check all musical concept growth such as notation, pitch and so on. Perhaps some prep-time with the program will help students to succeed once the research begins, giving them a prior-knowledge of the program. Having backup systems to use when in technical difficulties is crucial. When looking at the participants in this research, investigating gender influence with technology would give a different perspective on the

results, to see if males using SmartMusic have an advantage with technology compared to the female students. The last recommendation would be to conduct this research in a longer span of time to show full growth.

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Appendices

Appendix A – Parent/Student informed consent

Appendix B – Student Questionnaire

Appendix C – Performance Test

Appendix D – Mini Checks

Appendix A



To the parents/guardians of our 5th Grade Instrumental students,

As an instrumental music educator, one of my primary goals is to have our students acquire solid music comprehension skills in the instrumental classroom. Our district offers the opportunity to use the SmartMusic program in school to enhance learning for our band students.

I am currently earning my Masters Degree in Science and Education, concentration in Curriculum and Instruction at SUNY Oswego. As part of my thesis, I am researching student comprehension within the instrumental music classroom. My research topic is “Smartmusic, can it motivate students to progress in the instrumental music classroom?” I will be focusing on using SmartMusic as an assessment tool to see if it will encourage students and help them to progress more successfully than without it.

I am looking for student volunteers to conduct this research at our Elementary school. Volunteers will be selected from students that are currently in the band program and are in the Fifth grade. Research will run from mid October – November 8th during lessons. **This opportunity is completely voluntary and will not affect students’ performance grade in class.** Students will be given two questionnaires, and performance evaluations to monitor progress. These results will be shared with my graduate class and instrumental colleagues. This information will be used to further enhance instruction for your child.

I am excited to find a strong assessment strategy and investigate SmartMusic within my fifth grade instrumental music classroom. If you and your child are interested in participating in this day school curricular research, please return the bottom portion of this form to me by **Wednesday, October 6th**.

If you have any questions or concerns please feel free to contact me. My email is castafan@westgenesee.org. Or you may contact Dr. Faith Maina at 312-2641 (my academic advisor), or Dr. Friedman, Chair of the SUNY Oswego Human Subjects Committee at 312-6381.

Sincerely,

Christine Astafan
Instrumental Teacher



.....
Permission Slip

I am giving _____ permission to participate in Mrs. Astafan’s research on SmartMusic as an assessment tool in the instrumental music classroom.

Parent Signature _____ Date _____

Student Signature _____ Date _____

Appendix B

Questionnaire for Students

Musical recognition

1.) Please rate your understanding of the passage below (circle where you feel your understanding is)

(musical passage will be placed here)

Good.....Bad

UnderstandConfused

2.) Are you able to read this passage with ease? _____

(passage here)

3.) Please write in the counts for the first two measures of these passages below the notes.

Appendix C

Performance Test

1.) (half notes/rests, whole notes/rests, quarter notes/rests passage here) (basic)

Do you understand how to play this musical passage? _____

Performance: 4 - played all rhythms accurately
3- made 1 rhythmic mistake
2 - made 2-3 rhythmic mistakes
1 - made 3 or more rhythmic mistakes

Comments:

2.) (with eighth notes passage here) (more complex)

Do you understand how to play this musical passage? _____

Performance: 4 - played all rhythms accurately
3- made 1 rhythmic mistake
2 - made 2-3 rhythmic mistakes
1 - made 3 or more rhythmic mistakes

Comments:

Appendix D

Mini Checks

Example _____

Performance: 4 – played all rhythms accurately
3 – made 1 rhythmic mistake
2 – made 2-3 rhythmic mistakes
1 – made 4 or more rhythmic mistakes

Issues

- a. Counting in general
- b. Counting rests
- c. Counting rhythms only
- d. n/a

Comments