

**iLearn: Using iPads to Teach Music Literacy in the Secondary General Music
Classroom**

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Master of Music in Music Education

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ABSTRACT

iLearn: Using iPads to Teach Music Literacy in the Secondary General Music Classroom

(September 2016)

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Statement of Purpose

The purpose of this study is to investigate the effectiveness of using iPads to teach music literacy to middle school general music classes. For this empirical study, a group of sixth grade students will be taught musical literacy skills through the iPad learning model, using school-issued iPads. A second group of sixth grade students will learn the concepts of music literacy in the traditional, teacher-directed platform.

Rationale

Since the introduction of mass-marketed personal computers and the creation of Musical Instrument Digital Interface (MIDI) in the early 1980's, the landscape of education, and music education specifically, has drastically changed (Dorfman 12). 21st century learners have been surrounded by technology their entire lives. Researchers and educators have devoted countless hours attempting to determine technology effectiveness and how it affects comprehension.

This study serves to inform secondary music educators the effects of teaching music literacy through the platform of Apple's tablet, the iPad.

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Chapter 1 - iLearn: Using iPads to Teach Music Literacy in the Secondary General Music Classroom

Statement of Purpose

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This study serves to inform secondary music educators the effects of teaching music literacy through the platform of Apple's tablet, the iPad.

Expected Findings

Stepping into a modern day, secondary music classroom, you may find yourself surround with an array of digital resources, from computers, to recording devices, and tablets (Peluso 1). Technology permeates our current cultural climate, and has found its way into the fabric of our educational system. Using these tablets may be having an effect

on student comprehension, but little research has been done in the music field to measure its usefulness.

This thesis postulates that the data could show either result – students achieved at a higher rate when utilizing technology, or, students were engaged and learned best through the traditional approach. Using iPads daily in a secondary classroom can be a useful tool to help students achieve, but can also be a distracting, shiny, rectangular box. This thesis seeks to discover, through this research, whether iPads raise or lower student comprehension.

Chapter 2 – iHistory: Historical Implications of Technology in the Music Classroom

History of Technology in the Music Classroom

Chad Criswell states in his article, “Technology on the Horizon”,

Technology has been shaping the way we hear, play, and teach music since the dawn of the recording age. Slowly but surely, tools such as synthesizers, samplers, and computers have created a whole new musical landscape – and the arrival of the iPad and other devices suggests that technological innovation is in no danger of disappearing any time soon

(Criswell 2).

From its humble beginnings, to today’s personal devices, technology has helped shape music notation and music recording (Watson 11). As technology has strewn itself across the landscape of businesses, politics, homes, and personal lives, music education has been no stranger to the ever – evolving world of technology. Teachers and administrators work tirelessly to discover ways to integrate these new forms of technology into their school districts and classrooms.

The word “technology” is a Greek word, relating to art or skill, as well as to discourse and communication (Webster 1). Various types of hardware were the first to develop in the music technology field. In the 1600’s, the age of music boxes, player pianos, and other music machines, gears and levers were the early mechanical hardware devices (Webster 2). These levels and gears helped spring-formed machines like the music box create sound. Another major technological advance resulted when John A Fleming applied the observations of Thomas Edison- namely that the flow of electrical

currents, when in a vacuum, can be directed. Fleming then created the vacuum tube in the late 1800's and placed it into radios.

After vacuum tubes, transistors followed in the mid 1950's. Transistors helped achieve sound amplification that allowed for hearing through a phone, as well as amplifying the sound of a TV or radio station), and can be used to create power switches to turn something on or off.

Lastly, the final piece of hardware integral to music technology was the integrated circuit (IC) in the late 1970's (Webster 2). The IC is a computer chip that processes digital information quickly. Apple and IBM used this technology to develop personal computers. This technology also was integral in the development of MIDI (Musical Instrument Digital Interface), and CD-ROM's.

As hardware advanced, software development started to pick up steam in the late 1950's. High – level programming was created to run these hardware systems. With the creation of personal computers, developers were able to pour resources into developing music notation software (such as Finale or Noteflight). They also expanded from simply “music” technology, to “multimedia” technology in the late 1980's with the use of CD's and Quicktime technology. In the 2000's there was a rise of internet-based software materials for music educators, which are accessible 24/7.

Purpose and Results of Apple iPads

Apple launched its first iPad tablet in 2010, and it has been used for personal, business, and educational purposes (Apple, 1). This personal tablet, outfitted with some of the most advanced technology, puts an enormous resource in the hands of students and teachers.

Apple found the following results when iPads were integrated into the classroom.

The benefits were:

- Improvements in academic performance
- Increases in engagement and motivation
- Added instructional flexibility and resource efficiency
- Integrated focus on content quality and design (Apple 2)

Additionally, when collecting data from state standardizing tests, a number of K–12 schools and districts in the United States are seeing substantial improvements when comparing:

- Current student test scores to prior-year test scores
- Student test scores to norms
- Student performance on pre- and post-test measures (Apple 3)

Pros and Cons to iPads in the General Music Classroom

Many researchers have poured over Apple's iPad data, spending resources to determine their effectiveness in the classroom. However, it is equally valuable to gain perspective from educators who have implemented the use of iPads in their different music classroom settings.

Jay Dorfman published a study entitled "Music Teacher's Experiences in One – to – One Computing Environments". He interviewed four music teachers from the Northeast, asking their concerns about the technical, pedagogical, and authenticity ramifications of iPads in the classroom (Dorfman 159). "The purposes of this study were to observe the behaviors and explore the dominant perceptions and concerns of music teachers who are embedded in schools with one – to – one technology programs"

(Dorfman 161). They each had a different music position within their school district.

Alan was a sixth grade general music teacher, Jessica was a first grade general music teacher and strings director, Katherine was elementary school music teacher, and Todd was a high school instrumental music teacher. After observing each teacher for six months, Dorfman compiled a list of pros and cons, outlined by the educators, about the effectiveness of iPads in the classroom (163).

Pros:

- Tablets allowed for easy communication with students and families
- Made music distribution easier
- Engaged the “other 80%” of students who do not like music
- Developed musical skills (such as reading music)
- Accessible regardless of musical skill level

Cons:

- The installation of apps was cumbersome and often not thought out by administrators
- Implementing a new device in the classroom or rehearsal required more time to plan outside of the classroom than the teachers typically needed to do
- There were new classroom management issues that arose with tablets and access to the internet
- More time was needed in each class period to do the activities and complete the tasks
- Often the school internet was not fast or powerful enough to withstand so many devices

While not exhaustive, Dorfman's study provides a second perspective into the effectiveness of iPads and the struggles that educators may have when implementing them into their classrooms.

Chapter 3: iResearch - Detail of Study

Overview

The research for this paper was conducted at Ridley Middle School. Utilizing students in each of four 6th grade general music classes, each student took a pre – assessment to quantify their prior knowledge regarding music literacy and notation. All four classes then received the same large group instruction on music notation on the treble clef, including how to read the notes in the staff. After the instruction was given, the students began activities to practice this knowledge. Two of the four classes received what this study will call the traditional method (TM), including activities with marker boards, and a chalkboard. The other two classes received what this study will call the iPad method (IM), including activities using apps such as Penultimate, and treble cat. The study took place over eight class periods. After every student received the large group instruction and practiced the concepts, they were given a post – assessment to quantify the new level of comprehension.

School Background

Ridley School District (RSD) has seven elementary schools, one middle school and one high school. Ridley is located in southern Delaware County, and provides public education to over 5,700 students. The Ridley area encompasses the Ridley township, and the borough of Eddystone and Ridley Park. This suburban school district currently has 23% of students identified as receiving special education services, including but not limited to life skills, autistic support, gifted, and emotional support. The school district has also been an Apple Distinguished School since 2013. Each teacher and student in the

RSD has received a school-issued, Apple iPad. Students bring this iPad with them to each class, and they are able to take the device home to work on homework and complete assignments. RSD provided its educators with extensive training on implementing the tablets into the classroom.

Class Background

Each student at Ridley Middle School takes general music for one trimester (12 weeks), every year. This music appreciation class explores many different facets of music, including but not limited to, world drumming, the history of the blues and rock and roll, music composition, electronic music, and musicals. The class meets twice a week, once for a full 80 minute block, and once for a 40 minute split block.

Four 6th grade classes, labeled 1, 2, 3, and 4, were used for this study. The classes' demographics (gender, special education plans, involvement in band or chorus, and the type of practice they obtained) are listed below:

Figure G.1:

Class 4	Class 3	Class 2	Class 1
23 students	17 students	17 students	17 students
11 females 12 males	9 females 8 males	11 females 6 males	7 females 10 males
5 IEP's	2 IEP's	1 IEP	4 IEP's
3 band/chorus	2 band/chorus	7 band/chorus	0 band/chorus
Traditional Method	iPad Method	Traditional Method	iPad Method

Study Procedure

This study took place during April and May 2016, and lasted for eight class periods. All four classes began with the pre-assessment (Appendix B). This two-page test measured how much prior knowledge each student had regarding reading music on the treble clef. It asked them to draw a treble clef, write out the acronym for the notes on the lines, as well as the word used to remember the notes in the lines. Then, they were given several letters, and asked to draw the note above in the staff. Conversely, the second section of the assessment had notes in the staff, and they had to write the letter of the note underneath. The last section required them to use notes to spell out two words. This pre-test took students from 8 minutes to 25 minutes to complete.

Next, after the pre – test was completed, each class went through a large group instruction. They learned where the parts of the staff, and how to identify the notes in the treble clef. The instruction was given verbally and using a chalkboard with painted staff lines.

After understanding how to read the notes on the lines using E(very) G(ood) B(oy) D(oes) F(ine), students were divided into groups of three and tasked to create their own original acronym for the notes on the lines. The room buzzed with conversation as students creatively found new sentences that helped them memorize the order of the notes on the lines. Each group shared two sentences they had created.

Next, each student filled out a worksheet to capture all the information that had been presented (Appendix A). This was to ascertain if they understood the concepts that were presented. After they filled out this worksheet, each class began activities to master

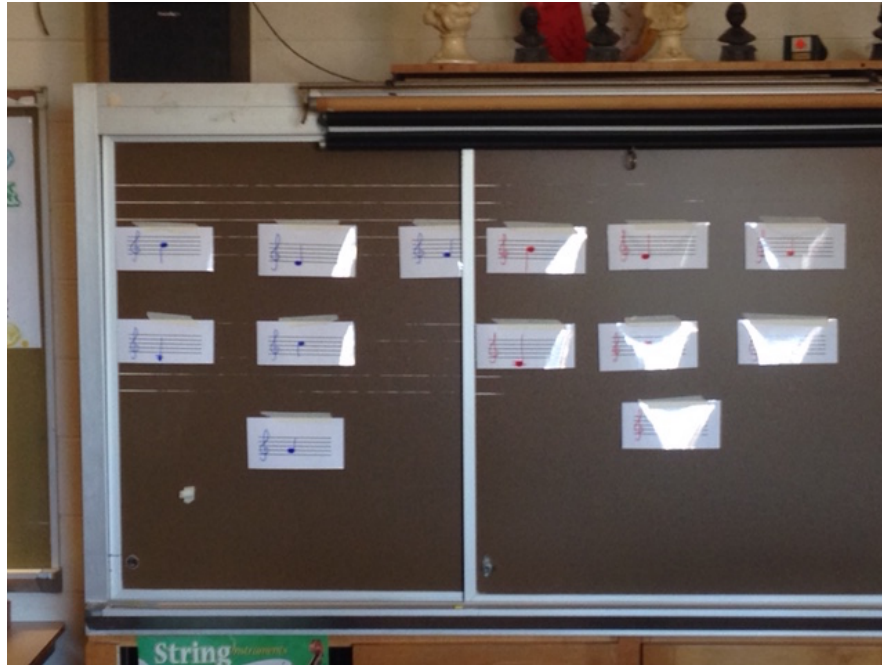
the concepts. Classes 2 and 4 learned through the traditional method, and Classes 1 and 3 learned through the iPad method.

After students practiced the concepts and drilled the notes, (either through TM or IM) they were given a post assessment. This was the exact same test as the pre – assessment. Students were asked to draw a treble clef, write out the acronym for the notes on the lines, as well as the word used to remember the notes in the lines. Then, they were given several letters, and asked to draw the note above in the staff. Conversely, the second section had notes in the staff, and they had to write the letter of the note underneath. The last section required them to use notes to spell out two words. The post-test took between 7- 28 minutes.

Activities and Materials Included for the Traditional Model (TM)

Students began activities with a myriad of materials to practice the information presented. First, staff marker boards and dry erase markers were distributed to each student. They practiced drawing treble clefs, and showed the people sitting around them the one they felt the most proud of. Next, a letter would be put on the board, and they had to draw the note on their marker board. When they completed the note, they turned the board around to be checked for accuracy. After that, the skill got reversed, a note was drawn on the board and they had to write the letter on their board. After completing the note, they turned the board around to be checked for accuracy. Lastly, with one marker board per two people, the students decoded messages for each other. They would write two words with the notes, and pass the board to their partner and see if they could decode the words. Each person got to create two sets of words.

Next, the students practiced these skills further with a game. Identical flashcards were put on the board, in two colors to represent two different teams. Each team picked a representative. They would go up to the board with a fly swatter, and try and find the note that was given to them by the teacher first, and hit it with their fly swatter. Then, another representative from each team would come up and play another round.



Activities and Materials Included for the iPad Method

Each RMS student has an Apple iPad that is equipped with an Apple ID and that they bring to music class each week. Students were asked to download two apps to help master the skills and concepts in music notation. Those apps were Penultimate and Treble Cat Free. Both of these apps are free to download and free to use.

The first app that was utilized was Penultimate. This digital handwriting app is a product of Evernote. This virtual notebook customizes each page with different types of paper, such as a lined paper, graph paper, dotted lines, and most importantly for these

purposes, music staff paper. After the app was downloaded, students were given directions how to set up a music staff page in their virtual notebook. They were instructed how to manipulate the app to zoom into a portion of the page, and how to use a virtual marker.

Students were directed to draw a treble clef, and show the people around them the best one they could create. With the same app projected on the front screen, students were given a note and asked to draw it on their virtual music staff paper. They turned their iPad around to be checked for accuracy. Then, the necessary skill was reversed. The students were given a note and they had to draw the letter on their board. After they wrote the letter on their screen, they turned the iPad around to be checked for accuracy. Then, students created two words that had to be decoded by their peers. They were divided into partners and traded iPads and tried to decode each other's words.

Next, the students practiced these skills using a game on the iPad. Treble Cat is an entertaining game, developed by professional musicians and educators to help people read music and eventually help them reading music more quickly. Students were given the direction to play the game and get to level 5.

After all students practiced the skills and concepts, both with the traditional method and the iPad method, they took the post – assessment. The scores were recorded to compare to the pre – assessment test scores.

Chapter 4: i-Conclude – Results and Interpretation

Presentation of pre – assessment and post – assessment data

Sixth grade students at Ridley Middle School were given a pre – assessment, and a post assessment. This post-assessment was identical to the pre-assessment, but the scores reflected the knowledge they gained during the instruction period, either through the IM or the TM. The following charts below show each class, 1-4, the student number, and their pre – assessment and post assessment data.

Each students’ pre – assessment and post – assessment scores are compared, by class, in the following graphs:

Figure E.2

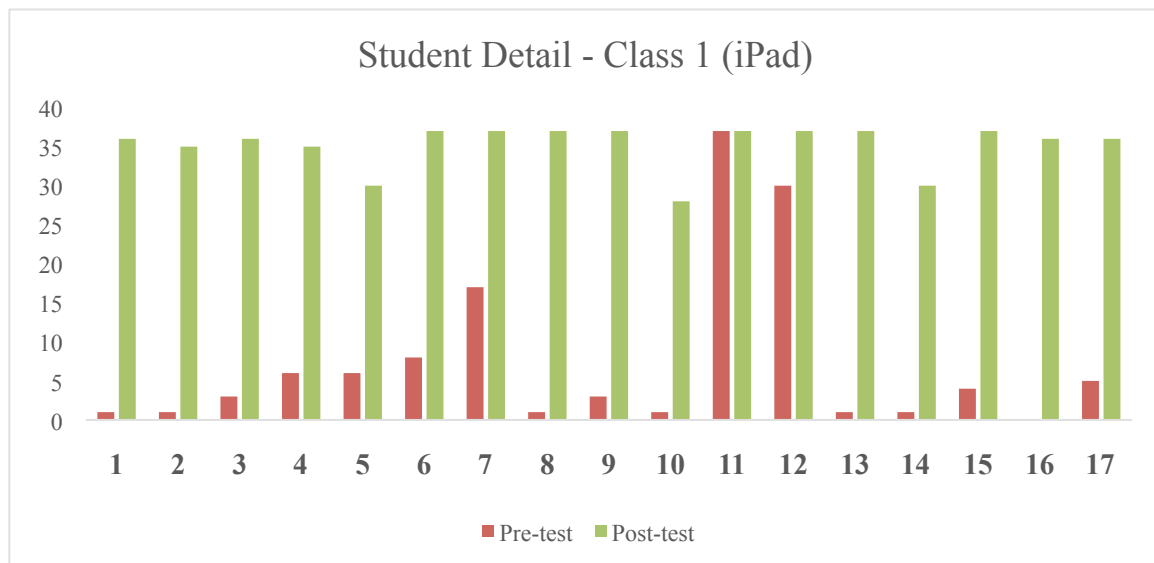


Figure E.4

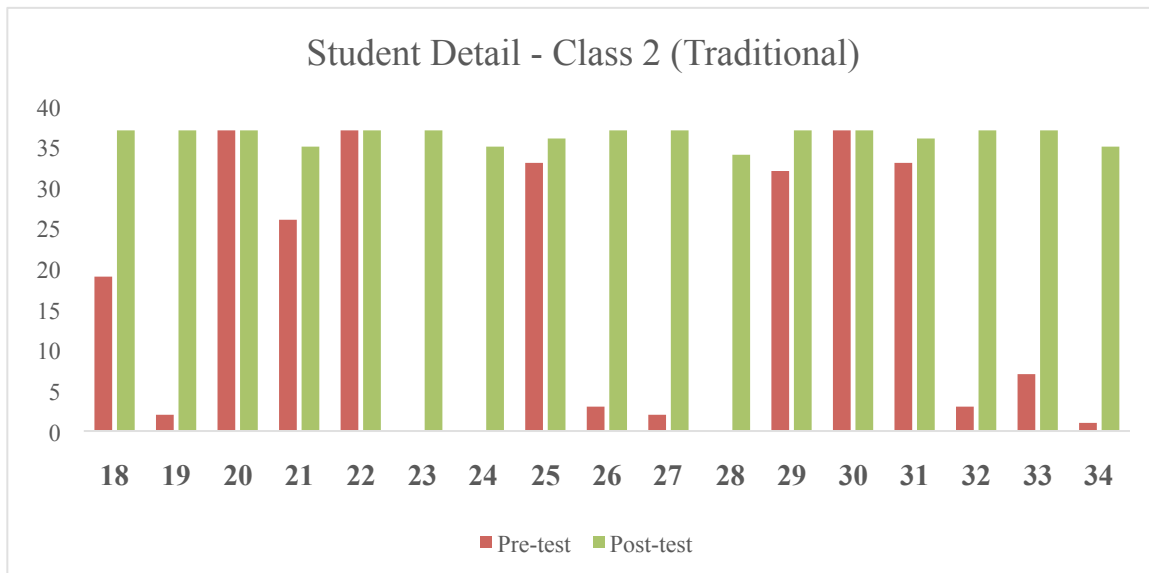


Figure E.6

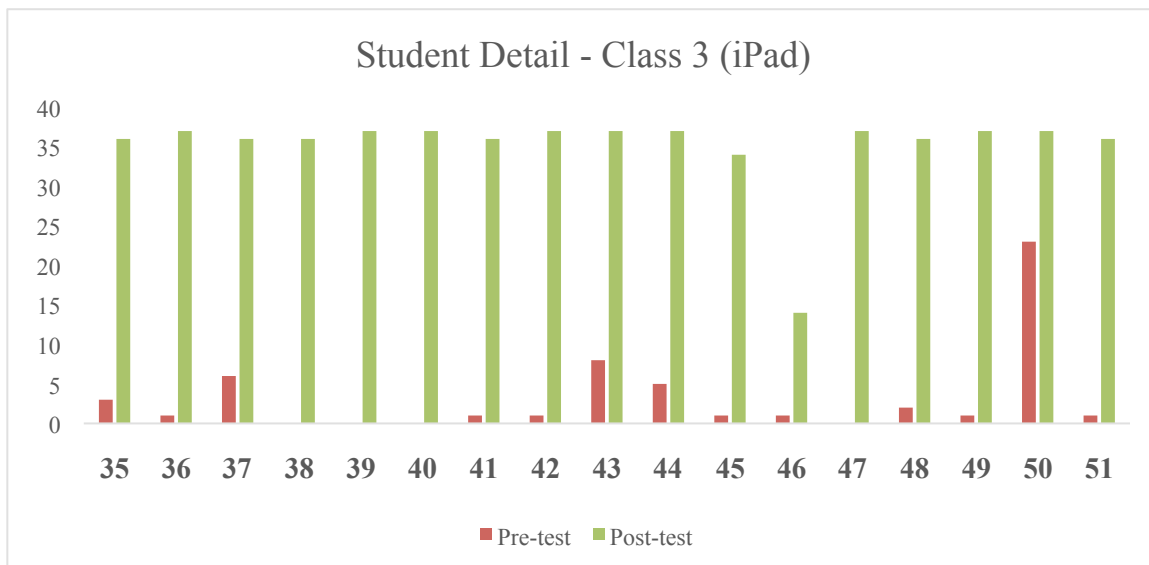
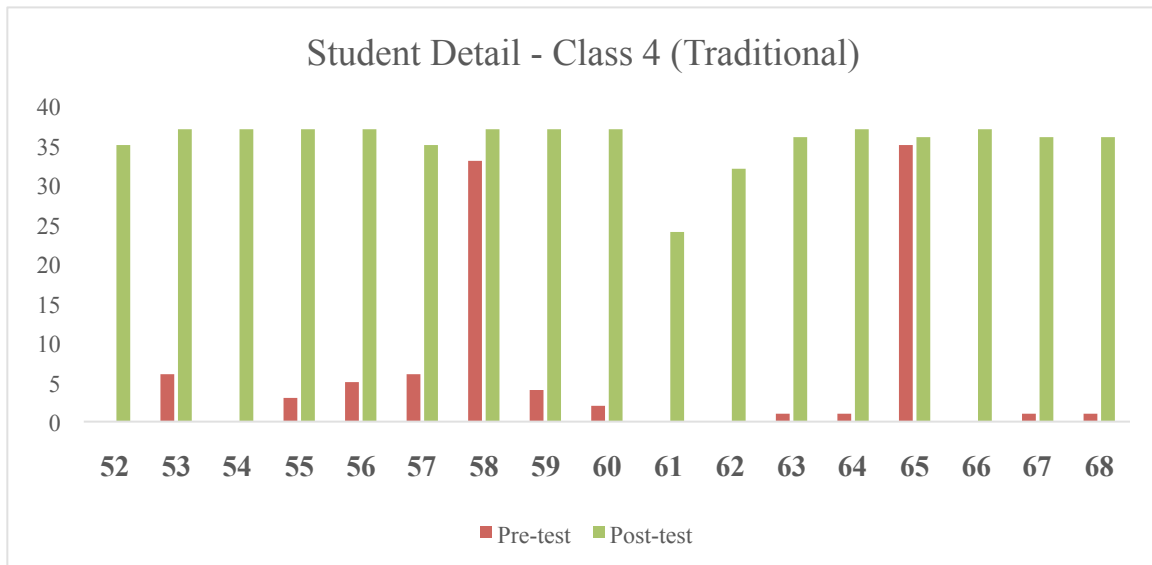
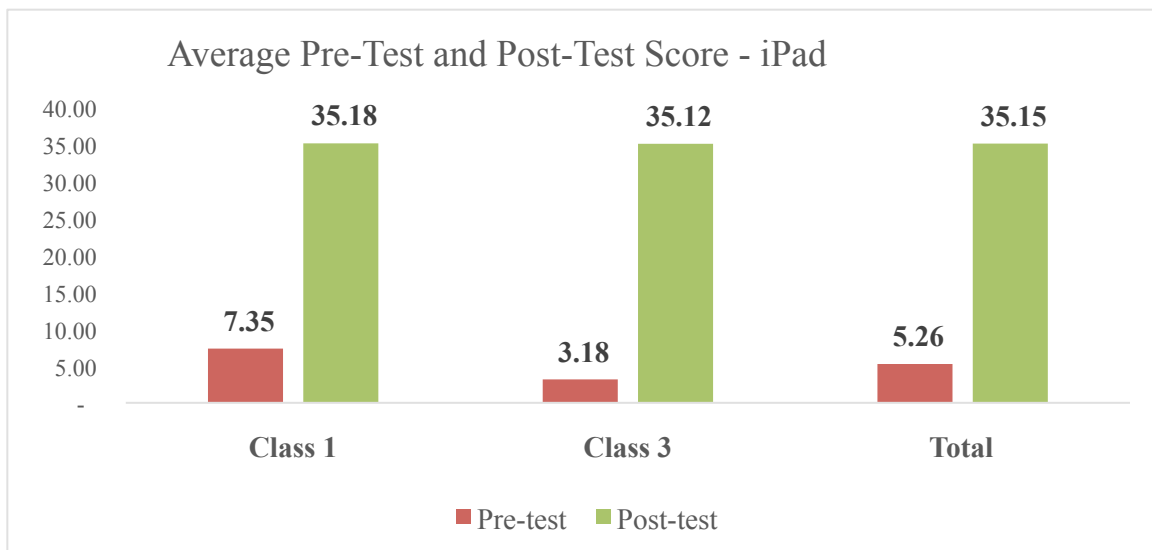


Figure E.8



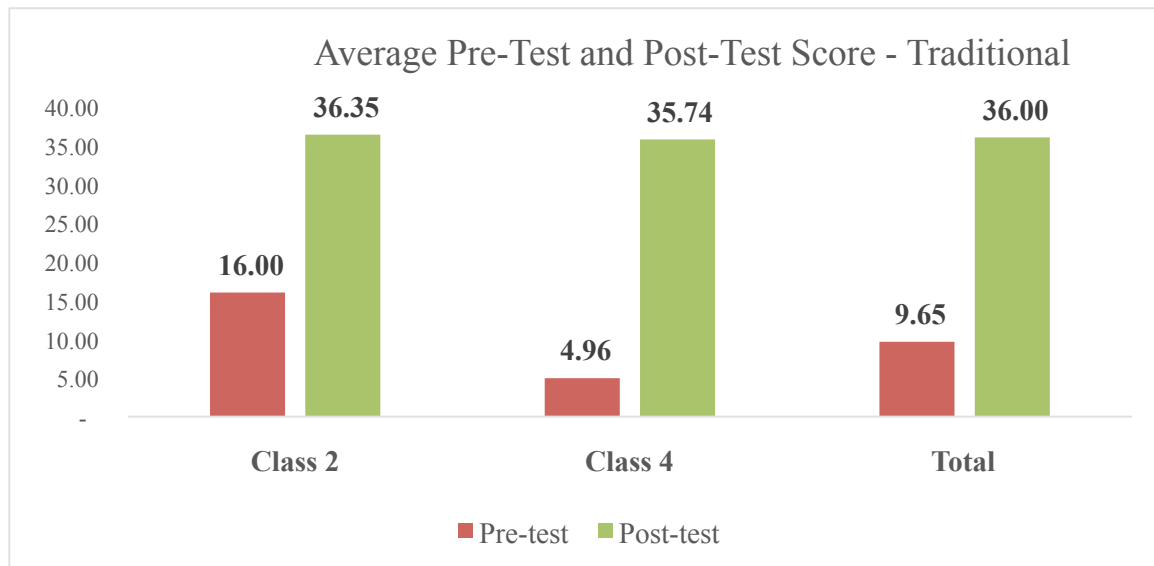
The average assessment scores for the IM classes was 5.25 points for the pre – assessment and 35.15 points for the post – assessment.

Figure F.3:



The average assessment scores for the TM classes were 9.65 for the pre – assessment, and 36 points for the post – assessment.

Figure F.5:

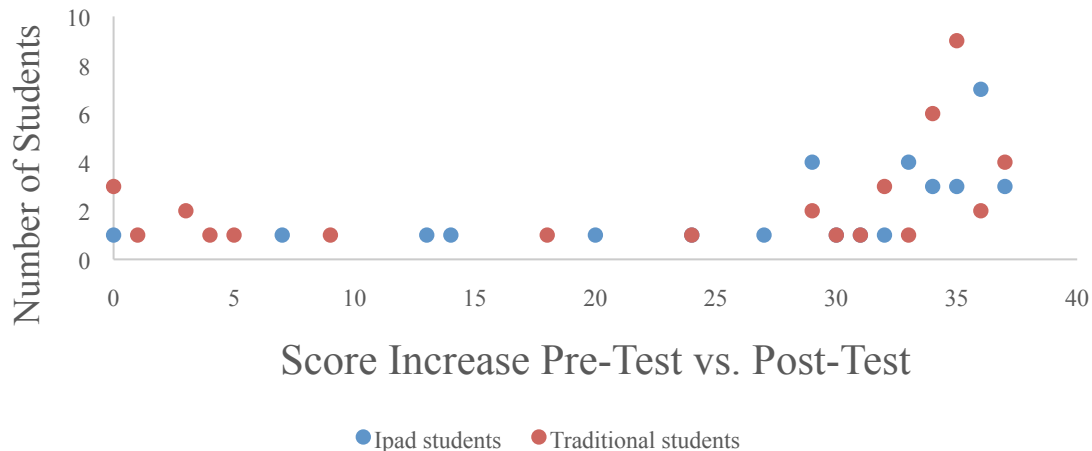


Data Interpretation

This data illuminates specific trends in student improvement. Comparing the rate of improvement between the assessments, the following information can be determined: 5.4 % of students did not improve at all, they achieved a perfect score, 37/37, both times they took the assessment. Conversely, 94.6% of students showed improvement from the first assessment to the second assessment. Additionally, 68% of students scored at least 30 points higher on their post – assessment.

Figure F.7:

Score Increase Between Pre- and Post- Assessment



Looking at specific class trends, class 2 did twice as well on the pre – assessment as the next closest class (class 1). This could be attributable to the higher number of students involved in band that are enrolled in that class. Those students are more familiar with reading music, and do it more frequently than the students who are not involved in band.

The purpose of this research was to determine which methodology, the iPad method or the traditional method, helped students understand and score higher on the post – assessment. Every class improved their average after receiving instruction. Class 3 (iPad model) improved the most, showing a 1006% percent increase between the pre – assessment and the post – assessment. They improved 7.9 times over their pre assessment score. However, if we take the average of improvement between the two tests, the data shows that student’s, who learned under the traditional model, had a higher score on the post – assessment than students who learned under the iPad model.

Final Thoughts and Reflections

So, what are the findings? The data shows that students learn better using the traditional method, and my own personal experience as a teacher using iPads support that. The students under the traditional model loved the interactive aspects of reading music. They worked in partners, played a class game, and were able to interact with me on a greater level. Students using iPads got frustrated at its functionality, as well as the slow internet that prevented us from doing activities efficiently. Additionally, they didn't like the tactile feel of writing notes on their iPad - they might have preferred the precision of writing with a marker, than writing with their finger on an app. These observations may have impacted student learning?

It is also important to point out that the foundation of this study is based on doing the SAME activities, just in a different model. I simply replaced a traditional activity with it's technology equivalent. However, this does not scratch the surface for what new, unimaginable things I can accomplish with tablets. Instead of substituting what I already do in my classroom, I can create new lessons that I was unable to dream of previously. These iPad lessons reach and engage students in the middle school general music classroom. Many times secondary music educators find students in their music appreciation classes to be disinterested and disengaged. However, with new opportunities to relate to music, these students are able to identify with music on a whole new level. This is what makes the iPad such a compelling tool. David McAllester predicted this in the 1967 Tanglewood report, saying

We have a splendid beginning in the early grades, when children are sometimes lucky enough to get acquainted with rhythm and melody on all

sorts of simple and nonconventional instruments. They have the thrill of exploring the delights of free creativity without a long apprenticeship in technique first... We might entertain the idea that someone who never does develop skills on conventional instruments could become a gifted performer on unconventional ones... Someone who never learned to read conventional notation might nonetheless become an outstanding composer in some medium where notation has yet to be invented, or may even be impossible to invent (Williams 1).

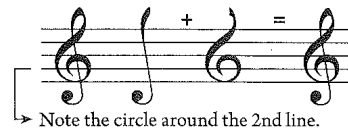
APPENDIX A: Treble Clef Worksheet

3

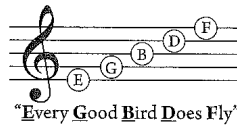
Treble Clef

A **Clef** is a symbol at the beginning of the staff that assigns letter names to the individual lines and spaces of the staff. The first seven letters of the alphabet (A through G) are used to name these lines and spaces.

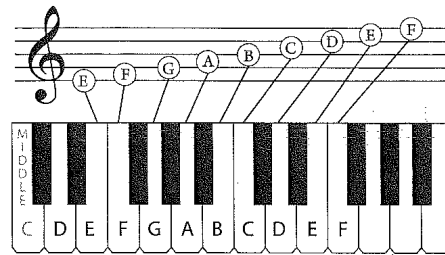
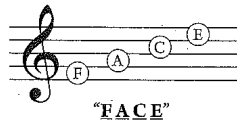
The **Treble Clef** (also known as the "G" clef) encircles the second line of the staff and names it "G." This G is above the middle C on a piano keyboard.



Treble Clef Lines

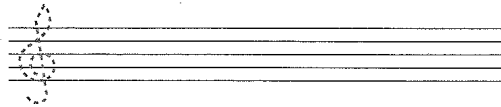


Treble Clef Spaces

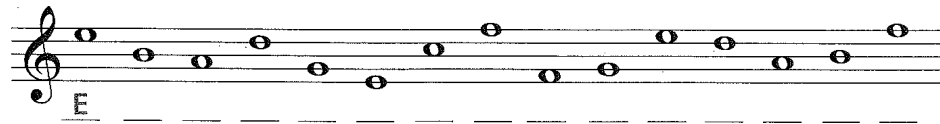


STUDENT ASSIGNMENT

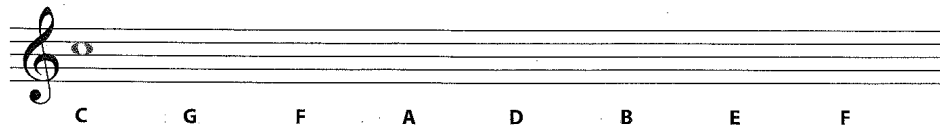
- Trace the treble clef and draw four more in the staff provided.



- Write the letter name of each note in the blank provided below it. The first one has been done for you.



- On the staff, draw the notes indicated by the letters below. There may be more than one correct answer for some. The first one has been done for you.



- Write the name of the lower note in the blank provided beneath each exercise. The first one has been done for you.

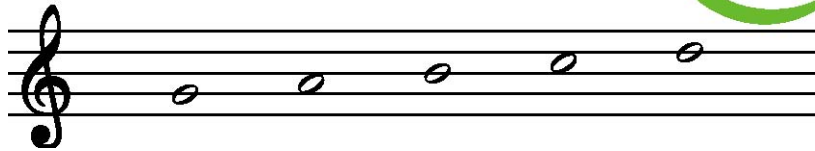


APPENDIX B: Theory Worksheet – Ready Set Go!

Ready,Set,Go! note naming speed test will challenge students to develop speed and accuracy in their note naming skills. With the clock ticking, students will name 10 notes as fast as they can. When they complete the line they record their time (incorrect answers add 5 seconds to their score). Try again. Beginner Level: 60 seconds/10 notes - Intermediate: 30 seconds/10 notes - Advanced Level: 10 seconds/10 notes.

Treble Clef (G Clef)/G
Position

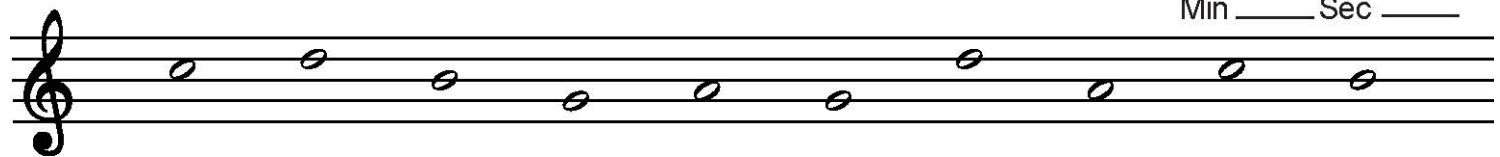
Ready, Set, Go!



G A B C D



Min ____ Sec ____



Min ____ Sec ____

APPENDIX C: Pre/Post Assessment

Name: _____ Date: _____

Section: _____

Music Notation

Treble Clef

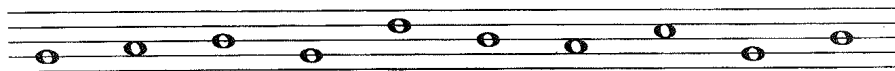
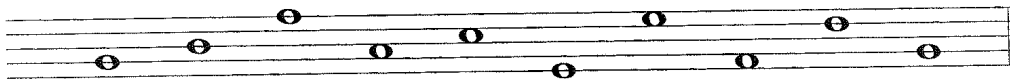
1.) Draw a treble clef



2.) What word do we use to remember the notes in the spaces of the treble clef?

3.) What phrase do we use to remember the notes on lines in a treble clef?

4.) Draw a treble clef at the beginning of the staff. Then write the names of each note.

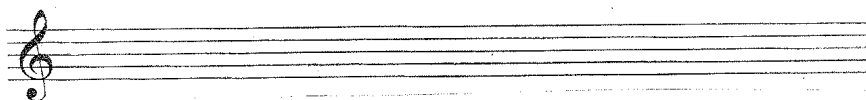


5.) Draw a treble clef at the beginning of the staff. Then draw the notes indicated. If a note can be written in multiple places, choose one.



G E B C D B A C D F

6.) **Code Maker** – using treble cleft notes, write two words and draw the notes above.



APPENDIX D: Letter of Approval

Ridley Middle School

Free & DuPont Streets
Ridley Park, Pennsylvania 19078
(610) 534-1900 #1304

Mr. Adam Staples
Principal

February 19, 2016

To whom it may concern,

Ms. Christa Converse has permission to conduct a research study involving general music students at Ridley Middle School. I understand that this is a requirement for her masters program, which she is pursuing at University of the Arts. I will be interested in the results of this study, and how technology effects achievement in the general music classroom, specifically in music literacy.

Respectfully,



Adam Staples

Principal

It is the mission of the Ridley School District to create a caring environment that gives all students the opportunity to achieve their fullest personal and academic potential in order to become productive and responsible citizens.

Appendix E: Class Pre/Post Assessment Data

Figure E.1: Class 1

Class 1 - iPad

Student	Pre-test	Post-test
1	1	36
2	1	35
3	3	36
4	6	35
5	6	30
6	8	37
7	17	37
8	1	37
9	3	37
10	1	28
11	37	37
12	30	37
13	1	37
14	1	30
15	4	37
16	0	36
17	5	36

Figure E.2

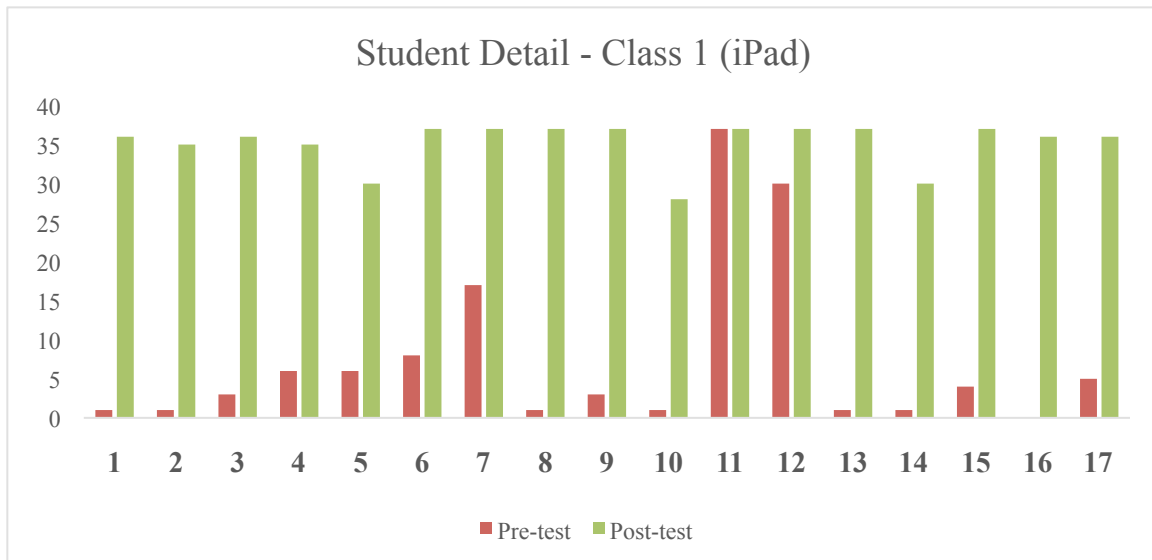


Figure E.3: Class 2

Class 2 - Traditional

Student	Pre-test	Post-test
18	19	37
19	2	37
20	37	37
21	26	35
22	37	37
23	0	37
24	0	35
25	33	36
26	3	37
27	2	37
28	0	34
29	32	37
30	37	37
31	33	36
32	3	37
33	7	37
34	1	35

Figure E.4

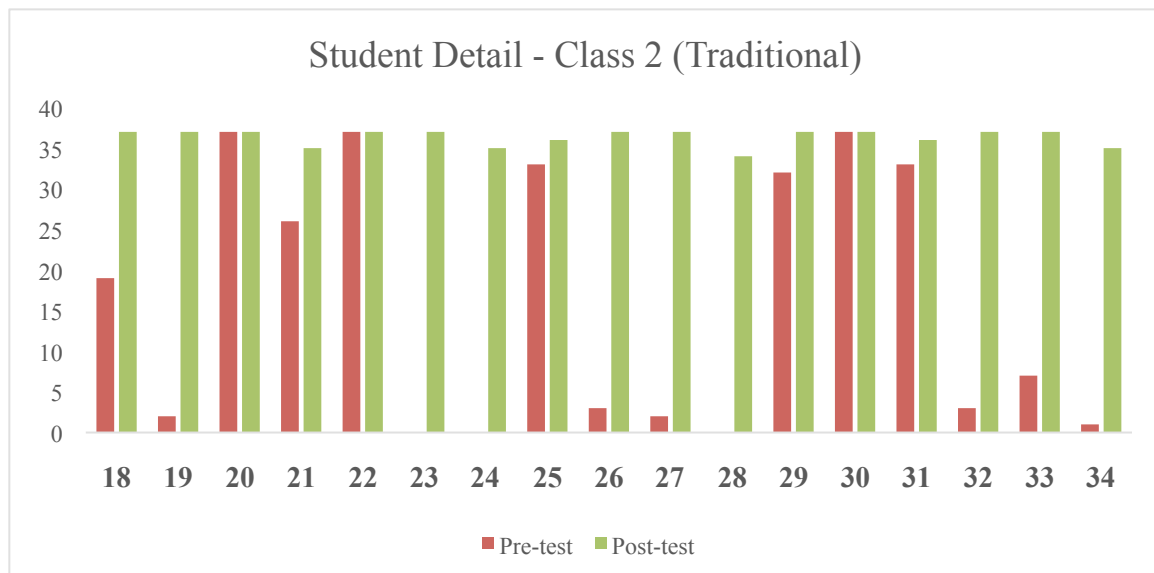


Figure E.5: Class 3

Class 3 - iPad

Student	Pre-test	Post-test
35	3	36
36	1	37
37	6	36
38	0	36
39	0	37
40	0	37
41	1	36
42	1	37
43	8	37
44	5	37
45	1	34
46	1	14
47	0	37
48	2	36
49	1	37
50	23	37
51	1	36

Figure E.6

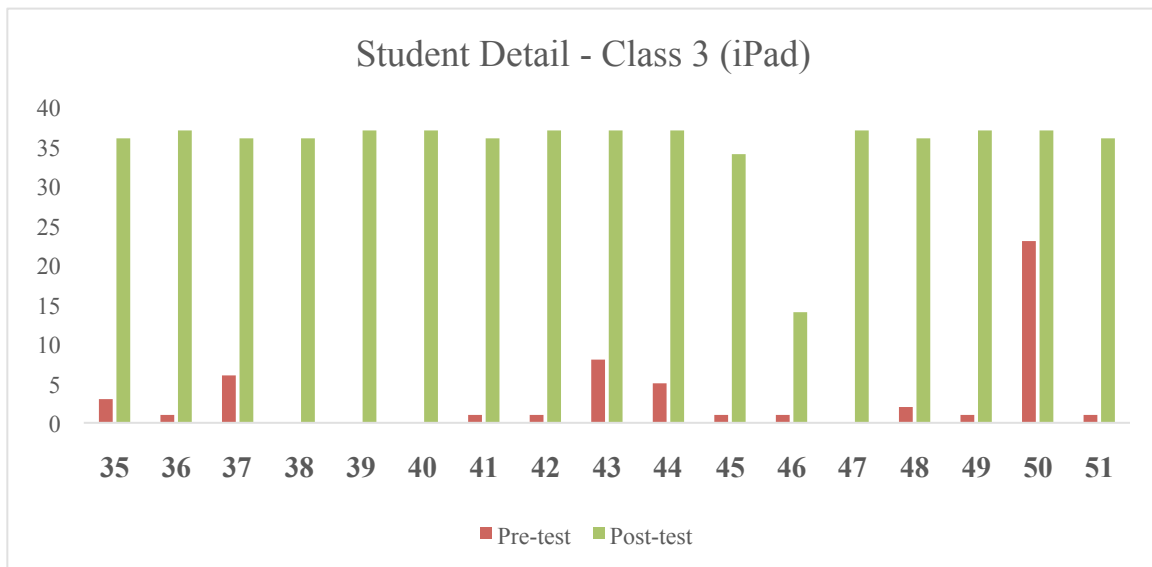
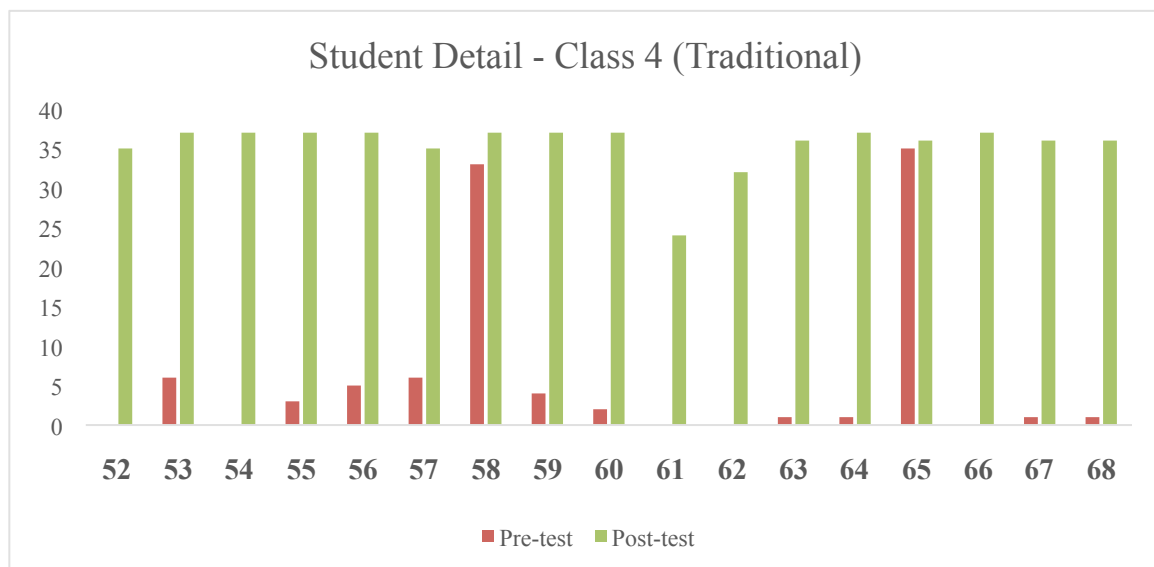


Figure E.7: Class 4

Class 4 - Traditional

Student	Pre-test	Post-test
52	0	35
53	6	37
54	0	37
55	3	37
56	5	37
57	6	35
58	33	37
59	4	37
60	2	37
61	0	24
62	0	32
63	1	36
64	1	37
65	35	36
66	0	37
67	1	36
68	1	36
69	0	37
70	1	37
71	5	34
72	5	37
73	3	37
74	2	37

Figure E.8



Appendix F: Comparison of Pre/Post Assessment Data

Figure F.1 Average of Class Scores

	Average of pre test	Average of post test
iPad	5.264705882	35.14705882
1	7.352941176	35.17647059
3	3.176470588	35.11764706
Traditional	9.65	36
2	16	36.35294118
4	4.956521739	35.73913043
Grand Total	7.635135135	35.60810811

Figure F. 2 iPad Method Scores

Class	Pre-test	Post-test
Class 1	7.35	35.18
Class 3	3.18	35.12
Total	5.26	35.15

Figure F. 3

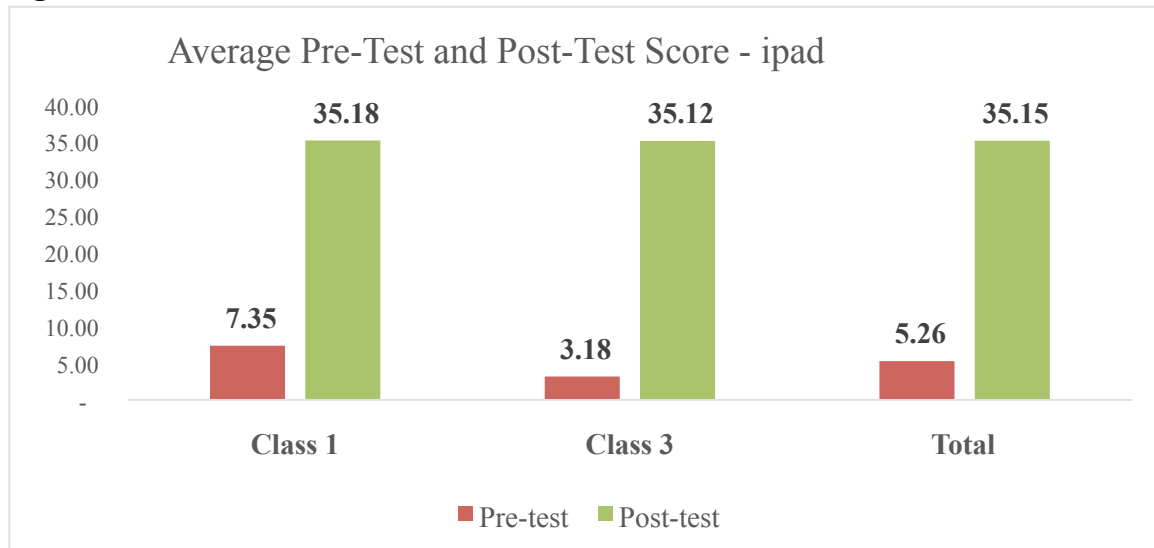


Figure F.4 Traditional Method Scores

Class	Pre-test	Post-test
Class 2	16.00	36.35
Class 4	4.96	35.74
Total	9.65	36.00

Figure F.5

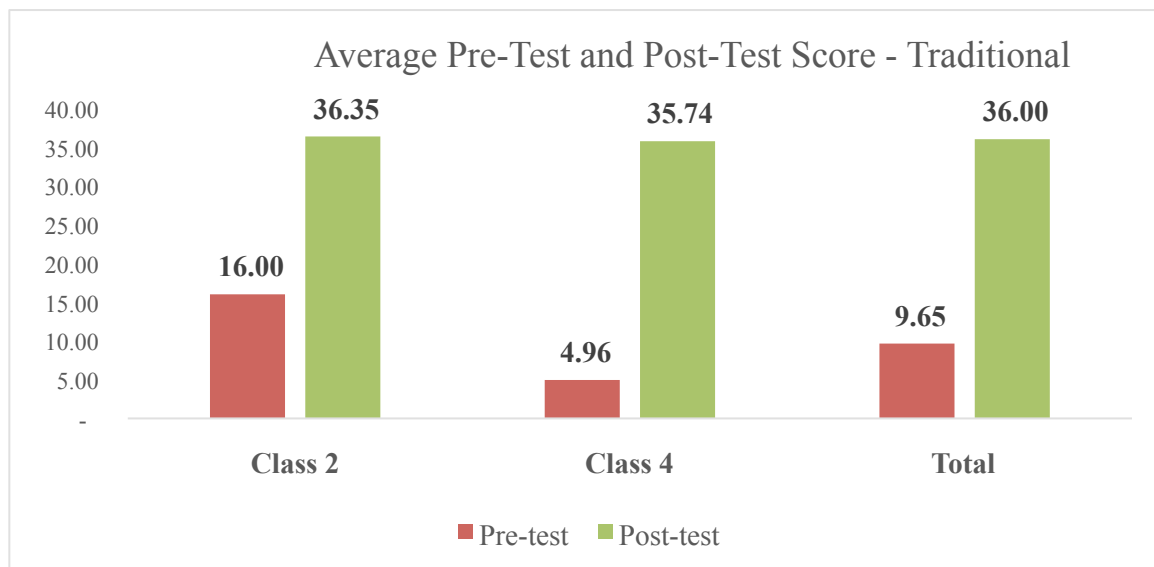
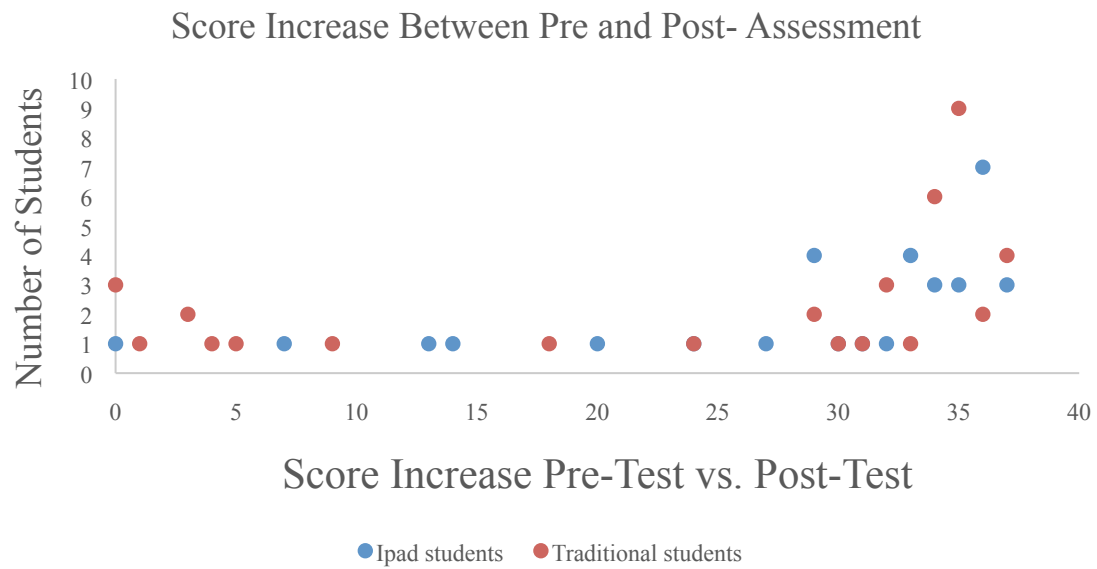


Figure F. 6 Percent of Score Increase

	Count of Student Number	Percent of students	Cumulative Percent
0	4	5.4%	100%
1	1	1.4%	95%
3	2	2.7%	93%
4	1	1.4%	91%
5	1	1.4%	89%
7	1	1.4%	88%
9	1	1.4%	86%
13	1	1.4%	85%
14	1	1.4%	84%
18	1	1.4%	82%
20	1	1.4%	81%
24	2	2.7%	80%
27	1	1.4%	77%
29	6	8.1%	76%
30	2	2.7%	68%

31	2	2.7%	65%
32	4	5.4%	62%
33	5	6.8%	57%
34	9	12.2%	50%
35	12	16.2%	38%
36	9	12.2%	22%
37	7	9.5%	9%
Grand Total	74		

Figure F.7: Score Increase Between Pre- and Post – Assessment



APPENDIX G: Class Demographics

Figure G.1

Class 4	Class 3	Class 2	Class 1
23 students	17 students	17 students	17 students
11 females 12 males	9 females 8 males	11 females 6 males	7 females 10 males
5 IEP's	2 IEP's	1 IEP	4 IEP's
3 band/chorus	2 band/chorus	7 band/chorus	0 band/chorus
Traditional Method	iPad Method	Traditional Method	iPad Method

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