COLOR AND MUSIC: A REVIEW OF RESOURCES TO ENHANCE BEGINNING INSTRUCTION IN PIANO PEDAGOGY

by

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This paper will examine color-coded musical notation. The history of color and music will be briefly explored before a more in-depth analysis of the widely available color-coded curriculums. Traditional method book formats will be examined for the potential integration of color-coded musical notation.

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CHAPTER 1

INTRODUCTION

Piano teachers have honed the process of beginning piano instruction into the format that is recognized today. Students attend lessons, have method books and learn how to practice. The means to accomplish these goals have undergone numerous innovations in the past twenty years. Standard method books such as John Thompson's Easiest Piano Course, published in 1936, and Bastien's Basic Piano Course, published in 1985, are still in use today. These methods have not changed much, if at all, since their original publication. Personal computers and music software such as Finale and Sibelius have allowed musicians to begin desktop publishing and printing music in a more professional format. With the advent and widespread use of digital color copiers and color duplicators, more avenues for new types of publications have also become available.

A long history of interest in color and music exists but mass publication in such a format as color-coded notation has been cost prohibitive. This paper will briefly examine the history of interest in color and music as well as examples of color-coded notation research before evaluating the new color-coded methods that are available

to the consumer. The objective is not to persuade the reader of the validity of color-coded notation but to merely shed light on a developing area of the profession that is available to piano pedagogues, parents and students.

CHAPTER 2

COLOR AND MUSIC IN HISTORY

As far back as Pythagoras in the sixth century BC and Aristotle in the fourth century BC references are made to the harmony of colors and sounds. Sir Isaac Newton is often credited with being the first modern scientist to investigate the relationship between color and sound in the era of modern history (Cytowic, 1993). However, an artist named Giuseppe Arcimboldo began investigating this relationship a century and a half earlier.

Archimboldo is better known for his paintings, than for his scientific experiments. The humanist Gregorio Comanini commented on Archimboldo's work in his *Il Figino, Overo Del Fine Della Pittura* of 1590. The work describes the meticulous approach that Archimboldo took to examining the relationship between light and sound by using the Pythagorean intervals from music. Archimboldo proposed that by calculating the intervals of music and the intervals of light and dark that an entire composition can be seen in patterns of woven lines of light and color (Caswell, 1980).

The interest in color and sound began experiencing a recurrence in the late nineteenth century. The book

Colored Hearing was written by Suarex de Menoza and published in French in 1890. In 1927, A. Argelander wrote a book title *Colored Hearing and the Synesthetic Factor of Experience.* As interest continued to developed, conferences on the subject of the correlation between sound and color began to be held in the late 1920s. These conferences used the idea of synesthesia as a starting point. The first international conference on synesthesia took place in Hamburg, Germany from March 2-5, 1927. This same conference was held again on October 1-5, 1927; October 2-7, 1933; and October 4-10, 1936 (Cytowic, 1993).

There are a few composers that are often mentioned in conjunction with synesthesia and color in music because of the approach they used in some of their compositions. One of the most often referenced is the composer Alexander Scriabin. Scriabin composed the symphony *Prometheus, the Poem of Fire* in 1910. The score called for the use of a clavier a lumieres. This instrument was played in the fashion of a keyboard instrument but produced no sound. Instead, the clavier controlled a series of colored light that were to illuminate the concert hall in rays of color that corresponded with the sounds of the music. The first performance of the piece was on March 20, 1915. Scriabin

was ultimately unhappy with the changes that were required for in order to stage a performance of *Prometheus, the Poem of Fire*. He felt that the character of the piece could not be adequately expressed with the changed required by the venue. Scriabin also began composition on a piece title *Mysterium*, but he died before the completion of the work (Cytowic, 1993).

More recently, well known researchers associated with the subject of color and sound are Lawrence Marks, Richard Cytowic, MD, Simon-Baron Cohen and Vilayanur S. Ramachandran, MD, PhD. Lawrence E. Marks wrote an article for the *Psychological Bulletin*, 82(3), 303-31 that was reprinted in the book *Synesthesia: Classical and Contemporary Readings* that was edited by Simon Baron-Cohen and John E Harrison, the title is *On Colored-hearing Synesthesia: Cross-modal Translations of Sensory Dimensions.* The objective of the paper was to show that there is consistency between the associations of color and sound that are consistent from person to person. Marks suggested that there is a correlation between the vowel quality and the corresponding visual images.

In order to examine this correlation, Marks studied at least thirty-three reports that discussed vowel color.

These reports were drawn from much of the late nineteenth century and through the mid-twentieth century. The categories of colors used in these reports were: yellow, red, green, blue, violet, white, gray, brown and black. From these reports emerged a pattern of vowel color as shown in Table I.

Table I

Vowel and Color Associations

Vowels	Color Associations	Color Associations
A	Blue	Red
E and I	Yellow	White
O	Red	Black
U	Blue	Brown

The paper resulted in three ideas that defined colored vowels. First, there is a correlation in colored synesthesia between visual and auditory stimuli. Second, the vividness or brightness of the synesthetic experience is directly related to the pitch of the vowel. High vowel elicit bright colors where as low vowels create dark colors. Finally, vowels can

be categorized as green or red based on how compact they sound (Marks, 1982).

CHAPTER 3

RESEARCH ON COLOR-CODED NOTATION

A review of current literature reveals that few studies have been conducted utilizing the kind of colored notation that would appear in method books. Many of these studies have ended with mixed results. In this section, two studies that relate to this style of color-coded notation are examined.

Music-Color Association

A study of music-color associations was done by Robert A. Cutietta and Kelly J. Haggerty. The paper *A Comparative Study of Color Association with Music at Various Age Level* was published in the Journal of Research in Music Education in 1987. In this study, twelve hundred and fifty-six subjects from the ages of three to seventy eight were participants. The research for this paper was conducted in three phases. The authors indicate that there was originally only to be one phase of research, but that there was insufficient data obtained thereby leading to two additional phases.

In all three phases, the subjects listened to three recorded musical examples that were approximately thirty seconds in length. The examples were (1) Gustav Holst's

Suite No. 1 in Eb, third movement, "March," measures 1-36, (2) Modest Moussorgsky's *Pictures at an Exhibition*, fourth movement, "Bydlo", measures 1-20, and (3) George Frederic Handel's *Music for the Royal Fireworks*, "Bourree," measures 11-26. These examples were chosen for their contrasting styles.

Phase One of the study was given to elementary school through college age students. Every participant was given a color wheel for each musical example. While listening to the examples, they were to select the color that most reminded them of the piece. In the Holst example, on an average of forty percent of the students selected red as the predominant color they associated with the music. Many of the other answers were on the red, yellow and orange side of the color wheel. For the Moussorgsky work, answers ran similarly as to the Holst piece, with the predominant color being blue. The third musical example, Handel's *Fireworks* showed less consistency. The responses varied all over the color wheel. There was a gradual tendency towards yellow and green in the response of older students, but over all there was little consistency. The conclusion drawn by the researchers for Phase 1 was that there were two areas that needed further study and in turn posed two

questions. One, is the development of color associations in preschoolers based on conditioning? Two, does development in color associations continue in post-college aged subjects?

Phase Two of the study involved children from the age of three up to the age of eleven. The preschoolers and those under the age of seven were given sheets with colored shoes on them and instructed to choose the color based on the music they heard. Subjects ages seven to eleven were shown posters with shoes on them in a classroom setting. Then they were instructed to choose a corresponding letter name on the sheet at their desk.

The researchers found the results of Phase Two surprising in that there was a lack of consistency between the younger and older age groups. There was consistency in thirty to forty percent of each age grouping, but no consistency between the groups. For example, for all three pieces ages three and ten chose blue; whereas ages five, six and eleven chose red. Neither was there evidence of a gradual conditioning for color selection. The responses seemed to be random until approximately the age of nine and then patterns did begin to emerge.

Phase Three, consisted of subjects from the ages of eighteen to seventy-eight years of age. Each participant was given a color wheel for each musical selection and asked to choose a color they thought identified the pieces most closely. The conclusion of phase three was that the answers were extremely consistent across all of the age groups.

In musical example one, six of the seven age groups chose red as their answer. The subjects in their fifties chose yellow as the primary answer. Overall, sixty-eight percent of participants chose a red or orange hue as their answer. In the second musical example, sixty-eight percent of participants chose blue or purple as their primary response. For the third example, there was a strong preference of yellow. However, as with the previous studies, this musical selection yielded a more varied response. The two primary responses were yellow or green. The results of the Phase Three study begin to show indications that there is support for the idea that there exists wide spread musical color association in adults.

The researchers concluded from looking at all three phases that music color association must be the result of a sensory process in the brain that is widespread and

consistent across all age groups. The researchers went on to report that two major publishing companies used colors in some of their publications as an educational tool. However, they do not name which publishers to which they are referring. This paper closes with the idea of more research being needed to determine the value of using color and music in educational setting (Cutietta and Haggerty, 1987). Scientific studies such as Cutietta and Haggerty's have begun to show that there is a possible connection between music and color. If a parallel could be made between the advantages of using color in education and color in music, it could give educators another teaching aid to assist in maintaining a young beginning student's interest in music.

Color-Coded Notation

The use of color to teach musical notation would be considered the use of a mnemonic device. A mnemonic device is an aid to assist in memorization or recall of fact. A simple poem or acrostic would be an example. Music teachers often use the phrase Good Boys Do Fine Always as a mnemonic device to help students remember the bass clef lines of the staff. Hilgard and Bower 1975 concluded that audio-visual instruction combined with mnemonic devices and

imagery of materials can enable to student to maximize the amount of information to be learned in the least amount of time with less repetitive drilling. M. C. Wittrock observed that when using imagery mnemonics as a teaching tool, a student without a high rate of literacy can also succeed in the task (Wittrock 1985).

A subject with less research is the area of color-coded music notation. George L. Rogers authored a paper titled *Effect of Color-Coded Notation on Music Achievement of Elementary Instrumental Students* which was published in the Journal of Research in Music Education Volume 29 Issue 1 in 1991. He attempted to answer the following questions in his study: "Does the use of color-coded notation in instructional materials affect fifth and sixth-grade students' music achievements of tasks of (1) performing music by memory? (2) sight-reading? (3) naming the letter names of notes?" Rogers clearly states in his goals for the study that he did not intend to replace the current notational system but to provide a pedagogical aid for the beginning student.

The subjects of the study were fifth- and sixth-grade beginning wind instrument players. The participants attended two different schools and were a cross-section of

socioeconomic backgrounds and abilities. Forty-two of the students were from a middle socio-economic background while fifty more were from a low to middle socioeconomic background. The remaining six students from the second school were learning disabled or mentally handicapped. Students with no music experience were chosen for this study for three reasons. (1) Younger students had been shown to make cross-sensory associations of this type. (2) It was most logical to present this idea at the time the students were first presented with note reading material. (3) Instrumental students were chosen over vocalist students to eliminate any chance of text affecting the memorization aspect of the test.

Forty-six students were randomly selected to participate in the use of color-coded method books and supplementary materials. In these materials, each pitch was highlighted in a different color. The control group used the same method books but without the color-coded notation. All students had their own books and no mention was made of the colors after an initial explanation. The colors had been chosen randomly and the only limiting factor was the adjacent notes must be in contrasting

colors. During the course of the twelve week trial period, only eight pitches were learned.

At the end of the twelve week study period, students were tested individually in three areas. The first area tested was memorization skill. The students were given a twenty-six note melody. The melody was color-coded or not color-coded based on which educational materials the student had been using. The teachers aided the students in memorizing the music as part of the class' normal activities. Normal class time was forty-five minutes per day. The second test was in the area of sight-reading. Students were given two twelve note phrases with one being color-coded and the other one not color-coded. Each student was asked after playing both melodies which line had been easier to play. Finally, the third test was naming the notes of two seven-note melodies. Again, one melody was color-coded and the other was not. The tests were scored numerically based on the number of notes the student played correctly out of possible number of correct notes.

The results of test number one showed that the experimental group, using colors, and control groups, using traditional musical notation, performed in almost the same

ways in memorization. The average of the control group was 15.28 and that of the experimental group 15.24. The second test showed many of the same results. Both groups performed better on the color-coded notation during sight-reading than when using the traditional notation. In a setting like the one described, each unit is expected to excel on the type of material they were trained with over a foreign presentation. However, the control group scored lower on the uncolored notation than they did on the colored-notation. Similarly on the third test, both groups scored higher on the colored notation than on the traditional notation when asked to name the notes.

One music teacher had commented that the learning disabled students were highly dependent on the color-coded notation. Upon separate analysis of their note naming tests, the students' scores showed that their average on color-note naming was seven out of fifteen. The results of the non-colored notation were only 1.5 out of fifteen. In the sight-reading portion of the test, the students were completely unable to read the music without the color-coded notation. Each student scored a zero out of fifteen.

Perhaps the most interesting aspects of the study was the students' own report on which type of musical example

was easier to play. In a similar way, the experimental group reported that the color-coded music, which they had been taught with, was easier to play. However, eighteen of the forty-six students in the control group also selected the color-coded notation as easier to play even though they had not seen the format before (Rogers 1991). It is not stated in the conclusion of the paper if the students stated why they believed the color-coded notation was easier to play. This may indicated the need for further study into student preference in learning to read music. Having reviewed two published papers dealing with color-coded musical notation, we can now review the resources and methods that are readily available in the marketplace that use color as a teaching tool. For the purposes of this paper, existing color-coded teaching aids and curricula will be examined and gauged as to if they could be an effective teaching tool and to what age level would best benefit from their use. However, before looking at the color-coded methods, a baseline for topics covered in a successful method books needs to be established. This will allow for the evaluation of color-coded methods from a pedagogical view point.

CHAPTER 4

COLOR-CODED TEACHING TOOLS

Presented first will be the pedagogical aid Rainbow Key-Note Connections. While not a method in the same format as other examples, the chart uses color as a teaching tool in differentiating notes on the piano and grand staff.

Rainbow Key-Note Connections

In the simplest format of using color as a pedagogical aid is the Rainbow Chart. This product is produced by Rainbow Key-Note Connections out of Portland, Oregon. The Rainbow Chart is a 12x41 chart on dry erase material that presents the musical staff in vertical and horizontal formats. Also on the chart is a pictorial of a four octave keyboard. On either end of the chart is a vertical representation of colored note heads on a grand staff. The notes for all four octaves are presented on a horizontal grand staff that aligns with the end cap vertical presentation of the same material. Across the bottom of the chart is a corresponding color coded four octave keyboard.

Rainbow Key-Note Connections Chart

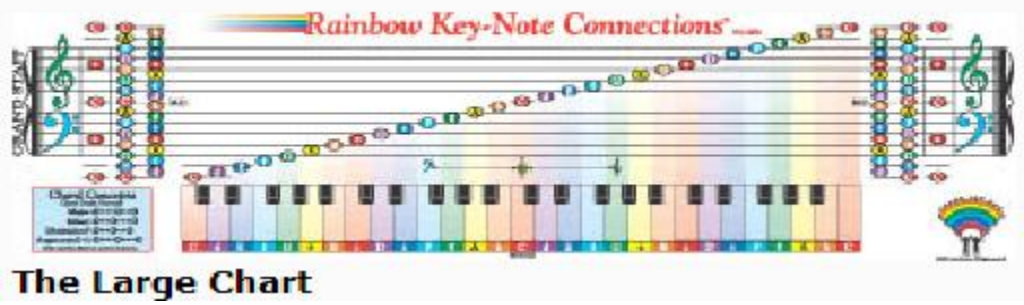

Figure 1. Rainbow Key-Note Connections Chart

The company also produces a number of charts that are also color coded that present the ideas of flats, sharps, chords and the circle of fifths (Rainbow Key-Note Connections, 2003).

While only a pedagogical aid and not a method, the Rainbow Key-Note chart gives one of best large scale representations of what all of these products are trying to accomplish. If this chart were to be paired with the ColorKeys or Piano Wizard programs, it could provide an effective visual instructional aid for a teacher's classroom or studio.

Before looking at the first method, Piano for Preschoolers, what is the baseline of knowledge that a pre-school student would need to begin piano lessons? When looking at preschool curriculums and workbooks that are readily available to parents in retail settings, many of

these workbooks include introduction to color. *The Toddler Calendar* by Elaine Commins outlines tasks and material which children ages two to three should begin learning and comprehending. Some of these tasks include recognizing primary colors, matching pictures and knowing parts of the body (Commins 1999).

Piano for Preschoolers

For the young beginner, the Piano for Preschoolers, published in Dripping Springs, TX, offers an introduction to the keyboard through a color-coded lesson book. Despite repeated written requests, Piano for Preschoolers did not return inquiries regarding the development of the product. The first book can be downloaded from the internet and comes with a chart of corresponding colored piano keys, covers for the music book and teacher book, a music book and a teacher book. Also, included are audio files with voice over counting for each song. All of these materials are available in hard copies through the publisher. The company also offers a thirty-seven key mini-keyboard that corresponds to their chart of colored piano keys. The colors used for the keys in thisbook are: C is green, D is orange, E is purple, F is pink, G is blue, A is yellow and B is red.

The student book in the Piano for Preschoolers method only includes the pieces. In the figure below is a sample page for the student book.

Piano for Preschoolers Sample Page

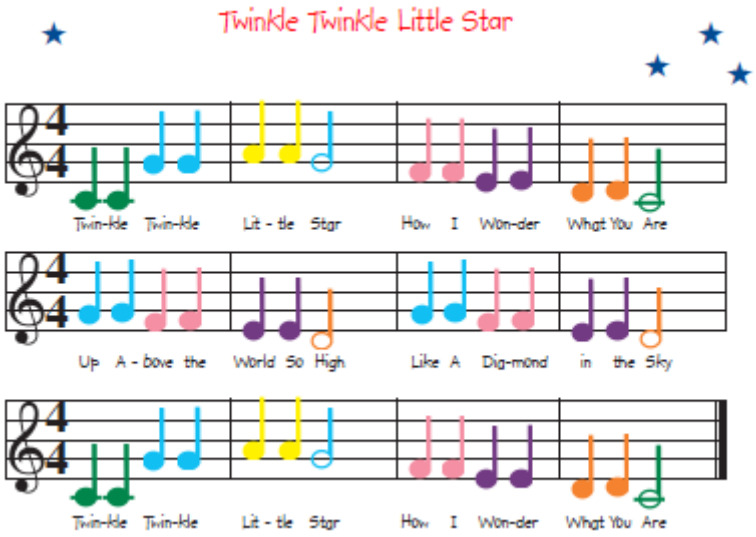

Figure 2. Piano for Preschoolers Sample Page

The Parent Teacher guide contains the instructional material for each piece. Book One contains nineteen lessons with corresponding songs. The introduction advises the instructor to sing along as the student plays. Also, it is noted that the CD is mainly for the instructor. In this book, each lesson is comprised of two pages. The first page is an instructional guide while the second contains a copy of the piece in black and white. At the bottom of the second page is a sentence or two dealing with

educational topics. The table that follows outlines the material covered in Piano for Preschoolers Book One.

Table 2

Piano for Preschoolers Book One

Lesson	Topics	Pieces/Songs
Lesson 1	Finding Middle C Placing the Color Strip	Twinkle Twinkle Little Star
Lesson 2	Hand position	Hey Diddle Diddle
Lesson 3	White keys and Black keys Higher and Lower sounds	Yankee Doodle
Lesson 4	Time Signature Measure Quarter Note Half Note	Rain, Rain Go Away
Lesson 5	Review of previous ideas Practice Chart	London Bridge
Lesson 6	Create a Recital	
Lesson 7	Eighth Notes	Frere Jacques
Lesson 8	Review	This Old Man
Lesson 9	Dotted Half Note	Mulberry Bush
Lesson 10	Quarter Rest Half Rest Whole Rest	Pop Goes the Weasel
Lesson 12	Musical Alphabet	Old MacDonald

Table 2 (continued)

Lesson 13	Review	Eensie Weensie Spider
Lesson 14	Treble Clef Letter names on staff Middle C up to next C	Review old songs Notes names coloring page
Lesson 15	Tie	Row Row Row Your Boat
Lesson 16	RH Finger Numbers	Farmer in the Dell
Lesson 17	RH Finger Numbers	Hickory Dickory Dock
Lesson 18	Middle C in bass Clef	Mary Had a Little Lamb
Lesson 19	LH Finger Numbers	Ten Little Indians

("Piano for Preschoolers," 2005).

The Piano for Preschoolers is a good idea, but the presentation of the curriculum appears to have certain weaknesses and inconsistencies. Having only one song per lesson creates the situation where the student completes a piece but does not understand the material and has learned the piece through rote. The lessons are a mishmash of musical concepts. Having the student wait until lessons sixteen through nineteen to learn finger numbers could hinder the student in learning to play with correct hand position.

Hand position is covered in lesson two. This would mean that the student would complete all the lessons from two to sixteen with no instruction regarding proper hand placement for each piece. Lesson fourteen introduces treble clef and an entire octave of letter names for the first time. While this method has the correct material presented for a young student, the organization of the material does not appear to lend itself to success for the average preschooler.

ColorKeys

Another, color-coded method is the ColorKeys program which is based out of Ontario, Canada. The Color Keys website states:

> "ColorKeys is a patent-pending system that ensures beginner piano players of any age can quickly become proficient. The system claims to use color for written musical notation, which enables novices to more easily read music and thus bypass on the most difficult hurdles in learning how to play the piano and other multi-octave instruments."

The premise of the ColorKeys method is that each note of an octave is assigned a colored sticker. The stickers correspond with the colored note heads in each of the three

books in the series. The company proposes that the colored musical notation is used like a map to "…guide the eye through the maze of markings on a musical score." The company briefly explains on its website the history of using colored musical notation. ColorKeys uses a computer algorithm to gauge the greatest possible contrast in the colors while using a single palette. The company notes that the advances in digital printing technology have decreased the difficulty and expense in an enterprise such as this.

The first book of the ColorKeys method begins with an introduction to ColorKeys approach and an outline of the material to be covered. This is followed by a page of icons and explanation of what each icon signifies. The icons are broken into two sections. The first section explains the icons that correspond with the compact discs that are included with the book. The compact disc includes rhythms that are tapped out and performances of the pieces. The second icon section is constructed of six different colored boxes that give instruction to the student. The boxes are titled: *Know This, Do This, Learn This, Practice This, Remember This and Behind the Scenes.* The Know This box is orange and explains new concepts or vital

information. Do This boxes are bright green and convey instructions on how to proceed through an exercise or song. Learn This boxes are bright pink. These boxes highlight new terms and concepts. Practice This boxes are light green and given practice examples or material that will be seen again in a piece of music. Light pink Remember This boxes provide a recap of information from previous lesson. Finally, Behind the Scenes boxes are light blue and give interesting information about the piece or concept being presented.

The first ColorKeys book is divided into four main sections called Lessons. The first lesson covers understanding the colors, applying the colored stickers, piano posture, fingering, the grand staff and middle C. In lesson one, a detailed diagram is given on how to apply the stickers to the correct keys of the keyboard. The colors and corresponding letter names are: A is pink, B is brown, C is black, D is purple, E is green, F is orange and G is blue.

The next idea presented is proper posture and finger position at the keyboard. Pictures are given of correct hand and body position. A bullet point list address different parts of the body and the positions they should

be in when seated at the piano. A Behind the Scenes box admonished students to keep their fingernails trimmed. Next the concept of finger numbers in presented using Learn This and Practice this boxes. A picture is given in which the fingers are numbered. Section one continues with the introduction of the Grand Staff, Treble Clef, Bass Clef, Bar Lines and Measures. The first musical note learned is Middle C. This note is present on the staff in treble and bass clef positions. A whole note is also presented but information about its length is absent.

Section 1 continues with Lesson 2. Lesson 2 covers all of the C's, D's and E's on the keyboard. Quarter Notes and Half Notes are introduced and explained. The use of the CD for rhythm teaching is introduced in this section. On page 22, the student places their hands on the keyboard for the first time. The figure below is used to guide the student in locating the correct keys and corresponding notes on the staff.

C, D and E Correct Hand Position

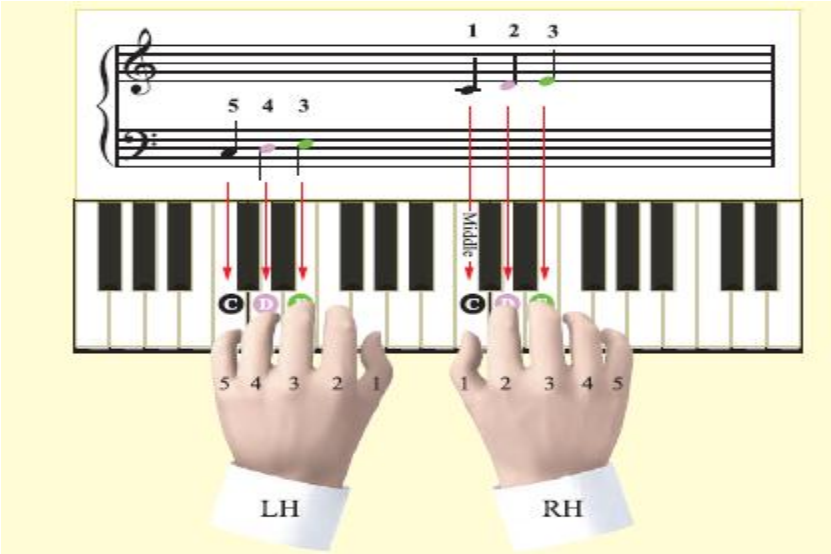

Figure 3. C, D and E Correct Hand Position

A Do This box gives the following instructions: One, read each note out loud. Two, tap out the rhythm. Three, use the fingering diagram to place hands correctly. Four, keep both hands on the piano for the entire piece. Five, Practice until the student can play the exercise without hesitation. The next exercise is the song Mary Had a Little Lamb. The piece is shown twice, one time for each clef.

Mary Had a Little Lamb Sample Piece

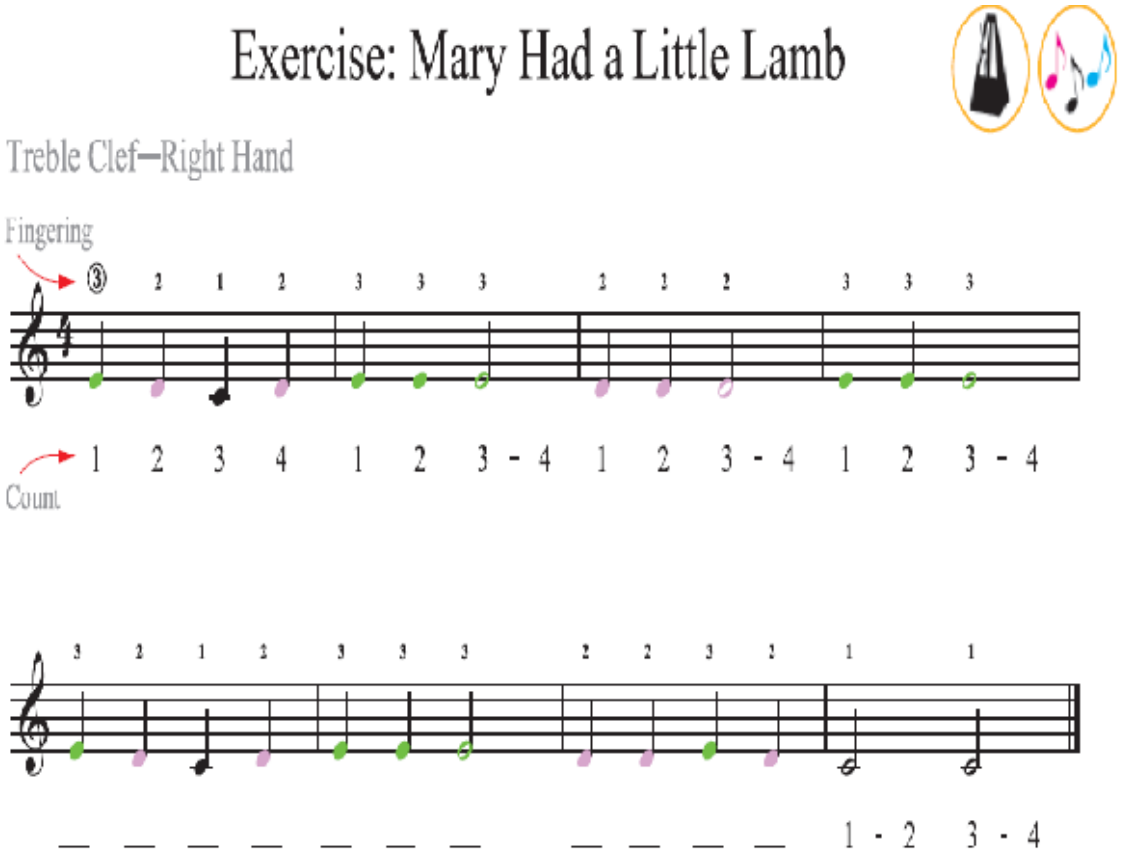

Figure 4. Mary Had A Little Lamb Sample Piece

Section 1 continues with lesson 3. Notes of F and G are introduced in the same manner as C, D and E. Also, the whole note is introduced again, this time with the value of the note being explained. Lesson 3 is presented in the same visual format as Lesson 2. This lesson concludes with the student playing Jingle Bells and Lightly Row hands separately. Lesson 4 covers the notes A and B and introduces the 4/4

time signature. The note presentation is the same as previously used. The time signature explanation is broken down in a very detailed manner. Each part of the equation is pointed out and expounded upon in an easy to follow format. Lesson 4 concludes with the student playing Old MacDonald and Camptown Races. The song notes are given on the staff with corresponding arrows pointing to the appropriate keys on a keyboard diagram. Then the piece is given twice, once for each clef. The hands are still not playing together at this time.

Corresponding Key and Note Colors

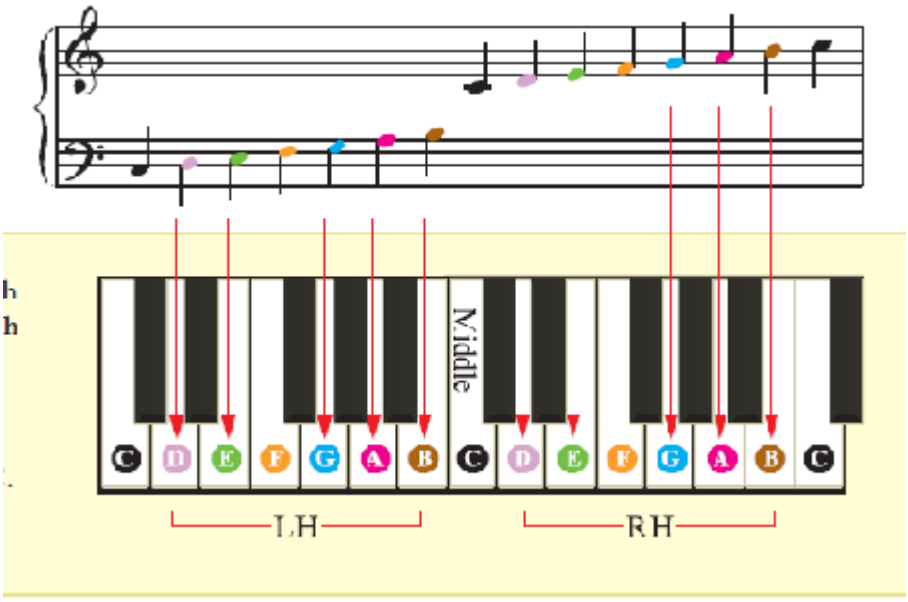

Figure 5. Corresponding Key and Note Colors

The first section concludes with a Review of the musical notes and staff. It also includes a short quiz with the answers provided.

In Section 2, the new material is presented in an identical format as in Section 1. Section two presents numerous ideas for each new song. Please see the chart below for a complete guide to Section 2.

Table 3

Color Keys Book One Repertoire

Lesson	New Material	Pieces/Songs
Lesson 1	Dynamic Signs, Forte, Boxes Measure Numbers, Some Fingerings Removed, Tempo Markings, Lyrics	Ode to Joy Jingle Bells
Lesson 2	Grand Staff, Playing with Both Hands, Rests, Octaves, Mezzo Forte	Brother John Twinkle, Twinkle, Little Star
Lesson 3	Dotted Half Notes, ¾ Time Signature	Three Blind Mice Beautiful Brown Eyes

Table 3 (continued)

Lesson 4	Stretching Fingers, Tied Notes, Melody Alternates between Hands, Accents, Intervals, Different Notes in Each Hand at the Same Time	Row Your Boat Pop! Goes the Weasel Chiapanecas
Lesson 5	2/4 Time Signature, Octaves, Cross-Over, Finger Slides, Same-Note Finger Changes, Repeat Signs	Sea Chantey
Lesson 6	Half Steps and Sharps	Bingo
Lesson 7	Eighth Notes, Accompaniment, Held-Note Accompaniment, B-below middle C, tied notes of different durations, echoing accompaniment	Ten Little Indians Skip to My Lou Mary Ann
Lesson 8	Dotted Quarter Notes	London Bridge Good Night Ladies
Lesson 9	Flats, Slurs, Mezzo Piano, Melody Splits between LH and RH	Aura Lee Camptown Races
Lesson 10	Musical Phrases, F# and D#, Musical Introduction, Fermata	Ta-Ra-Ra Boom-De-Ay Good Morning To You

Table 3 (continued)

Lesson 11	Interval in Accompaniment, C Position, Pick Up Bar, D in Bass Clef	This Old Man She'll Be Comin' Round the Mountain
Lesson 12	G Position, Allegro, Beamed Eighth Notes, G in all octaves, Andante	Theme by Mozart Four Seasons:Spring Minuet in G

All of the material in Section 2 is clearly explained and diagramed following the same format as Section 1. The ColorKeys company promotes the idea of pattern recognition. It is stated that the song selection was built around pieces that have patterns of repeating notes. In the conclusion section of book one, the user is admonished to be comfortable with all of the pieces in Book 1 before moving on to Book 2. Following the Conclusion is a comprehensive Glossary of all the terms and symbols used in book 1 (Kestenbaum 2007).

The ColorKeys method book is a well thought out and organized method. The explanations in the books are detailed and clearly presented. The pieces are easy to read on the page. One flaw would be the fact that there is only one piece per new point of information. Overall, the

ColorKeys method book could be an effective method for the self-motivated adult student who wishes to learn to play the piano without hiring an instructor.

ColorKeys School Computer Based Curriculum

ColorKeys has also devised a school curriculum. The company was only willing to give a computer link to a promotional website. The information about the school computer based program was assembled from the information available on: http://www.colorkeys.com/site extras/Promo/index.html.

The website has a Promotional Video, a Trial of the computer software, a Teacher Resources section and a Benefits of Music Education area.

The link to the ColorKeys computer program begins with a page with the titles Section 1 and Section 2. These links correspond with the Sections 1 and 2 in the ColorKeys Book 1. Upon opening Section 1 on the website, the viewer encounters pages in the format shown below. These pages contain the exact same information as what is shown in the hard copy lesson book. The Section 1 pages are almost identical to those in the lesson book but have a tool bar added to the left of the screen.

ColorKeys Opening Screen

Figure 6. ColorKeys Opening Screen

Section 2 Lesson 1 begins with Beethoven's Ode to Joy. On the left of the screen is an interactive tool bar that allows the user to select which portion of the Lesson to use. The majority of the screen is the lesson page or the piece of music that the student is utilizing at the time. When a student is ready to use a keyboard to begin playing a piece of music, the song is selected and a screen with the song appears. At the top of the page is the title of the piece, the composer and any other pertinent musical information. The notes are colorized using the same schematic as in the method book.

ColorKeys Ode to Joy Sample Music

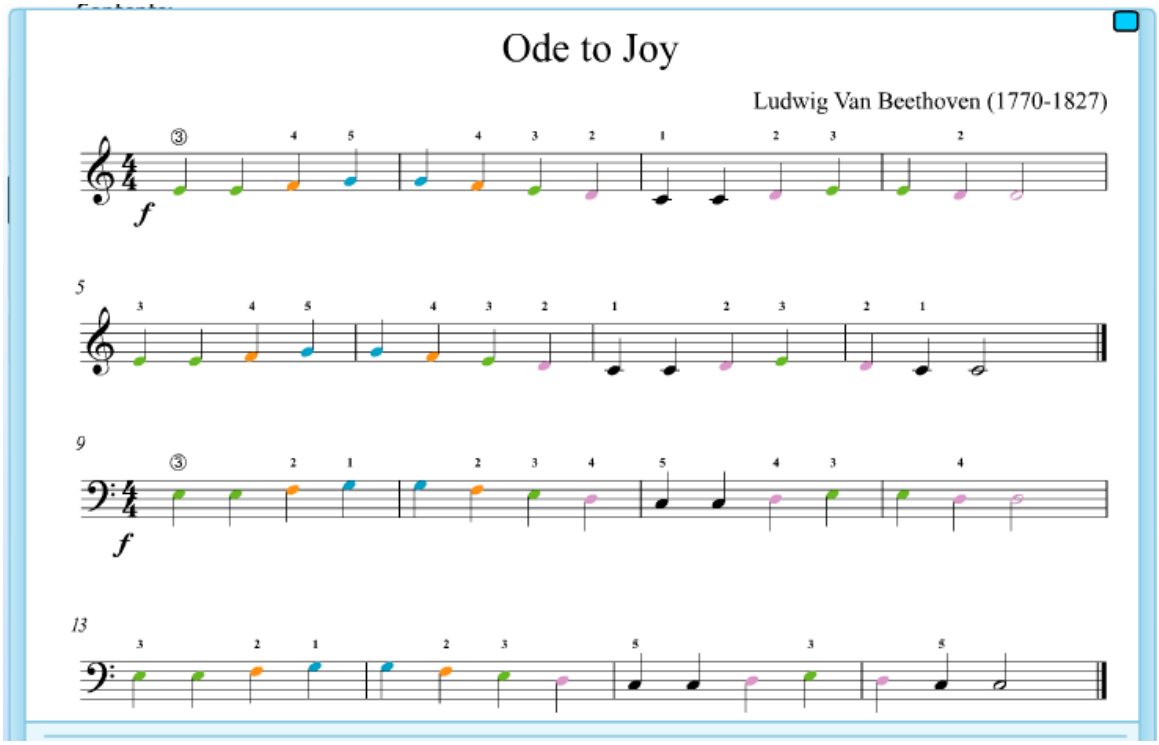

Figure 7. ColorKeys Ode to Joy Sample Music

At the bottom of screen is a tool bar that is used to control the options for playing the piece.

ColorKeys Tool Bar

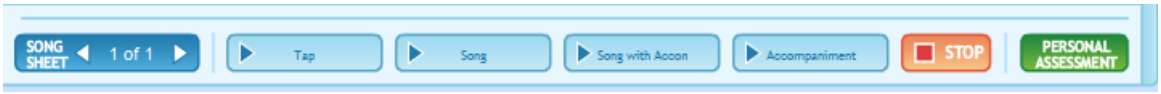

Figure 8. ColorKeys Tool Bar

On the left of the tool bar is the Song Sheet icon that allows the user to scroll between the musical pages. Next is the tap feature. The Tap feature allows the user to hear the correct rhythm in a non-musical format. The

Song button allows the user to see and hear the piece as it is being played as an example. A track bar crosses the notes as they are heard on the recording. Another feature is Song with the Accompaniment. This allows the piece to be played with a backing track. There is also a button that allows the student to play the Accompaniment Track alone. Finally there is a Stop button and a Personal Assessment Button.

The Assessment Button allows the student to play the piece and record their work. The student presses the red record button and is given a two measure count off before the piece begins. As the student plays the piece is recorded and scored. At the end of the music the student has the option to Playback or Assess their music. The Assess feature gives the total number of notes, number of correct notes and a percentage score. Below this information is Extra Notes, Long Notes and Short Notes. This tells the student how accurate they were on each type of note and if the student played extra notes.

The Teacher Resources section includes a first lesson plan, a quiz with questions from ideas in Section 1 and a tutorial on how to use the program. The final section is about the Benefits of Music Education. The first area

lists in a table and bullet point format benefits of music education. At the end of the section there is a bibliography supporting the statements. Also there is a fact sheet that could be construed as promotional material for the company (http://colorkeys.com).

The Colorkeys computer program was difficult to evaluate from a user standpoint. The company was unwilling to send a functional copy of the program and only provided a website link to a demo program. Given that the program is marketed to elementary school children, it is not presented in a user friendly manner. The definitions might be provided in a more concise format. Also, the program does not allow for tempo adjustment during practice. The tempos for the pieces are quite quick and student could easily be frustrated if they were to have low scores due to the pieces being too fast. Therefore, the program could be viewed as in development with room for improvement.

Rainbow Piano Technique

The Rainbow Piano Technique is another printed book marketed to preschooler. The Rainbow Piano Technique was written by Annie Wang. A link from the Rainbow Piano Technique website leads to an article in the Los Angeles Times website. The article states that Annie Wang is a

piano teacher and that she developed the Rainbow Piano Technique for her three year old son. No official credentials are given on the Rainbow Piano Technique website regarding Annie Wang's educational or publishing experience. The book can be ordered via the internet in the United States and it ships from California. The press coverage of this book is almost exclusively in Chinese and Taiwanese local newspapers out of California. The Rainbow Piano Technique book has a unique physical characteristic in that it is an oversize book. The book measures 13 3/4 by 9 5/8. The book begins with a page about the color code. This page instructs the user to cut of the small color slips and tape them to the keys. The color strips only measure one inch by one-half inch. Above the slips is a very small representation of the keyboard with matching color strips. The note names are given above the slips to be applied to the keyboard. The pictures below are a scale representation of what is given in the book. The actual measurements for the keyboard are 7 x 1 inches and for the color slips are 11 x 2 inches.

Rainbow Piano Technique Keyboard Stickers

Piano keyboard with colored markers

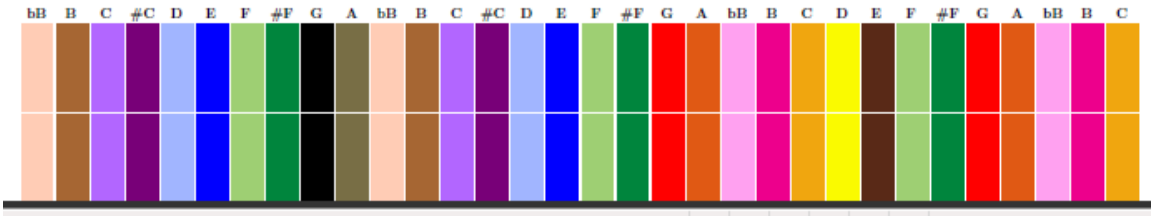

Figure 9. Rainbow Piano Technique Keyboard Stickers

The Rainbow Piano Technique could not be construed as a method. There are no instructional pages in the book. The book consists of forty-two pieces of varying degrees of difficulty. The first piece Happy Fish has both hands playing on the staff using quarter, half and whole notes. There are no instructions anywhere in the book as how to proceed with learning any of the pieces or describing any of the musical notations. On the website rainbowpianotechnique.com there is a web page called Piano Basic. This is comprised of a picture of good hand position and one of poor hand position. Also shown on the web page is a picture of hands on the piano keyboard with the fingers numbered (Wang 2008).

The Rainbow Piano Technique is definitely misrepresented in its promotional materials. The average consumer would expect a book labeled for Beginners to come with instructional material. Even if the book is to be used in conjunction with a teacher, some instructional material would be needed. The layout of the book is very professional and the song selection is something with which young children would be familiar. However, the lack of instructional material renders the book unusable for the average beginner or parent.

Piano Wizard Method

Perhaps the most current example of a user friendly color-coded piano curriculum is the Piano Wizard Method by Music Wizard Group based out of Boulder, CO. The development of this project was begun by Chris Salter who is a Southern Illinois University Carbondale alumnus. In 2005, Donald and Delayna Beattie began the Piano Wizard Academy pilot program on campus at Southern Illinois University Carbondale. This connection allowed for more extensive research into the development of the program. The central premise of the Piano Wizard Method is that students can begin making music immediately and develop music reading skills in the natural course of playing

music. The realization of this goal is addressed in several different ways.

Colorization of Musical Notation

In the Piano Wizard Method, every musical note has its own pre-assigned color. C is white, C#/Db is black, D is light blue, D#/Eb is red, E is orange, F is light green, F#/Gb is purple, G is yellow, G#/Ab is dark blue, A is brown, A#/Bb is dark green and B is pink. The colors were chosen based on two criteria. The first was that each key was a contrasting light or dark color. The second was that the colors must match perfectly on the screen and with the stickers on the keys.

Piano Wizard Computer and Keyboard Setup

Figure 10. Piano Wizard Computer and Keyboard Setup

Coordinating the colors on the screen with the colors on the keyboard was possible by using the PMS scale. PMS stands for the Pantone Matching System. The PMS system is an international standard for colors with each color being assigned a specific number. The PMS colors were then converted into RGB for the software of the game. The RGB color system is a system where Red, Blue and Green light are mixed to produce in various colors. For the stickers on the keys of the keyboards, the PMS colors were converted into CMYK colors. CMYK stands for cyan, magenta, yellow and black. CMYK is also known as process colors. There are specific formulas listed in the PMS swatch book for converting PMS to Process colors.

Transitional Music Reading Stages

The Piano Wizard Method is comprised of four levels of music reading proficiency. In the first three levels the player has color to assist them in the learning process. In level one, the player matches moving characters from the bottom of the screen up a matching color-coded line to the corresponding color-coded key at the top of the screen. This enables the player to become comfortable with the layout of the keyboard. Every song that comes on the software is capable of being played in all four levels.

Piano Wizard Step 1

Figure 11. Piano Wizard Step 1

The second level of Piano Wizard retains the same idea of following a moving object across the screen to match corresponding colors. The difference is that in level two the objects are now moving in a horizontal fashion as opposed to vertical in level one. In this phase, the student is introduced to the idea of following the line of notes or objects across the page.

Piano Wizard Step 2

Figure 12. Piano Wizard Step 2

The third level, is the same as the second level only the student now progresses to colored note heads on a musical staff. The notes are still moving across the screen to a keyboard with matching colors but now they are on the appropriate line or space.

Piano Wizard Step 3

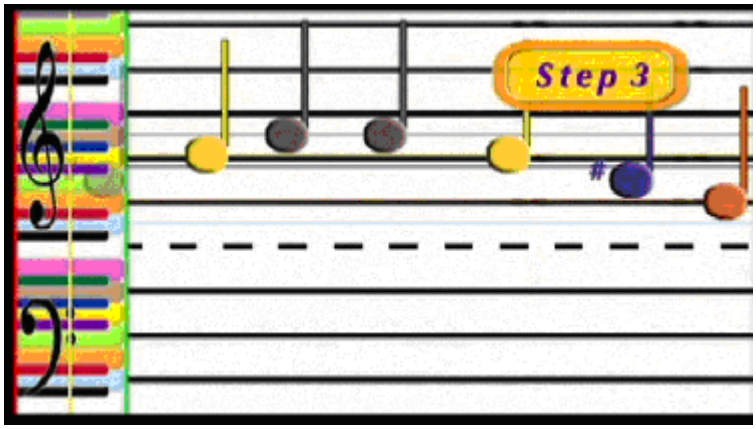

Figure 13. Piano Wizard Step 3

In the fourth level of the program, the student now reads musical notation on the grand staff without the assistance of color.

Piano Wizard Step 4

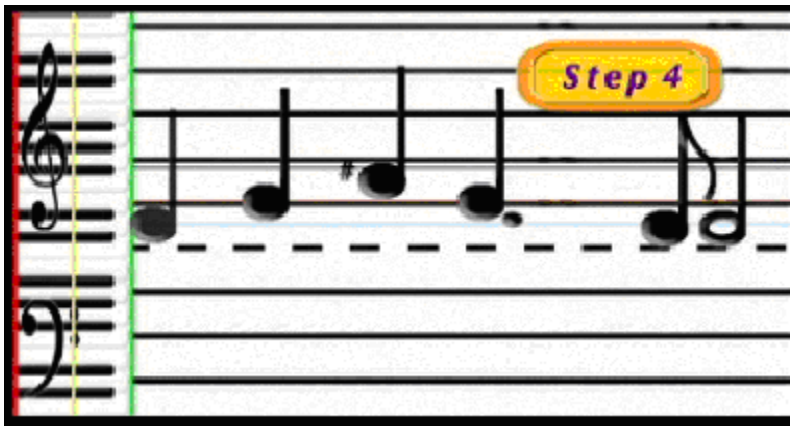

Figure 14. Piano Wizard Step 4

The Method accomplishes its goals of beginning with music and in the course of the game play, providing a visual and tactile experience of piano playing and note reading.

Counting and Spatial Concepts

One of the more difficult concepts to understand in learning to play the piano is the idea of counting and time. It is especially problematic with young beginners whose spatial frame of reference can be rather limited. Piano Wizard's solution to this problem is to create a visual representation of time. From the set up menu of the game, there is a section called Worlds. In the Worlds section, students can choose a background for their song as

well as select note representations. The choices of note presentations are either short figures for note accuracy or long figures for note and rhythmic accuracy. The short figures allow the student to just play the correct note. When using the long figures, the student must hold the piano key down for a specific amount of time. The long figures fill up with color as these long notes are held for the appropriate duration. If the key is released too soon, the color stops filling the figure.

To show how notes must be played at the appropriate time, Piano Wizard incorporates a green, yellow and red line system at the top or side of the page depending on the level. As an overlay to the color-coded keyboard on the screen is a green, yellow and red line. These lines can be stretched or shortened in distance based on the player's choice. When the lines are farther apart the player has more time to play the correct note when the figure reaches the top of the screen. The closer together the lines are placed the more exact the player must be in his or her musical timing. These features give the students a visual representation of counting and note placement in the musical selection.

Practicing Hands Separately

One of benefits of using Piano Wizard is that it can be used in an individual setting. The features of the program allow the student to focus on different aspects of the learning process independent of other musical stimuli. Perhaps the easiest to use and most beneficial feature is being able to play the right and left hand separately. Hands separate rehearsal is fundamental to successful learning experiences at the piano at all levels of playing, and this important learning feature is incorporated in the game of Piano Wizard. Students can choose to play the piece hands separately at any time in the process to facilitate better understanding of the piece at any time.

Another game feature that is important to piano instruction is the choice and adherence to piano music fingering. For any age or skill level using the program, the fingerings feature can be selected and the appropriate finger numbers appear inside the objects no matter which level you are playing. As the student transitions to note reading and no longer relies on the color coding of the game, this feature is of great advantage to the development of note reading skills. As with the fingering feature the note labels appear with the appropriate letter in the

center of the figure. As the student transitions to note reading and color drop out feature may be utilized. When using the color drop out feature of the game and gradually the note heads all turn to black as the piece progresses. Sometimes they make a recurrence in color but the goal is to wean the student away from color reliance.

Tempo Selection and Beat Lines

While learning different musicianship skills, the tempo selection and visual application of beat lines to the game screen are also useful tools. With the manual tempo adjustment, the student can set the tempo before beginning the piece. If the student wishes to be challenged at a higher level, a gradual tempo increase can be set to occur while the piece is in progress. For example, the beginning of the piece might be set with a quarter note equaling forty beats per minute and gradually progressing up to a quarter note equaling 120 beats per minute. Also, to aid the student in independent learning is the metronome feature. The metronome can be turned on and will tick to whatever the given tempo of the piece is. When combined with the held note characters it gives the student a visual and audible representation of counting. After the student progresses to the third and fourth levels of the game the

use of beat lines is helpful. The beat lines provide a visual aid to the rhythmic patterns of each measure of music. The lines run vertically down the staff just like a music teacher would draw on paper to teach a student beat placement. If this feature is combined with the metronome feature the student has visual and auditory cues as to where the beat falls.

While visual cues can do much for music learning, students must also learn to listen to the music that they are playing. Musical arrangements of the game song repertoire are complimentary to the pieces and help enhance the learning experience at each stage of development. In the easiest game repertoire, piano scores are doubled by other musical instruments to help build the self esteem of the beginning player. As students become more proficient at the game and advance to classical music repertoire, these musical arrangements are streamlined in with the game and in so doing, helps prepare game players for the experience of solo piano playing.

Finally, for every level of the program the student receives a percentage score that indicates how many of the notes were played correctly. This allows the player to gauge if they need to repeat a level or are ready to

proceed to the next step. The scoring can be disabled if it is too distracting to the student (Piano Wizard [computer software]).

The Piano Wizard Method engages three of the five senses. Sight, sound and touch are incorporated in such a manner that the user begins to forget that learning to play the piano is work. The Piano Wizard Method is continually evolving. Current feed back from teachers and students allows the production of new material. This new material is distributed through online updates. With traditional methods, a teacher may wait years, due to publishing costs, to see an updated edition of a curriculum. Society and musical output is moving at such a rapid pace that a method that can actively evolve very well could be the pedagogical method to keep students motivated.

CHAPTER 5

INTEGRATION OF COLOR-CODED RESOURCES

Alfred's Premier Piano Course Lesson Book 1A was released in June 2005. This new method was released to give teachers a choice in teaching style between the Alfred Basic Piano Library and the Premier Piano Course. Alfred's website premierpianocourse.com describes the method as "non-position reading based on patterns and landmarks." (Alfred's Alfred Premier Piano Course, 2010, para. 10). Of interest to this writer are the possibilities of adding color to this excellent series.

Alfred Premier Piano Course Lesson book 1A begins with a page of basic piano playing information. Topics covered are how to sit at the piano, checking the bench height, and distance from the keyboard. The second page explains hand position and finger numbers. The chart below will give a summary of what musical material is examined in the 1A Lesson book. Later in the paper, Alfred Premier Piano* Course Lesson Book 1A will be evaluated for ways in which color could be incorporated in the learning experience.

Table 4

Alfred Premier Lesson Book 1 Repertoire

Topics	Pieces
Quarter Notes and Stem Direction	Steady Quarter Notes
Two Black Keys	Our Journey
Quarter Rest, Playing down the piano on 2 Black Keys	Treasure Map
Playing up the piano on 2 Black Keys	Treasure Chest
3 Black keys, Barlines	Practice Carefully It's Fun to Play
Half Note	Taking Turns
Dynamic Signs, Forte, Piano	Great News Dream Big Dreams
Whole Note	Merrily We Roll Along
4/4 Time Signature	Old MacDonald Had a Dog
Damper Pedal	Fortune Cookies
Musical Alphabet, Keyboard Anchor D	
C,D,E going up the piano Mezzo Forte C,D, E going down the piano	Up the Attic Stairs Down the Attic Stairs
Keyboard Anchors G and A	Old MacDonald Had a Mouse
Whole Rest F,G,A,B on the keyboard	Rock Wall Climbing Down

Table 4 (continued)

Step-wise motion	A Jazzy Tune Hush, Little Baby
Dotted Half-Note 3/4 Time Signature	Let's Take Trip Big Ben Gum Ball Machine Early to Bed
The Staff Treble and Bass Clef	Reading Middle C
Change Middle C between Treble and Bass Clef	Change on C
Bass F Tempo Marking Moderately	Arrowhead My New Piece
Whole Rest in 3/4	Waltzing
Treble G	Aspen Trees Ice Pops Twinkling Planets
Bass Clef G a step up from F	Skating
Bass Clef E a step down from F	Basketball
Landmark Note Bass Clef C	Trampoline Bounce
Bass Clef D a step up from Bass Clef C	French Fries
Stepping up from Bass Clef C	Skateboard Champ Minuet for Bach
Treble Clef D and E a step up from Middle C	Alouette
New Note F a step down from Treble G	My Kite
Stepping up from Middle C	All-Star Game Ode to Joy

Table 4 (continued)

Moving the hand so fingers play a different note	A Page or Two
B and A a step down from Middle C	Snowy Day
Stepping down from Middle C	Bike Ride Old Joe Clark
Skips- from various keys to various keys	Hopscotch Rise and Shine! The Wheels on the Bus Eine Kleine Mozart Haydn's Surpise Time to Celebrate

Alfred Premier Lesson Book 1A covers a modest range of musical information for the first book in a beginning piano method book series. The material is presented in a clear and easy to understand manner. Often, the new concepts will the presented in two different formats. An example of this would be a new note on the staff being show, in a diagram of the staff as well as marked on a small keyboard. This shows the relationship between the note on the staff and where it can be found on the piano. New ideas are presented and then reinforced with multiple pieces. This builds a strong foundation before new material is presented. After reviewing the existing color-coded method books that are available, we will return to the Alfred Premier Lesson Book 1A and hypothesize how adding color to

the existing material could enhance the learning experience (Alexander, Kowalckyk, Lancaster, McArthur, and Mier 2005).

Colorizing Alfred's Premier Piano Course

Now that the topics cover in the Alfred Premier Lesson Book 1A have been examined, it is possible to hypothesize upon the idea that the existing method could be enhanced using color-coded notation. Given that the existing curriculum is sound and that it is well organized, perhaps adding color in selected instances, rather than over the entire book would prove the most useful. For example, in the pieces Our Journey, Treasure Map and Treasure Chest, students are not yet reading on the staff. The application of color to the notehead could aid the student in recognizing the movement of the note heads.

Later in the book, when the student begins reading on the staff, if the new note being presented were to be colorized on the staff this could aid in pinpointing the location of said note. Then in a song such a Basketball where step-wise motion is introduced, the stop-wise motion could be highlight by colorizing the note heads to make the idea more pronounced. In an anecdotal aside, teachers at the Charlotte Academy of Music in Charlotte, NC, are inputting songs from the Alfred Premier series into the

Piano Wizard program. The students then review the songs during lab time before of after the lesson. This process is reinforcing the tune and the notes outside of the lesson but still in a supervised setting.

CHAPTER 6

CONCLUSION

Pythagoras and Aristotle were amongst the first to write about the relationship of color and music. Throughout history, the interest and research in color and music has grown ever more complex. The recognition of synesthesia, a learning perception through the association of color, as an existing condition gave a scientific basis to a previously abstract idea. Composers began to more freely experiment with the verbalization and notation of the idea of combining sound with light. Composition and performance begat more interest which led to more extensive research on the subject of color and music with specific interest in the learning benefits to be derived by color-coded musical notation.

After examining research that has been conducted in color-coded notation and several diverse color-coded methods, it is apparent that the various publishers and researchers have very different ideas of what color-coded notation is and what its role is in education. The goals in each method vary from the acceptance of the student playing the piano without note reading to the more traditional note reading format. As stated in the

introduction, the objective of the thesis is not to persuade the reader to the validity or success of color-coded notation but to present relevant ideas and research regarding color and music and the potential for integrating color coded resources in contemporary methods of beginning piano instruction.

From a pedagogical standpoint, it would be useful to see research detailing the success or failure of color coded teaching resources in a traditional music studio setting. Color-coding musical notation could serve as an integral part of the success of piano method book series that are developed in the future. It will always be individual instructors who evaluate new ideas in piano pedagogy and influence changes that take place in music publishing. It is up to publishers to present new ideas in such a format that is palatable to a mass market audience so that the new material reaches the broadest audience. Regardless of individual decision making, it is clear from historical perspective and contemporary practice that color and music have a most relevant relationship and that resources that explore this relationship have the potential to significantly impact learning and teaching effectiveness in music education.

REFERENCES

Alexander, D., Kowalchyk, G., Lancaster, E. L., McArthur, V., & Mier, M. (2005). Alfred's Premier Piano Course: Lesson 1A. USA: Alfred Publishing Company.

Alfred's Alfred Premier Piano Course. (2010, May 1). *Frequently asked questions.* Retrieved from http://www.premierpianocourse.com/faq/

Caswell, Austin B. (1980). The Pythagoreanism of Archimboldo. *The Journal of Aesthetics and Art Criticism*, *39*(2), 155-161.

Colorkeys (2006.) Learn to Play the Piano at Home-Learning With Color Key Lessons. Retrieved October 1, 2008 from http://colorkeys.com/

Cutietta, Robert A., & Haggerty, Kelly J. (1987). A Comparative Study of Color Association with Music at Various Levels. *Journal of Research in Music Education*, *35*(2), 78-91.

Cytowic, Richard E. (1993). *The man who tasted shapes.* New York: G. P. Putnam's Sons.

Hilgard, E. R. and Bower, G. H. (1981). Theories of Learning. Englewood Cliffs, NJ: Prentice-Hall.

Kestenbaum, David. (2007). Piano Lessons:Using Color To Play Piano Book/Cd #1. Toronto: Colorkeys.

Marks, L. E. (1982). Synesthetic_perception_and poetic metaphor. *Journal of Experimental Psychology: Human Perception and Performance, 8*, 15-23.

Piano Wizard [computer software]. Boulder, CO: Music Wizard Group.

Piano for Preschoolers (n.d.) Teach your kids beginning piano music with award winning lessons and songs. Retrieved September 19, 2008 from http://pianoforpreschoolers.com/

Rainbow Key-Note Connections (2003). Color-coded dry-erase visual aids for music instruction. Retrieved October 5, 2008 from http://therainbowchart.com/

Rogers, George L. (1991). Effect of Color-Coded Notation on Music Achievement of Elementary Instrumental Students. *Journal of Research in Music Education, 39*(1), 64-73.

Wang, Annie. (2008). Rainbow Piano Technique. Pasadenca, CA: Annie Wang Publications.

Wittrock, M. C. (1985). Teaching Learners Generative Strategies for Enhancing Reading Comprehension. *Theory into Practice,* 24(1), 123-126.

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