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Remediating the Transient Music Student Using Hypermedia and Finale Performance Assessment™ : A Recorder Based Model.

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Remediating the Transient Music Student Using Hypermedia and Finale Performance Assessment™: A Recorder Based Model

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ABSTRACT

Remediating the Transient Music Student

Using Hypermedia and Finale Performance Assessment™:

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The purpose of this study was to develop, implement, and test a tool designed to help transient students gain the basic musical knowledge and skills needed to successfully complete a fourth grade unit of recorder study. The project resulted in the development of a hypermedia-based application.

The seven-week study consisted of 49 fourth-grade students. Students were given pitch reading and rhythm pattern identification pretests and posttests. Students participated in weekly tests and tutorial sessions via the hypermedia-based application. At the conclusion of the study, the students were given posttests and a performance test.

The pretest and posttest scores for the transient and established populations were analyzed. A *t*-test analysis revealed a significant improvement in the scores of the established and transient populations. It appears that the hyper-media application may be an effective tutorial for transient students.

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DEDICATION

I would like to dedicate this manuscript to each individual who had influenced my musical journey.

My parents, who were always willing to sacrifice their time and money so that I might purse my dreams. Thank you for you patience, understanding, and constant support.

To my husband, Cam, whose advice and encouragement is invaluable.

To my three beautiful nieces, Emily, Blayne, and Tori, whose love of singing and learning constantly amazes and inspires me.

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CHAPTER 1

INTRODUCTION

Background of the Problem

Because of the 2001 “No Child Left Behind” legislation, many school systems have begun to examine various factors that affect student achievement, including race, socio-economic status, special education programs, and student mobility. Although researchers had long studied the effects of race, socioeconomic levels, and special education programs on student achievement, the majority of studies concerning the effects of student mobility have occurred within the past decade. A 1994 report by the United States General Accounting Office (GAO) found that approximately 20% of Americans move every year, resulting in the United States having one of the highest mobility rates among developed countries (GAO). The GAO study also found that 1 out of 6 third-grade students could be defined as highly transient, meaning the student had attended three or more schools since first-grade. More current statistics appeared to indicate that the mobility trend was increasing. In 2000, the United States Census revealed that 15% to 20% of students had relocated at least one time during the preceding year (U.S. Census Bureau, 2001).

Research conducted in the past 10 years has shown the devastating consequences student mobility has on student achievement. Transient students consistently scored lower on standardized tests and had a 35% greater risk of repeating a grade than their established peers (North Central Regional Educational Laboratory [NCREL], 2002). Highly transient students also appeared to have a negative impact on the achievement of established students. A 1999 California study found that the achievement scores of established students attending schools with high mobility rates were significantly lower than the scores of their peers attending schools with

lower mobility rates, and concluded that teachers must spend valuable instructional time reviewing instead of moving forward (U.S. Census Bureau 2001).

One of the main challenges highly transient students encountered was a lack of continuity in the academic curriculum. This was particularly evident in the arts curriculum. Although the Music Educators National Conference (MENC) found that 97% of public elementary schools offered music instruction, a closer look at the data revealed varying levels of music education. Throughout the United States only 70% of the elementary music classes were taught by a certified music specialist. Of the schools that provided music instruction, only 53% employed a full time music specialist. Even more alarming was the data concerning awareness and integration of the National Standards for Arts Education. The MENC survey found that 34% of elementary music specialists were aware of the National Standards but only 24% of the respondents were incorporating any of the standards into their arts program (MENC, 1994). With such a low percentage of music teachers adhering to the National Standards, it was very common for transient students to have little or no musical knowledge or skills. This lack of musical experience becomes very evident and detrimental when a transient student moves into a school with a well-developed music program. Such students - unable to read, write, identify, or create with musical symbols - are basically musically illiterate, making full participation in music class nearly impossible. The situation was equivalent to an upper elementary age student entering a reading or social studies class unable to read, write, or identify the alphabet. In both cases, the transient students and the established students suffered as the teacher struggled to remediate the transient students while continuing to challenge the established students. Unfortunately, music teachers regularly encountered this predicament as new students intermixed with established students both at the beginning of and throughout each school year.

One example of a school where teaching music was challenging due to the transient population is Hal Henard Elementary School in Greeneville, Tennessee. Hal Henard is a K-5 school with a population of approximately 350 students. Students participate in music class for two 30-minute periods each week, for a total music instruction time of approximately 36 hours per school year. The music curriculum is taught by a certified, Kodaly-trained music specialist, and is aligned with the goals set in the National Standards for Music Education. At the conclusion of the third grade year, music students are able to read, sing, and notate simple pentatonic melodies; read, recite, and improvise basic rhythm patterns; sing in two- and three-part canon as well as beginning two-part ostinato vocal literature; and perform pentatonic melodies and accompaniments on Orff instruments using printed music. As a major component of the fourth-grade curriculum, the students participate in a unit of recorder study. As of the first full day of school, the 2005-2006 fourth-grade class at Hal Henard Elementary School contained 49 students, 81% of whom have attended Hal Henard for two years. The other 18% had enrolled within the past year. Although most of the students who enrolled in Hal Henard by the beginning of the third grade have gained enough musical knowledge and skills to comprehend and successfully complete the recorder unit, transient students who enroll at the beginning of fourth-grade are often unable to satisfactorily complete the required pitch, rhythm, and performance tests that accompany the recorder unit.

Purpose

The purpose of this study was to research, develop, and implement a tool to help transient students gain the basic musical knowledge and skills needed to successfully complete the 4th grade recorder unit. The tool introduced and guided the transient student through the process of pitch identification, rhythm pattern identification, and recorder fingering identification. The

project concluded with the application of these musical skills to the song “Blue”. The students were expected to demonstrate their understanding of the basic elements of music by achieving a passing grade of 80 on the song.

A second component of the study included an evaluation of the hypermedia-based application by colleagues. The evaluation of the hyper-media application provided valuable feedback concerning various aspects of the hypermedia-based application including design, content, and perceived effectiveness, helping to identify areas which needed further development or clarification.

Method

Due to the varying levels of musical knowledge and skills transient students bring with them into the music classroom, and the unpredictability of their enrollment, the tool designed for this study had to be self-paced and self-evaluating, as well as independent of constant teacher involvement. In examining what type of tool could fit the necessary parameters, it was concluded that a tutorial would allow for the most flexibility in design and evaluation. There were two main considerations for the tutorial. First was a software-based application, written by a programmer and distributed on CD-Rom. The second option was a hypermedia-based application, written by the music specialist and maintained on the Internet. Ultimately, a hypermedia-based application was selected as the most appropriate and effective method for developing the music-based tutorial. With a hypermedia-based application, students would be able to access the tutorial at any location with Internet access and the potential for lost or damaged CD-ROMs would be eliminated. Also, as earlier implied, the hypermedia-based application could be written by the music specialist, thereby saving money as well as reducing the probability of musical mistakes due to ineffective communication between the programmer and the music specialist. The

hypermedia-based tutorial also allowed for immediate and constant updating. The single most important factor for choosing the hypermedia-based tutorial was the ability to include the Finale Performance Assessment™ Program. This program allowed the teacher to compose and publish songs for the students. Once downloaded, the students were able to view, listen to, play, and record any of the teacher-composed songs. Most important, the Finale Performance Assessment™ Program evaluated the student's performance, marking their mistakes, and assigning an objective numerical grade to their performance.

The self-paced hypermedia tutorial guided students through the various elements of music literacy, including pitch identification, rhythm pattern identification, recorder fingering identification, and song performance demonstration. Each of the content areas included textual descriptions and graphics as well as practice quizzes and tests for evaluation. Behind the scenes, the hypermedia-based application recorded data on student achievement.

The opportunity to evaluate the hypermedia-based application was presented to elementary music specialists and to pre-service teachers at East Tennessee State University. To evaluate the hypermedia-based application, the participants filled out an online evaluation consisting of 22 questions. The evaluation was protected with a general username and password given to all participating teachers. The evaluations were anonymously submitted through the hypermedia-based application and recorded in the database for analysis.

Assessment

The recorder unit of study ran for a 6-week period beginning in August 2005. All fourth-grade students were given a pretest covering material from the previous school year including pitch identification and rhythmic pattern identification. The results of the pretest were used to determine which students displayed a deficiency and in which area(s) the deficiency occurred.

Throughout the recorder unit, the students were given weekly tests on pitch identification, rhythm pattern identification, and recorder fingering identification. Each test contained 10 multiple choice questions and had a 3-minute time limit. Each week, the tests increased in difficulty. Once the students completed their weekly test, they were able to spend the rest of the class period exploring the tutorial. By the end of the 6th week, all students had completed the pretest and six tests in the areas of pitch identification, rhythm pattern identification, and recorder fingering identification, as well as spending a minimum of approximately three hours using the hypermedia based tutorial. To conclude the unit, the students performed the song "Blue" for a grade using the Finale Performance Assessment™ Program.

Once the pretest and posttest data from the study were collected, they were evaluated for the highest degree of success demonstrated by each individual student. The scores were then grouped into two categories. Category one included only established students, defined as those students who have attended Hal Henard for a minimum of 2 years. Category 2 included transient students, defined as students who have attended Hal Henard for 1 year or less. The assessment of the hypermedia-based application by music specialists and additional personnel was used to determine the quality, usefulness, and effectiveness of the hypermedia-based tutorial. The results and comments from the evaluations were examined and discussed.

CHAPTER 2

REVIEW OF LITERATURE

In an effort to reform education, many administrators and researchers are beginning to examine the role student mobility plays in academic achievement. Numerous research projects, articles, and educational papers have been written in an effort to identify the challenges of - and possible solutions to - the mobility crisis facing most school systems in the United States. This chapter reviews the research concerning highly transient students as well as the use of hypermedia-based applications as a tool for remediation. The review of literature in this chapter focuses on three major categories: the highly transient student; hypermedia based applications; and existing software and website tutorials.

Highly-Transient Students

Percentages of Highly-Transient Students

Current data indicate that American families are on the move and, as a result, their children are suffering. The latest U.S. Census found that 45.9% of Americans had moved at least once between 1995 and 2000 (U.S. Census Bureau 2003). The Florida Division of Teaching and Learning estimates that approximately six million elementary school children change schools each year (Paik & Phillips, 2002). Nationally, the percentage of elementary-aged students transferring to multiple schools within 1 school year ranged from 15% to 40%, depending on location, income, and citizenship (United States General Accounting Office, 2004). A report by the National School Boards Association indicated some urban schools may face upward of 80% student turnover annually, with a number of students moving as many as six or seven times within 1 school year (Stover, 2003).

Effects of Student Mobility on Academic Achievement

Although studies seem to indicate that most students eventually rebound from one move, students who experience multiple school transfers were less likely to recover (*Columbus Public Schools Student*, 2003). There appeared to be a direct correlation between the number of times a student moved and their academic achievement. A U.S. General Accounting Report found that 41% of highly transient third-grade students tested below grade level in reading and 33% scored below grade level in math, compared to reading and math scores of 26% and 17% respectively, for established students. Highly transient students in California tested an average of 20 points lower on the California Achievement Tests in Reading than their established peers (Family Housing Fund, 1998). An article in the *Journal of Education for Students Placed at Risk* stated that students can fall 1 full academic year behind their established peers by moving just three times within 6 years (Paik & Phillips, 2002). As a result, the highly transient students were 2 ½ times more likely to repeat a grade than established students, with 20% eventually repeating a grade. Perhaps most alarming was the data that suggested "[c]hildren who changed schools four or more times by eighth grade were at least four times more likely to drop out than those who remained in the same school" (United States General Accounting Office, 2004, p.8).

The Kids Mobility Project suggested a strong relationship among school attendance, mobility, and academic achievement. Highly transient students were found to attend school 84% of the time, while the established student averaged 94%. The difference in attendance is significant when the test scores of the two groups are compared. On yearly achievement tests, "students with nearly perfect attendance made significant one-year gains, while students who only attended 85% of the time or less lost ground" (Family Housing Fund, , 1998, p. 5). Judith

Tennenbaum, one of the major contributors to the Kids Mobility Project, suggested that a high rate of mobility among young elementary students directly affects the students' ability to achieve as they advance through the intermediate grades. Tennenbaum surmised that "the cumulative effect of many moves may mean that students cannot achieve at higher levels because they were not in attendance for critical learning opportunities" (p.6). Tennenbaum also noted that highly transient students were suspended from school at a higher rate than their established peers, further decreasing their attendance rates. In fact, poor social adjustment is characteristic of many highly transient students who exhibit violent behavior (Rumberger, 2001). A 2003 study by researchers at Cincinnati Children's Hospital found that "school mobility is an independent predictor of behavioral problems–regardless of one's race, income, maternal education level, or any other factor measured in the study" (p.1). Surprisingly, the effects of mobility appear to be long lasting, as students who are highly transient, especially in the elementary years, have an increased tendency to violent behavior that carries over into their high school years (Ellickson & McGuigan 2000 as cited in Rumberger).

Although many factors, including poor behavior, contribute to academic deficiencies of highly transient students, many studies have found that low achieving transient students are less likely to receive special education services such as Chapter 1. Every year approximately 90,000 highly transient K-6 students were eligible for, but not receiving, special services. The lack of special services may have been due to the inability of schools to transfer the student's permanent record in a timely manner. More often than not, it took between two and six weeks for a student's permanent record to be transferred to the new school, and if the student transferred out of state, it was not uncommon for the student's record to contain incomplete information, further

complicating the task of placing the student in the appropriate class or special service. (United States General Accounting Office, 2004).

Effects of Highly-Transient Students Upon Their Teachers and Established Peers

In addition to affecting their own academic achievement, highly transient students appeared to have a negative impact on their established peers. At the most basic levels, the peers of highly-transient students were directly affected by the "chaos factor" that resulted from the introduction of new students into the classroom (Rumberger, Larson, Ream, & Palardy, 1999). Some researchers suggested that classrooms affected by highly transient students were subject to slow-paced curriculums (Hartman, 2002). A research project on schools in the Chicago area found that teachers in highly transient schools often become review-oriented in their lessons, slowing the introduction of new material (Kerbow, 1996). These curriculum delays appeared to significantly lower the test scores of established students, according to a study of transient schools in California (Rumberger et al.).

Teachers were also adversely affected by schools exhibiting high student mobility. Teachers reported an increase in classroom interruptions and time spent on non-instructional tasks such as preparing student materials, creating new class rosters and introducing the student to classroom procedures (United States General Accounting Office, 2004). The Chicago report found that teachers in highly transient classrooms often exhibited "lower levels of collaboration with their peers, less collective focus on student learning, and a lower orientation to innovation in instruction" (Kerbow, 1996, p.22). As a result, some researchers have concluded that student mobility likely leads to decreased teacher satisfaction (Hartman, 2002).

Possible Pedagogical Solutions for the Highly-Transient Student

In an effort to reduce the negative impact of transient students, schools began testing numerous theories, some with much success. At Washington School in Los Angeles, transient students were tested in the basic academic areas before being assigned to a classroom, and students were provided with opportunities for individualized instruction via computer drill (Biernat & Jax, 1999). The study also found that students feel more secure at a school that incorporates known elements and routines such as reciting the Pledge of Allegiance or singing a known song (Biernat & Jax). To benefit the future teacher of a transient student, the current teacher can create a portfolio to accompany the student's permanent record that showcases the student's academic experiences, as well as strengths and weakness (Kerbow, 1996). The Policy Analysis for California Education recommends teachers who anticipate a high percentage of mobility throughout the school year:

- Develop learning packets that give important background information and activities of key units.
- Create a subject matter skills assessment test.
- Create a reading comprehension and writing assessment test.
- Create a personal information or journal assignment. Develop a list of five to ten personal questions that the student can answer in two pages. This will not only help the teacher know the student better but also provide a sample of writing skills.
- Create a short list of class rules and procedures (Rumberger et al., 1999).

Summary

Statistics indicate that the percentage of transient students is increasing in both urban and rural areas and that most students are negatively impacted by the transient student, either through slow-paced curriculums, lack of funding, or the chaotic atmosphere that often results from the unexpected incorporation of a new student into an established classroom. School systems are struggling to identify solutions to stop the movement of students and to remediate their academic deficiencies. Although some scholars have provided guidelines to help teachers in highly transient schools prepare for the arrival of transient students, the development of additional programs to evaluate and remediate transient students appears necessary.

Hypermedia-Based Applications

Use of Hypermedia-Based Applications in Higher Education

The traditional methods of education have been vastly modified due to the establishment and implementation of the World Wide Web. Since the introduction of the Internet in the 1980s, the inclusion and design of distance learning opportunities has increased both in popularity and convenience. A 2003 study conducted by the National Center for Education Statistics (NCES) found that during the 2000-2001 academic school year, 56% of all qualified two- and four-year degree-granting institutions offered some form of distance learning. Of that percentage, public institutions were overwhelmingly more inclined to offer distance learning opportunities, with over 89% of both two and four year institutions offering some form of distance learning (National Center for Education Statistics, 2003). Some universities, such as the University of Phoenix Online, boast enrollments of over 110,000 students, further proving the demand for online distance learning is growing in popularity (Botelho, 2004).

Currently, the majority of online distance education courses are developed using one of three resources: basic text editors; web page design software; or courseware systems such as Blackboard (Blackboard Inc., Washington DC), (Geraci, 2002). High-quality course sites typically use a number of different applications - including chat rooms, online discussion boards, whiteboards, and e-mail - to promote online communication between the students and teacher, as well as hyperlinks and multimedia to improve student comprehension (Cook & Dupra, 2004). One of the major benefits of web-based or computer-assisted learning is that the students are able to plan, evaluate, and pace their learning. Hypermedia applications are extremely flexible, allowing the webmaster to update information and links instantly (Janicki et al.). The resulting academic success is undeniable, as computer assisted instruction has been found to be as effective - and in some areas more effective - than traditional teaching styles (Fletcher-Finn & Gravett, 1995, as cited in Janicki et al.).

Use of Hypermedia in K-12 Education

Just as colleges and universities are using hypermedia applications to educate their students, many K-12 educators are also beginning to recognize the potential of the Internet and web-based instruction. According to a 2004 report from the U.S. Department of Education, 94% of students research topics on the Internet, and 24% have created a personal webpage. In addition to teaching basic technology and Internet skills, many high schools are now beginning to include distance and web-based learning in their curricula. In an effort to better understand the uses of distance learning in public school districts, the National Center for Education Statistics (NCES) administered a technology survey to public-school superintendents, who were asked to select the appropriate individual within their school district to complete the survey. The NCES analyzed the responses and found the following were most often cited by the respondents as reasons their

school districts offered distance learning opportunities: to offer courses not otherwise available (80%); to better meet the needs of specific students (59%); to offer advanced placement courses (50%);to eliminate scheduling conflicts (23%) (NCES, 2005).

In addition to identifying the reasons schools offered distance or online learning, the report also found that during the 2002-2003 school year 36% of public high schools offered some type of distance learning, enrolling approximately 328,000 students. Of the public high schools that offered distance learning, approximately 59% offered some type of online learning, either through another school district, an independent vendor, a state education agency, or a postsecondary institution. In some states, distance and online learning are in such demand that entire virtual schools have been created. In Florida, students can complete an entire curriculum of high school courses at Florida Virtual High School (located at http://www.flvs.net.) Additional virtual high schools, such as those in Kentucky, Illinois, and Michigan, offer advanced placement courses for students in high school, home-school, or private school.

Online learning is not confined to high school students; elementary age students are also beginning to experiment with online learning. A 2005 U.S. Department of Education study found that 90% of children as young as 5 years old use computers, and between 2000 and 2002, the largest group of new Internet users was children between the ages of 2 and 5. With the percentage of elementary aged children who are “tech savvy” on the rise, many elementary schools are beginning to incorporate online learning into their curriculum. Current statistics indicate that only 1% of distance learners are enrolled in elementary school (NCES, 2005). Some scholars suggest that elementary schools could better meet the needs of their students - especially specific subgroups - through the use of online learning; which can provide gifted students with the individualized and self-paced curriculum they need for true academic growth; and the ability

to offer courses without the need for a specialized instructor is a key benefit of online learning (Washington, 1997). Although Washington advocates allowing gifted elementary age students to participate in self-guided online learning, without the need for or interference of a teacher, other scholars say that online learning at the elementary level should supplement teacher-led lessons or target specific groups such as homebound students (Ravaglia & Sommer, 2000).

Development and Design of Academic Hypermedia-Based Applications

Regardless of the intended use of online learning courses, there are specific guidelines designers follow when developing an online learning environment, especially when the target audience includes elementary aged students. Unlike hypermedia applications designed for adults, applications designed for children must consider the "differences in cognitive competencies and capacities, differences in how independent and autonomous the learning situation is, and differences in curriculum and goals of the educational process" (Musgrove & Musgrove, 2004, p.217). The main difference in the cognitive abilities of adults and children is short-term memory capacity. Research has concluded that children have a considerably lower ability to store information in their short-term memory (Dempster, 1981, as cited in Musgrove & Musgrove). As a result, children need information presented in small bits, without trivial distractions (Musgrove & Musgrove). The smaller bits of information should be organized in a clear and consistent manner throughout the entire site so children can recognize recurring patterns and new important information (Abbey, 2000).

In addition to presenting information in small amounts and taking extra precautions to avoid visual overload, the guidelines governing the design of a hypermedia application for children do not vary from the basic guidelines for all hypermedia applications. The following guidelines developed by Cook and Dupras (2004) can help assure quality hypermedia design:

- Begin by gathering data, analyzing the needs of the target audience, and outlining the goals and objectives of the project.
- Evaluate the available technical resources such as courseware products and determine the likely experiences and technical abilities of the target audience.
- Examine commercially available software and determine if it can be modified or supplemented to meet your needs.
- Discuss and receive approval for the plan with appropriate others whose assistance will be necessary to implement the final application.
- Coordinate the development of the hypermedia application and the content, taking precautions to avoid merely copying pages of lecture notes.
- Carefully organize the text so that it resembles an outline, allowing the user to scan for information.
- Throughout the site, use the unique ability of hypermedia to include relevant and content-enriching links, multimedia and online communication.
- Be observant of all copyright laws and practice discretion when selecting links and multimedia options, as all items on the page should add measurable value.
- Research and follow the principles of good hypermedia design including clean and consistent page organization, appropriate navigation and hyperlinks, and appropriate use of space.
- Include design features that encourage the student to participate, assess, reflect, and direct their learning by including online discussions and self-grading tests that provide immediate feedback.

- Test the hypermedia application, seeking opinions and suggestions from colleagues and members of the target audience before launching the complete application.
- Encourage and motivate the student to use the hypermedia application. Consider placing a link to the site on a well-known and often-viewed page, so students do not have to remember the URL for your site.
- Evaluate the design of the hypermedia application and its effect on student learning both throughout and at the conclusion of the course.
- Create and follow a comprehensive maintenance plan to periodically test hyperlinks, update content, and resolve technical problems.

Although following the aforementioned guidelines will help the academic designer create an informative and useable hypermedia application, there are some specific technical problems that must be addressed when designing a hypermedia application. A report by Petrik (2000) suggested website designers should avoid:

- The use of inflated graphics that dramatically increase the amount of time required to download a page. Designers are encouraged to edit all graphics in an image-editing program, rescaling the dimensions, and redefining the resolutions to a more appropriate size.
- The inclusion of dense text instead of bulleted lists or shorter paragraphs. Users typically scan pages for important details; therefore, outlining the text is favorable. Informative text should be categorized into small pages that do not require excessive scrolling.

- Creating hypermedia pages with bright or busy backgrounds or low amounts of contrast. These pages are difficult to read and create eye strain. Petrik recommends using high contrast colors such as black or bold colored text on a white background.
- Inappropriately sized fonts when the hypermedia application is viewed in an alternate platform. Simply checking the site using the small and large text buttons in Internet Explorer 4.5 or greater can reveal problematic text areas.
- The inclusion of useless looping animations that do not provide feedback to the user. If the sole purpose of the animation is to attract the attention of the learner, remove it. The use of animation in the navigational toolbar can be acceptable, as long as it is not distracting and provides an indication of pertinent hyperlinks.
- The use of courseware systems that are aesthetically unappealing, that are difficult to navigate, or that do not provide an overview of the course.
- Hypermedia pages that require excessive amounts of time to download. Ideally, all pages should be kept between 40K and 50K. For larger pages, indicate an approximate time for downloading.
- The forgotten, content-less site. Any hypermedia site should contain relevant information and hyperlinks that are routinely verified and updated.

Evaluating Academic Hypermedia-Based Applications

Evaluating hypermedia applications can be somewhat subjective, based upon the skills, personality, and desires of the individual who is using or evaluating the application. In general, most educators identified the following criteria as important for hypermedia-based applications: inclusion of well-defined simple navigation; aesthetically pleasing page layouts and graphics; the

ability to interact with the content instructor or other classmates; and activities with varying levels of difficultly (Huang, 2002). For educators seeking a more defined method of evaluating the design, content, and effectiveness of their hypermedia application, the e-Learning Framework provides a guide that can help assure the inclusion of the necessary components found in quality instructional applications. The framework, defined by Ciavarelli (2003), includes:

> [a]ll components of the instructional system, including the quality and value of the instructional content, the instructor's performance, the instructional strategy used, the presentation method (lecture, seminar, learning activity), the delivery system, the appropriateness and reliability of the technology and media, and the institutional support services (p.16).

The e-framework provides a list of detailed questions the designer can apply to the hypermedia application to validate the usability and effectiveness of the site. Ciavarelli also includes lists of suggested readings that correspond with specific objectives within the framework.

Perhaps the most well known tool used to evaluate hypermedia is the Website Motivational Analysis Checklist Senior 4.0. The checklist contains 32 questions that help identify how stimulating, meaningful, organized, and easy to use the target audience finds the website. The evaluator scores each question, answering how strongly they agree or disagree with each statement. For the designer, the checklist provides a form that will score each of the categories. Also included are sample graphs and scoring grids to further evaluate the hypermedia application.

Summary of Hypermedia Applications

The use of hypermedia applications in education has dramatically increased throughout the past decade due to online education. As studies have shown, students at all levels can benefit from the incorporation of online learning into their curriculum. However, it can be a challenge for instructors who strive to develop and integrate hypermedia applications into their current teaching situations. Educators who are contemplating creating a hypermedia application may find it beneficial to adhere to the suggested development and evaluation techniques.

Existing Software and Website Tutorials

Tutorials for Teaching Pitch

The use of computer-assisted tutorials in the music classroom is a growing trend. One of the largest distributors of music education software is ECS Media. As of 2005, ECS Media offered over 75 different software applications, including 19 different pitch reading applications. The pitch software programs available from ECS Media can be divided into four main groups. The first group consists of applications designed to teach the treble and bass clef notes along with basic keyboard skills. Early Keyboard Skills, Keyboard Kapers, Keyboard Note Drill, Keyboard Speed Reading, K.I.D.S. Piano and Keyboard Method, and Note Detective all use tutorial lessons, games, and flash-card drills to help the learner increase his or her speed and accuracy in naming pitches and identifying piano keys. Most of the programs introduced the bass clef, making the keyboard-based programs unsuitable for teaching recorder skills because the recorder is notated in the treble clef.

In addition to keyboard-based instruction, ECS also distributes pitch reading software that is game-oriented. Adventures in Musicland and Smack-A-Note both consist of games that offer practice in pitch reading. Both Adventures in Musicland and Smack-A-Note are colorful,

character-filled programs that provide the students with an opportunity to practice pitch reading in a setting that is similar to a computer game.

The most common type of pitch reading software distributed by ECS Media involved drill practice. Examples of these programs included Clef Notes, Early Music Skills, Elements of Music, Music Flash Cards, Music Skill Builder, and Note Speller. The demonstration versions of Clef Notes, Early Music Skills, and Music Flash Cards did not include any explanations of the musical elements used in the tests; instead, students were simply given the opportunity to practice naming the pitches. The graphics and screen designs were somewhat lackluster, often colored only in shades of black, white, and gray. Although drill is necessary to master pitch reading, the lack of tutorials and colorful graphics diminished the appeal of the Clef Notes, Early Music Skills, and Music Flash Cards programs. Elements of Music and Note Speller did contain more colorful graphics and screen designs, but were still drill-oriented programs that may become boring to the students.

ECS Media also distributes two tutorial-based software programs that contain pitch lessons, games, and drill-oriented activities. MiDisaurus, a program designed for ages 4-11, provides a colorful and animated series of tutorials and activities designed to gain and maintain the attention of students in the primary grades. Although MiDisaurus provides a good introduction to the basic elements of music, the cartoon characters may seem a bit immature to an older audience of 10- or 11-year old students.

Like MiDisaurus, Music Ace contains colorful graphics, interesting activities, and thorough tutorials. The original version of Music Ace consists of 24 lessons covering a variety of topics, including pitch reading, key signatures, major scales, whole and half steps, and basic keyboarding skills. The Music Ace program also includes a database to store student information

and grades. Music Ace is one of ECS Media's most inclusive software programs: however, it did not introduce any rhythmic elements, performance skills, or recorder fundamentals.

Tutorials for Teaching Rhythm

ECS Media also distributes software applications designed to teach the elements of rhythm. The ECS Media software programs can be divided into two distinct groups. The first group, Tap It, Tap It II, Tap It III, and Tap It Rhythm Center, contains only drill-oriented activities. Each of the Tap It programs encourages the students to tap the displayed rhythm. The rhythmic elements and time meters become progressively more difficult in Tap It II and Tap It III. Students are given the opportunity to create rhythm patterns in Tap It Rhythm Center. Each of the Tap It programs was straight-forward drill activities with monochromatic graphics and screen designs of black, white, and gray. The tutorials found in each of the Tap It programs identify each rhythmic element but do not use rhythm syllables.

The second category of rhythm tutorials distributed by ECS Media consists of games. Musicus, Challenge Musicus, and Rhythm Divide are vibrant games that require the student to place rhythmic patterns in a specific order. The students are also required to successfully determine the appropriate duration of each note or rhythm pattern. Musicus, Challenge Musicus, and Rhythm Divide provide an opportunity for knowledgeable students to demonstrate their understanding of rhythmic patterns. Students with little or no knowledge of the elements of rhythm would not find Musicus, Challenges Musicus, or Rhythm Divide useful as a tutorial program.

The only programs that are tutorial-based are Music Ace II and Music Ace Maestro. Like the original Music Ace, Music Ace II provides students with lessons, activities, and games.

Music Ace Maestro is a bundle package containing all lessons, activities, and games found in Music Ace and Music Ace II.

Tutorials for Teaching Recorder Skills

There are very few tutorial programs designed to instruct beginning recorder students. The only available recorder tutorials are hypermedia-based applications. There are no well-known commercially available software programs. The majority of the hypermedia-based applications are designed for individuals seeking academic information on the recorder. Kidsworld.com, Americanrecorder.org, Recorderhomepage.net, and The Recorder Player's Page are examples of a websites designed to provide information, but offer little interaction with the user. My Music Class (www.MyMusicClass.Com) is the only tutorial-based interactive website for the recorder. The website provides information and quizzes on reading pitches of the treble clef and recorder fingerings. My Music Class also includes 12 songs that students could hear and view. Students can read about how to hold the recorder and view fingering charts; however, there are no opportunities for the students to read about rhythm patterns, perform interactive songs for assessment, or view tips on how to practice.

Programs for Teaching Instrumental Performance Skills

There are three commercially available software programs designed to teach instrumental performance skills. iPas, a program distributed by ECS Media, allows the teacher to create lessons, download specific assignments into each student's iPas program, review student progress, and maintain detailed records of each student's practice schedule, performance grades, and completed lessons. The iPas program does not contain any music notation capabilities; therefore, the teacher must purchase music notation software to fully use all aspects of iPas. The 2005 iPas program retailed for $399.

The most well-known instrumental performance tutorial is Smart Music®. For a subscription fee, Smart Music® provides exercises, drills, sight reading pieces, and numerous selections of standard repertoire for band and orchestral students to practice. Students can manipulate the tempo of the compositions, isolate challenging passages, perform with accompaniments, and record their practice sessions for immediate feedback. For the teacher, the program will record the student's progress and email copies of the student's performances. Smart Music® is an ideal tool for teaching students how to practice and encouraging them to develop daily practice sessions. Unfortunately, the soprano recorder is not supported as an instrument in the Smart Music® program.

The third commercially available software program for teaching instrumental performance skill is Finale Performance Assessment™ (FPA™). Finale Performance Assessment™ is included as a free program in the 2005 edition of Finale®, a music notation software. Like the Smart Music® program, Finale Performance Assessment™ allows students to record and assess their performances. Students can download the Finale Performance Assessment™ plug-in at no cost, then access songs and compositions created by the instructor. Officially, the soprano recorder was not supported in Finale Performance Assessment™; however, after researching the available instruments and experimenting with the different instrumental options, it was found that the soprano recorder could use the same literature as the piccolo. The only function that did not work for purposes of this project was the fingering chart, which, when activated, displayed the appropriate fingering for the piccolo instead of the soprano recorder.

Hypermedia-Based Music Tutorials

The Internet contained numerous websites devoted to introducing basic music skills and appreciation. Most websites are designed as depositories of information, providing biographies

of musicians, histories of musical instruments, and/or opportunities for children to create original compositions using predetermined rhythmic and melodic patterns. The most colorful and interactive websites are generally created by major orchestras and symphonies. Websites such as Playmusic.org, the New York Philharmonic Kids Zone, the San Francisco Symphony Kids Site, and the Dallas Symphony Orchestra Kids Site were interactive, vivid, well organized, information-filled websites. At these websites, older elementary and junior high students can explore instruments, musicians, and elements of music. CreatingMusic.com and ClassicsForKids.com did not contain detailed tutorials but did allow students to create, record, and listen to short music compositions.

Summary of Existing Software and Website Tutorials

There were a number of commercially available software applications for practicing basic music skills; however, there are no completely comprehensive, information-driven tutorials that were attractively designed to motivate or interest beginning recorder students. The majority of the software-based tutorials concentrated on a specific skill, such as pitch reading, keyboarding, or rhythm reading. The only all-inclusive music program is Music Ace Maestro. Unfortunately, the 2005 suggested retail price for a 30 seat lab pack of Music Ace Maestro was $1499 making it cost prohibitive.

The majority of the hypermedia-based music applications are designed to teach music appreciation. There are currently no hypermedia-based tutorials designed to teach students to play the recorder. The existing hypermedia-based programs contain numerous pages of text, information, and links. There are no hypermedia-based programs designed to guide students through the steps of learning to play the recorder.

CHAPTER 3

DESCRIPTION OF THE PROJECT

Selection of a Tool

Due to the availability, flexibility, and economic savings of web design, it was concluded that a hypermedia based application would be the most effective and efficient tool for teaching and reviewing information related to recorder performance at Hal Henard Elementary School. The hypermedia application was designed to act as a tutorial providing information on pitch reading, rhythm reading, and playing the recorder. The hypermedia application allowed for student interactivity by offering quizzes as well as practice and performance opportunities using Finale Performance Assessment™.

Technical Development of the Hypermedia Application

The original design of the hypermedia application was selected upon reviewing available web templates from BoxedArt.com. The header and footer, originally titled Giga Records HTML, were extensively modified using Adobe PhotoShop® CS. All menu buttons, titles, and graphics were created using Microsoft Image Composer® 1.5. Songs and audio files were notated and saved as MIDI files using Finale® 2005, a music notation software. Each song was also saved in a printable format using Adobe Acrobat® Professional. Quizzes were created using QuizMaker Suite. The pretests, posttests, and weekly tests were generated by Active Server Pages (ASP) from a Microsoft Access® database. To protect the integrity of the study, each student was required to login to complete all tests. The tests were viewable only at pre-determined times, and each test was time-stamped upon completion. The students were assigned a username (consisting of their first initial and last name) and the password (music). Throughout the website, bright primary colors were chosen for the header, footer, navigation bar, and other

graphics as they were colors that are typically found in children's software. The title of the site, SqueakysRecorderPlayhouse.com, was chosen for many reasons. The word "squeaky" could have a double meaning: first, as the name of the mouse character located on each page; and second, as a reminder of the challenge most beginning recorder students face learning how to play without squeaking. Because the site was a tool for recorder players, it was important that the word "recorder" appear somewhere in the title. Because one of the goals was to create a fun place for the students to learn about and play music, the term playhouse was selected to conclude the name of the site.

Navigational Development of the Hypermedia Application

Determining the navigational structure of the hypermedia application was the most challenging aspect of the design process. In an effort to make locating the various tutorials and activities simple, the following categories were developed:

- Credits. Technical information concerning the development of the site.
- Downloads. Links to all downloads necessary to run all programs found on the site.
- Home. Returned the user to the homepage.
- Links. Links to additional websites.
- Notes: A tutorial page with graphics and text that described how to determine the names of the notes found on the treble clef.
- Practicing. The four steps that develop successful practice skills.
- Parent's Guide. A description of the purpose of the website and how to best use the site.
- Songbook. Songs available for practicing or performing using Finale Performance Assessment or printing using Adobe Acrobat Reader.

- The Recorder: Links to basic recorder information including how to play the recorder, fingering charts, and stopping squeaks.
- Rhythms: Graphic representations of commonly found rhythm patterns. Also included were multimedia files that allowed the students to hear how the various patterns sound.
- Quizzes: Links to interactive quizzes on pitch reading and recorder fingering identification.
- Weekly Test: Links to the weekly timed tests on pitch reading, recorder fingering identification, and rhythm pattern identification.

In order to facilitate student use, the navigation bar appeared on the left side of every page. The contents of the navigation bar were placed in tutorial order, not in alphabetical order, to promote cumulative comprehension. The links designed for teacher or student enrichment were located at the bottom of the navigation bar.

Content Development of the Hypermedia Application

Every page within the hypermedia application was developed following the guidelines for quality web design outlined in the review of literature. Pages containing a large amount of text were divided into categories that were accented with graphic examples. Bulleted lists were used where possible and, throughout the site, tables with colored borders were used to draw attention to important details. In an effort to provide continuity between the website and the classroom curriculum, each song notated in the songbook was selected from the folk song literature used in the K-5 curriculum at Hal Henard Elementary School.

Implementation of the Hypermedia Application

Subjects

The population for this research project was the entire fourth grade class at Hal Henard Elementary School in Greeneville, TN; at the beginning of the study (August 17, 2005) there were 49 fourth-grade students. An analysis of the population revealed:

- 19% of the students had enrolled at Hal Henard within the past year.
- 81% of the students had attended Hal Henard for a minimum of 2 years.

Procedure

The students attended a 30-minute music class 2 days each week. Each class participated in the following procedures: pretest and posttest, weekly music tests, hypermedia use, classroom recorder instruction, and a performance assessment test at the conclusion of the 6-week experiment. Copies of the pretests and posttests and the song used for the performance assessment test are located in Appendix A.

Pretest. Beginning on August 17, 2005, students were given a pretest consisting of two tests, one for pitch identification and one for rhythm pattern identification. Each test contained 25 questions and was administered via SqueakysRecorderPlayhouse.com. Students had 4 minutes to complete the pitch identification test and 6 minutes to complete the rhythm pattern identification test.

Weekly Procedures and Tests. The 6-week experiment began the week of August 22, 2005. During the first class period of each week, students participated in a group recorder lesson. Each week, one new musical element was introduced. In weeks 1, 3, and 6, new pitches and the corresponding recorder fingerings were introduced. In weeks 2, 4, and 5, the emphasis was on introducing and practicing new rhythm patterns. During the first music lesson, every student was

given a packet of music containing the songs found on SqueakysRecorderPlayhouse.com, a fingering chart and suggested tips for performance, and practice. While in class, the students were introduced to new recorder fingerings and practiced by reciting the rhythms and identifying the pitches of each song performed.

On the second class period of each week, students were in the computer lab. Upon entering the computer lab, students were directed to log into Squeakysrecorderplayhouse.com and to navigate to the weekly test page. All students remained on the initial page until told to continue. All students completed tests in pitch identification, recorder fingering recognition, and rhythm pattern identification. Students were given 2 minutes to complete the 10-question pitch identification and recorder fingering identification tests, and 3 minutes to complete the 10-question rhythm pattern identification test. The questions in each weekly test were aligned with the elements and skills found in the songs the students were practicing each week. The weekly songs and tests included the following:

- Week 1
    - Songs: “Hot Cross Buns” and “Mary Had A Little Lamb”.
    - Notation and recorder fingerings for included the notes BAG
    - Rhythm Identification: Quarter and eighth note patterns
- Week 2
    - Songs: “Frog in the Meadow” and “Closet Key”
    - Notation and recorder fingering questions included the notes BAG
    - Rhythm Identification: Quarter note, eighth note, and quarter rest patterns
- Week 3
    - Songs: “Rain, Rain” and “Lucy Locket”

    - Notation and recorder fingering questions included the notes BAGCD.
    - Rhythm Identification: Quarter note, eighth note, quarter rest, and half note patterns.
- Week 4
    - Songs: “Bells in the Steeple” and “Dinah”
    - Notation and recorder fingering questions included the notes BAGCD.
    - Rhythm Identification: Quarter note, eighth note, quarter rest, half note, and four-sixteenth note patterns.
- Week 5
    - Song: “Jim Along Josie”
    - Notation and recorder fingering questions included the notes BAGCD.
    - Rhythm Identification: Quarter note, eighth note, quarter rest, half note, four-sixteenths, and eighth, two-sixteenths note patterns.
- Week 6
    - Song: “Brother John”
    - Notation and recorder fingering questions included the notes “BAGCDE”.
    - Rhythm Identification: Quarter note, eighth note, quarter rest, half note, four-sixteenths, and eighth, two-sixteenths note patterns.

Each week, after the students had taken the three weekly tests, their performances were evaluated and progress or deficiencies noted. Students who did not receive a passing grade on the weekly pitch test were assigned to read the “notes” page and take one of the note quizzes. Likewise, students who did not pass the weekly recorder fingering test were assigned to read the “recorder” page and take a corresponding recorder fingering quiz. Any student who did not pass

the weekly rhythm identification quiz was assigned to review the "rhythm" page. The students who passed all three weekly tests were allowed to freely explore SqueakysRecorderPlayhouse.com for the remaining class time, approximately 20 minutes.

Performance Assessment. On the 5th week of the experiment, the students were told they would have a performance assessment on the song "Blue" the following week. One week after the announcement, the students began completing the performance test on the song "Blue" using Finale Performance Assessment. The students performed individually during assigned times before, during, and after school. The students were allowed to view the song twice before performing the song in Finale Performance Assessment™. Each student was allowed two attempts to play the song. The higher score was recorded.

Posttest. At the conclusion of the 6th week of recorder study, the students returned to the computer lab to take the posttest. The posttests for pitch identification and rhythm pattern identification contained the same questions as the pretests, but in a different order. Students were given four minutes to complete the pitch identification test and six minutes to complete the rhythm pattern identification test. The posttest also included a test for recorder fingering recognition. The test contained 25 questions and the students had four minutes to complete the test.

Teacher Evaluation of SqueakysRecorderPlayhouse.Com

Development of Evaluation Tool

In addition to testing the effectiveness of SqueakysRecorderPlayhouse.Com using students, it was also important to seek feedback from other music professionals and teachers. To gather feedback, a short 22-question survey was developed. The evaluation survey consisted of 20 questions subjects answered by identifying how strongly they agreed or disagreed with the

each statement. The final two questions contained a text box for the subject to write a short response. The 22 questions covered a variety of topics including:

- The overall design of the website
- The functionality of the website
- The usefulness of the website
- Opinions on the use of Finale Performance Assessment

Subjects

The subjects participating in the evaluation included pre-service teachers and elementary music specialists. The pre-service teachers were enrolled in an elementary music methods course at East Tennessee State University. The elementary music specialists were from Greeneville City Schools, South-Eastern Chapter of Kodaly-Educators of the Organization of American Kodaly-Educators, and music specialists from the Denver Public Schools.

Procedure

The evaluation survey was administered via SqueakysRecorderPlayhouse.Com beginning September 26, 2005. All potential music specialists received an e-mail outlining the purpose of SqueakysRecorderPlayhouse.Com, the request for professional evaluations of the site, and directions on accessing the survey. The instructor of the students at ETSU informed the students of the website and requested their participation in the survey. To help identify each group, the participants were given specific login names to identify if they were a student or music specialist. Students were given the username “ETSUstudent”; music specialists were given the username “Teacher”. All participants used the password “survey”.

Summary

A hypermedia-based application was determined to be the most cost-effective and flexible remediation tool. The resulting hypermedia-based application, www.SqueakysRecorderPlayhouse.com, included tutorial lessons, quizzes, and tests for pitch identification, rhythm pattern identification, and recorder fingering identification. Also included in the hypermedia-based application was a songbook that used Finale Performance Assessment™.

The procedures for the 6-week study included giving each student a pretest, a posttest, and weekly tests. The pitch identification pretest and the rhythm pattern identification pretests were given to all students at the beginning of the study. During the 6-week study, all students participated in a group music lesson and a testing session each week. The weekly tests focused on the pitches, rhythm patterns, and recorder fingerings presented in the previous group music lesson. At the conclusion of the 6-week study, the students were given pitch identification, rhythm pattern identification, and recorder fingering posttests. To conclude if the students were able to apply their musical knowledge, a playing test was given using Finale Performance Assessment™.

To evaluate the design and potential usefulness of the hypermedia-based application, an evaluation survey was developed. The survey contained 22 questions on the design, content, and usefulness of the hypermedia-based application. The survey was presented to pre-service teachers in the music department at East Tennessee State University and to elementary music specialists.

CHAPTER 4

ANALYSIS OF THE DATA

The results of the pitch and rhythm pattern identification pretests and posttests for the established and transient student population were collected and analyzed. A *t*-score was calculated to determine if there was any statistical significance in the differences between the mean scores of the pretests and posttests for pitch identification and rhythm pattern identification. The results of the recorder fingering and performance assessment test were also evaluated and a mean score for each was determined.

The survey results were gathered and analyzed. Each possible response was assigned a point value: ‘strongly agree’ received 4 points; ‘somewhat agree’ received 3 points, ‘somewhat disagree’ received 2 points; ‘strongly disagree’ received 1 point. The responses for each question were evaluated and a mean score for each question was determined.

Results of the Pitch Identification Pretest and Posttest

Established Population

The mean score for the pitch identification pretest of the established population (Table 1) was 69.85. After participating in the 6-week treatment, the posttest scores of the established population improved to 93.64, implying improved pitch reading skills. Next, the pretest and posttest scores were evaluated for significant statistical importance. The mean scores were analyzed using a *t*-test for correlated samples. The resulting *t*-scores ($t = 6.9, p < .05$) indicated that there was a significant statistical improvement in mean scores on pitch identification by the established population.

Table 1

Pitch Identification Pretest and Posttest Mean Ratings and t-Score of the Established Population

	Pitch identification pretest	Pitch identification posttest
Mean	69.85	93.64
Variance	740.09	187.55
df = 38		
t = 6.911		
t critical one-tail ($p < .05$) = 1.685		

Transient Population

The mean score for the pitch identification pretest of the transient population (Table 2) was 63.55. At the conclusion of the 6-week experiment, the mean score on the posttest was 88.44. The mean score of the posttest suggests that the transient population improved their pitch identification skills. To determine the statistical significance of the gain between the pre- and posttest, the data were analyzed with a *t*-test for correlated samples. The *t*-scores for the transient population ($t = 2.19$, $p < .05$) revealed a significant statistical improvement in the transient students' pitch identification skills.

Table 2

Pitch Identification Pretest and Posttest Mean Ratings and t-Score of the Transient Population

	Pitch identification pretest	Pitch identification posttest
Mean	63.55	88.44
Variance	1101.78	825.78
df = 8		
t = 2.19		
t critical one-tail ($p < .05$) = 1.86		

Results of the Rhythm Pattern Identification Pretest and Posttest

Established Population

The mean score for the rhythm pattern identification pretest of the established population (Table 3) was 71.38. At the conclusion of the 6-week study, the mean score of the established population on the posttest was 88.82, suggesting improved rhythm pattern identification skills. To determine the level of significance, the pretest and posttest scores were analyzed using a *t*-test for correlated samples. The resulting *t*-score ($t = 5.36$, $p < .05$) indicated a significant statistical improvement in rhythm pattern identification skills by the established population.

Table 3

Rhythm Pattern Identification Pretest and Posttest Mean Ratings and t-Score of the Established Population

	Rhythm pattern identification pretest	Rhythm pattern identification posttest
Mean	71.38	88.82
Variance	452.66	155.110
df = 38		
t = 5.36		
t critical one-tail ($p < .05$) = 1.68		

Transient Population

The mean score for the rhythm pattern identification pretest of the transient population (Table 4) was 50.67. The mean score for the posttest was 89.33. The increased mean score suggests the transient population improved their pitch reading abilities. To determine if the improvement was statistically significant, the pretest and posttest scores of the transient population were analyzed using a *t*-test for correlated samples. The resulting *t*-score ($t = 3.38$, $p < .05$) indicated a statistically significant improvement in the transient students ability to correctly identify the specified rhythm patterns.

Table 4

Rhythm Pattern Identification Pretest and Posttest Mean Ratings and t-Score of the Transient Population

	Rhythm pattern identification pretest	Rhythm pattern identification posttest
Mean	50.67	89.33
Variance	1272	64
df = 8		
t = 3.38		
t critical one-tail ($p < .05$) = 1.86		

Results of the Recorder Fingering Identification and Performance Assessment Test

At the conclusion of the 6-week study, both the established population and the transient population were given a recorder fingering identification and performance assessment test. The populations were not given a pretest in either area because they had no previous recorder experience; therefore, no knowledge of the recorder fingerings or performance abilities were expected. The test scores for each category were analyzed, and a mean score (Table 5) for each population was determined. The mean score for the recorder fingering identification test of the established population was 96.86. The mean score for the recorder fingering identification test of the transient population was 95.5. The mean scores of the established population and the transient population appear to indicate that at the conclusion of the study, the students were successful at identifying pictorial representations of the recorder fingerings.

The performance assessment scores for each group were also analyzed. At the end of the study, each student completed a performance assessment on the song "Blue". The student's performance was evaluated by Finale® Performance Assessment and assigned a grade. The mean score of the established population was 67. Of the established population, 46% passed the performance assessment with a grade of 80% or higher. The transient population's mean score was 86, with 87% of the students passing the performance test with a grade of 80% or higher.

Table 5

Results of Recorder Fingering Identification and Performance Assessment

	Established population mean ratings	Transient population mean ratings
Recorder Fingering Test	96.7	95.5
Performance Assessment Test	67	86
Assessment Grade > 80%	46%	87%

Results of the Survey

The survey was submitted to pre-service teachers at East Tennessee State University and to music specialists currently teaching elementary music. While the pre-service teachers reported that they had completed the survey, those responses never reached the database. Five music specialists responded to the survey. Each response was scored, and a mean score (Table 6) was determined for each question. The grand mean score (3.87) suggests that the music specialists were satisfied with the design and content of the hypermedia-based application.

Table 6

Survey Responses

Question number	Question	Mean rating
1	The colors, graphics, and overall design of the website are visually pleasing.	4
2	The information presented in this website is accurate.	3.66
3	All graphics contribute to the effectiveness of the website.	4
4	All audio files contribute to the effectiveness of the website.	3.66
5	All text contributes to the effectiveness of the website.	3.66
6	There are no special skills needed to use this website.	3.66
7	The Finale Performance Assessment tool used in the Songbook is useful.	4
8	The information in this website is presented in an interesting manner.	4
9	The information and features of this website would be useful to elementary recorder students.	4
10	There is no unimportant or redundant information in the website.	4

Table 6 (Continued)

Question number	Question	Mean rating
11	This website contains all of the information a beginning recorder student would need.	3.3
12	All buttons and features work properly.	4
13	The various quizzes provide adequate practice and feedback opportunities.	3.66
14	This website contains unique features that add to its usefulness.	3.66
15	All information in this website is presented in a style that is clear and consistent.	4
16	The amount of time required to download each page is reasonable.	4
17	The various pitch, rhythm, and recorder fingering quizzes are relevant.	4
18	I would visit this website again.	4
19	I would recommend this website to my colleagues.	4
20	I would recommend this website to my students.	4
Grand Mean		3.87

After the initial data analysis, the questions were organized into four categories. The first category, including questions 1, 3, 4, 5, 8, 14, 15, and 16, focused overall design and function of the hypermedia-based application. The second category of questions (2, 7, 9, 10, 11, 13, and 17) addressed the content of the hypermedia-based application. The third category, which addressed how easy the hypermedia-based application was to use, included questions 6 and 12. The final category (questions 18, 19, and 20) identified the how likely the participant was use hypermedia-based application or recommend it. A mean score (Table 7) for each area was calculated. All music specialists strongly agreed that they would recommend the hypermedia-based application to colleagues and students resulting in a mean score of 4.0. The mean scores of the music specialists were divided - between strongly agree and somewhat agree - in their responses concerning the design (3.86), content (3.81), and ease of use (3.89).

Table 7

Categorical Analysis of the Survey Responses

Category	Mean ratings
Overall Design	3.86
Content	3.81
Ease of Use	3.89
Likelihood of Recommendation	4.0

Summary

The data collected from the pretests and posttests for pitch identification and rhythm pattern identification were analyzed and compared using *t*-tests for correlated samples. The results of the study indicate that all students improved their pitch identification and rhythm

pattern identification skills. The pretest and posttest mean scores were analyzed using a *t*-test for correlated samples. The *t*-test scores of the established population ($t = 6.9$, $p < .05$) and the transient population ($t = 2.19$, $p < .05$) indicated significant statistical improvement in the pitch identification. The pretest and posttest mean scores of the established population and the transient population on the rhythm pattern identification were analyzed using a t-test for correlated samples, and showed a significant statistical difference in the scores of the established population ($t = 5.36$, $p < .05$) and the transient population ($t = 3.38$, $p < .05$).

The results of the recorder fingering test and the playing test were analyzed and a mean score for each was calculated. The recorder fingering identification mean score for the established population was 96.86; the mean score for the transient population was 95.5. On the playing test, the established population's mean score was 67, with 46% of the group passing the performance assessment with a grade of 80% of higher. The transient population's mean score was 86, and 87% of the students passed the performance test with a grade of 80% or higher.

The results from the evaluation of the hypermedia-based application were analyzed by assigning a point value, between 1 and 4, to each possible response. The responses to each question were examined and a mean score for each question, and each category of questions, was developed. The mean scores for each of the categories were: design (3.86); content (3.81); ease of use (3.89); and likelihood of recommending the site (4.0).

CHAPTER 5

DISCUSSION

Test Results

Pitch and Rhythm

The pretest scores for both the established and the transient population were surprising. The mean scores for the pretests of the established population for pitch identification (69.84) and rhythm pattern identification (71.38) were lower than initially expected. The students took the pretest at the beginning of the year, without review of content taught in previous years, which may have affected their scores. If students had reviewed the material prior to the test, the mean scores might have been higher and the differences between the pretest and posttest means might have been less significant.

The mean score for the pretests of the transient population were also unanticipated. The transient populations mean score for the pretest for pitch identification (63.55) and rhythm pattern identification (55.66) were higher than initially expected. A factor that may have contributed to the higher than expected pretest scores was the inclusion of students who had attended Hal Henard Elementary School for part of the previous school year. These students were exposed to the elements of music and had some experience using them.

Performance

The difference between the performance scores of the transient population and the established populations was unexpected. The scores for the established populations' performance of the song "Blue" were extremely low. Only 46% of the established students passed the test with a grade of 80% or higher; while 87% of the transient students passed with a grade of 80% or higher. Although there appear to be no factors to explain the difference in the scores of the two

populations, there are factors that may have contributed to the low performance scores received by some students in both populations. First, the students spent half of the instructional time for this project in the computer lab. As a result, the students may not have had enough time to practice playing the recorder. Also, “Blue” was the first and only song on which the students had a performance test. The students appeared to be unprepared for how stringently the computer graded their performance. The Finale© Performance Assessment Program required the student to play both in-tune and at a moderate dynamic level. Failure to play a pitch in-tune or at a moderate dynamic level often resulted in the pitch being as marked incorrect. With additional experience using the Finale© Performance Assessment Program, the students may have scored higher.

Survey Results

The survey results were overwhelming positive; however, the lack of participation in the survey made it difficult to accurately evaluate the hyper-media application. Although the survey was distributed to pre-service teachers at East Tennessee State University and to music specialists, only 5 sets of responses were available. The recorded responses were from music specialists, and although the pre-service teachers at East Tennessee State University verbally reported they had taken the survey, their results and responses were not recorded in the database. The database was tested for accuracy (using the usernames and passwords assigned to the elementary students, pre-service students and the music specialists) before, during, and after the study. All surveys and tests completed during the trail testing sessions were recorded in the database; therefore, the discrepancy between the verbal reports from the pre-service teachers and the recorded database results cannot be explained.

The 5 sets of responses included suggestions for improvement and comments concerning the hypermedia-based application. The comments indicated that the inclusion and use of Finale Performance Assessment™ was the respondents' favorite thing about the hypermedia-based application. The following suggestions for improvement were submitted: visual alignment of heartbeats in the rhythm patterns; the inclusion of solfa patterns; and the relocation of 'high e' songs.

Visual Alignment of Heartbeats in the Rhythm Patterns

One respondent identified the need for all of the rhythm patterns to be aligned according to each specific beat. The purpose of aligning the beats is to allow the student to visually interpret the relationship of the beats between the patterns. Although aligning the rhythms by beat was a valid concern, it was not practical in the hyper-media application. Because each of the rhythm graphics was created with imaging editing software, creating some of the more elaborate patterns-such as four-sixteenths note patterns-in a narrower width that was still readable was difficult, if not impossible. The only way to align the rhythms by heartbeat would be to spread the simpler quarter and eighth note patterns apart. The result would make the simpler patterns appear disjointed. Thus, the appearance of the rhythm patterns was not altered.

The Inclusion of Solfa Patterns

One respondent requested the inclusion of solfa patterns for visual and aural identification. Although solfa identification is a major component of any Kodaly-based classroom, it was not considered an appropriate focus for this hypermedia-based application. The purpose of the hypermedia-based application was to develop musical literacy for students learning to play the recorder; the inclusion of solfa patterns is not essential to pitch identification or rhythm pattern identification. Although including solfa patterns could be useful for the general

music classroom, it would be more inclusive and beneficial if developed as a separate hypermedia-based application.

Location of 'High E' Songs

The final comment involved the location of the 'high e' songs. In the hypermedia-based application, the 'high e' songs are listed as the final category for beginning recorder players. The respondent indicated that 'high e' songs were not appropriate for beginning recorder players. This was a valid observation, so the 'high e' songs were moved to the intermediate category.

Challenges of the Project

Student Attendance and Enrollment

Consistent student attendance was one of the main challenges of the project. Although individual absences were to be expected, the number of school-wide assemblies was not. The project was originally scheduled to run for 7-weeks to allow for the pretest day, the posttest day, the performance test day, 6-weeks of recorder study, and the scheduled Labor Day holiday. Due to all of the unexpected interruptions from student assemblies and teacher's meetings, the project ran for 9-weeks. The time-line for the project would have been extended by 1 additional week, to a total of 10 weeks, had the school media specialist not volunteered her library time for music instruction.

Throughout the project, consistent student enrollment was also a challenge. There were three students who enrolled after the start of the project and five students who transferred before the conclusion of the project. Although the transient students played the recorder and completed the weekly tests, their scores were not included in the results because they were not present for the entire study.

Technical Challenges

Throughout the project, there were very few technical problems. The majority of the technical issues were more minor inconveniences than major problems. One of the most common situations concerned the student username login and password. The students were assigned a username that consisted of their first initial and last name. Many of the students placed spaces between their initial and last name, which resulted in a rejected login. The process was further complicated when, 3 weeks into the project, the school began using tutorial software that required the students to login using their last name followed by their first initial, exactly the opposite of their music login. Although the students were reminded of how to login, there were a few occasions when it was necessary to physically type the student's login name to expedite the login procedure.

A second challenge with the login was misspelled passwords. In an effort to avoid the chaos and hassle of forgotten passwords, it was decided that all students would use the same password. Because the students were participating in music class, the word 'music' was selected as the general password. Unfortunately, many students had difficulty correctly spelling the word 'music'. As a result, struggling students were given a note with the word 'music' spelled out, or someone would physically type in the password to expedite the login process.

Another testing challenge was related to the resolution of the computer screens. The most appropriate screen resolution for viewing each test question was 1024 x 768. However, many of the computer screens in the lab were set at 800 x 600. (Because the lab is used by numerous classes, resetting the screen resolutions was not an option.) As a result of the lower screen resolution, students taking the rhythm pattern identification test were not able to view all four responses to each question. Some of the students failed to notice the cut-off rhythm patterns and,

as a result, began answering the questions after examining only two possible answers. Fortunately, this was observed on the pretest and students were instructed to scroll the page to reveal all of the possible choices.

One unexpected technical problem of consequence was the failure of Windows Media Player to recognize the MIDI files in some of the rhythm tests. This problem was not confined to any specific computer; instead, it seemed to select a different work-station each testing period. When this occurred, the students were directed to log-off of the computer and log-on a different computer.

Unexpected Benefits

Throughout the project, it became evident that the hypermedia-based application was most embraced by, and most used by, the accelerated and experienced students. These students were more likely to practice at home, view the hypermedia-based application outside of the music class, and learn additional songs through the Finale Performance Assessment Program. The hypermedia-based application provided an opportunity for the accelerated and experienced students to challenge themselves or each other by taking the advanced quizzes or learning more difficult songs.

One of the observed benefits of using the hypermedia-based application was improved student perseverance. Typically, beginning recorder students tend to stop playing each time they make a mistake. After using the Finale Performance Assessment Program, the students continued playing, even after making multiple mistakes. This may be because the song continues to play until it is finished, or it may be because the student is graded through the end of the song, regardless of whether they stop or continue playing after a mistake. Although the reason for the improved student perseverance is disputable, the results were noticeable.

Recommendations for Future Study

Anyone planning to replicate the study should consider the following recommendations. First, a longer time period for the study is needed. A semester-long study would allow more time between tests; ideally, a minimum of 3 class periods of playing should be followed by a testing day. It would also be beneficial for the students to have more scheduled performance tests. Additional performance testing would help prepare the students for the expectations of the final performance test. Again, 3 class periods of practice followed by a music and performance test may be appropriate.

In addition to lengthening the study, it is also recommended that researchers plan for transient students who enroll late or who transfer before the conclusion of the study. A process that permits these students to explore and use the hypermedia-based application during the time before or after-school is advised. By providing students with additional time to explore the hypermedia tutorial, the student may be able to gain enough musical knowledge to fully participate in the class.

It is also recommended that any evaluations or surveys be submitted before the study begins. By presenting the surveys before the study, typographical errors, or incorrect information could be changed before the students use the hypermedia-based application. Also, suggestions for improvement could be evaluated and applied.

Finally, it is recommended that the study involve at least two schools, with each school receiving a different treatment. If students at one school use the hypermedia treatment and students at the second school receive traditional instruction, it will be easier to determine the effect of the hypermedia application. Although it is possible to assign the students in one school

to two groups, it is difficult to keep the control group from knowing of or using the hypermedia application.

Summary

Throughout the study, numerous surprises and challenges arose. The pretest mean scores of both the established and transient students were different from those expected. Although both the established and transient populations showed improvement, it was not possible to definitively state that the use of hypermedia improved led to that improvement.

The evaluation of the hypermedia application by music specialists and pre-service teachers at East Tennessee State University indicated that the hypermedia application was considered well-designed and useful; however, there was a lack of participation from eligible respondents. The pre-service teachers at East Tennessee State University reported they had completed the survey; however, their responses were not recorded in the database. The database was tested before, during, and after the study and was found to accurately record the data; therefore, no there was explanation for the discrepancy. The responses from music specialists included comments and suggestions for improvement which were examined and considered for application.

The challenges encountered throughout the study were characteristic of the types of problems one encounters when working with human subjects, especially in a school setting. Unexpected meetings and school assembles made implementing the research project difficult. Many of the students experienced difficulty correctly typing their username and password. Fortunately, the majority of the computers worked correctly and the Internet connection was reliable.

Recommendations for any future studies include lengthening the study, involving more than one school, and creating a plan for transient students who enroll after the start of the project. The project may best be implemented over an entire semester by a music specialist who works at two schools. A researcher who incorporated these recommendations may be able to better determine the effect of the hypermedia application on the transient population.

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APPENDICES

Appendix A

Pretests

Pitch Identification

1. 

○A ○C
○G ○B

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2. 

○C ○F
○B ○E

---

3. 

○E ○F
○G ○A

---

4. 

○E ○A
○B ○G

---

5. 

○A ○D
○B ○F

---

6. 

○G ○C
○D ○E

Pitch Identification, Continued

7.		○D ○G	○F ○C
8.		○G ○F	○A ○E
9.		○C ○A	○D ○B
10.		○B ○D	○A ○G
11.		○G ○F	○E ○A
12.		○C ○A	○D ○B
13.		○D ○G	○F ○C

Pitch Identification, Continued

14.		○ G	○ C
		○ D	○ E
15.		○ A	○ B
		○ D	○ G
16.		○ A	○ B
		○ E	○ D
17.		○ G	○ A
		○ F	○ E
18.		○ E	○ D
		○ C	○ F
19.		○ D	○ F
		○ G	○ C
20.		○ C	○ D
		○ A	○ B

Pitch Identification, Continued

21.		○B ○D	○A ○G
22.		○F ○C	○A ○E
23.		○C ○G	○B ○A
24.		○E ○B	○A ○G
25.		○A ○D	○B ○G

Rhythm Identification

1. 

---

2. 

---

3. 

---

4. 

---

5. 

---

6. 

---

7. 

---

8. 

Rhythm Identification, Continued

9.

10.

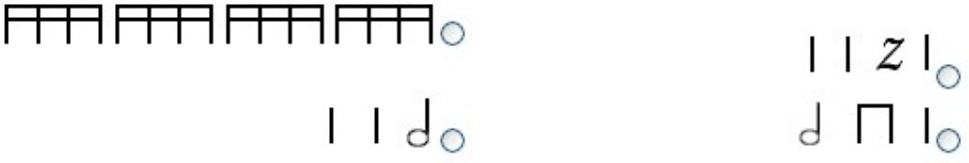
11.

12.

13.

14.

15.



Rhythm Identification, Continued

16.

17.

18.

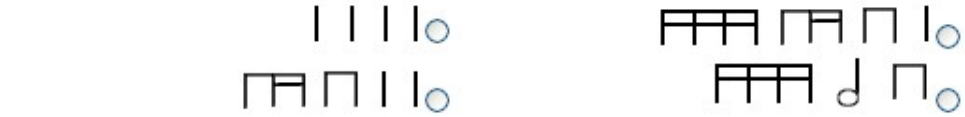
19.

20.

21.

Rhythm Identification, Continued

22. 

23. 

24. 

25. 

Appendix B

Posttests

Pitch Identification

1.		○F ○C	○A ○E
2.		○C ○G	○B ○A
3.		○F ○C	○A ○E
4.		○A ○D	○B ○G
5.		○E ○C	○D ○F
6.		○E ○B	○A ○G

Pitch Identification, Continued

7.		○C ○A	○D ○B
8.		○D ○G	○F ○C
9.		○A ○G	○C ○B
10.		○C ○B	○F ○E
11.		○E ○G	○F ○A
12.		○C ○G	○B ○A
13.		○A ○C	○G ○F

Pitch Identification, Continued

14.		○F ○A	○B ○E
15.		○A ○B	○D ○F
16.		○G ○D	○C ○E
17.		○B ○D	○A ○G
18.		○G ○F	○E ○A
19.		○C ○A	○D ○B
20.		○D ○B	○E ○C

Pitch Identification, Continued

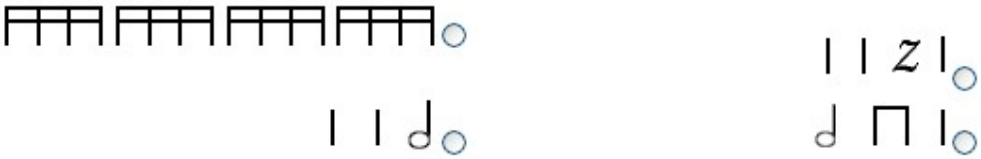
21.		○D ○A	○G ○F
22.		○A ○D	○B ○G
23.		○A ○E	○B ○D
24.		○G ○F	○A ○E
25.		○C ○G	◉B ○A

Rhythm Identification

1. 

2. 

3. 

4. 

5. 

6. 

7. 

Rhythm Identification, Continued

8.

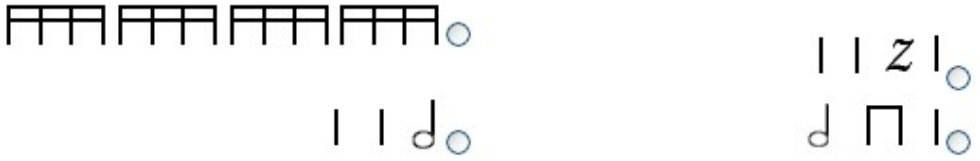
9.

10.

11.

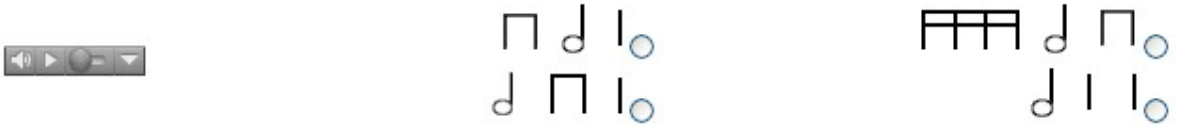
12.

13.



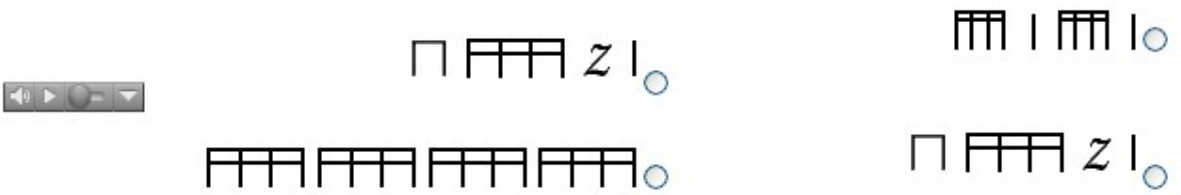
14.

Rhythm Identification, Continued

15. 

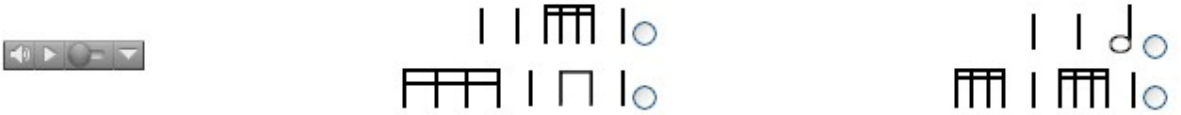
16. 

17. 

18. 

19. 

20. 

21. 

Rhythm Identification, Continued

22.		
23.		
24.		
25.		

Appendix C

Additional Tests

Recorder Fingering Identification

1.

○B ○A

○G ○F

2.

○B ○A

○G ○D

3.

○B ○A

○G ○E

4.

○C ○B

○A ○G

Recorder Fingering Identification, Continued

5.

○C ○B

○A ○G

6.

○B ○G

○C ○D

7.

○A ○B

○C ○D

8.

○A ○C

○E ○G

9.

○B ○E

○G ○A

Recorder Fingering Identification, Continued

10.

○C ○B

○A ○D

11.

○A ○C

○E ○G

12.

○C ○B

○A ○G

13.

○C ○B

○A ○G

14.

○B ○A

○G ○F

Recorder Fingering Identification, Continued

15.

○B ○A

○G ○D

16.

○C ○B

○A ○D

17.

○A ○C

○E ○G

18.

○B ○G

○C ○D

19.

○C ○B

○A ○D

Recorder Fingering Identification, Continued

20.

○C ○B

○A ○G

21.

○B ○A

○G ○D

22.

○B ○A

○G ○F

23.

○B ○G

○C ○D

24.

○A ○C

○E ○G

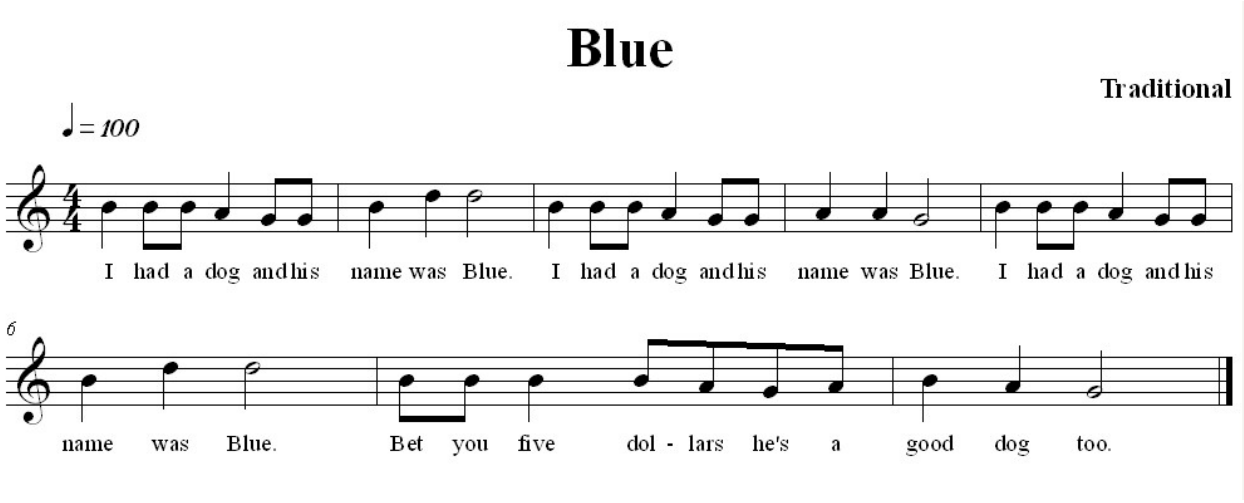
Recorder Fingering Identification, Continued

25.

○B ○A

○G ○D

Performance Assessment



Appendix D

Survey

1. The colors, graphics and overall design of the website are visually pleasing.

   - ○ Strongly Agree
   - ○ Somewhat Agree
   - ○ Somewhat Disagree
   - ○ Strongly Disagree
   - ○ Not Applicable

2. The information presented in this website is accurate.

   - ○ Strongly Agree
   - ○ Somewhat Agree
   - ○ Somewhat Disagree
   - ○ Strongly Disagree
   - ○ Not Applicable

3. All graphics contribute to the effectiveness of the website.

   - ○ Strongly Agree
   - ○ Somewhat Agree
   - ○ Somewhat Disagree
   - ○ Strongly Disagree
   - ○ Not Applicable

If you did not answer "Strongly Agree" or "Somewhat Agree" then please explain:

Survey, Continued

4. All audio files contribute to the effectiveness of the website.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

If you did not answer "Strongly Agree" or "Somewhat Agree" then please explain:

5. All text contributes to the effectiveness of the website.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

If you did not answer "Strongly Agree" or "Somewhat Agree" then please explain:

6. There are no special skills needed to use this website.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

Survey, Continued

7. The Finale Performance Assessment tool used in the Songbook is useful.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

8. The information in this website is presented in an interesting manner.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

If you did not answer "Strongly Agree" or "Somewhat Agree" then please explain:

9. The information and features of this website would be useful to elementary recorder stu

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

10. There is no unimportant or redundant information in the website.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

Survey, Continued

11. This website contains all of the information a beginning recorder student would need.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

12. All buttons and features work properly.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

13. The various quizzes provide adequate practice and feedback opportunities.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

14. This website contains unique features that add to its usefulness.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

15. All information in this website is presented in a style that is clear and consistent.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

Survey, Continued

16. The amount of time required to download each page is reasonable.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

17. The various pitch, rhythm and recorder fingering quizzes are relevant.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

18. I would visit this website again.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

19. I would recommend this website to my colleagues.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

20. I would recommend this website to my students.

- ○ Strongly Agree
- ○ Somewhat Agree
- ○ Somewhat Disagree
- ○ Strongly Disagree
- ○ Not Applicable

Survey, Continued

21. What is the best feature of this website?

22. What features of this website are lacking or need improvement?

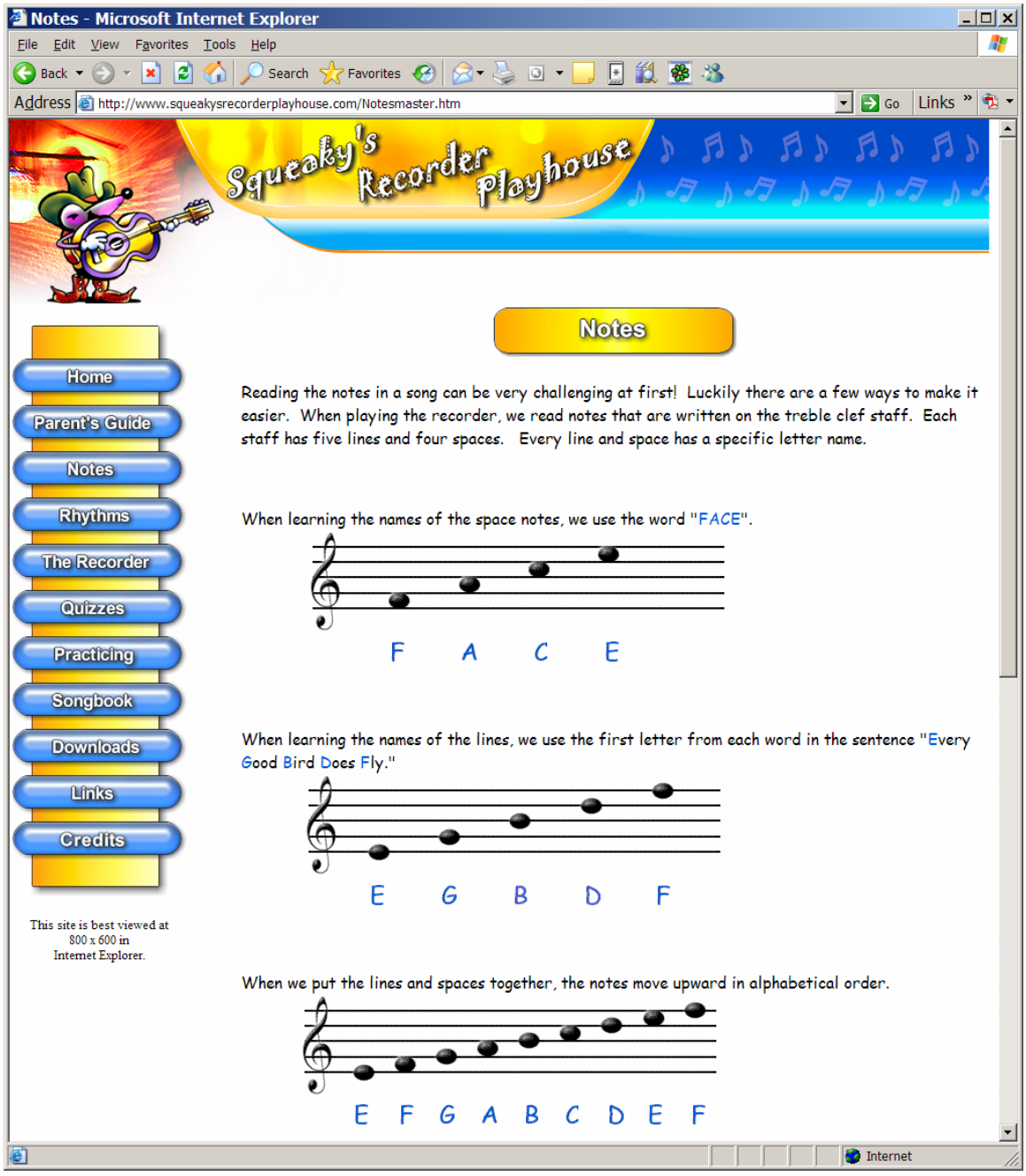
Appendix E

Screen Shots

Home

Parent's Guide

Notes


Notes - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites
Address http://www.squeakysrecorderplayhouse.com/Notesmaster.htm
Go Links
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Notes
Reading the notes in a song can be very challenging at first! Luckily there are a few ways to make it easier. When playing the recorder, we read notes that are written on the treble clef staff. Each staff has five lines and four spaces. Every line and space has a specific letter name.
When learning the names of the space notes, we use the word "FACE".
F A C E
When learning the names of the lines, we use the first letter from each word in the sentence "Every Good Bird Does Fly."
E G B D F
When we put the lines and spaces together, the notes move upward in alphabetical order.
E F G A B C D E F
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Rhythms


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Rhythms
Reading rhythm is as simple as looking at sticks. The rhythm of a song is determined by the stems of the notes. Each type of stem has both a real name and a nick-name. We use the nick-name to help us recite the rhythm pattern. The basic elements of rhythm are:
Figure Nick-Name Real Name
Tah Quarter Note
Tee-Tee Eighth Notes
Ti-ri-ti-ri Sixteenth Notes
In addition to the rhythms above, there are two examples that use the note head to determine the rhythm. These are:
Figure Nick-Name Real Name
Tah-ah Half Note
Tum Whole Note
Now that you know the basic elements of rhythm, we can combine them to make patterns. To hear some common patterns, press the play button. If you experience any problems playing the audio clip, you may need to check your audio settings. Some of the most common rhythm patterns are:
Rhythm Pattern Pronunciation
Tah Tah Tah Tah
Tee-tee Tee-tee Tee-tee Tee-tee
Done
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The Recorder

Quizzes


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Quizzes
Fingering Quizzes
Think you know your recorder fingerings? Here are some quizzes to test your level of expertise. The quizzes become more difficult as they progress from the first to the last one, so beginners be sure to start with Quiz 1.
Beginning
Quiz 1
Quiz 2
Intermediate
Quiz 3
Quiz 4
Advanced
Quiz 5
Quiz 6
Note Name Quizzes
Want to test your understanding of the note names? Just click on a Quiz! If you are a beginner, you may want to start with Quiz 1. The quizzes will become more difficult as you progress to the final Quiz.
Beginning
Quiz 1
Quiz 2
Intermediate
Quiz 3
Quiz 4
Advanced
Quiz 5
Quiz 6
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Practicing


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Learning how to practice correctly can dramatically increase the speed at which you progress. True practicing is very different from just playing. If you are always working on songs/pieces that you can play, then you are playing, not practicing. When you practice, you should work on a song/piece that includes some challenging passages. The act of properly practicing involves four major steps.
Step 1
Read and clap the rhythm of the piece. You may choose to read it using rhythm syllables or by counting. If you encounter any rhythm patterns which seemed difficult, stop and repeat the pattern until you can read and clap it correctly and in tempo with the rest of the piece. If you are looking at a song in Squeaky's Songbook, you may want to push the play button and clap the rhythm as the computer lights up each note.
Step 2
Read the names of the notes. When doing this, you will want to read the notes in rhythm. Once again, if you encounter any notes you are unsure of, stop and repeat the measure. Continue to repeat the piece until you can read it in tempo. If you are looking at a song in Squeaky's Songbook, you may want to push the solo line button and then the play button. Be sure to say the names of the notes as the computer plays each note. If the song is too fast, slow it down by moving the tempo button.
Step 3
Chin it. Place the recorder on your chin, and 'play' the piece. You will not blow into the recorder, just be sure to finger each note and name each note. Again, be sure to repeat this step until you can 'chin play' the entire piece correctly without stopping. If you are looking at a song in Squeaky's Songbook, you may want to push the solo line button and then the play button. Be sure to say the
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Songbook


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Songbook
Printable Songbook
Note: Before you can play these songs, you must download and install Finale Performance Assessment. For help using Finale Performance Assessment, click here. If you want to print these songs, click here.
Beginning
If you have just started learning the recorder, you will want to begin playing the songs in the Beginning Level I section. These songs only use the notes B, A and G. Once you have mastered these songs, you may move on to Beginning Level II and learn the note C. The songs in Beginning Level III include the notes B, A, G, C and D. Click here for Intermediate or Advanced Level Songs.
Level I
Hot Cross Buns
Mary Had A Little Lamb
Sailor on the Sea
Frog in the Meadow
Farfalina
Closet Key
The Boatman
Level II
Great Big House in New Orleans
Level III
We Are Dancing in the Forest
Rain, Rain
Bells in the Steeple
Lucy Locket
Sea Shell
Blue
Sleep, Baby Sleep
Go Tell Aunt Rhody
Who's That Tapping?
Deedle, Deedle Dumpling
Dinah
The Deaf Woman's Courtship
A Tisket, A Tasket
Daddy Shot a Bear
Over in the Meadow
Bye, Baby Bunting
Phoebe in Her Petticoat
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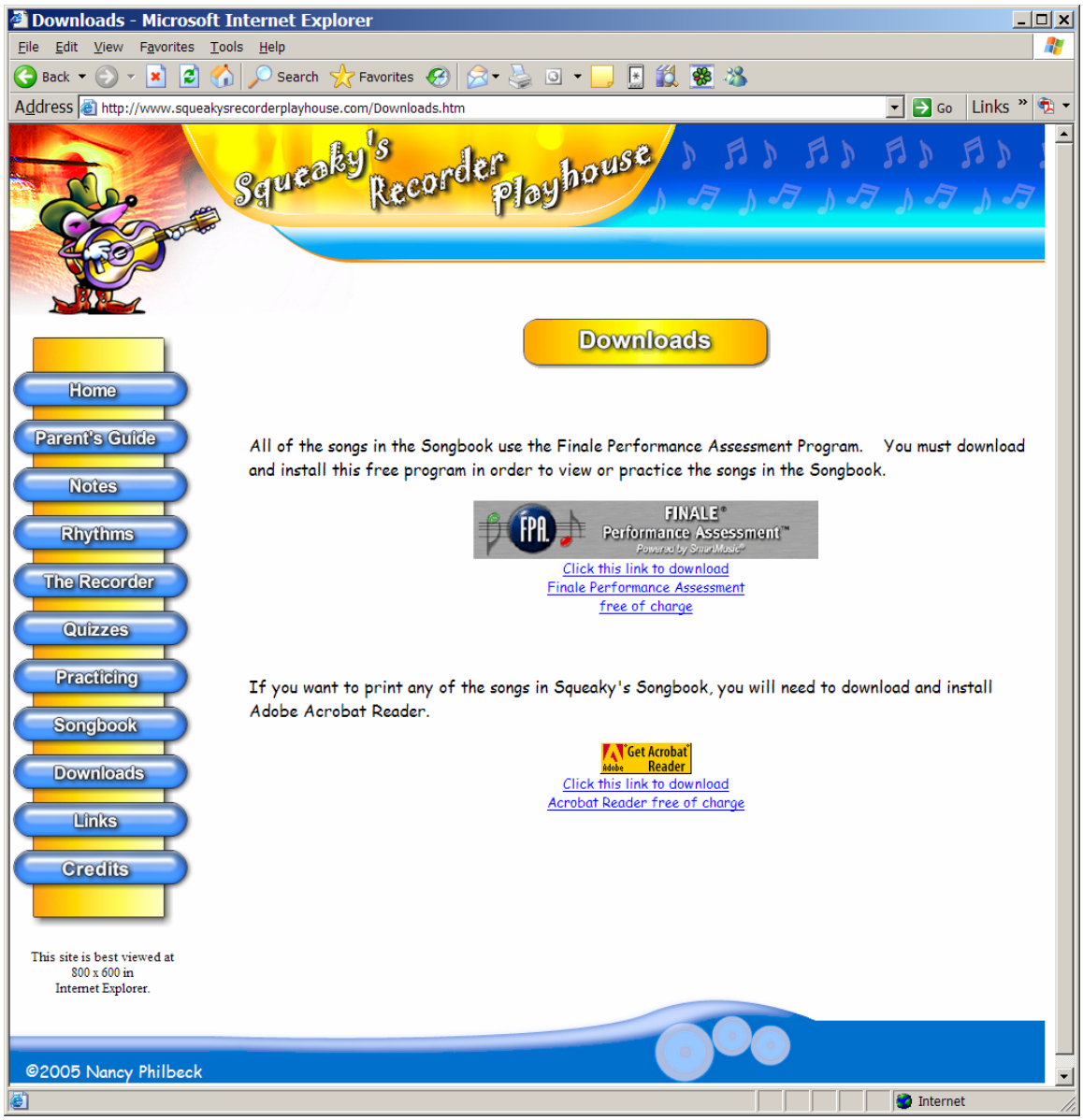
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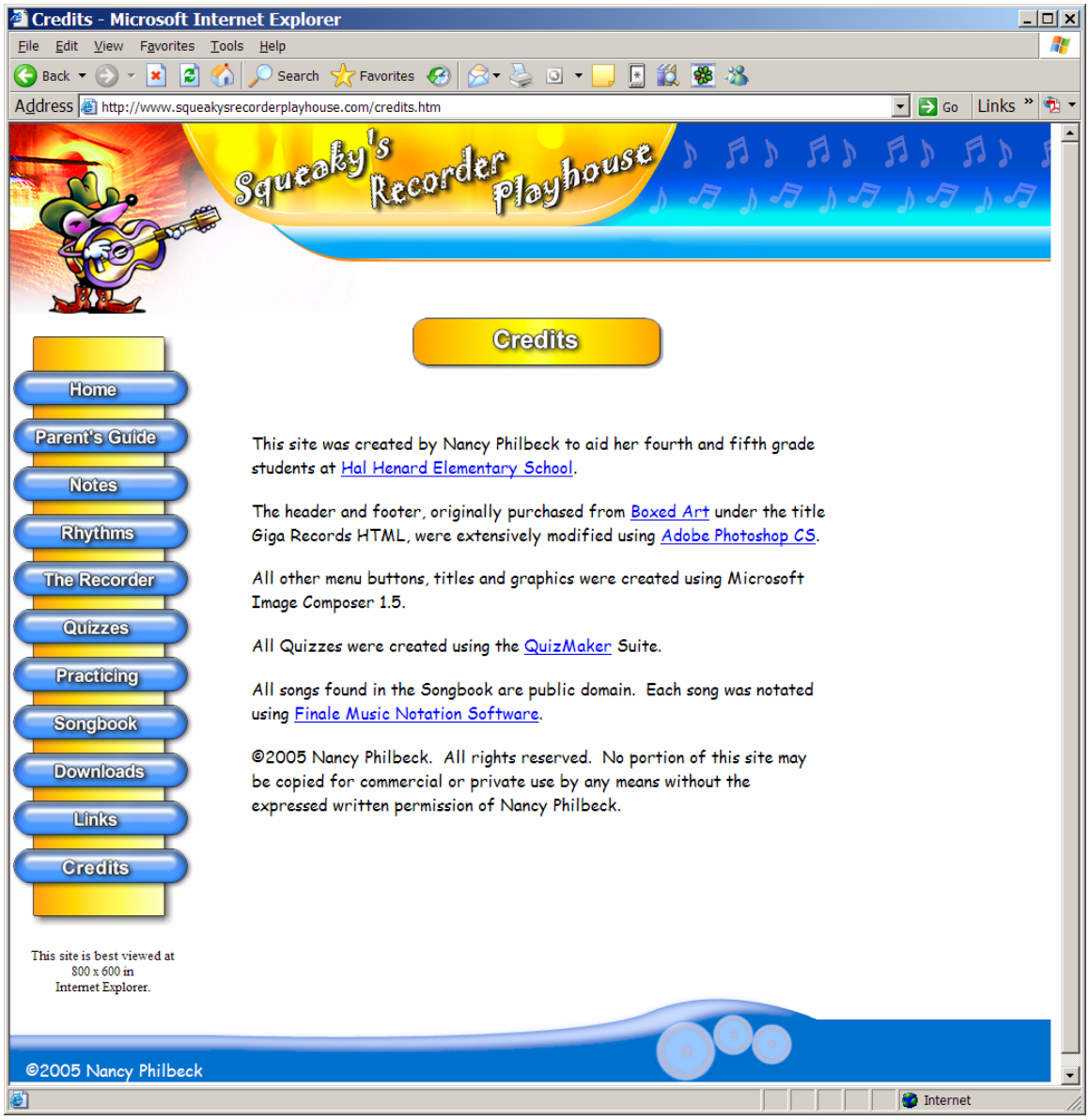
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This site was created by Nancy Philbeck to aid her fourth and fifth grade students at Hal Henard Elementary School.
The header and footer, originally purchased from Boxed Art under the title Giga Records HTML, were extensively modified using Adobe Photoshop CS.
All other menu buttons, titles and graphics were created using Microsoft Image Composer 1.5.
All Quizzes were created using the QuizMaker Suite.
All songs found in the Songbook are public domain. Each song was notated using Finale Music Notation Software.
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Testing Login

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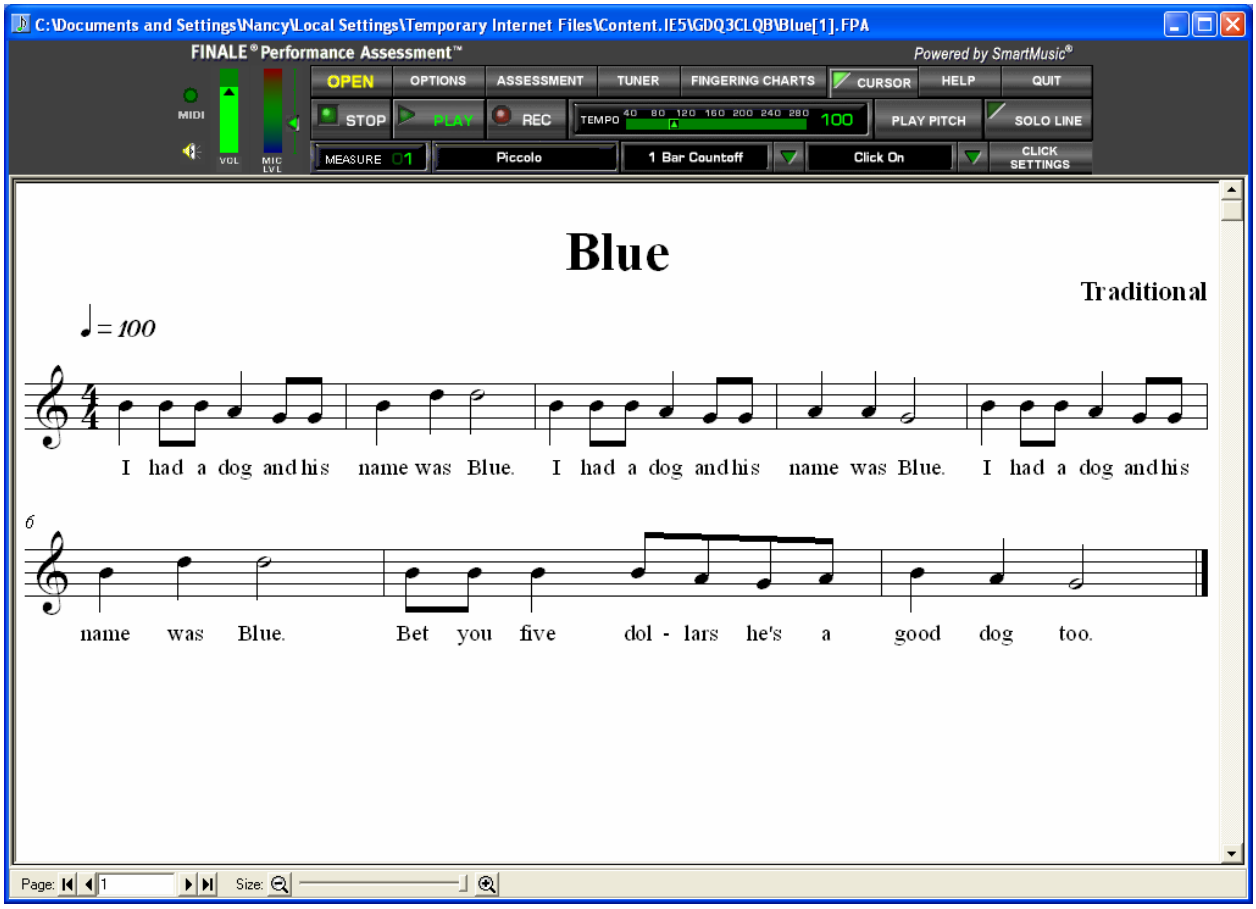
Finale Performance Assessment



VITA

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