

**University of Massachusetts  
Academic Year 2003-04  
Final Report On Professional Development Grant**

Licensure Preparation Web site for the Massachusetts Educator Certification  
Tests in Music

Gena Greher, P.I.  
UMass Lowell  
Coordinator of Music Education, Assistant Professor of Music Education  
Lowell, MA  
Phone: 978-934-3893  
Email: [Gena\\_Greher@uml.edu](mailto:Gena_Greher@uml.edu)

**Other Participants**

Dr. Jesse M. Heines, Associate Professor, Computer Science, UMass Lowell  
Dr. T. Dennis Brown, Professor of Music Education, UMass Amherst

**Additional Contributors**

Department of Music Faculty, Lowell and Amherst  
David Peet, Student in Computer Science-Lowell  
Deborah MacKinnon, Student in Music Studies-Lowell  
Erik Bettencourt, Freelance Graphic Designer, former student at UMass Lowell,  
recommended by Prof. Karen Roehr  
Jason Alborough, Music Technology Lab-Lowell

UMass Lowell  
35 Wilder Street, Durgin Hall  
Lowell, Mass 01854

Gena\_Greher@uml.edu (978) 934-3893  
tdbrown@music.umass.edu (413) 545-2227  
heines@cs.uml.edu (978) 934-3634

UMass Lowell and UMass Amherst - Music Education

**Introduction**

The goal of this project was to increase the pass rate for UMass students when taking the Massachusetts Educator Certification Tests in Music. It was hoped that this site would provide our students with diagnostic exams and a structured approach to test preparation consistent with the test objectives published by the Commonwealth of Massachusetts. Due to heavy course loads, performance ensembles, classroom observations and outside job commitments, it has been difficult to schedule teacher preparation seminars that are convenient for most of our students. This web based preparation site would afford students the opportunity to prepare for the licensure exam any time of day at their own pace, giving students immediate feedback as to areas of weakness. The log in procedure will allow faculty to monitor the progress of each of our students to ensure that they are fully prepared to take the exam.

The multimedia capabilities of the Worldwide Web make this approach particularly suitable for music studies. Students will be able to listen to musical examples within this diagnostic program.

They will be able to view musical notation examples similar to the types of questions that are on the test. Through the use of multimedia resources, this approach lends itself to reiterative remediation. To prepare adequately for the Massachusetts Licensure Test, each UMASS music education student will be required to take the diagnostic test multiple times to obtain a score of 80% or better at least 3 times. After a student takes the diagnostic test, the student will receive feedback details related to their performance. In addition to the diagnostic test, there is a 'practice' test where students can choose to concentrate on Music Theory, Music History and Literature or Music Education. While the ultimate goal is to build a diagnostic and remediation site, the funding for the current project was to build just the diagnostic portion.

### **Scope of Project**

#### Music Content Overview

This project was based on the music content guidelines outlined by the Massachusetts Department of Education. They are as follows:

#### MUSIC CONTENT AREAS

##### MULTIPLE CHOICE

- I. MUSIC THEORY AND ANALYSIS = 33%
  - A. MUSIC THEORY
  - B. AURAL ANALYSIS
- II. MUSIC HISTORY AND LITERATURE = 33%
  - A. MUSIC HISTORY AND LITERATURE
  - B. AURAL ANALYSIS
- III. MUSIC EDUCATION = 14%

##### OPEN RESPONSE-Essay

- IV. INTEGRATION OF KNOWLEDGE AND UNDERSTANDING = 20%

Each content area is then divided into content specific sub areas as follows:

#### MUSIC SUB AREAS

##### MUSIC THEORY AND ANALYSIS= 33%

- A. MUSIC THEORY
  - 1. Understand the process of reading a score
  - 2. Understand the elements of a melody
  - 3. Understand the elements of harmony
  - 4. Understand the elements of meter, rhythm and tempo
  - 5. Understand compositional forms and technique
- B. AURAL ANALYSIS
  - 6. Identify elements of scoring in a musical recording
  - 7. Identify elements of melody in a musical recording
  - 8. Identify elements of harmony in a musical recording
  - 9. Identify elements of rhythm, meter and tempo in a musical recording
  - 10. Identify elements of compositional forms and techniques in a musical recording
  - 11. Identify elements of errors in a recorded vocal or instrumental performance of a written score

## MUSIC HISTORY AND LITERATURE = 33%

### A. MUSIC HISTORY AND LITERATURE

12. Demonstrate knowledge of music from the Middle Ages through 1750
13. Demonstrate knowledge of music from 1750 through 1900
14. Demonstrate knowledge of music from the Twentieth Century to the present
15. Demonstrate knowledge of music from the United States from 1650 to 1900
16. Demonstrate knowledge of music from the United States from 1900 to the present

### B. AURAL ANALYSIS

17. Recognize characteristics of music from the Middle Ages through 1750 in a musical recording
18. Recognize characteristics of music from 1750 through 1900 in a musical recording
19. Recognize characteristics of music from the Twentieth Century to the present in a musical recording
20. Recognize characteristics of music from the United States from 1650 to 1900 in a musical recording
21. Recognize characteristics of music from the United States from 1900 to the present in a musical recording

#### MUSIC EDUCATION

22. Understand choral and instrumental literature
23. Understand techniques of conducting
24. Understand basic vocal and instrumental techniques
25. Understand the musical development of children and adolescents
26. Identify methods of music education

#### INTEGRATION OF KNOWLEDGE AND UNDERSTANDING

27. Prepare an organized developed analysis on a topic related to one or more of the following: music theory and analysis; music history and literature; music education

Various members of the department of music faculty, based on their area of expertise, then came up with 20 questions for each of sub-areas 1-26, totaling roughly 520 questions. These questions would then be randomized so that each time a person took the test, the questions would be different. It is set up so that two questions per each of the 26 sub-areas comprise the whole test. Deb MacKinnon organized and compiled the questions for David Peet to code. She would then work with the professors in obtaining and formatting the various graphics and listening examples that would be needed for those questions that required it. It was and continues to be an enormous undertaking.

### **Programming Overview**

A great deal of back end programming was necessary to ensure this project came together in terms of integrating code and content. It was agreed that during the practice mode, the site would tell students if their answers were correct or incorrect and that they could listen to the audio portion multiple times. In test mode, students would not be able to listen to an audio example more than twice to replicate the actual test. They would also not be given any indication of which questions they got wrong. This involved different coding for each mode. David and Jesse were responsible for the following:

- creating an XML file to store the test questions and the breakdown of test categories
- creating web pages that present questions to the user
- allowing the questions to be randomly selected from the XML file

- creating an XML log file that stores users' results
- working to solve multiple Internet Explorer vs. Netscape and Windows vs. Macintosh display and audio problems
- adding questions gathered and prepared by Deb to the XML file
- working with Joe Attardi to integrate secure user login pages with the work above

### **Graphic Design Overview**

Erik Bettencourt worked with programmers to create flow charts and assess the usability of the MTEL prep web site. Several meetings were held and preliminary sketches, layouts and color choices were selected. A logo with a static wireframe was developed.

The MTEL prep site logo was created in illustrator and several revisions were made to help build site branding that correlated to the content. The Georgia and Myraid font families were utilized for the logo and were carried through all main level navigation to give the site a consistent appearance.

The interfaces' clean professional appearance was designed to keep the viewer focused on the content and to maintain the integrity of the actual MTEL test. The use of subject related graphics and heavy blocks of color convey a less stressful environment to the sample test but the logo and question page layout suggest the purpose and goals of the MTEL prep site. The red and blue color scheme corresponds to the UMASS Amherst and Lowell logo and site layouts. This connection helps achieve the institutional and educational purpose of MTEL prep site for the Massachusetts Tests for Educator Licensure.

### **Issues Encountered**

The first major issue encountered, and one that is still plaguing the project intermittently, is regarding difficulties playing the sound files in the Web browser on Mac's. Jesse did some research into the difficulties he was encountering and discovered that Mac's are browser sensitive. Therefore, in order for this site to work on a Mac, the user would need to be working in Netscape's 7.1 browser. It was decided that Mac users would be informed that Netscape 7.1 would be needed to run this program and that we would put a download link on the Homepage or our site as well. We also agreed to put a link to download the latest version of Quicktime Player and Quicktime Musical Instruments for the playing of midi files. At the time of this report, the links still need to be put in place.

Another audio issue is that some computers take longer to download the audio files. David Peet is looking into having the "Play Melody" button say "Downloading" while the file is downloading then change to "Playing" after the file is finished downloading. While on the surface it sounds like a simple task, it is complex behind the scenes.

Coordinating the various faculty members in terms of content deadlines and number of questions needed, in addition to their already stressed workloads, was a daunting task. We also had to account for the fact that once we opened the site up for student use, there was the possibility that we could overburden the server. We fell behind schedule due to content and technical issues and couldn't actually begin preliminary testing until the beginning of May, when students were also involved in final projects and studying for finals. We have done some limited testing of the site at the Lowell campus and once we finish debugging and correcting content errors we will open this up to the Amherst campus for their input. I have been in touch with Roger Rideout from the Amherst campus and have apprised him of the delay.

### **Findings**

<http://teaching.cs.uml.edu/music>

Students who have already taken the MTEL test feel this site is user friendly, relevant and close to the actual test in terms of content and difficulty level. The Teaching Assistant who has been running the Test Prep seminars feels that everyone will benefit from this site. Our computer lab has powerful G4 computers but there does seem to be some compatibility issues with regard to Mac's and the OSX operating system. Many students are still having problems playing the audio files yet many are encountering relatively little difficulty. Jesse believes that the audio difficulties some users have been experiencing could be due to the server currently being used for the site. Since it is a Windows 2000 desktop-class system, perhaps it just can't handle the demand of that much traffic. He believes that once they get the new Linux server-class system to replace the current Win32 box that that will solve the problem.

So far about a dozen students have actually gone through the program in both practice and test modes and filled out a survey. With the exception of one student who was miffed that this program was browser specific, they all felt the program was easy to use. They felt this site would be useful for preparing for the MTEL exam and preferred this method to the test preparation classes we've been holding. They all felt the site was easy to navigate, liked the convenience of doing this in their own time, and felt the questions provided were of a balanced variety. While about half of the respondents encountered technical difficulties, which were centered mainly around the playing of audio samples, they found the graphic examples clear and helpful. They liked knowing how they did at the end of the test but would like a breakdown of the areas they are weak in. All the students felt this was a positive addition to the Music Studies program. At this writing we have not yet addressed Section 27, which is the essay section.

At this writing, though we are still a "work in progress" in some areas, we feel we have made tremendous progress and will be fully functioning in time for students to begin preparing for the MTEL test in the fall. After several of our students who will be using the site actually take the exam, we will have a better idea of how well this site helped in their preparation to take the test. Several of our music faculty have expressed interest in opening this site up to their grad students, who are preparing for the ETS test in Music. I am hoping to find additional funding so that we can go to phase two and have a review area as well as being be able to keep this site up to date.

### **Budget**

- \$5,500 for Computer Science Programming
- \$1,500 for Music Department assistant
- \$500 for graphic designer
- \$938 for software, such as Finale, Adobe Premier, Acid Pro, Macromedia Studio MX, Iomega external CD-RW Drive

TOTAL = \$8,438.38

**\$1,500** earmarked for travel expenses for Dr. Gena Greher for travel between campuses as well as dissemination of research at research conferences for both Dr. Greher and Dr. Heines has yet to be spent. We are asking to defer that portion until the Fall 2004 semester.