Challenges in Developing an Informal Music Learning Game Environment: A Project with *The San Francisco Symphony*

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SFSKIDS: Portal for 8-13 year old students

SE Challenges in *SFSKIDS*

-- Non-Functional Requirements
-- Playful user interfaces
-- Gesture control
-- Real-time DSP in Web browser
-- Persistence without storage
-- Design for extensibility

Accommodating Preponderance of Non-Functional Requirements

– SFSKIDS must be *fun* for *8-13 year old students*

-- SFSKIDS must operate on older or slower personal computers

-- SFSKIDS should be aligned with *National Music Education Standards*

Align with National Music Education Standards

National Association for Music Education

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RESOURCES
- BOOKS
- PERIODICALS
- TRI-M MUSIC HONOR SOCIETY
- ADVOCACY AND PUBLIC POLICY
- COPYRIGHT CENTER
- INFORMATION ON MUSIC EDUCATION
- NATIONAL STANDARDS

SECTIONS
- BAND
- CHORUS
- FUTURE TEACHERS
- GENERAL MUSIC

NATIONAL STANDARDS FOR MUSIC EDUCATION

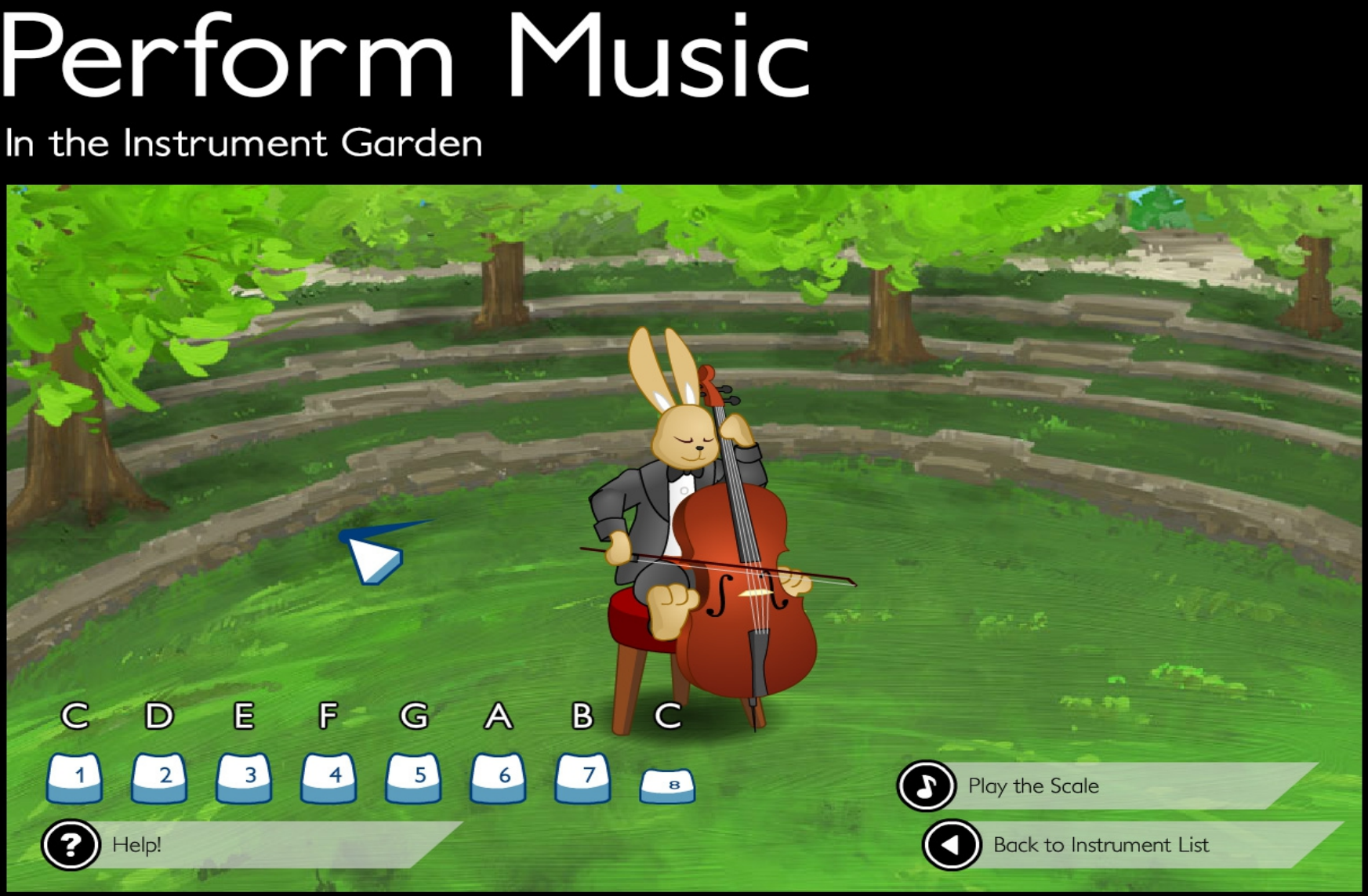
1. Singing, alone and with others, a varied repertoire of music.
2. Performing on instruments, alone and with others, a varied repertoire of music.
3. Improvising melodies, variations, and accompaniments.
4. Composing and arranging music within specified guidelines.
5. Reading and notating music.
6. Listening to, analyzing, and describing music.
7. Evaluating music and music performances.
8. Understanding relationships between music, the other arts, and disciplines outside the arts.
9. Understanding music in relation to history and culture.

Related Links:

- Summary Statement Education Reform, Standards, and the Arts—Summary Statement to the
- National Standards for Arts Education: Introduction
- National Standards for Arts Education: A Brief History
- National Standards for Arts Education (complete K-12 standards, hosted by ArtsEdge)

Playful user interfaces

Gesture control



Real-time DSP in Web browser

Persistence without storage

SFS required minimal service support: thus no external database or content management servers

-- Users can export (via email) *encoded URIs* that embed music compositions or music animations

-- Other users can receive and select encoded URIs, resume session or modify created content

Anticipated extensions

SFSKIDS designed for extension, modding, or customization of:

- Recorded music catalog
- Music history
- Music genres (Opera, Jazz, World,...)
- Musical instruments
- User created music+imagery
- External content management
- Localization

Conclusions

- *Fun*: a challenging requirement!
- Interdependence of SE and HCI
  - playful user interfaces
  - gesture control
  - playful game (user) experience
- SE helps to develop application as a reusable, extensible platform!

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