

Engineering Challenges in Developing an Informal Music Learning Game Environment

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Overview

- A brief tour of SF SKids.org
 - highlighting innovations and competitive advantages
- Guided tour and walk-through of SF SKids
- Expanding the scope and reach of SF SKids to diverse, global audiences with multiple musics
 - through externally funded partnerships

SFSKIDS.org: Portal for 8-13 year old students

SFSKIDS FUN & GAMES WITH MUSIC

Discover Listen Play Perform Conduct Compose



SAN FRANCISCO SYMPHONY



Welcome!

Welcome to SFSKids – Fun and Games with Music! We're glad you're here. There's a whole world of symphonic music waiting for you to explore!

Start by choosing a location. Then jump right in and let the fun begin!



Let's Start!

Click here to start!

Looking for SFSKids Classic?



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SFSKIDS.org: Portal for 8-13 year old students

SFSKIDS

FUN & GAMES WITH MUSIC

Discover Music

Under the Sea of Knowledge.



Play with Music

Above the Musical Skies



Perform Music

In the Instrument Garden



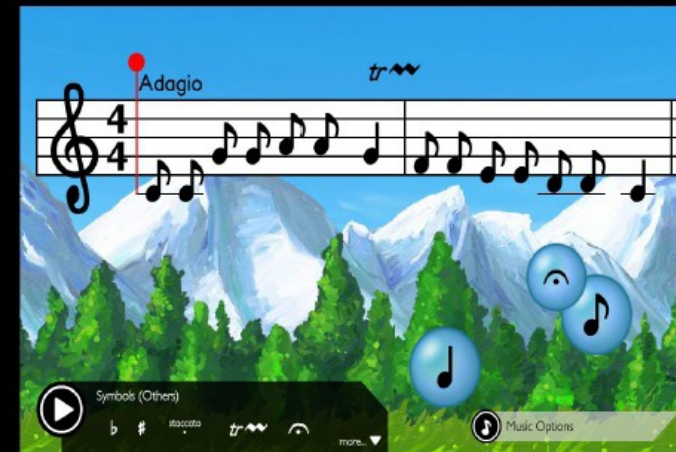
Conduct Music

At the Symphony Hall



Compose Music

Atop the Mountain of Muses



Competitive landscape: who competes with *SFSKids*?

- Other orchestra portals?
 - *NYPhil, Dallas, Nashville, (Carnegie Hall)?*
- Online music education portals?
 - *Music Learning Community, Piano Education, MTNA, World Music Daria, PBSKids?*
- Games with/for Music?
 - *CreatingMusic? Harmonix/Disney Fantasia: Music Evolved? (video)*

Innovative challenges addressed in *SFSKIDS*

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

Accommodating Non-Functional Requirements

- SFSKids must be *fun* for 8-13
year old students
- SFSKids must operate on older
or slower personal computers
 - enabling young people in underserved communities
- SFSKids aligned with *National
Music Education Standards*

Align with National Music Education Standards



National Association
for Music Education

ABOUT

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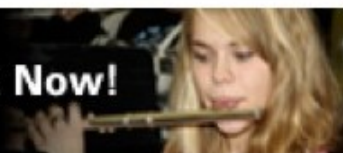
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GENERAL MUSIC

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

Discover Music

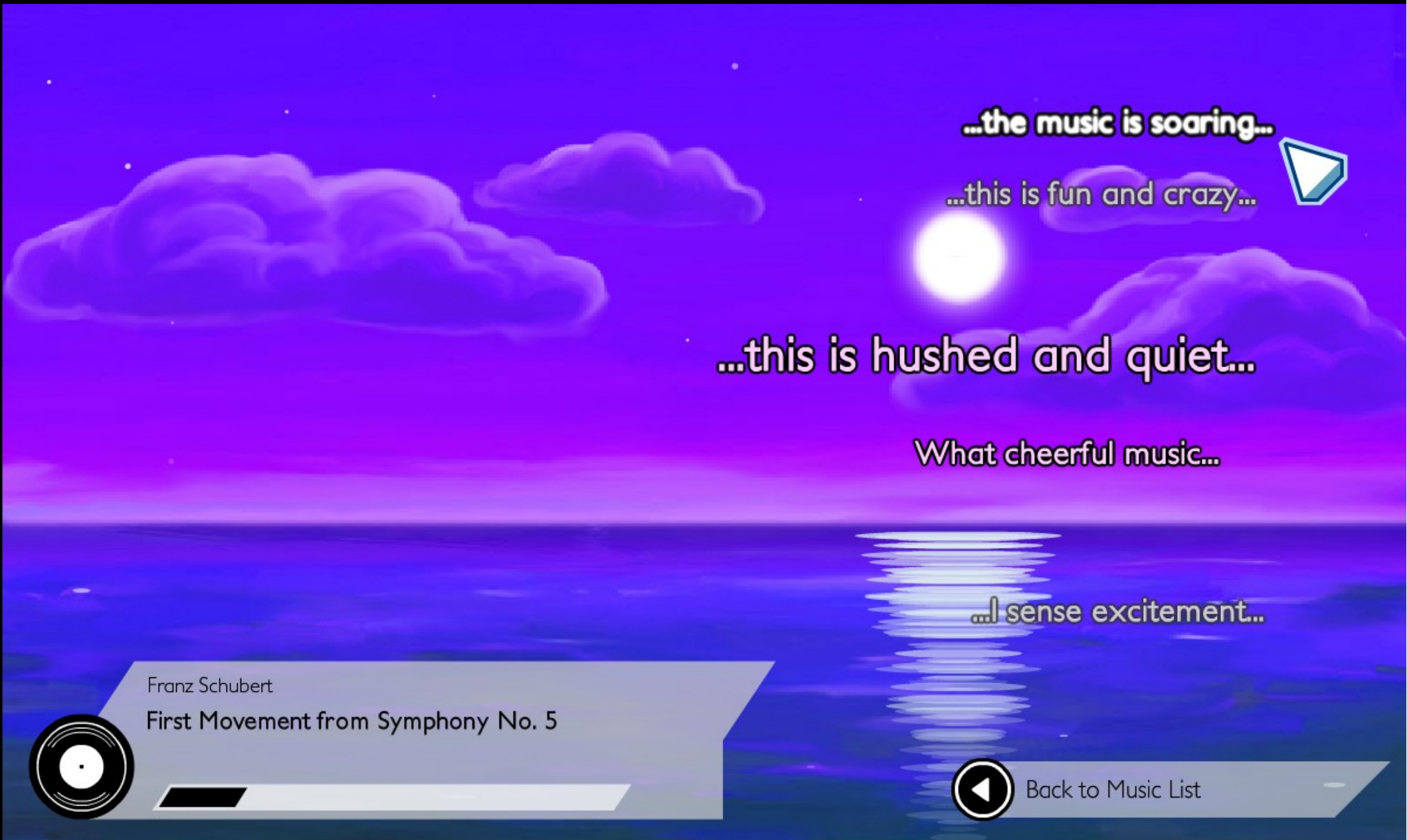
Under the Sea of Knowledge.



Playful user interfaces (for stimulating neurocognitive attention management)



Playful user interfaces (for emotional recognition and reasoning)



Gesture control (without costly devices)

Perform Music

In the Instrument Garden



Gesture control (without costly devices)



Real-time DSP/Music Processing in Web browser

Conduct Music

At the Symphony Hall



Real-time DSP/Music Processing in Web browser

Select Mode

► Dance of the Hours



Follow



Let the master conductor guide you.
Follow the instructions perfectly to earn a high score!



Lead



The student has become the master.
Use everything you've learned to lead the orchestra!



Back to Music List

Real-time DSP/Music Editing/Composing in Web browser



Moderato



p

ff

Here is the second half of our solution, the decrescendo symbol.



Crescendo and Decrescendo

Crescendo and decrescendo smooth the journey from soft to loud, and from loud to soft!



Stop Current Lesson



Music Options

Persistence without storage

SFSKids requires minimal service support:
therefore no external database or content
management servers employed/required

- Users can export (via email) *encoded URIs* that embed *music compositions* or *music (video) animations*
- Other users can receive and select encoded URIs, resume session, or modify user-created content

Anticipated extensions

SFSKids.org, an instance of the *World of Music* platform, is designed for extension, modding, or customization of:

- Recorded music catalog
- Music history
- Music genres (Opera, Jazz, World,...)
- Musical instruments
- User-created music+imagery (“music videos”)
- Localization (internationalization)
- Integration with Science, Technology, Engineering, Arts, and Mathematics (STEAM) learning initiatives

Conclusions

- *Fun and games with music*: a challenging requirement!
- Technological innovations for youthful online music education
 - playful user interfaces; gesture control;
 - real-time music processing; persistence without storage, extensibility, etc.
- Enabling new (market) opportunities via a reusable music learning platform!

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- *No review, approval, or endorsement implied.*