

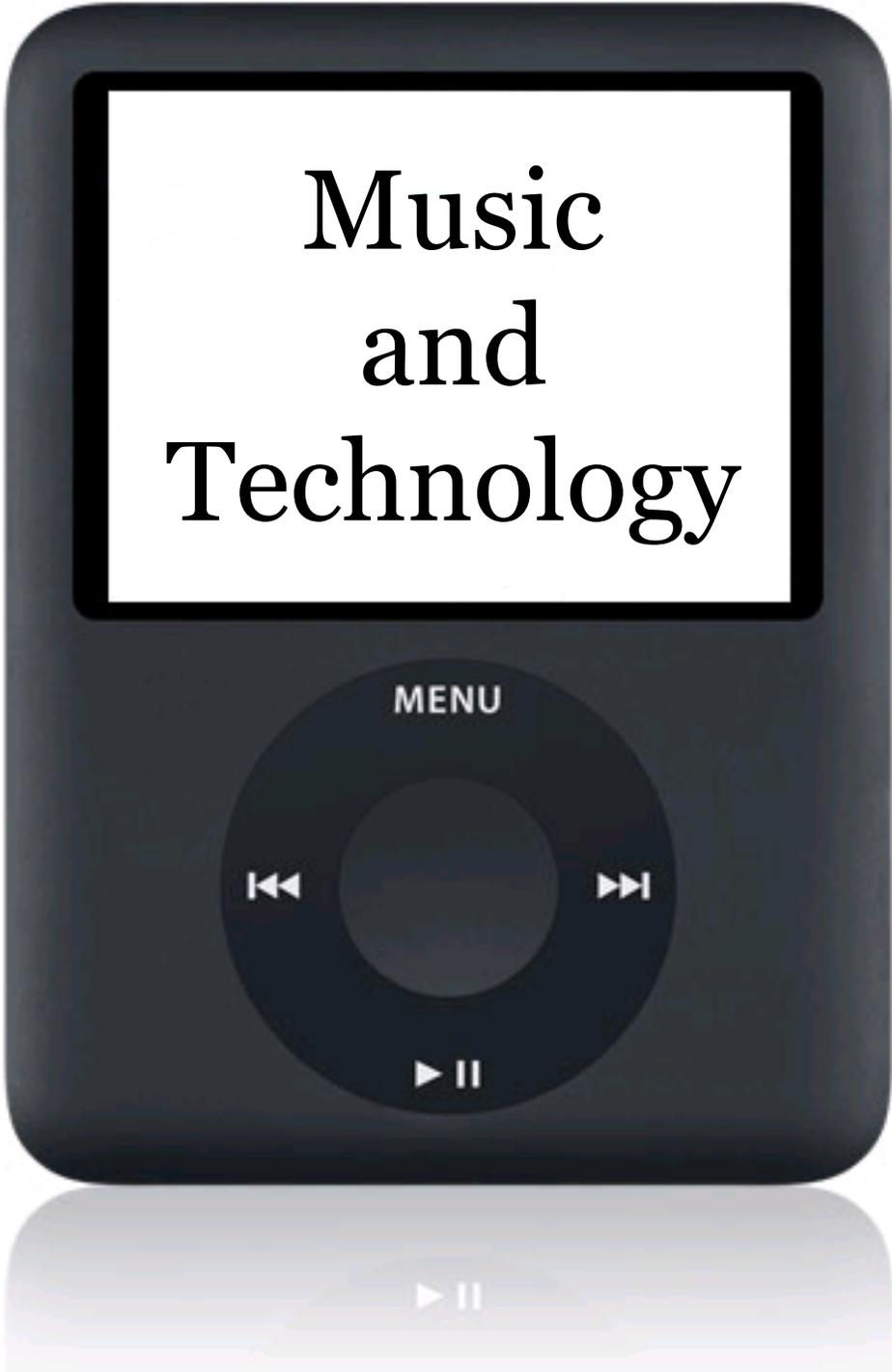


# mp3 and the Choir Rehearsal

How to move your school music program into the 21<sup>st</sup> Century

Dr. Christopher J. Russell, Park High School



An iPod is centered in the image. The screen displays the text "Music and Technology" in a black serif font. Below the screen is the circular click wheel with four directional buttons: "MENU" at the top, "Previous" on the left, "Next" on the right, and "Play/Pause" at the bottom. The iPod is reflected on a white surface below it.

# Music and Technology

MENU



# Why Music Isn't Technology 'Friendly'

- Lack of Training about Technology in Music Education
- “Old” Attitudes about Technology in Music Education
- Lack of Funding (Even grants!)
- Priority of other issues in education (testing, ‘core’ areas)
- Music is a performance-based class (Middle/Junior High/High School)



# Music is all about technology

- Historically (Development of theory and instruments)
- MIDI
  - Musical Instrument Digital Interface (established 1983)
- Recording Industry
  - Music Editing Hardware
  - Music Editing Software
  - Electronic Instruments
  - End User: CDs or Downloadable Files
- Music Composition Software
  - Finale and Sibelius
- Music Accessories
  - Tuners, Metronomes
  - Freehand
- Music Education Software



# Ways to Use Technology in Music

- Performances
  - Accompaniment
    - Music Notation Software
    - Mp3 players
    - Digital Grand Pianos
    - Amplification
      - PA
      - Solo
      - Vocal Jazz
    - Recording
      - Moving away from CD recorders – Digital Recorders

# Ways to Use Technology in Music

- Rehearsal
  - Accompaniment
    - Music Notation Software
      - Playback
      - mp3 (or WAV) creation
      - SmartMusic
    - Mp3 Players
      - Group Rehearsal
      - Small Rehearsal
    - Digital Grand Piano
    - iTunes

# Ways to Use Technology in Music

- Rehearsal
  - LCD Projectors
    - Announcements
    - Warm-Ups
    - Sight Reading
    - Lecture (Theory/History)
    - Wireless Link to Projectors
  - Teacher Amplification
  - Recording
    - Mp3 recorder OR iPod recorder

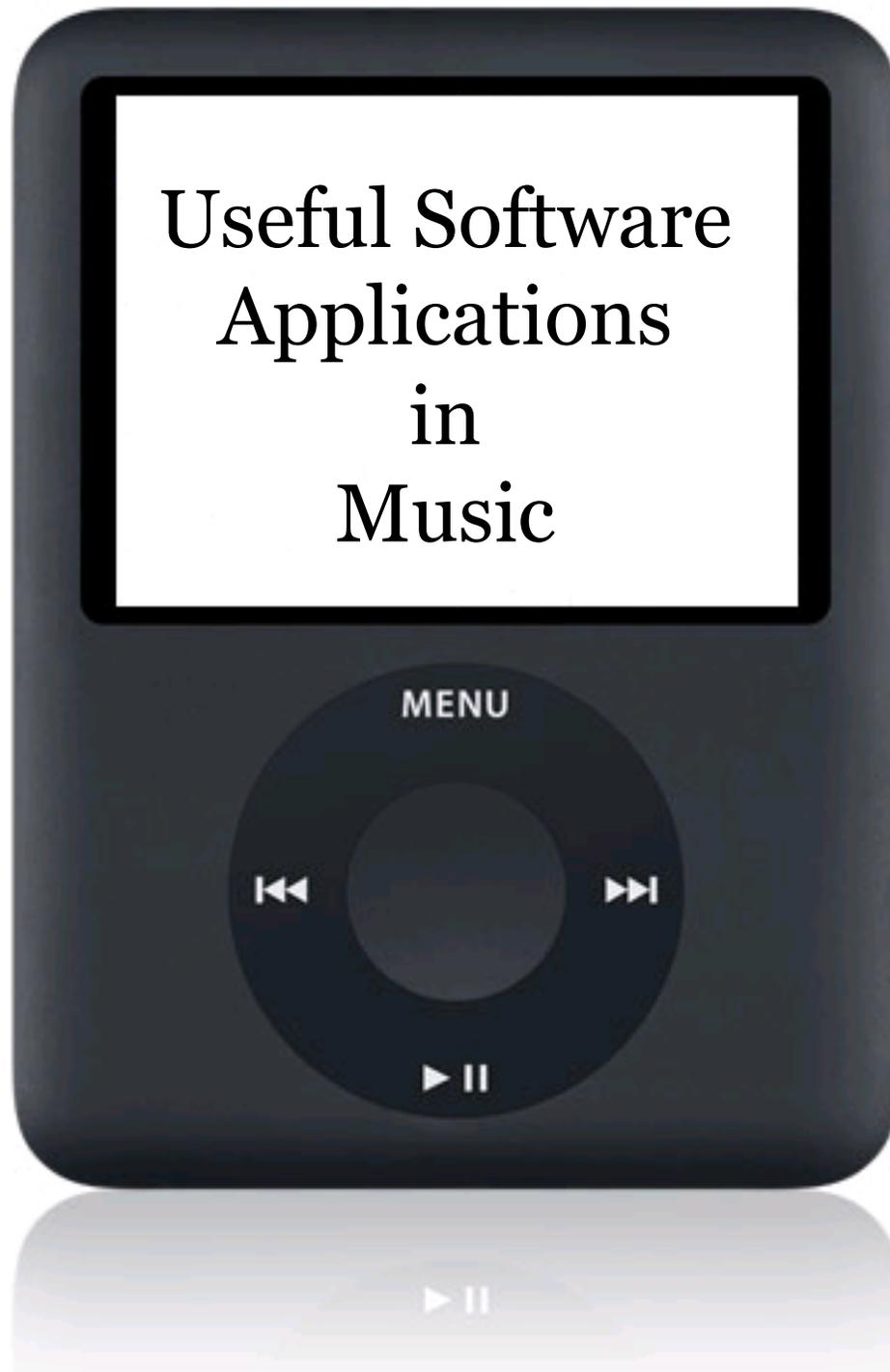
# Ways to Use Technology in Music

- Replace Scores/Sheet Music
  - Music Notation Software (literally)
  - Freehand (digitally)
- Composition & Arranging
  - Music Notation Software
- Audio Library
  - Listening library
  - Concert archives
- Attendance
  - I am still searching for that program or system that cost-effectively and time-effectively allows you to keep attendance in the classroom for 30-80 students at a time

# Ways to Use Technology in Music

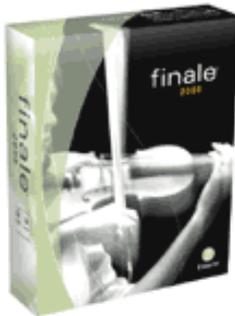
- Internet
  - Organizational webpage
  - File sharing\* (more about Copyright Laws later)
  - Moodle (online courses)
  - Things to be cautious about: Facebook, MySpace, IM Chat (AOL, Gmail, Yahoo!, Trillian)
- Music Accessories
  - Tuners
  - Metronomes
- Solo & Ensemble Prep
  - Accompaniment
  - Mp3 players & trainers
  - iTunes
  - Music Notation Software
  - SmartMusic

Useful Software  
Applications  
in  
Music



# Music Composition Software

- Finale & Sibelius (the big two)
  - Finale (MakeMusic) [Eden Prairie, MN]



- Released in 1988
- *Finale* is not fully backwards-compatible. Newer versions of Finale can open older files, but a newer file cannot be converted to an older version. Finale 2003 added a feature to import and export MusicXML files.

Finale is used by large publishers such as the Hal Leonard, by many colleges and universities, and by many film composers.

- Sibelius [UK, with world offices]

- Released in 1993
- Often considered the easiest composition software to use



# Music Composition Software

- In addition to writing and printing music you can:
  - Play music directly into the program (keyboard or other instruments)
  - Make rehearsal tracks with improving digital sounds with audio mixer controls
  - Export graphics to PowerPoint and other application



<http://www.freehandsystems.com>



# iTunes

- Search Feature
- Slider (advancing to a specific time in a piece)
- Equalizer (view→show equalizer)
- Playlists
- Burning/Sharing\* (more about Copyright laws later)
- File Conversion (advanced→convert)
- Advanced Tag Information
  - (edit→preferences→advanced)
  - Composers
  - Images

# Advanced Tag Information

Sonata No. 11 for Piano in A - III: Rondo alla turca. Allegretto.

Summary Info Sorting Options Lyrics Artwork

**Name**  
Sonata No. 11 for Piano in A - III: Rondo alla turca. Allegretto.

**Artist**  
Alicia De Larrocha, Piano

**Album Artist**

**Album**  
Mozart 250 - A Celebration [Disc 2]

**Grouping**

**Composer**  
Wolfgang Amadeus Mozart (1756-1791)

**Comments**

**Genre**  
Classical

Part of a compilation

Year: 2006  
Track Number: 9 of 12  
Disc Number: 2 of 2  
BPM:

Previous Next OK Cancel

Advanced Help iTunes

Unforgettable

View 1 of 19386

Unforgettable  
Words and music by Irving Berlin  
Arranged by John Lewis  
The Jazz Series

Unforgettable  
Performance Tracks

Name	Track #	Genre	Artist	Album
<input checked="" type="checkbox"/> Unforgettable Vocals		Choral Acco...	Performance Tracks	Unfc

1 song, 3:34 total time, 5.8 MB

- Bluegrass
- CJR Music
- CJR Videos



# iTunes

- Type of Encoding in your library
  - Digital Format (AAC, mp3, or ???)
  - Bit Rate
  - You can tell iTunes what you want it to do!
  - iTunes will import a variety of files
  - iTunes can convert those files into another format

# Digital Audio Formats

- Many formats to choose from (Uncompressed vs. Lossless vs. Lossy)
- Uncompressed
  - Uncompressed audio formats (often referred to as PCM formats) are just as the name suggests — formats that use no compression. This means all the data is available, at the risk of large file sizes.
  - WAV (1 minute = 10 MB)

# Digital Audio Formats

- Lossless
  - Lossless compression applies compression to an uncompressed audio file, but it doesn't lose information or degrade the quality of the digital audio file.
  - Apple Lossless (1 minute = 5 MB)
  - Windows WMA Lossless

# Digital Audio Formats

- Lossy
  - Lossy compression will result in some loss of data as the compression algorithm eliminates redundant or unnecessary information — basically it tosses what it sees as irrelevant information. Lossy compression has become popular online because of its small file size, it is easier to transmit over the Internet.
  - Apple AAC (1 minute less than 1MB)
  - Windows WMA (1 minute = 1MB)
  - mp3 (1 minute = 1MB)

# Digital Audio Formats

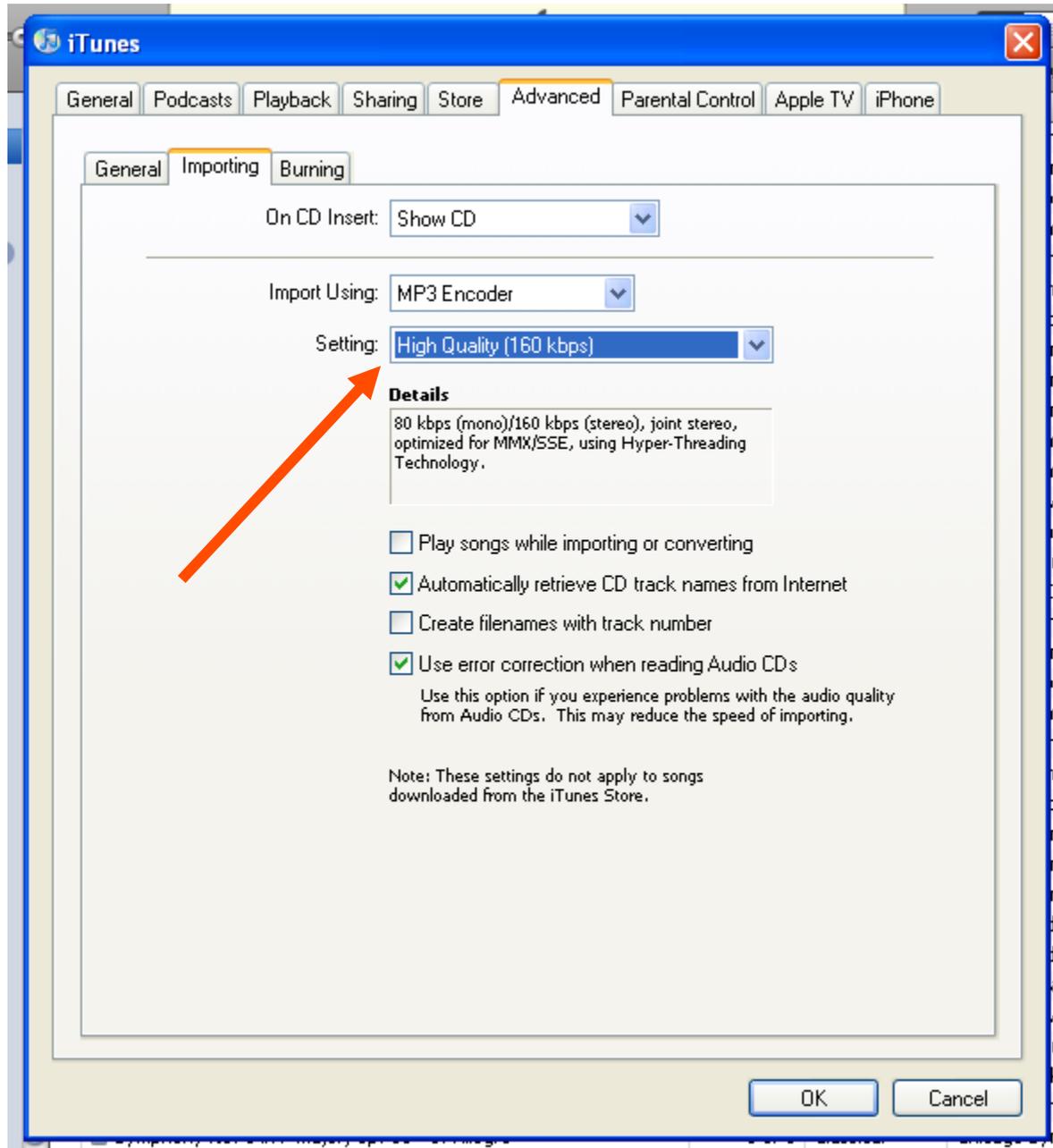
- A 2005 listening test compared the performance of the LAME MP3 encoder against more modern compression formats at 128 kbit/s, it was found that there was no statistically significant difference between the results for mp3, ogg, AAC, and WMA files.

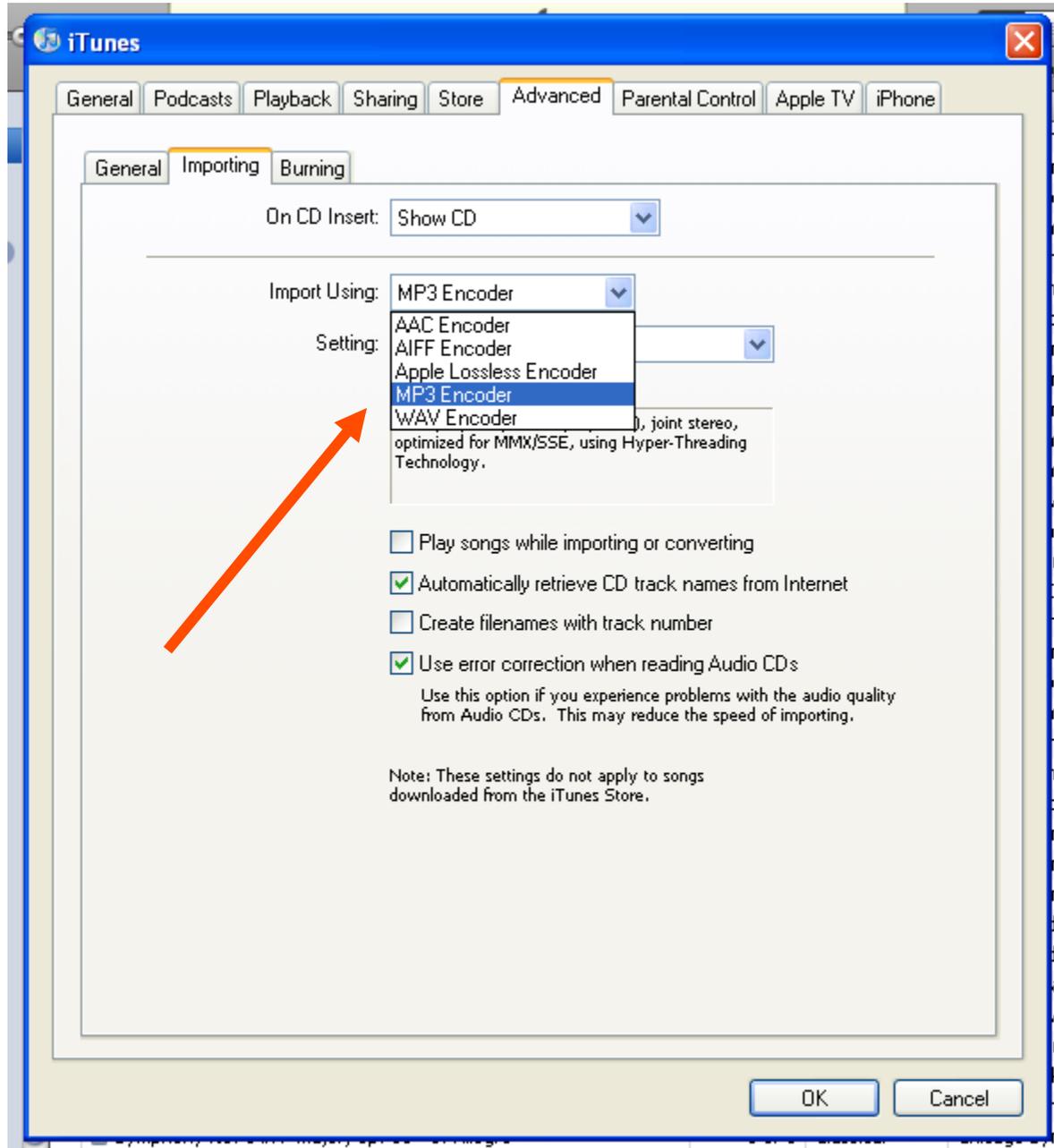
[<http://www.listening-tests.info/mf-128-1/results.htm>]

[[http://www.webopedia.com/DidYouKnow/Computer\\_Science/2005/digital\\_audio\\_formats.asp](http://www.webopedia.com/DidYouKnow/Computer_Science/2005/digital_audio_formats.asp)]

# Digital Audio Formats

- I use mp3 files
  - If I do have to share a digital audio file, it is available as a universal format
  - I tend to encode at 160 kbits/second, which is usually very close to the original in my ears
  - Storage space is less of an issue, so if you use a lossy format, use a higher bit rate!

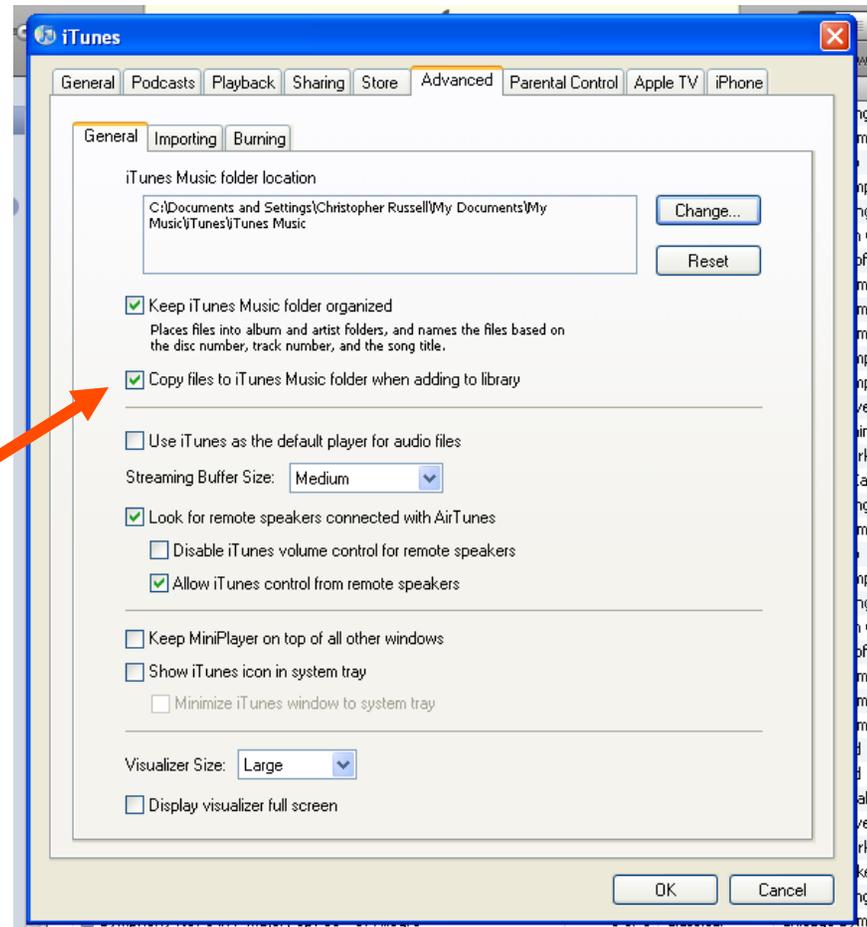






# iTunes

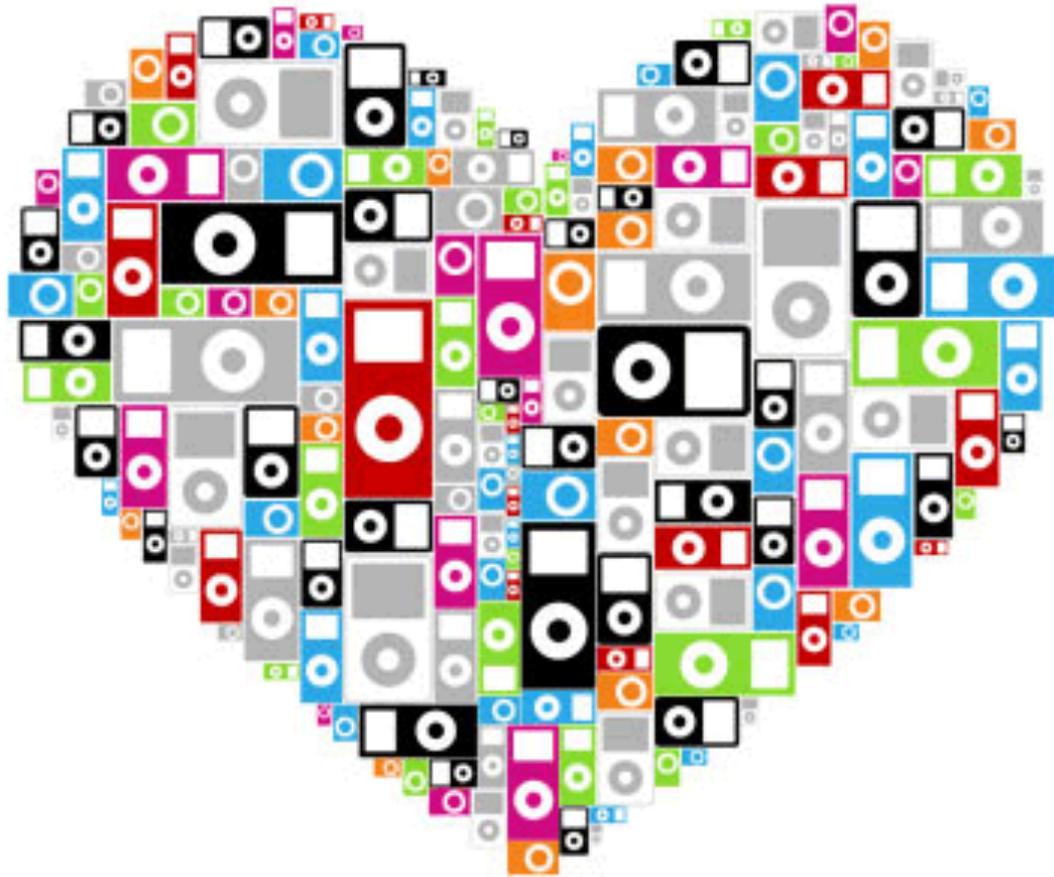
- Storing in iTunes Folder
  - A common area of stress for iTunes users
  - Makes sure that iTunes has its own copy of your music (if you delete it from another spot)

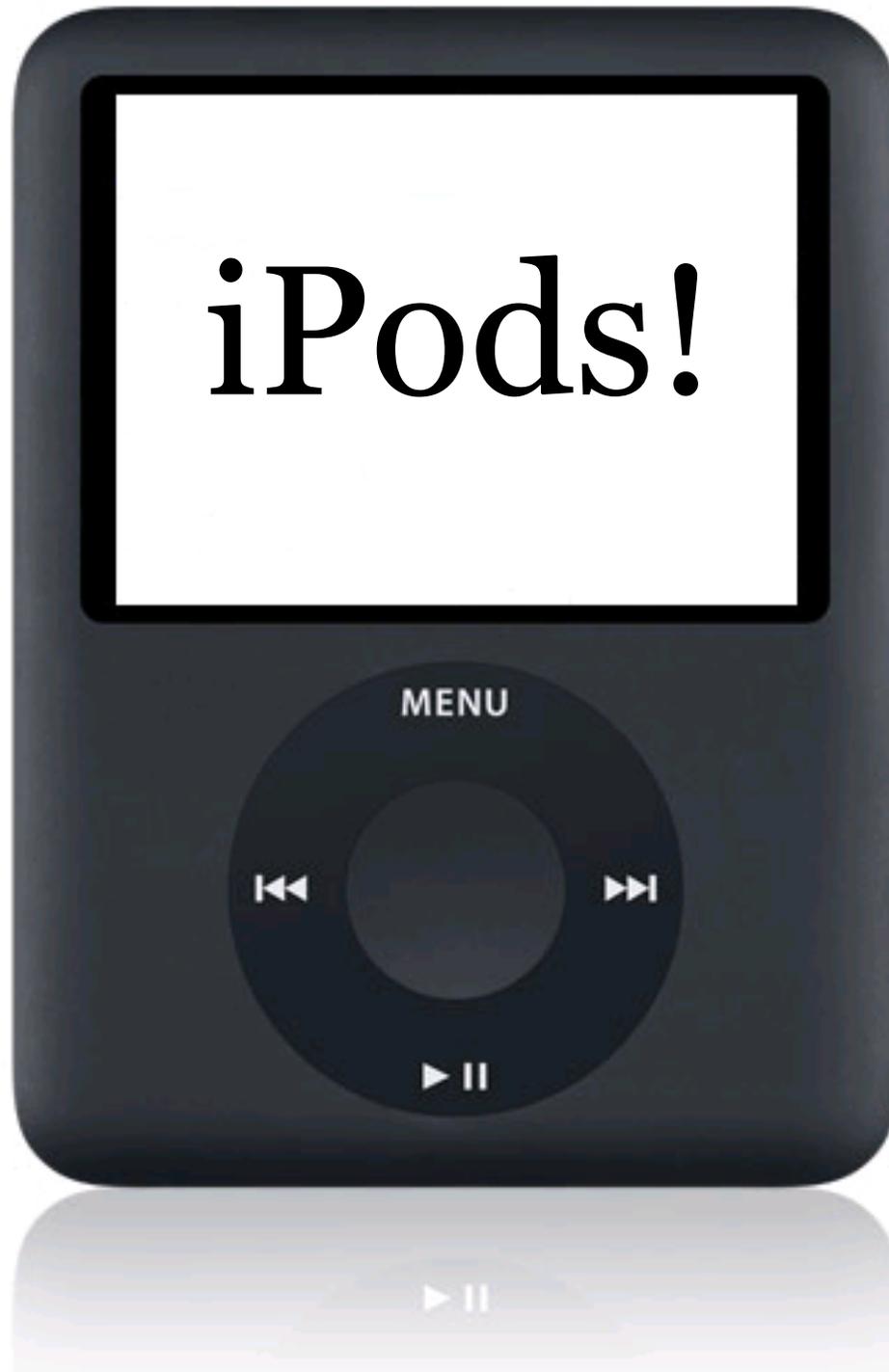




# iTunes

- And of course, iTunes controls the files on dedicated iPods.





iPods!

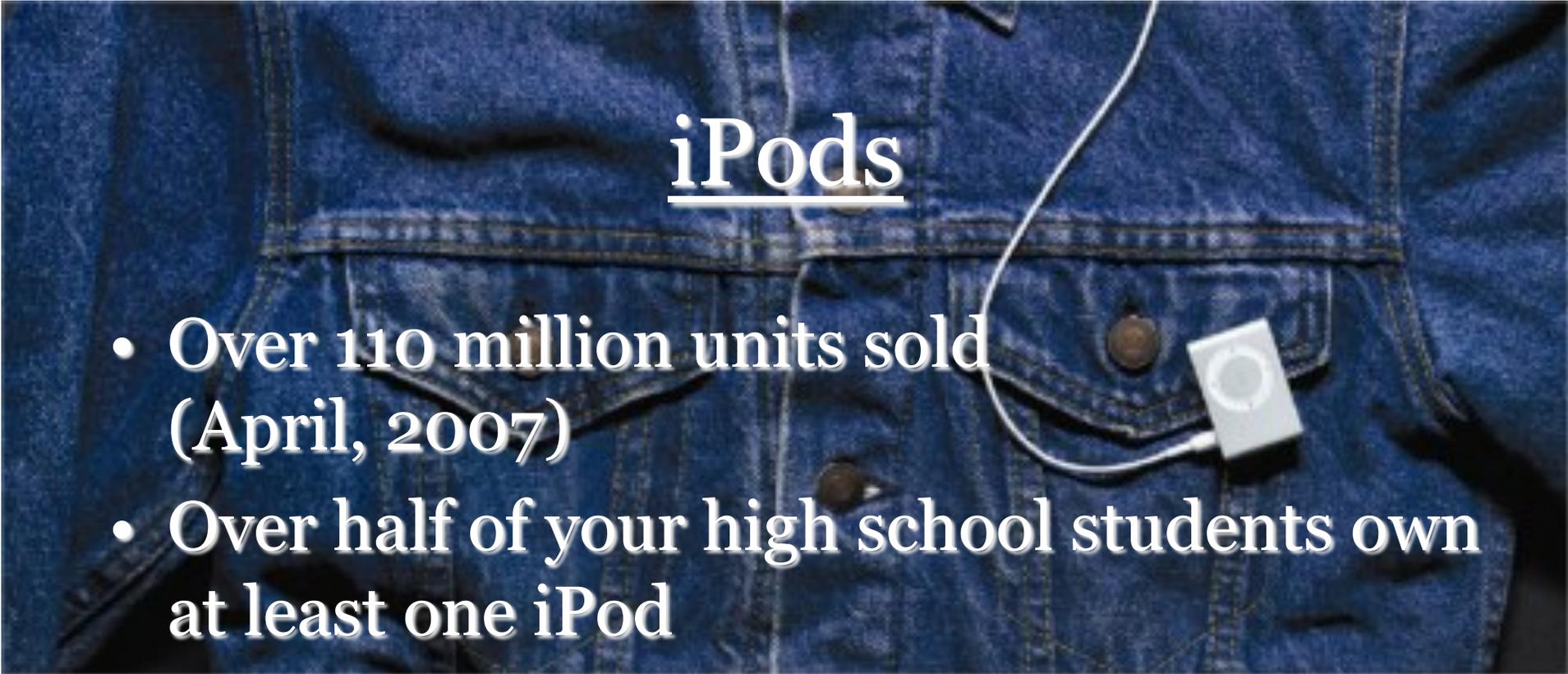
MENU



# iPods

- The overwhelming popularity of iPods...
  - They are an icon in our world
  - Best original marketing scheme ever?





## iPods

- Over 110 million units sold (April, 2007)
- Over half of your high school students own at least one iPod
- Unique, user-friendly interface
- Unlimited number of accessories
- Refurbished units come with the same warranty as new units (Apple.com)
- Schools are struggling with this technology

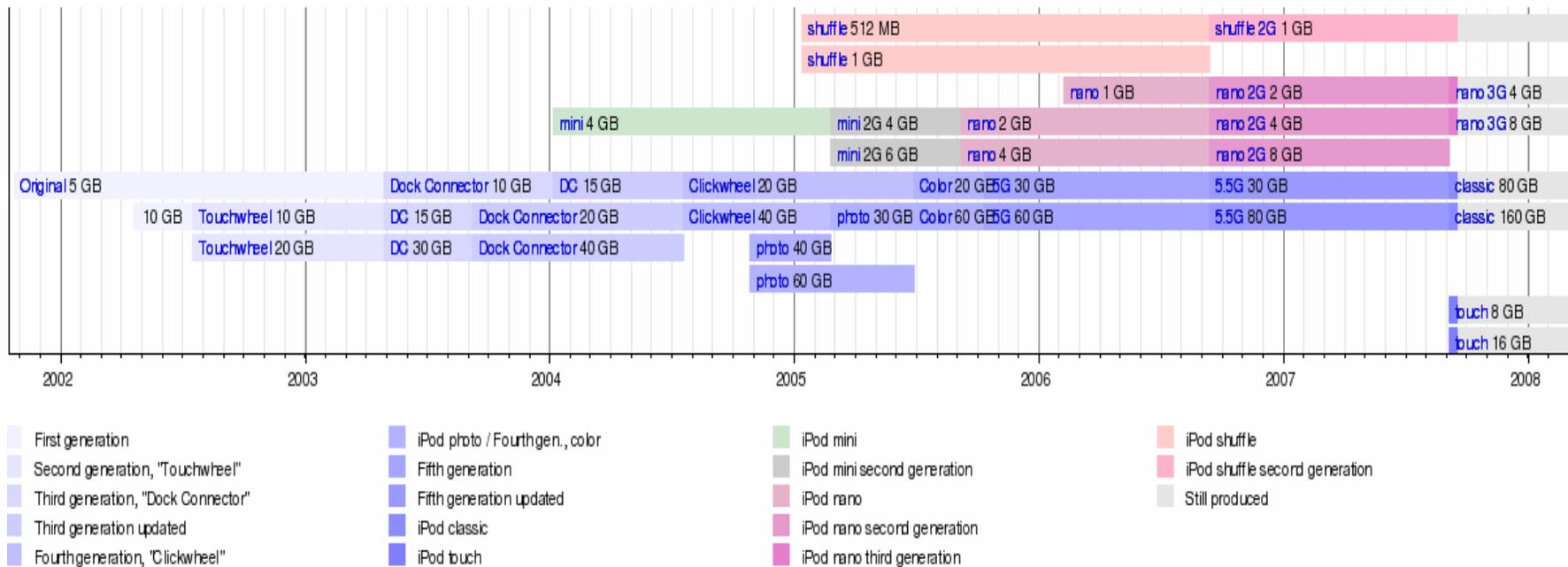
# iPods

- Perhaps your school would like to post this sign?





# Timeline of the iPod



In 6 years, Apple has sold over 110,000,000 iPods, growing from 5GB storage to 160GB (with the exception of the iPod shuffle), while developing a playtime up to 40 hours!

# iPods

- Some **BAD** iPod ideas:



# Just a few iPod Accessories

- Accessories
  - Sound Recorders
    - Xtrememac Micromemo
    - Belkin Tunetalk Stereo
  - iPod boombox
    - Memorex iMove (mi3005)
      - Handle
      - Remote
      - Charges iPod if plugged in
      - Protects iPod



# Just a Few iPod Accessories

- Accessories
  - iPod boombox
  - Brookstone
    - Boombucket

**Boombucket™ Portable Music System**  
for iPod® plays and protects your iPod  
anywhere you go



**Cordless!** Portable, weather-resistant and perfect when you're outdoors or traveling.



**Rechargeable!** Battery delivers up to 8 hours of your favorite music on a single charge.



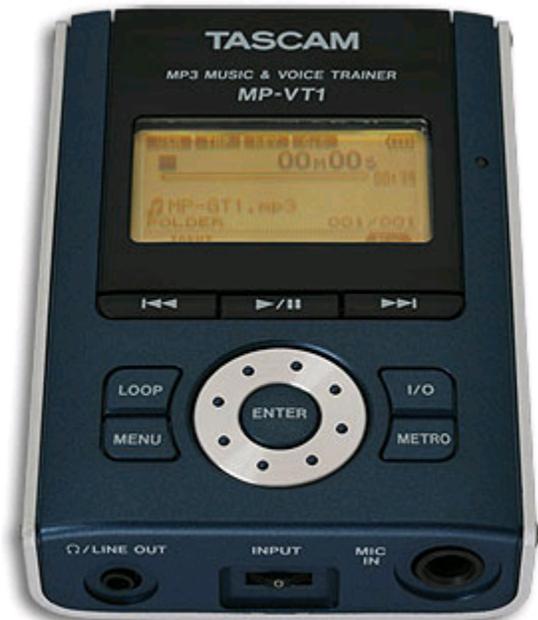
**Automatically charges your iPod while docked.** And the full-range speakers produce big stereo sound.



Made for iPod

# Other mp3 Accessories

- A new product
  - TASCAM mp3 trainer
    - Parts can be slowed down, looped and even
    - Plays back MP3s using Variable Speed Audition, which slows down the speed without changing the pitch, and sections can be seamlessly looped while practicing tricky passages.
    - Songs can even be pitched up or down to match the tuning of an instrument or vocal range



# Some Interesting iPod Accessories

- Accessories
  - Stereo Rack Accessories
    - Alesis
      - iMultimix 8 USB (records)
      - iMultimix 9R
    - Raxxess
      - IRDS iPod Docking Station



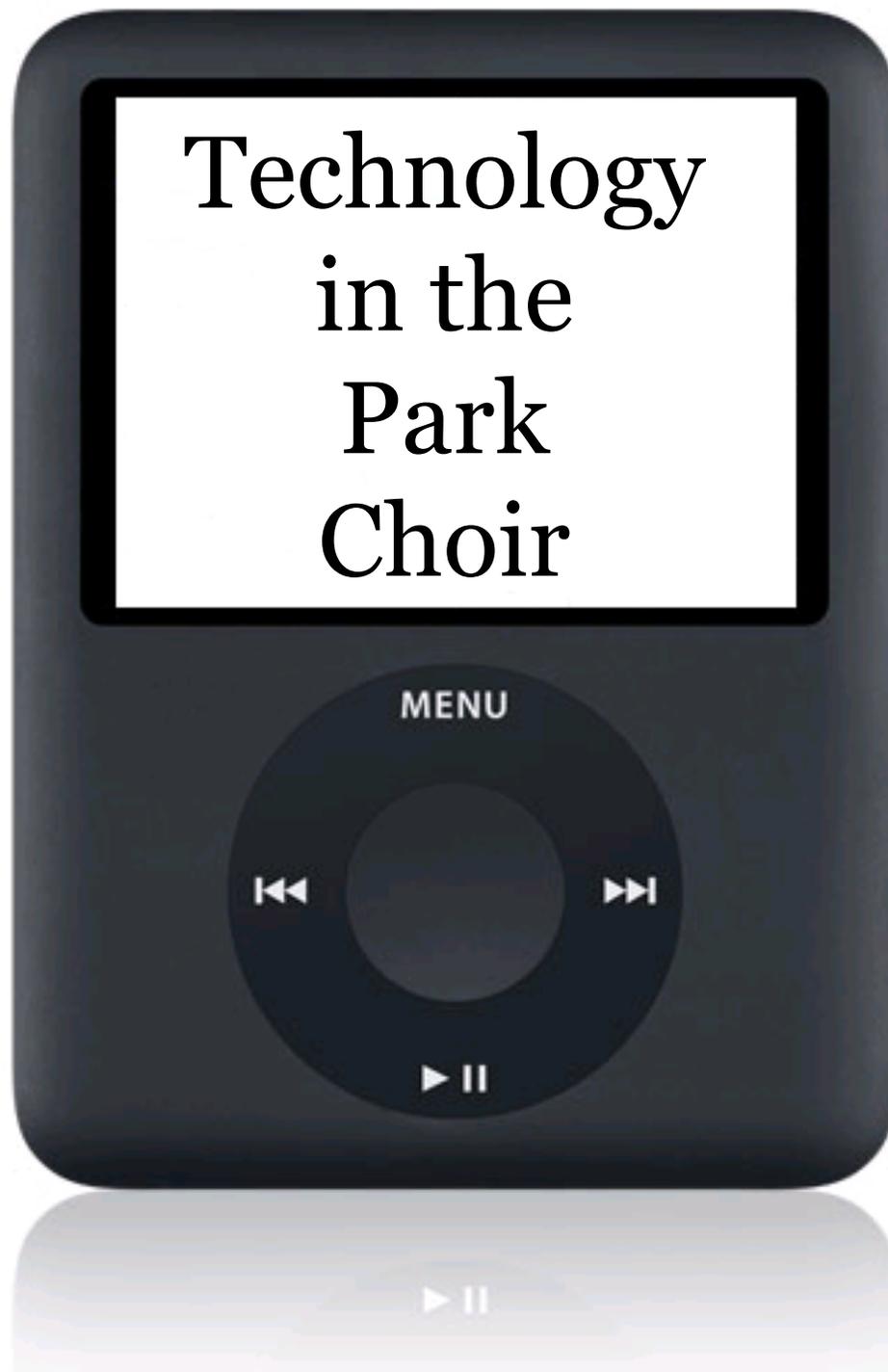
# Digital Audio Recorders

- For the concert hall or rehearsal room

- Edirol R9
- M-Audio MicroTrack
- Samson Zoom



Technology  
in the  
Park  
Choir



# Our iPod Situation

- Four 4GB 3<sup>rd</sup> Generation iPod nanos
- Four Brookstone Boombuckets
  - Provided generously through a grant from the St. Croix Valley Community Foundation and the Wisconsin Arts Board, as well as from the South Washington County Schools Technology Department
- One 4GB 2<sup>nd</sup> Generation iPod nano
- Three broken but functioning Altec Lansing im7 speaker systems
- One universal iPod dock
- My own personal laptop

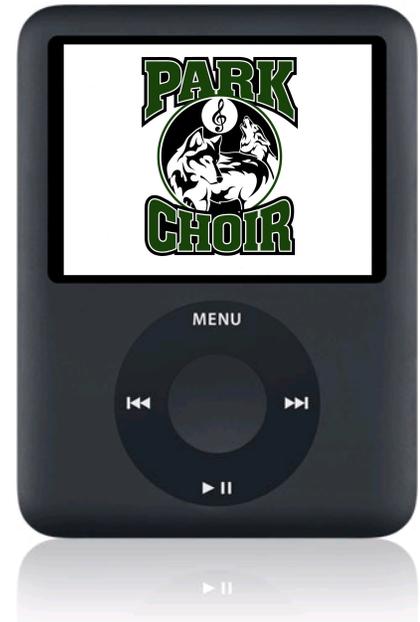


# Other Technology

- 2 Student Use Computers with Finale (2007)
- 1 District Computer
- 1 Dell Laser Printer
- Dell LCD Projector  
(PowerPoint for warm-ups, announcements, rehearsal order, & lecture – I can show an example later during Q&A time)
- Plector Wireless Projector Adapter
- Digital Baby Grand Piano (Valdesta)
- PA System
- Zoom H4 mp3 Recorder

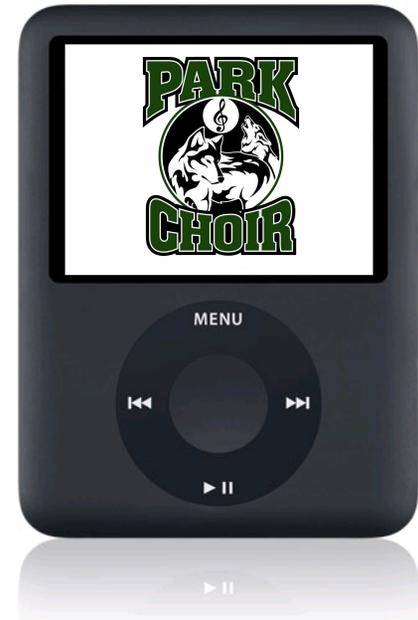
# Using iPods in Choir

- Currently, I feel the the 4GB Nano is ideal for the classroom setting
  - Lower Cost (replaceable) \$149
    - 11 bags of suckers!
  - Works with **most** accessories
  - Most programs lack 4GB of music data
  - Full color display
  - No hard disk
  - Apple offers free engraving (minimal security)
  - Replaces need for multiple pianos (& movement of those pianos!)
- Negatives of the 4GB iPod
  - Inability to use variable speed playback
  - Security issues (very easy to steal)
  - No tuner or metronome



# Using iPods in Choir

- How to use iPods in Choir
  - Also need an amplification system
  - Create or rip rehearsal tracks, and import them into iTunes
  - Place rehearsal tracks on iPods
  - through use of a playlist
  - Assign specific rehearsal places
  - and return times
  - Float and monitor



# Our iPod Situation

- Past use of mp3 technology:

2005-2006



2002-2005; 2006-2007  
(not counting discs for students)



2007 and beyond



The Compact Disc is 25 years old! The world's first CD manufactured at Philips factory near Hanover, Germany, on August 17, 1982. Philips and Sony co-developed the CD, and over 200 billion CDs have been sold in the last 25 years!

([news.ecoustics.com/bbs/messages/10381/379607.html](http://news.ecoustics.com/bbs/messages/10381/379607.html))

# How The Approach Has Changed

## CDs & Players

### Pocket PCs

- Use of Finale to generate rehearsal files
- Manual Manipulation of Sound files (drag & drop)
- Sync each unit
- Fragile
- Cost issues
- Storage issues (memory)
- Speakers? (The district provided computer speakers, but these were difficult to use, so I personally purchased “broken” im7 iPod speakers for this purpose)
- Learning Curve

- Use of Finale to generate rehearsal files
- Use of iTunes to manage (and convert) mp3s
- Use playlists to create recordings
- Can create as audio or data CDs
- Waste (CDs become trash)
- Time (takes longer to burn CDs)
- Toggling (can be complicated)
- Usefulness (have to print covers, although iTunes can do this for you)
- Students brought CD Players
- Cost: Ask students & families to bring CDs for classroom use
- Purchase paper CD jackets for protective use (c4component.com)
- Purchase clear poly cases for CDs that will stay in use (with iTunes jackets)

### iPods & Boombuckets

- Use of Finale to generate rehearsal files
- Use of iTunes to make mp3s
- Use playlists to organize music
- Fast syncing on four current ipods
- Able to toggle to an exact second to practice
- Zero learning curve
- Students able to practice anywhere without need for power outlets

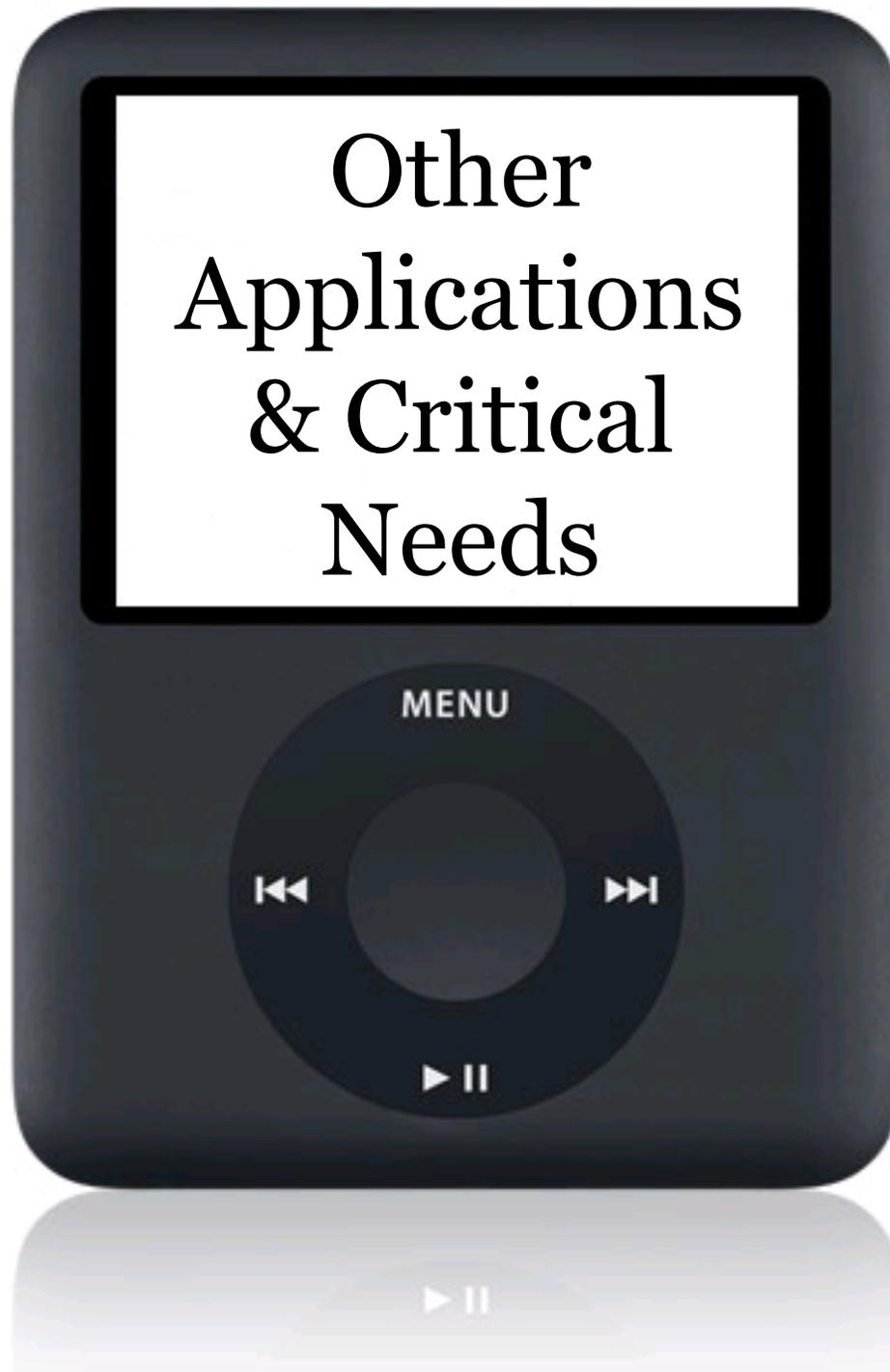
# Some Observations

- Some second hand programs are good (essential) for “canned recordings” that have multiple rehearsal tracks, such as Sony Sound Forge (want to be able to import by range instead of track)
- Some “canned recordings” are now coming with separate voice parts recorded on separate tracks.
- Finale Issues:
  - I am still trying to find the right sound levels for rehearsal tracks created by Finale
  - For accompaniments (only), using VST (real time recording). Why? Quality of sound.
  - For rehearsal tracks (with voice), use MIDI (fast)
  - MIDI: main volume = 127, Voice = 101, others = 55
  - Pure accompaniment: main volume 90

# Some Observations

- Good tagging is worth the time and effort
- I have noticed a significant increase in sync time with 3<sup>rd</sup> generation nanos over 2<sup>nd</sup> generation nanos or 5<sup>th</sup> generation iPods.
- When to use recordings:
  - Rehearsal: Anytime
  - Performance: When you lack a piano player or the recorded track offers something that your instrumentalists cannot, or if the genre requires a different sound than your instrumentals can provide or than the audience expects
- I still find my laptop with iTunes to be a better “master rehearsal” device in class, with the ability to pull up any song from my library on a whim, or to use Finale for a track I haven’t exported yet.

Other  
Applications  
& Critical  
Needs

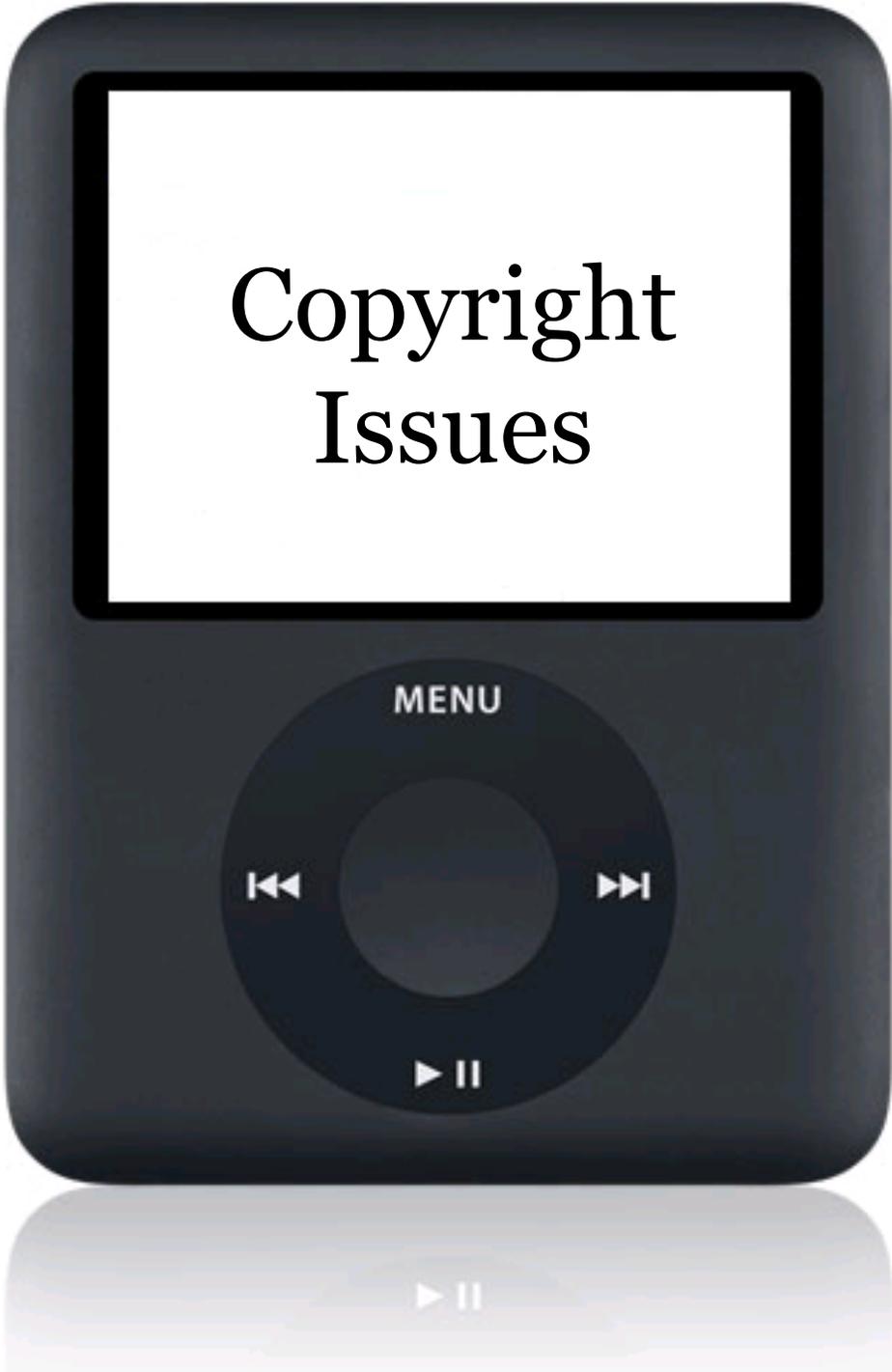


# Other Possible Applications?

- Elementary General Music
  - Convert book series CDs to mp3 files
  - Teacher creates daily lesson plans with Playlists
  - Teachers can enhance lesson plans with any other music
  - Teachers can use Boombuckets in any location (many schools do not have a dedicated music room) without a power source!
  - No need for expensive audio equipment permanently installed in one room
  - Can create a district CD/mp3 resource, allowing all music teachers access to district-purchased materials (many sheet music libraries are run in this fashion)
- Fewer applications for instrumental music, as instruments have less reliance on piano/accompaniment.

# Critical Needs of Music Teachers in Technology:

- All Teachers:
  - Laptop Computer with all standard district software, CD/DVD writer, also with Finale or Sibelius
  - MIDI keyboard or digital piano with MIDI
  - Mp3 recorder
  - Audio playback system (iPod or otherwise)
- Vocal Teachers:
  - iPod
  - Budget which allows for the purchase of music, such as accompaniment CDs or audio for general music book series
  - Possibly subscriptions to SmartMusic
- Instrumental Teachers:
  - Subscriptions to SmartMusic
  - Access to multiple student use computers in practice rooms (at least 2)

An image of a black iPod with a white screen. The screen displays the text "Copyright Issues" in a black serif font. Below the screen is a circular click wheel with a central button. The word "MENU" is printed above the click wheel. The click wheel has four directional buttons: a double left arrow (previous track), a double right arrow (next track), a right arrow followed by two vertical bars (play/pause), and a double left arrow (fast forward). The iPod is shown with a soft shadow below it.

# Copyright Issues

MENU





# Copyright Issues

- Content provided by the MENC
- Current U.S. Copyright Law represents an attempt by Congress to balance the rights of creators and copyright proprietors with the rights of copyright users. That is, Congress wanted both to protect those that produce and own copyrighted materials (composers and publishers) and to recognize the needs of those that use and enjoy those materials (listeners, performers, and prominently, music teachers).

# Copyright Issues



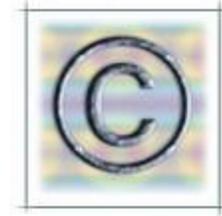
- Music teachers have some rights with digital music:
  1. To reproduce the copyrighted work in copies or recordings
  2. To distribute copies or recordings of the copyrighted work to the public (mostly by sale, but also by rental or other methods)
  3. To perform the work publicly
  4. To perform the copyrighted work publicly by means of a digital audio transmission



# Copyright Issues

- To reproduce the copyrighted work in copies or recordings
  - Make one copy per student of up to 10% of a musical work for class study as long as that 10% does not constitute a performable unit
  - Make a single recording of a student performance for study and for the school's archive
  - Make a single recording of aural exercises or tests using copyrighted material
  - Make up to three copies to replace a copy that is damaged, deteriorating, lost, stolen from a public library or archive (or if the existing format has become obsolete, and if, after reasonable effort by the library/archive, an unused replacement cannot be obtained at a fair price)

# Copyright Issues



- To distribute copies or recordings of the copyrighted work to the public (mostly by sale, but also by rental or other methods)
  - Music educators may occasionally wish to record student performances and distribute copies of the recording within the community. A license is required to do so. Music teachers can pay a royalty, set by law, to the copyright owner.
  - The Harry Fox Agency offers licenses for 500-2500 copies. If you want to license fewer copies, you must contact the publisher of the music directly (more later)

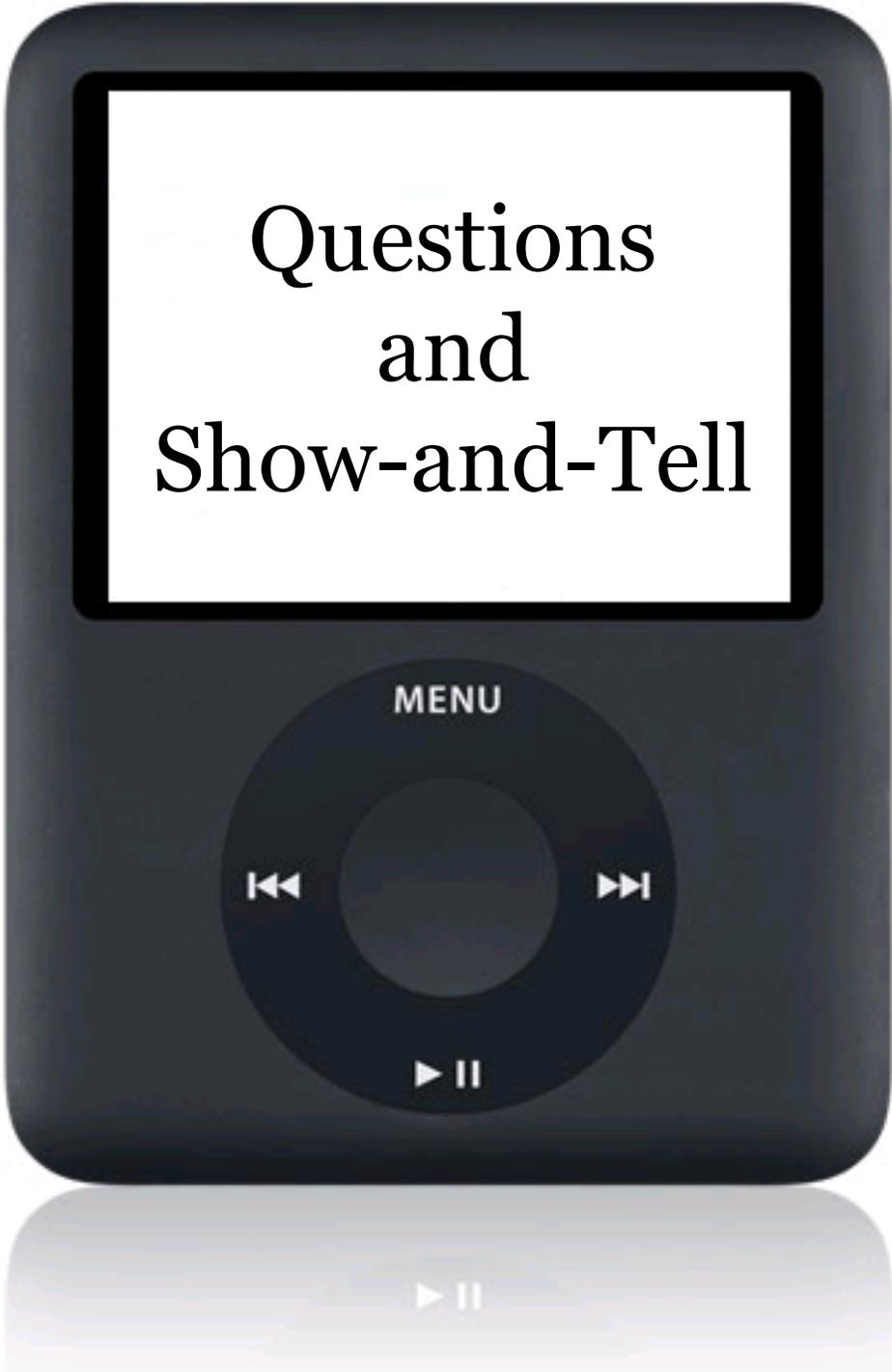


# Copyright Issues

- You CAN record a concert, and store it in a digital format
- You CAN obtain a copy of a work and play it for your students
- You CAN distribute 10% of a work to your students for educational purposes
- You CAN perform a work in public with an accompaniment track
- You CAN copy accompaniment tracks your school (or district) owns to iTunes for your use and for the use of your students at school
- You CAN make copies of CDs legally in case of damage to the original (thus the legality of iTunes)

# Copyright Issues

- You cannot legally give or sell copies of concerts without paying  $\approx$ \$.09 for each song per album (Many recording companies include this cost in the production fees)
  - For the smallest number of copies on Harry Fox, one song costs  $\approx$ \$14.00 to license. If you have 22 songs on a CD, that translates to \$308 to make 500 copies or less of a concert.
- You cannot legally offer downloads of your songs online without paying the above fees for downloads.
- You cannot legally give copies of songs to your students to practice with.
- You cannot legally give your students hand-made recordings of copyrighted songs made with a music notation software package.

An iPod with a screen displaying the text "Questions and Show-and-Tell". The iPod is black with a silver click wheel. The screen is white with black text. The text is centered and reads "Questions and Show-and-Tell". The iPod is shown from a front-facing perspective, slightly angled. There is a reflection of the iPod on the surface it is resting on.

Questions  
and  
Show-and-Tell

MENU



Questions?

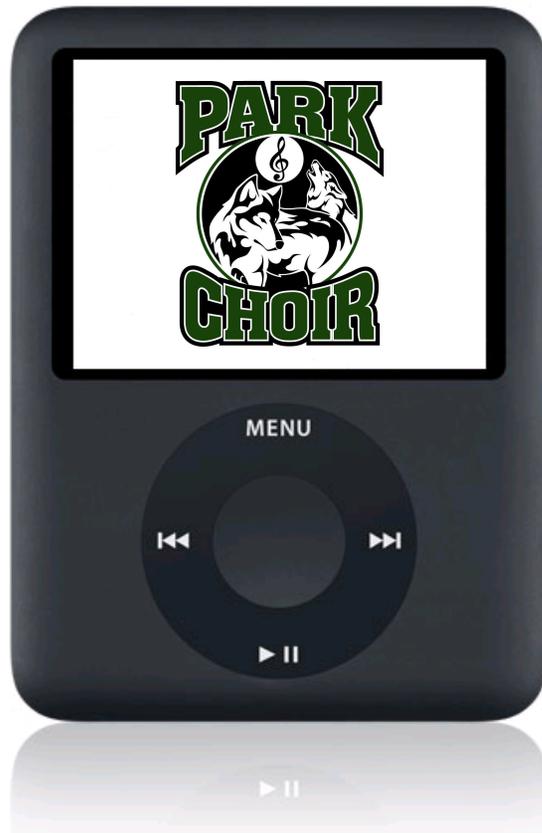
# Products I Brought Along

# iPod Orientation

- PowerPoint follows this slide

# An Introduction to Sectionals

## Using Apple iPod Nanos (3<sup>rd</sup> Generation) and Brookstone Boombuckets



# Purpose of Sectionals

- To work with your section to master every piece of music with 100% accuracy
- To achieve excellence
- To develop the ability of your “ear” to hear incorrect notes and to learn the correct ones
- To develop student leaders
- To allow peers to teach peers through collaboration, and to allow your teacher to be a coach (rather than a director)

# Directions for Sectionals

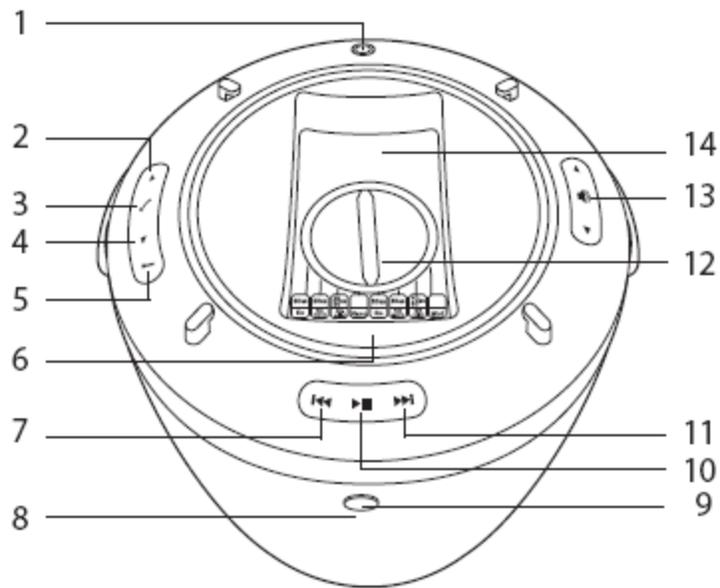
- One person is the assigned “leader” of the sectional
- Another person may be in charge of the iPod and Boombucket (iPod Wizard)
- Go to your assigned rehearsal space
- Using the menu options on the iPod, go to “music,” then “playlists,” and finally your choir & section (e.g. “Concert Choir Alto”)
- Work on your assigned songs, repeating them as necessary
- When you feel you can practice without the voice part, try doing them with just the accompaniment
- Return to class at the appointed time

# Expectations for Sectionals

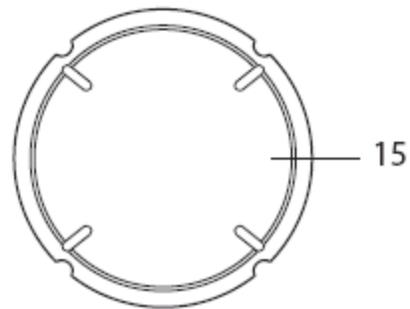
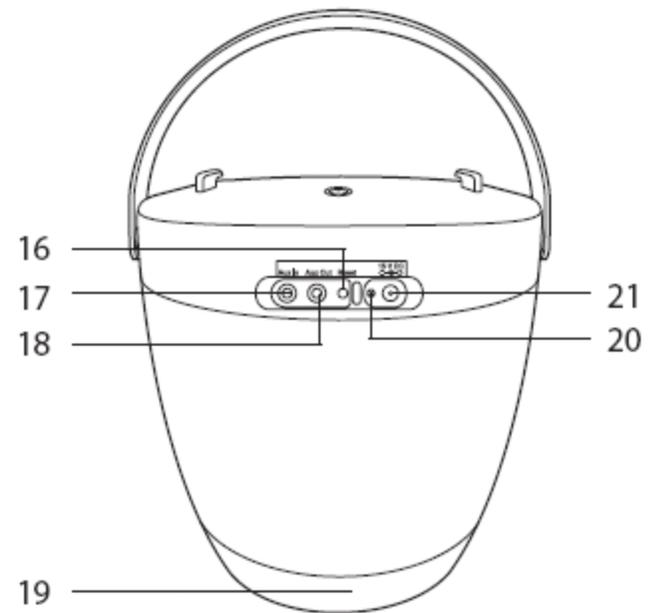
- Everyone will be working to learn their music and improve their performance skills
- Section leaders will communicate with Dr. Russell if individuals are not participating
- Your focus in sectionals is the music, and nothing else in the room (we may use other classrooms from time to time)
- Remember proper posture while you practice!
- Take care of the iPods and Boombuckets. We need them to last for years!
- Don't accept mediocrity! If you have a spot where you are having problems, go back and rehearse it!

# About the Boombuckets...

MAIN UNIT FRONT



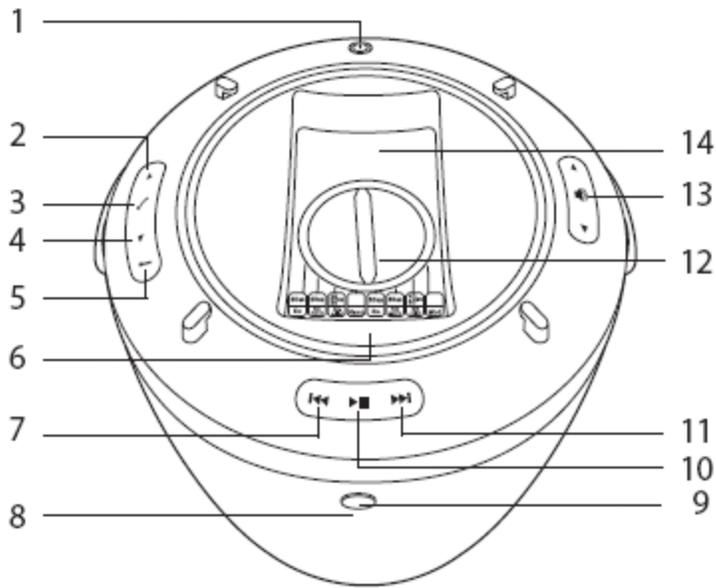
MAIN UNIT BACK



# About the Boombuckets...

- Each Boombucket has a rechargeable battery, which means that you do not need to rehearse near a power outlet
- Boombuckets are capable of providing quality audio with substantial amplification
- Do not remove the plastic cover for any reason (leave the iPods alone)
- And again, take care of these units!

## MAIN UNIT FRONT

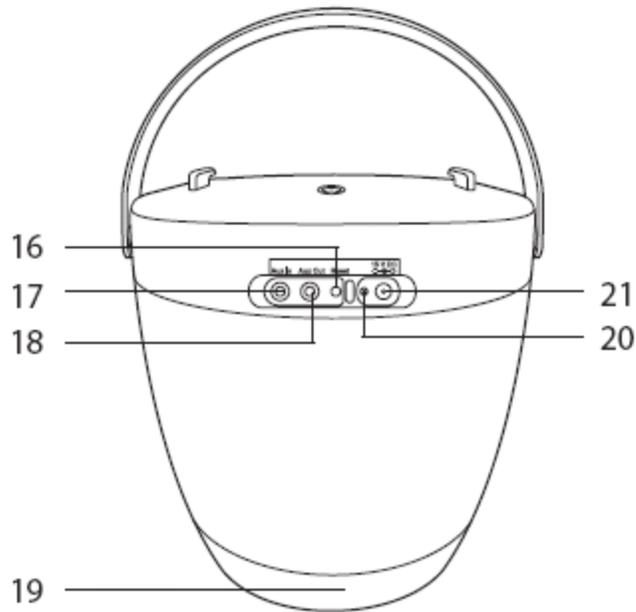


### MAIN UNIT

- |                          |                        |
|--------------------------|------------------------|
| 1.  (Power)              | 13.  (Volume Up/Down)  |
| 2. MENU UP               | 14. iPod DOCK          |
| 3. MENU ENTER            | 15. COVER              |
| 4. MENU DOWN             | 16. RESET              |
| 5. MENU                  | 17. AUX IN             |
| 6. iPod CONNECTION PIN   | 18. AUX OUT            |
| 7.  (Rewind)             | 19. BOTTOM COVER       |
| 8. POWER INDICATOR       | 20. CHARGING INDICATOR |
| 9. REMOTE CONTROL SENSOR | 21. 15V DC             |
| 10.  (Play/Pause)        |                        |
| 11.  (Fastforward)       |                        |
| 12. iPod ADJUSTMENT DIAL |                        |

- Power button on the top (“power on” indicator on front)
- Menu Controls on the left side (select playlists and songs)
- Volume Control on the right side
- Play, forward, rewind controls on the bottom (hint: to fast forward through a song, hit play/pause and then use the arrows to toggle to the position where you want to rehearse! Make note of actual start times on the iPod while running through songs)

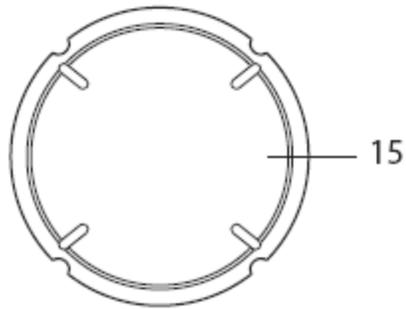
## MAIN UNIT BACK



### MAIN UNIT

- |                          |                        |
|--------------------------|------------------------|
| 1.  (Power)              | 13.  (Volume Up/Down)  |
| 2. MENU UP               | 14. iPod DOCK          |
| 3. MENU ENTER            | 15. COVER              |
| 4. MENU DOWN             | 16. RESET              |
| 5. MENU                  | 17. AUX IN             |
| 6. iPod CONNECTION PIN   | 18. AUX OUT            |
| 7.  (Rewind)             | 19. BOTTOM COVER       |
| 8. POWER INDICATOR       | 20. CHARGING INDICATOR |
| 9. REMOTE CONTROL SENSOR | 21. 15V DC             |
| 10.  (Play/Pause)        |                        |
| 11.  (Fastforward)       |                        |
| 12. iPod ADJUSTMENT DIAL |                        |

- Take care with the unit, use the handle in transport
- Note #21, where the unit is plugged back into the charger
- Note #20, which glows red or green while the unit is charging



#### MAIN UNIT

1. (Power)
2. MENU UP
3. MENU ENTER
4. MENU DOWN
5. MENU
6. iPod CONNECTION PIN
7. (Rewind)
8. POWER INDICATOR
9. REMOTE CONTROL SENSOR
10. (Play/Pause)
11. (Fastforward)
12. iPod ADJUSTMENT DIAL
13. (Volume Up/Down)
14. iPod DOCK
15. COVER
16. RESET
17. AUX IN
18. AUX OUT
19. BOTTOM COVER
20. CHARGING INDICATOR
21. 15V DC

- Please note that the unit has a plastic cover.
- Do not remove this cover for any reason.
- All iPod controls are accessible on the front panel of the Boombucket

# Your Assignment

- Rehearsal Locations:
  - Sopranos: On the stage
  - Altos: Choir Room
  - Tenors: Cozy Corner of the Cafeteria
  - Basses: Back practice room
- Pieces: All seven pieces for the concert
- Return Time: 8:20  
(we will run several pieces when you get back)

# Now, go do sectionals!

