Connecting The Classroom To the Cloud
Connecting the Classroom to the Cloud
bridging the digital gap between home and school

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A little about Sarasota

• 42,000 students
• 5,000 employees
• 52 schools
• 1 of only 10 ‘A’ districts in Florida
• Schools have a ratio of one computer for every two students
Planning deployment

• Student Email – is this really a good idea?
  • SkyDrive OneDrive to rule them all!
    • Google Drive, Box, etc

• Newsfeed – Great for corporations, not for K-12

• All aboard Office 2013

• Teachers LOVE Change
How to get the word out?

Challenges

• Approximately 1 hour travel time from north to south
• 42,000 students + 5,000 staff > 1 specialist
• Your trying to access Office 365 on what device again?

What I Learned

• Using videos, Blackboard and other tools helped... but there is something to be said for face to face trainings
• Sometimes your best trainers can be students
• The flexibility of Office 365 is great, but get familiar with a variety of devices
What Office 365 looks like in Sarasota

• Students have access to
  • Email (internal only)
  • OneDrive
  • Microsoft Office ProPlus download

• Staff have access to
  • Lync
  • OneDrive
  • Microsoft Office ProPlus download
One size doesn’t always fit all…

- Disabled the Newsfeed district wide. Information sharing and posting is great for staff, but not students.
- Internal Only email for students.
- Log in confusion using ADFS. Users searching for ‘Office 365’ and attempting to log into the wrong site. Deployed Stoneware for single sign-on solution.
The Future of O365 in Sarasota

- Enabling Yammer to promote teacher collaboration and information sharing
- Hybrid email setup to allow staff to utilize built in Exchange features
- Skype for Business – putting staff in control of their video conferencing needs
- Office 365 Video – One place to easily share/distribute content quickly and efficiently
OneDrive – Year At A Glance

OneDrive for Business sites deployed
Shows the number of OneDrive for Business sites deployed

Aggregated data by: Weekly ▼ 12 WEEKS  24 WEEKS  52 WEEKS
What it looks like in a classroom

- Traditional seating focuses on Teacher vs. Tech-Flow seating focuses on Student
What it looks like in a classroom

- Students are able to share not only ideas, but research/annotations/projects
  - WiDi capable devices allow for students cast their devices to the main screen
- Instructor is freed from front-of-room presentation

BYOD – Office365 unites multiple platforms

- Access from almost any device from almost anywhere adds to productivity
Microsoft Surface

- Current devices – Surface 2 RT

Pros
- Mobility
- Flexibility
- Seamless integration with O365
- Apps

Cons
- Do Domain Login
- No 3rd Party Software
- No Stylus
  - All non-issue with Surface 3+

- Students adapt very quickly to using swiping and touch
- Split screen used often
- E-Textbooks and OneNote allow for students to do work from anywhere
Power of Productivity

• OneNote
  • By far the most versatile teaching tool in O365
  • Students no longer need to carry heavy notebooks/textbooks
  • No longer excuses about “leaving it at home”.
  • Students can share/collaborate on projects

• Class OneNote
Formula and Constants

F = ma  \quad \text{Peri} = a(1-e)

V = a + Ap = a(1+e)

P^2 = a^3 \quad V_c = \sqrt{\frac{GM}{r}}

Baseline \quad \frac{2\pi D}{360} \quad V_e = \sqrt{\frac{GM}{r}}

Act Dia \quad \frac{\text{Arc Dia}}{2\pi D} \quad P^2 = \frac{4\pi^2}{GM} \quad r^3

G = 6.67 \times 10^{-11} \text{Nm}^2/\text{kg}^2

g_{\oplus} = 9.8 \text{ m/s}^2

M_{\oplus} = 5.98 \times 10^{24} \text{ kg}

r_{\oplus} = 6380 \text{ km}

1 \text{ mile} = 1.6 \text{ km}

1 \text{ AU} = 1.5 \times 10^{8} \text{ km}
1. We must first find the frequency from the wavelength, and then find the energy from the frequency. For the 450 nm blue photon:

\[ f = \frac{c}{\lambda} = \frac{3 \times 10^8}{450 \times 10^{-9}} = 6.7 \times 10^{14} \text{ Hz} \]

\[ E = hf = 6.63 \times 10^{-34} \times 6.7 \times 10^{14} = 4.42 \times 10^{-19} \text{ J} \]

There are $1.6 \times 10^{-19}$ J in 1 eV, so $E = 2.8$ eV.

Doing the same for the 200 nm photon yields $E = 6.2$ eV, which is 2.25 times more energy. This makes sense because the blue photon has a wavelength 2.25 times longer.

2. The frequency is $1 \times 10^{11}$ Hz, so $E = hf = 6.63 \times 10^{-34} \times 1 \times 10^{11} = 6.63 \times 10^{-23}$ J. There are $1.6 \times 10^{-19}$ J in 1 eV, so $E = 4.1 \times 10^{-6}$ eV.

3. We can calculate the frequency from the energy, after converting the energy into joules. We can then turn the frequency into a wavelength.

<table>
<thead>
<tr>
<th>$E$</th>
<th>$f = \frac{E}{h}$</th>
<th>$\lambda = \frac{c}{f}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 eV = $3.2 \times 10^{-19}$ J</td>
<td>$4.8 \times 10^{14}$ Hz</td>
<td>$6.2 \times 10^{-8}$ m = 620 nm</td>
</tr>
<tr>
<td>0.1 eV = $1.6 \times 10^{-20}$ J</td>
<td>$2.4 \times 10^{15}$ Hz</td>
<td>$1.2 \times 10^{-9}$ m = 12400 nm</td>
</tr>
<tr>
<td>5000 eV = $8 \times 10^{18}$ J</td>
<td>$1.2 \times 10^{10}$ Hz</td>
<td>$2.4 \times 10^{-10}$ m = 0.25 nm</td>
</tr>
</tbody>
</table>

4. In this transition, the value of $n$ changes from 11 to 10; remember that the ground level has $n = 1$. Using the formula in *More Precisely 4.4*, the energy in the eleventh level is

\[ E_{11} = 13.6 \left(1 - \frac{1}{11}\right) = 13.6(0.9917) = 13.4876 \text{ eV} \]

Likewise, the energy in the tenth level is

\[ E_{10} = 13.6 \left(1 - \frac{1}{10}\right) = 13.6(0.9900) = 13.4640 \text{ eV} \]

The difference between these two levels is 0.0236 eV, or since there are $1.6 \times 10^{-19}$ J in an
5.1 Optical Telescopes

**Refracting lens**

![Diagram of light ray refraction through a lens](image)

(a) Light ray refracted when it passes from air into glass.
(b) Ray refracted a second time when it passes from glass into air.

Air → Glass prism → Air

Large deflection angle

Incoming light rays → Lens → Focus

Focal length
Chapter 23 Notes: The Milky Way Galaxies

Monday, April 6, 2015  8:32 AM

From Earth we see few stars when looking out of our galaxy and many stars when looking in. Milky Way is what our galaxy appears as in the night sky.

Constellations are much more dim during winter and much brighter in the summer.

Herschel made the first attempt at calculating the mass of the milky way.

- Variable stars - novae, supernovae, and related phenomena (also called cataclysmic variables)
- There are other stars whose luminosity varies in a regular way, but much more subtly. These are called intrinsic variables.
- Two types of intrinsic variables have been found: RR Lyrae stars and Cepheids.
- The variability of these stars comes from a dynamic balance between gravity and pressure - they have large oscillations around stability.
- Many RR Lyrae stars are found in globular clusters. These clusters are not all in the plane of the galaxy, so they are not obscured by gas and dust and can be measured.
- The galactic halo and globular clusters formed very early; the halo is essentially spherical. All the stars in the halo are very old, and there is no gas and dust.
- The galactic disk is where the youngest stars are, as well as star formation regions.
- Stellar orbits in the disk move on a plane and in the same direction; orbits in the halo and bulge are much more random.

Any theory of formation should be able to account for all the following properties:

- Disk:
  - Highly flattened
  - Both young and old stars
  - Has gas and dust
  - Star formation
  - Stars move in circles
  - Spiral arms
- Galactic Halo:
  - Roughly spherical
  - Contains old stars only
  - No gas and dust
  - No star formation
Create, Collaborate, Share

• O365
  • Creating documents and presentations online or through office integration allows for staff and students to have access and the ability to edit from anywhere
  • Students can collaborate on projects and assignments using their O365 accounts

• WiDi
  • We are currently using the WiDi feature of our surface tablets to cast to our presentation screen. This allows students to share from their space.
    • Limits motion in class and downtime from changing out devices/loading content
    • Students are more comfortable with presenting from their desk/table

This entire presentation was created in Office 365
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Question and Answer

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