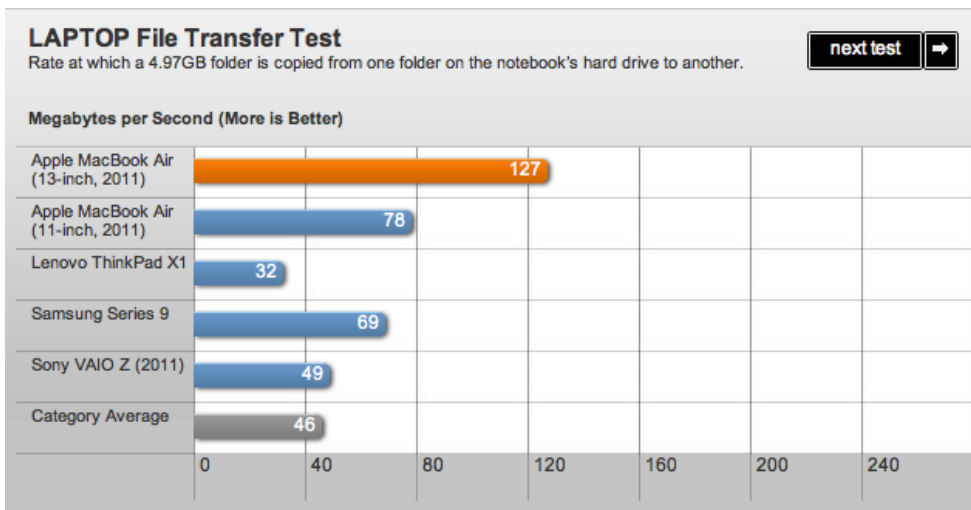| Bremen 1:1 Device Comparison			
	MacBook Air 11"	MacBook Air 13"	Lenovo x130e 11"
Battery	5 hours	7 hours	7 hours
Processor	Intel Core i5	Intel Core i5	Intel Core i3
Memory	2 GB DDR3	2GB DDR3	4GB DDR3
Weight	2.4 lbs	3 lbs	4 lbs
Storage	64 GB Flash	128 GB Flash	320 GB SATA
Operating System	Apple OSX Lion	Apple OSX Lion	Windows 7 Pro
Boot time	15 seconds	17 seconds	59 seconds
Sleep/wake time	Instant (flash)	Instant (flash)	Depends (avg.???)
Productivity Software	iLife (iPhoto, Garageband, iMovie) Microsoft Office	iLife (iPhoto, Garageband, iMovie) Microsoft Office	Microsoft Windows Live Microsoft Office
Island style keyboard	✓ (backlit)	✓ (backlit)	✓
Integrated webcam/mic	✓	✓	✓
Bluetooth wireless	✓	✓	
SD Card Reader		✓	✓
Built in PDF Reader/editor	✓	✓	Reader only
Web/PDF language translator and voice over	✓	✓	
Multi-gesture functionality	✓	✓	
Airdrop file transfer system	✓	✓	
Ability to run other OS natively/simultaneously	✓	✓	
Quick release power cord	✓	✓	

The Bremen Technology committee is recommending the following devices be purchased for the Bremen High School one-to-one computing initiative:
- 13" MacBook Pro for faculty members
- 11" MacBook Air for the students
  The committee has decided that the MacBook Air is the best device for Bremen students to be engaged, producers of knowledge. After much deliberation and research, there were numerous tangible advantages we found in the MacBook Air device. A discussion of these advantages follows.

- In a recent Laptopmag.com Editor's review of Mac OSX Lion and Windows 7, the Mac OSX operating system won 7 categories and overall best score taking the victory in categories such as interface, backup, search, multi-touch and navigation, and security/parental control. Two of the categories won by Windows 7, gaming and web browsing, do not impact our functionality as gaming will not be a part of our usage and the web browsing was a test of native browers (Internet Explorer and Safari). In other words, we don't have to use these browsers.

- Macintosh computers have long been known for their **stability and safety** from attacks. This still holds true today. We see this as an immense advantage when students will be plugging into our network after using the devices on home networks. Mac viruses are rare in comparison with Windows viruses, partly because of market share, but also because of the OSX architecture. Mac OSX is built on a more stable and safe UNIX platform giving added security and protection against many attacks.

- The average laptop battery lasts anywhere between 300-500 charge cycles before it is unable to hold a charge and a replacement battery is needed (http://www.freshbattery.com/Page.bok?file=replacement-laptop-battery.htm). However, Apple designs their batteries differenlty so that they average 1000 charge cycles. They also use adaptive charging to reduce "wear and tear" on the battery to prolong life.

- The solid state flash drives in the Airs are much more durable, because they do not have rotating parts as the traditional hard drives do. Also, flash memory allows for rapid access and transfer equating to faster boot time, wake time, and file transfer time. The 11" Air outperformed its competition in almost all file transfer and processing tests and the 13" Air was given the highest editor's rating and rare 5-star award.

LAPTOP File Transfer Test
Rate at which a 4.97GB folder is copied from one folder on the notebook's hard drive to another.

next test ➡

Megabytes per Second (More is Better)

Apple MacBook Air (13-inch, 2011)	127
Apple MacBook Air (11-inch, 2011)	78
Lenovo ThinkPad X1	32
Samsung Series 9	69
Sony VAIO Z (2011)	49
Category Average	46

0   40   80   120   160   200   240

(http://www.laptopmag.com/review/laptop/apple-macbook-air-13-2011.aspx)

- Educators are always concerned with available time for instruction and production. The MacBook Air will maximize this time! Over the course of a 180 day instructional calendar with an average user booting once per day and using sleep in four classes, the *Airs will use 45 - 50 minutes of boot/wake time* (15 – 17 seconds of boot, instant wake). Over that same period of 180 days, *the Lenovo x130e would use 280 - 300 minutes of boot/wake time* (59 seconds of boot, 8 – 10 seconds wake).

- The productivity software on the Mac is second to none. The iLife suite (http://www.apple.com/ilife/) is regarded as the most productive and powerful "out-of-the-box" software packages available. Our students will love the functionality of the iLife suite (iMovie, Garageband, iPhoto; http://www.apple.com/ilife/video-showcase/) and will be able to produce exceptional, professional level products, thus encouraging 21st century skill acquisition. The Macs also come with Safari browser, Mail, the superb Mac App Store, iCal, Address Book, FaceTime, Time Machine, and many others. (http://www.apple.com/macbookair/osx.html, http://www.apple.com/macbookair/built-in-apps.html) In terms of staff Professional Development, iAuthor will allow educators to build and publish their own interactive, standards-based digital books (http://www.apple.com/ibooks-author/). This is the same program McGraw-Hill, Pearson, and Houghton-Mifflin use to create their new digital books and it's free!

- PDF programs are an important part of 1:1 initiatives due to file sharing and security of files. Preview is a high level reader/editor that comes free on every Mac and takes the place of expensive ($449, Adobe Acrobat X Pro; Cnet.com) PDF programs.

- Airdrop, a program specific to Macs, allows the Airs to use Bluetooth in the transfer of files from one Mac to another. For instance, a teacher could have their students "push" their finished files to the teacher's MacBook through Airdrop without using the network at all. Besides saving bandwidth, this could eliminate the possibility of losing file transfer functionality if there is a network issue.

- The Reader program on Macs allows a user to rid themselves of distractions while reading on the Internet. One click of Reader brings only the relevant text and pictures of the article to the front of the screen, eliminating the "baggage" of advertisements and useless links. The Reader program also can translate text into over 20 built-in languages and allows a user to annotate and edit the article by manipulating it as a PDF. Reader will also read the text to the user in English or any of the translated languages. All of these features would be especially useful in our language department.

- OS X comes standard with a wide range of assistive technologies that help people with disabilities experience many features that are not found in other operating systems — at any price. For example, built-in VoiceOver screen-reading technology, (available in over 20 languages) makes it possible for those who are blind or have low vision to control their computers using key commands or gestures on a Multi-Touch trackpad. OSX also offers "out-of-the-box" support for more than 40 braille displays (including Bluetooth displays) and many other accessibility features, such as dynamic full-screen magnification, playback of closed captions, and a scalable screen.

- The readability on the Macbook Airs screen is excellent because of the high resolution display. As we move away from paper based texts, this will be very importnat as students find, recieve, and read much of their information on the device.

- The idea of cross-platform training as a 21st century skill is wrapped up into the use of Macs. The ability of our students to use both Windows PCs and Mac OSX will be a large advantage as they travel into higher education and the workforce. We see the use of Macs as a fantastic choice and a fresh, energizing platform for our student body and staff. Not to mention Macs can run Windows natively, but not vice-versa.

- Cross-platform training can also be an advantage and opportunity for the tech department to gain valuable new skills and knowledge.

- The Mac multi-gesture track pad is extremely responsive and user friendly. It is much larger than other notebook track pads. This is important as it is the method students will be using to interact with their device. "
  "At this point, Apple should probably just put on a clinic for Windows laptop makers on how to make a great touchpad. The huge 4.1 x 2.5-inch glass trackpad on the 11-inch Air is by far the best in its class. And you can do more with it now, thanks to the Lion OS. We could easily double-tap with two fingers to zoom in on a specific area of a website, and we used a three-finger swipe up to launch Mission Control (where you can see everything running on your Mac).As expected, two-finger scrolling and pinch-to-zoom both worked flawlessly. And there's a new way to scroll; Apple has added a natural scroll option under settings that lets you scroll as you would on the iPad or iPhone. So you drag down to drag up content; if this doesn't feel natural to you, you can just disable this setting. Making selections on the 11-inch Air's trackpad is as easy as clicking down on the trackpad, though you can activate tap-to-select under the settings." (http://www.laptopmag.com/review/laptops/apple-macbook-air-11-inch-2011.aspx)

- In considering total cost, battery replacement and resale value are important factors. Most Windows laptop batteries are designed to last 300-500 charging cycles. Apple designed the MacBook batteries to last 1,000 charge cycles.

- Resale value is another component of total cost and MacBooks hold their value well. In a search of auction and buyback sites, MacBooks consistently held a significant resale value. A six-year old MacBook (2006) 1.8ghz held a bid on ebay for over $200! (http://www.ebay.com/itm/Apple-MacBook-13-3-Laptop-MA700LL-A-November-2006-/160748298832?pt=Apple_Laptops&hash=item256d586250#ht_500wt_1361) This is important because the school has the option of auctioning off the laptops at the end of the lease. It also provides evidence of value to our students beyond their four years in high school.

- Customer support for Apple products has been consistently ranked at the top of customer satisfaction. The Mac Forums are also extremely user friendly and would provide our students with help at home. (https://discussions.apple.com/index.jspa) The support Joe Lee has given our initiative has been tremendous and proves his dedication to supporting our district, staff, and students.

The following are links to research and information prseneted in this discussion:

- MacBook Air 11" Review (includes performance testing graphs)
  - o http://www.laptopmag.com/review/laptops/apple-macbook-air-11-inch-2011.aspx
- MacBook Air 13" Review (includes performance testing graphs)
  - o http://www.laptopmag.com/review/laptop/apple-macbook-air-13-2011.aspx
- Lenovo x130e Review (includes performance testing graphs)
  - o http://www.laptopmag.com/reviews/laptops/lenovo-thinkpad-x130e.aspx
- iLife Suite and Productivity/Functinoality Software on Macs
  - o http://www.apple.com/macbookair/built-in-apps.html#imovie
  - o http://www.apple.com/macbookair/osx.html
- Mac OSX Lion vs Windows 7
  - o http://blog.laptopmag.com/mac-os-x-lion-vs-windows-7-which-is-better
- Battery Charge and Life Cycles
  - o http://www.freshbattery.com/Page.bok?file=replacement-laptop-battery.htm
  - o http://www.apple.com/batteries/notebooks.html
- Apple is World's Most Admired Company
  - o http://money.cnn.com/magazines/fortune/most-admired/2012/snapshots/670.html
- Textbooks on the iPad
  - o http://www.apple.com/education/ibooks-textbooks/
- Apple in Education: Mac
  - o http://www.apple.com/education/mac/
  - o http://www.apple.com/education/resources/
- Lenovo.com x130e Highlights
  - o http://shop.lenovo.com/SEUILibrary/controller/e/web/LenovoPortal/en_US/catalog.workflow:item.detail?GroupID=37&Code=X130e_BASIC_INTEL&category-id=BA6A19F3D3728EAFAFB6BADF396C54D6
- Apple.com MacBook Air Highlights
  - o http://www.apple.com/macbookair/
- Apple.com MacBook Pro Highlights (staff device)
  - o http://www.apple.com/macbookpro/
- Gazelle.com buyback value