INTRODUCTION
Hang on to your seats! This paper contains a lot of information and attempts to we cover the waterfront of 'Technology of the Future' in a speedboat! The focus is on old technologies that are becoming new again and in some cases technologies that in essence never died; they have just morphed a bit.

GOALS
✓ Review the basics of these technologies and identify ways in which these technologies can be used in our profession.
✓ Examine current patterns in technology across several age groups and discuss the implications for offering technology based services for our students.
✓ PLEASE NOTE: Not all new/old technologies are discussed in detail nor does this paper attempt to identify all the ‘emerging’ (old and new) technologies.
✓ Each section highlights significant information and links to a website with increase in details and other websites will be provided. You are encouraged to explore the areas of technology that most excites you in more depth.
✓ Finally, major data sources are cited in the reference list.

PLEASE NOTE: The authors are not trained as network specialists and cannot presume to answer questions related to compatibility with operating systems or software. Please see your institution’s technology consultant for answers to these types of questions. Our specialization is in the interface of these technologies between the pedagogical and/or service applications with humans!!
### General Internet Use Patterns

#### 1. An "educated guess" as to how many users are online worldwide

<table>
<thead>
<tr>
<th>Region</th>
<th>Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Total</td>
<td>605.60 million</td>
</tr>
<tr>
<td>Africa</td>
<td>6.31 million</td>
</tr>
<tr>
<td>Asia/Pacific</td>
<td>187.24 million</td>
</tr>
<tr>
<td>Europe</td>
<td>190.91 million</td>
</tr>
<tr>
<td>Middle East</td>
<td>5.12 million</td>
</tr>
<tr>
<td>Canada &amp; USA</td>
<td>182.67 million</td>
</tr>
<tr>
<td>Latin America</td>
<td>33.35 million</td>
</tr>
</tbody>
</table>

#### 2. History
- ENIAC, the first all-electronic computer, was introduced in 1946.
- The Internet has been around since the 1960's.
- E-mail has been around longer than the World Wide Web.
- The phrase "Surfing" the Web was coined in 1992.
- The average computer user blinks 7 times a minute.
- Lynx was one of the earliest browsers from 1992.

#### 3. Documents online
- There are now 550 billion documents online.
- Over 1 billion pages have been indexed by search engines and are therefore likely to pop up on your screen.
- The rate number of websites is increasing at the rate of 7.3 million a day.

#### 4. More fun facts
- In 1993, 3 million people were connected to the Internet. In 1999, 80 million Americans are connected and approximately 200 million people worldwide.
- 44% of U.S. internet users have contributed their thoughts and their files to the online world.
- 64% of wired Americans have used the Internet for spiritual or religious purposes.
- 55% of adult internet users have broadband at home or work.
- Average amount of time per week spent actively using the Internet: 14 hours per person.
- Average amount of time per year: 728 hours (about one month).
- Amount of time devoted to searching: 520 hours (21 days).
- Users frustrated with search engines and site navigation: 44%.
- Users who give up when a search is unproductive: 20%.
- Average duration of time a page is viewed by a U.S. user: 0:00:50.
STUDENT USE PATTERNS

1. Access: General
   - To the Internet has been expanding in locations outside of school, especially to homes with school-aged children.
   - Pew Internet & American Life Project surveys showed that 60% of America’s children, more than 43 million children under 18, use the Internet.
   - The number of teenagers using the internet has grown 24% in the past four years and 87% of those between the ages of 12 and 17 are online. In addition, more than one in five households with children (23%) have broadband connectivity through digital subscriber line (DSL) technology or cable modems.
   - This equals about 21 million people. Of those 21 million online teens, 78% (or about 16 million students) say they use the internet at school. Put another way, this means that 68% of all teenagers have used the internet at school.
   - Email, once the cutting edge “killer app,” is losing its privileged place among many teens as they express preferences for instant messaging (IM) and text messaging as ways to connect with their friends.
     - 38% of teens surveyed text-message with friends during school hours.
     - A smaller 30% of students say they play video games on their phones while at school.
     - Parents who look at their kid's calls will realize 26% of kids speak with people mom and dad wouldn't approve of.

2. Adolescents, schoolwork and the Internet
   - One of the most common activities that youth perform online is schoolwork.
     - Nearly every online teen (94% of 12 to 17 year olds who report using the Internet) has used the Internet for school research.
     - 71% used the Internet as the major source for their most recent school project.
     - 58% have used a Web site set up by school or a class.
     - 34% have downloaded a study aid.
     - 17% have created a Web page for a school project.
   - However, wired schools are not necessarily ‘computer havens’ for students, as many only get 1 hour or less per week in the lab.
   - However, 37% of teens say they believe that “too many” of their peers are using the internet to cheat

3. Teenagers go online for a variety of activities
   - Communicating with friends and family (via email, instant messaging, and chat rooms).
   - Entertaining themselves (doing things such as surfing the Web for fun, visiting entertainment sites, playing or downloading games, and listening to music online or downloading it).
   - Learning things largely unrelated to school (such as looking for information on hobbies, getting the news).
   - Researching a product or service before buying it, looking for health-related information.
• Looking for information that is embarrassing or hard to talk about).
• Exploring other online interactive or transaction features (such as going to a Web site where they can express opinions about something, visiting sites for trading and selling things, buying something online, creating a Web page, etc.).

4. College Students
• 79% of college students reported that Internet use has had a positive impact on their college academic experience. Nearly half reported that email enables them to express ideas to a professor that they would not have expressed in class. Many college students also reported using the Internet primarily to communicate socially, with friends. The implications of their Internet use are discussed.
• In recent Free Press (Mankato, MN) potential college students wanted more instant access to admission, more ‘financial calculating software’ re: costs; more technology enhanced ‘recruitment’ activities.

5. Other Interesting Facts:
• Political bloggers can make an impact on politics, but they often follow the lead of politicians and journalists.
• 97 million adult Americans, or 77% of Internet users, took advantage of e-gov in 2003, whether that meant going to government Web sites or emailing government officials. This represented a growth of 50% from 2002.
• 84% of US Internet users have contacted an online group.
• 77% of online Americans have used the Net in connection with the war in Iraq.
• Mothers spend an average of 16 hours and 52 minutes online per week. approximately four hours and 35 minutes more than American teenagers. Mothers in Charleston SC spend the most time online. The average time spent online by women in Charleston is 21 hours and 8 minutes.
• The number of women using the Internet worldwide will pass 96 million, or 45 percent of the world’s Internet users in 2001.
• 1 in 6 people use the Internet in North America and Europe.

**Instant Messaging**

1. **Instant messaging (sometimes called IM or IMing) is**
   - The ability to easily see whether a chosen friend or co-worker is connected to the Internet and, if they are, to exchange instantaneous messages with them.
   - IM provides multiple tools such as email, file transfer, voice and video interactivity, and white boards, etc.
   - Instant messaging differs from ordinary e-mail in the immediacy of the message exchange and also makes a continued exchange simpler than sending e-mail back and forth. Can use IM to:
     - Communicate with family/friends,
     - Communicate with co-workers,
     - Communicate with students, consumers.

2. **Who is using IM?**
   - More than 100 million people.
   - 41 million (nearly 40%) of home Internet users.
   - Predicted to surpass e-mail as the primary online communication tool.

3. **Teenager phenomenon**
   - 74% of online teens use instant messaging.
   - 45% of online teens use Instant Messaging each time they are online.
   - 69% of online teens use IM at least a few times each week.
   - 37% of online teens have used IM to write something that they would not have said in person.
   - 41% of online teens say they use email and instant messaging to contact teachers or classmates about schoolwork.
   - And these teens are or will become students.

4. **Adult use**
   - In comparison, 44% of online adults have used IM.
   - Use growing exponentially in the workplace.

5. **Benefits and limitations of IMing?**
   - Gets answers faster, thus saving time but can create a sense of urgency.
   - Decreases use of email and even voice mail.
   - Improves internal communication and allows for faster sharing of information. How accurate is the information?

6. **IM has potential applications for**
   - Recruiting and admissions.
   - Tele-advising and counseling.
   - Student/faculty or staff/staff communication.
   - Consultations, counseling, and group work, even crisis intervention.
   - Immediate questions, feedback and discussions during lectures, research, or training.
7. **Getting IM to work**
   - The user downloads instant messaging software from the internet and installs it on their computer.
   - Next, the user registers a unique ID (aka “screen name”) with their IM provider.
   - When online and the program is running, the screen name is logged into the IM server, indicating the user is available.
   - To connect to others, screen names of contacts are then added contact or “buddy lists.”
   - When both people are online and available, they can message one another instantly.

**More information about Instant Messaging Applications**
- There are many other instant messenger applications, if you want to choose from other options, just Google ‘instant messengers’.

**SPIM and SPAM**
1. *n.* Unsolicited commercial messages sent via an instant messaging system. Also: spim—spimming  *pp.*  spimmer  *n.*  antispim  *adj.*

2. It's been around a few years, but recently has reached the threshold of disruption.
   - The World’s No.1 Science & Technology News Service reports that spam being rapidly outpaced by 'spim'.
   - Messaging and collaboration research firm Ferris Research estimates that the quantity of such solicitations doubled, reaching 500 million.
   - The volume of so-called "spim", according to a report from the Radicati Group may reach 1.2 billion spims, 70 % of which are porn-related.
   - Another estimate, more than 1 billion spims were sent 2003; 4 billion are expected in 2004.
   - This is a mere trickle compared to the 35 billion spams expected, but the researchers warn that spim is growing at about three times the rate of spam, as spammers adapt their toolkit to exploit a rapidly rising number of new instant messaging (IM) users.

**More Information About SPIM and SPAM**
LOW THRESHOLD APPLICATIONS (LTAs)

1. Overview
   • Stephen Gilbert, president of the Teaching, Learning and Technology Center, defines Low Threshold Applications (LTAs) as
   • Information technology that is reliable, accessible, easy to learn, non-intimidating and (incrementally) inexpensive.
   • The potential user perceives an LTA as NOT challenging, not intimidating, not requiring a lot of additional work or new thinking.
   • LTAs are also 'low-threshold' in the sense of having low INCREMENTAL costs for purchase, training, support, and maintenance."
   • There are many thresholds that users must address, such as fear, comfort, ease of use, access, when considering use and/or adoption of technology in your practice.
   • The technologies that have the widest application and have with stood the test of time are those with the lowest threshold, with the least discomfort, the least difficulty in accessibility for ALL users.
   • Further, every LTA should be based on the underlying technology that is either almost ubiquitous, or is available commercially at low-cost to teachers and learners, or available from open source/open course collections of instructional and professional development resources. The latter collections require little or no payment but encourage users to contribute to the development of the resources.

MORE INFORMATION ABOUT LTAs
   • Archives of TLT-SWG@LISTSERV.ND.EDU. Teaching, Learning and Technology Center Listserve. http://listserv.nd.edu/archives/tlt-swg.html.
**EFOLIO**

1. What is Efolio?
   - It is an electronic and digital version of paper portfolios, resumes.
   - It is gaining rapid acceptance in all academic environments.
   - It is outcome/evaluation based in most environments.
   - It is being used not only by students for jobs, but by agencies/institutions for recertification/accrediting procedures.
   - It allows for graphic integration of multiple documents.
   - It allows persons to reflect on their activities and personal/professional development.
   - It allows ‘end users’ to see growth or change over time and to observe developer from multiple perspectives.
   - It saves paper and because it is on the internet, it can be seen by many end users.
   - It is very cost efficient.

**MORE RESOURCES ABOUT EFOLIOS**

- Minnesota State Colleges and University System (MnSCU). *Note: Efolio is a free resource for ALL Minnesota residents.*  
  http://www.efoliominnesota.com/
- Examples of tutorials using Efolio  
  http://www ctl.mnscu.edu/programs/educ_opp/tutorials.html
- Open Source Portfolio  
  http://www.rsmart.com

**SURVEY, QUIZ AND/OR POLLING SOFTWARE**

http://www.tamingthebeast.net/articles/webpolls.htm

http://www.cultivate-int.org/issue3/polls/

http://www.submitside.com/Free_Additions/Polls_Surveys.html

Google for ‘free quiz software’, ‘free survey software’ and ‘free polling software’. lists are toooo long to review/report.
OPEN SOURCE

1. History
   • Open source began in 1992 with the development of Linux Software. Developers wanted to share source code with all. In the original programmer world, it is expected that you will leave the name of programmer in the original code/add yours etc.

2. Learning Objects
   • The term Learning Object was first popularized by Wayne Hodgins in 1994 when he named the CedMA working group "Learning Architectures, APIs and Learning Objects" ("Use and Abuse of Reusable Learning Objects," Polsani, Journal of Digital Information, 2003).
   • Are small, independent chunks of knowledge or interactions stored in a database, which can be presented as units of instruction or information.
   • They are typically self-contained, interactive, and reusable.
   • Another definition includes "any digital resource that can be reused to support learning or service delivery.

3. Advantages
   • Ease of installation.
   • Ease of maintenance.
   • Ease of use—a good user interface—not only for admin staff but non-technical nonprofit staff that need to use the tool.
   • Good support—especially from a community of users and developers.
   • Good documentation.
   • Flexibility and a high level of customization for users and administration.
   • Ease of integration with other tools.
   • Security and stability.
   • Works with older hardware and other software that may be older.

MORE INFORMATION ABOUT OPEN SOURCE
• OIT/MnSCU. Learning Object Resources. A gateway for many resources. http://www.oit.mnscu.edu/pages/learningobjects.htm
• ELECTRONIC HALLWAY. Online repository for cases and other learning materials for faculty and/or staff that teach or train in public administration, public policy, and related subjects. Cases are available in numerous policy areas; economic development, education, environment and land use, human services, international affairs, nonprofit, state and local government issues, utility and transit issues, and urban and regional issues. Many cases include teaching notes. Several have video of cases being taught. http://www.hallway.org
• MERLOT (Multimedia Educational Resource for Educational and Online Teaching). Free and open resource designed for faculty and students of higher education. Links to online learning materials are collected with annotations such as peer reviews and assignments. http://www.merlot.org
RSS (LIVE NEWSFEEDS)

1. What is RSS?
   - "Rich Site Summary" or "really simple syndication".
   - Developed in 1997, RSS has evolved into a popular means of sharing content between sites.
   - Andrew King (WebReference.com) states “Really Simple Syndication (RSS) is a lightweight web authoring format designed for sharing headlines and other Web content. Think of it as a distributable "What's New" for your site. RSS democratizes news distribution by making everyone a potential news provider. It leverages the Web's most valuable asset, content, and makes displaying high-quality relevant news on your site easy.
   - An RSS feed is referred to as channel, news items, newspapers, even news blogs.
   - Aggregators or readers: applications that collect data from RSS-compliant sites. Applications that allow the user to gather, organize, update, and store information from any compliant source in a convenient, easy to use interface. It saves selected information in various formats for offline viewing and sharing. It reads, sorts, stores information from hundreds of web based news and radio sources. Many let you select the news sources and topics by keywords.
   - RSS’s software can be downloaded to your desktop as a news feed/email program with tabs, etc, can be integrated into your current email; and uses popup or tickers. Some RSS software/codes can be imbedded in your webpage.
   - Future versions of RSS will “incorporate popular additional fields like news category, time stamps, and more. Soon we'll see RSS portals with user-rated channels, cool RSS site of the day, build your own topic-specific portal, and highly relevant search engines.

MORE INFORMATION ABOUT RSSs
   - American Librarian Association page with RSS. Most at this writing were about Katrina. [http://www.ala.org/al_onlineTemplate.cfm?Section=alonline&Template=/TaggedPageDisplay.cfm&TPLID=14&ContentID=12155](http://www.ala.org/al_onlineTemplate.cfm?Section=alonline&Template=/TaggedPageDisplay.cfm&TPLID=14&ContentID=12155)
   - Good basic information [http://www.oasis-open.org/cover/rss.html](http://www.oasis-open.org/cover/rss.html)
   - Information on news feeds [http://www.bradsoft.com/feeddemon/help/1.0/basics/](http://www.bradsoft.com/feeddemon/help/1.0/basics/)
• King, Andrew. Introduction to RSS. WebReference.com. 
  http://www.webreference.com/authoring/languages/xml/rss/intro/
• Making an RSS feed By Danny Sullivan, Editor, April 2, 2003
  http://searchenginewatch.com/sereport/article.php/2175271
• Minnesota State University, Mankato, MSUMyPortal Webpage 
  https://portal.mnsu.edu/Default.aspx
• Mnot RSS Tutorial. http://www.mnot.net/blog/2005/09/01/rss_tutorial and 
  http://www.mnot.net/rss/tutorial/
• More Information about RSS 
  http://searchenginewatch.com/sereport/article.php/2175281
• One example 
  http://www.newsisfree.com
• Radio Community Service: Top 100 Most Subscribed to RSS Feeds 
  http://radio.xmlstoragesystem.com/rcsPublic/rssHotlist
• RSS Readers/Compendiums by platforms 
  http://www.lights.com/weblogs/rss.html
• Technology at Harvard Law School 
  http://blogs.law.harvard.edu/tech/rss
• USA Today List of RSS Feeds 
• US News and World Report 
  http://www.usnews.com/usnews/rss_info.htm
• US Government List of RSS feeds by topic 
  http://www.firstgov.gov/Topics/Reference_Shelf/Libraries/RSS_Library.shtml
WEBLOGS OR ‘BLOGS’

1. What is a weblog?
   • A ‘blog’ is web authoring tool that does NOT require the user to install software and does NOT require the user to develop webmaster skills.
   • It is a webpage that can be updated quickly via the web, email and, for some, through their cell phones.
   • Blog users can post, modify, or delete their own content on a Website using a browser interface.
   • It functions and reads as a web journal, or a page in which content is posted frequently and chronologically in most cases.

2. Content and purpose
   • The content and purposes of blogs vary greatly — from links and commentary about other web sites, to news about a company/person/idea, to diaries, photos, poetry, mini-essays, project updates, even fiction.
   • Many blogs are personal, "what's on my mind" type musings. Others are collaborative efforts based on a specific topic or area of mutual interest. Some blogs are for play. Some are for work. Some are both.

3. Usefulness of blogs
   • They can be interactive in that not only can the user post messages or other information, write stories, but readers can respond to the postings in many cases.
   • Its members form an online community and all participants are provided access to a suite of tools that enable a group to get organized, share knowledge, and communicate.
   • Blogs are also excellent team, department, company, and family communication tools. They help small groups communicating in a way that is simpler and easier to follow than email or discussion forums.
   • Blogs can be used for private exchange of information requiring security or for public access.
     • Blogs are used to keep everyone in the loop, promote cohesiveness and group culture, and provide an informal "voice" to outsiders.
     • Users can also share pictures, videos, links, documents, presentations and newsletters with specific persons or with the general society of web users.

4. Access to blogs
   • Many websites host weblog software, either free or basic charge.
   • Blogging software options have proliferated at an amazing speed. Any web search for 'free blogging software' will offer you more choices than humanly possible to 'explore'.
BLOGGING: GETTING STARTED

• BBC’s take on Blogs. http://news.bbc.co.uk/1/hi/technology/4086337.stm


• Blogomonitor http://www.blogomonomer.com/blogo.php

• Blog Census, attempts to count/analyze patterns of blog use across the web. http://www.blogcensus.net/

• Department of Rhetoric at U of M. An education example--Into the Blogsphere http://blog.lib.umn.edu/blogosphere/

• EDweb (Webquest guru) one of my personal favorites. And a wonderful ‘map’ of the blogging process. http://edweb.sdsu.edu/courses/edtec570/cooltools/blogging_map.htm


• Blogs at Harvard Law. Note the blog re: globalization and open net initiative. http://blogs.law.harvard.edu/

• Info Central: Cutting through Information and Technology Clutter. This site offers an amazing map of the process/steps. http://www.infosential.com/archives/2004/04/if_you_are_going_to_take_.php

• LS Blogs http://www.lsblogs.com/

• MnSCu’s webpage for blogging information http://www.oit.mnscu.edu/pages/weblogs.htm

• Redwood County Public Library http://www.rcpl.info/services/liblog.html

• Redwood County Public Library’s listing interesting eblogs http://www.rcpl.info/services/liblog.html#blogs

• The National Institute of Technology and Liberal Learning http://www.nitle.org/


• Technorati, another amazing websource for Blogs. http://www.technorati.com/

• Uthink-Blogs at University Libraries. Need to be UofM staff/faculty/student to log in. http://blog.lib.umn.edu/

• And finally, for your edification, a personal blogging effort by one of your presenters for travel and international exchanges (they are just the beginnings and are not meant to be great examples). http://dgdgdgtravel.blogspot.com/ and http://www.livejournal.com/users/dgdgdg/
1. **What are Wikis and Swikis?**
   - Wikis, developed by Ward Cunningham, were used to facilitate the discovery and documentation of software patterns but it has expanded to include a web-based collaborative writing tool (swikis).
   - Both provide an environment where users link together each other's experiences.
   - In creating wiki, Cunningham wanted to enhance the 'story-telling nature’ in all of us and he wanted people who wouldn't normally engage in web based authoring/development author to find it comfortable authoring, so that there stood a chance of us discovering the structure of what they had to say.
   - Current versions of wikis and swikis allow users to post information in multiple formats. Other participants can edit the text or other information that has been posted.
   - Thus, wikis and swikis function as a collaborative websites, referred to as a CoWeb, in which any page or application can be edited by anyone.
   - There is no formalized structure, no protocols, no standards, but enormous flexibility: Just edit and write.
   - Two fun examples
     - [Wikipedia](http://en.wikipedia.org/wiki/Main_Page)
     - [Brain Noodles](http://wiki.brainnoodles.com/)
     - [Jot spot](http://www.jot.com/index.php)

**MORE INFORMATION ABOUT WIKIS, AND SWIKIS**

- FAQ on Wikis and SWIKI [http://pbl.cc.gatech.edu/myswiki/137](http://pbl.cc.gatech.edu/myswiki/137) and [http://minnow.cc.gatech.edu/swiki/19](http://minnow.cc.gatech.edu/swiki/19)
- Guzdial, Marc. Marc Guzdial's swiki page: [http://coweb.cc.gatech.edu/guzdial](http://coweb.cc.gatech.edu/guzdial)
- Swiki Help Guide. [http://minnow.cc.gatech.edu/swiki/help#createPage](http://minnow.cc.gatech.edu/swiki/help#createPage)
- And finally, a wiki practice example by your presenters at [http://gohagan.jot.com/](http://gohagan.jot.com/)
Sources for Internet Data used in this Presentation

And some sources just for the heck of it!

ClickZ
ClickZ
ClickZ http://www.clickz.com/stats/

Disturbing Search Requests
Disturbing Search Requests
Disturbing Search Requests http://searchrequests.weblogger.com/

Google
Google
Google http://google.com

Lycos Top 50: Internet Culture and Trends.
Lycos Top 50: Internet Culture and Trends.

Pew Internet Reports
Pew Internet Reports
Pew Internet Reports http://www.pewinternet.org/reports/index.asp

Internetweek
Internetweek
Internetweek http://www.internetweek.com/

Mankato Free Press
Mankato Free Press
Mankato Free Press http://www.mankatofreepress.com/

News of the word
News of the word
News of the word http://www.newsoftheword.com/current/

Nielsen NetRatings
Nielsen NetRatings
Nielsen NetRatings http://www.nielsen-netratings.com/

Nua Internet Surveys (archives for ClickZ reports)
Nua Internet Surveys (archives for ClickZ reports)
Nua Internet Surveys (archives for ClickZ reports) http://www.nua.ie/surveys/ and
http://www.nua.ie/surveys/how_many_online/index.html

Professors online: The Internet’s Impact on College Faculty
Professors online: The Internet’s Impact on College Faculty
Professors online: The Internet’s Impact on College Faculty http://www.firstmonday.org/issues/issue10_9/jones/index.html

SilverPoint Organization
SilverPoint Organization
SilverPoint Organization http://www.silverpoint.com/1001/

Urban Legends
Urban Legends
Urban Legends http://www.snopes.com/

Wired
Wired
Wired http://www.wired.com/

World Fact Book
World Fact Book

Suggested Reading

Embrey (2002). You blog, we blog; Teacher Librarian v.30:2, pp.7-9
Tomkin (2005). Making the case for a wiki, Ariadne, no.42
http://www.ariadne.ac.uk/issue42/tonkin/