

intel®

innovation in
education

Intel® Innovation in Education

Institutes

Emerging Technologies in Education

Understanding and
Implementing New and
Promising Technologies



Emerging Technologies in Education

Understanding and Implementing New and Promising Technologies

The Intel® Innovation in Education Institutes Web resources contain the materials you need to present a successful workshop including:

- This document
- Workshop slides

NOTE: There are no participant handouts for this workshop.

These workshop materials assume that you:

- Have education experience in the classroom
- Have taken the workshop
- Have thoroughly reviewed and are familiar with the workshop resources
- Are familiar with the Intel® Innovation in Education Web site
- Are familiar with using the Internet
- Have a high-speed Internet connection to use during the workshop
- Are comfortable using and explaining the technologies covered in the workshop (weblogs, handhelds, syndication, etc.) as well as facilitating discussions of how they might be used in education

Technical Requirements

To give the workshop, you'll need a technology lab setting with high-speed Internet access and the following equipment:

- Presenter's computer equipped with:
 - A computer with a high-speed Internet connection
 - Screen
 - Computer projector
- Wireless mike (depending on room size and acoustics)
- Computers with high-speed Internet connection for participants (maximum of 2 participants per workstation)

For more information, on the computer requirements, see Site Recommendations www.intel.com/education/site_support/recommendations.htm



Preparation

Make sure you have spent time going over the Intel® Innovation in Education Web site before your presentation so you are familiar with its layout and content.

Set up a weblog to be used by participants during the workshop for them to post their comments, ideas, and thoughts.

Day of the Presentation

Open two browser windows: one to the workshop slides and another to the Intel® Innovation in Education Web site. You'll toggle between these browser windows during the workshop.

Emerging Technologies in Education

Understanding and Implementing New and Promising Technologies

Goals

Learn how to identify emerging technologies and adapt them for education.

1. Increase knowledge of important emerging technologies in education
2. Learn about free resources for learning more about using emerging technologies in education
3. Use a weblog to record activities, events, and strategies gleaned from the workshop

Agenda

Total Estimated Time: 2 hours 20 minutes

Topic	Estimated Time	Slide Numbers
1. Welcome	5 minutes	Slides 1–3
2. Overview and Goals	5 minutes	Slides 4–5
3. Emerging Technologies	10 minutes	Slides 6–7
4. Explore Weblogs	45 minutes	Slides 8–14
5. Use Handhelds	45 minutes	Slides 15–19
6. Review Other Technologies <ul style="list-style-type: none"> • Syndication • Wireless connectivity • Collaboration tools 	20 minutes	Slides 20–23
7. Wrap Up	10 minutes	Slide 24

Facilitator Tips During the Workshop


Slide 1

Welcome to

Emerging Technologies in Education

Understanding and Implementing New and Promising Technologies

Workshop



Key Points

Notes

Time: 5 min. Slides 1–3

Display this slide as participants enter the room.

If appropriate, introduce yourself and have participants introduce themselves.

About Intel in Education

The Intel® Innovation in Education initiative:

- Has invested **more than \$700 million worldwide** in education efforts through 2003
- Collaborates with leaders from education, governments, industry, academia, and research organizations
- Designs and delivers programs in more than **50 countries on six continents**
- Gives teachers tools, strategies, and resources, free-of-charge, that they can use to make a difference in the classroom

This long-term, sustained initiative consists of several programs:

- Intel® Innovation in Education Web site
- Intel® Teach to the Future
- Intel Computer Clubhouse Network
- Intel sponsored science competitions
 - Intel Science Talent Search (Intel STS)
 - Intel International Science and Engineering Fair (Intel ISEF)

Key Points

Notes

Time: 5 min. Slides 1–3

Introduce and review the purposes of the Intel® Innovation in Education initiative and its associated programs worldwide.

Intel® Innovation in Education Web Site

Intel® Innovation in Education home page
www.intel.com/education

The image shows a screenshot of the Intel Innovation in Education website. On the left is a blue navigation sidebar with the Intel logo and the text 'innovation in education'. Below this, there are several sections of resources, each with a list of links: 'Learning With Technology', 'Professional Development', 'Science & Math', 'Learning Anytime', 'Learning About Technology', and 'Global Commitment'. The main content area features a large banner with the text 'Intel® Innovation in Education' and a sub-header 'What is Connected Learning?'. Below the banner are several articles and resource cards. Three callout boxes are present: one pointing to the main content area with the text 'Five sections of education resources', one pointing to the 'Learning About Technology' section with the text 'Learn about Intel's Global Commitment to Education', and one pointing to a 'Subscribe' button with the text 'Subscribe to the quarterly newsletter'. A fourth callout box points to the main content area with the text 'New and updated content, tools, and resources'.

Key Points

Notes

Time: 5 min. Slides 1–3

Display the Intel® Innovation in Education Web site home page to make participants familiar with it as a source of Intel resources for educators.

Point out the location of *Emerging Technologies* on the Intel Innovation in Education home page (in the left navigation under Learning With Technology).

Overview and Goals

Learn how to identify emerging technologies and adapt them for education.

1. Increase knowledge of important emerging technologies in education
2. Learn about free resources for learning more about using emerging technologies in education
3. Use a weblog to record activities, events, and strategies gleaned from the workshop

Key Points

Notes

Time: 5 min. Slides 4–5

Present the goals of the workshop to set the stage for the concepts and activities to follow.

Agenda

Emerging Technologies

- Adapting for education

Explore Weblogs

- Explore education-focused weblogs
- Begin using your own weblog
- Post your first weblog

Use Handhelds in Education

- Explore *Learning With Handhelds* Web resources
- Read online resources on your handheld

Review Other Technologies

- Syndication
- Wireless connectivity

Wrap Up

Key Points

Notes

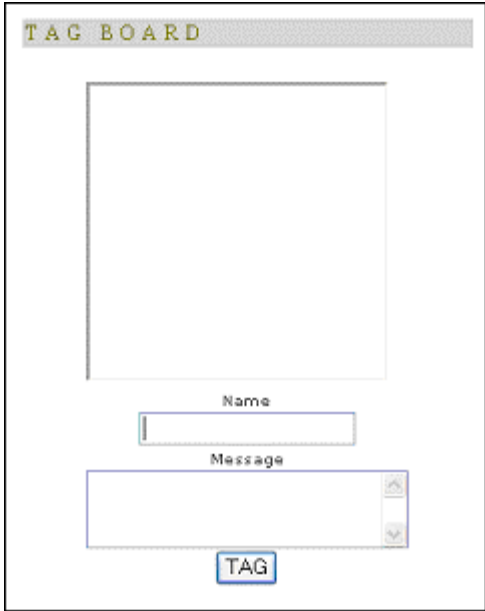
Time: 5 min. Slides 4–5

Briefly present the agenda to be covered in the workshop.

What Is an Emerging Technology?

An "emerging technology" is, in its simplest sense, one that is new to you, your school, or your district.

More broadly, emerging technology refers to cutting edge technologies that are not usually developed with education in mind.



"Tag Board" is a weblog-based chat tool which allows users to post notes, comments, and responses. It is available for free at www.tag-board.com.*

Key Points

Notes

Time: 10 min. Slides 6–7

Explain “emerging technology” using the points on the slide.

Ask participants about technologies that are new to their schools and have participants use the Tag-Board (or chat) to post or their responses.

Adapting Technologies for Education

IDENTIFY: What does this new technology allow a user to do?

ISOLATE: What are the most important features/functions?

ANALYZE: Where do these features/functions show up in education?

APPLY: Could this new technology be applied to improve/enhance that task?

Evaluating Emerging Technologies	
<h3>Blogging</h3>	
Emerging Technology	
IDENTIFY What does this new technology allow a user to do?	<ul style="list-style-type: none"> • Keep a journal • Publish one's ideas • Respond to others' ideas •
ISOLATE What are the most compelling of these uses?	<ul style="list-style-type: none"> • Publish one's ideas • Respond to others
ANALYZE How are these processes important in education?	Students keep reflection journals as they read literature, perform an investigation, etc. Being able to respond to each other's reflections adds depth.
APPLY How can this technology be applied to improve that task?	Students in a literature class keep individual weblogs, writing a reflection after each chapter. They are able to read and respond to each other's reflections online.

Key Points

Explain the ways to adapt technologies for education: identify, isolate, analyze, and apply.

1. Select one of the technologies from the responses to the question on the prior slide.

continued on next page

Notes

Time: 10 min. Slides 6–7

2. Identify clearly what the selected technology is and what it does.
3. List the important features of the selected technology.
4. Explain the listed features in the context of current educational practices.
5. Brainstorm how this technology might be used well in the classroom.

Explore Weblogs

What is a weblog, or simply, "blog"?

- Personal publishing
- Blog items are date-stamped and shown in reverse-chronological sequence



The companion Emerging Technology workshop weblog can be viewed at www.c42.ciservers.net/users/pilot*

Key Points

Notes

Time: 45 min. Slides 8–14

Explain the terms “weblog” and “blog.” Briefly explain how a weblog is used.

Ask participants if they have ever used a blog?

1. Have participants view one of the Institutes' weblogs at <http://institutes.edweblogs.org>.
2. Use the Resources section (on the right column of the blog) to view other weblog sites.

Anatomy of a Post

The diagram illustrates the components of a blog post. It shows a sample post from NECC.EDWEBLOGS.ORG with the following elements:

- Title of Entry:** NECC.EDWEBLOGS.ORG
- Body:** NECC 2003 - EdWeblogs.org I've been working on a collaborative weblog for use during the National Education Computing Conference taking place in Seattle next week. In addition to the weblog, there will also be a edublogger gathering. taking place Monday, June 30. Intel has graciously provided funds to pay for a meeting room and for an internet connection to the room. I'm hoping for an environment similar to what I witnessed at the O'Reilly Emerging Technologies Conference that took place in April. People coming together, learning from each other, and sharing the good work they are doing.
As Will Richardson mentioned today, the great thing about events such as NECC is that you have an opportunity to connect with people who you admire and to learn from them. That is what I am anticipating to take place Monday night and throughout the conference. If you are in Seattle on Monday, be sure to look us up.
- Entry author and date:** Posted by Tim Lauer on June 23, 2003
- Comments, trackback and other collaboration features:** Permalink, Category: Blogging | Comments (0) | TrackBack (0)

Key Points

Notes

Time: 45 min. Slides 8–14

Using the example on the screen, or another example, show the main features of a weblog:

- Posting
- Time/date-stamped
- Links and blogrolls
- Commenting

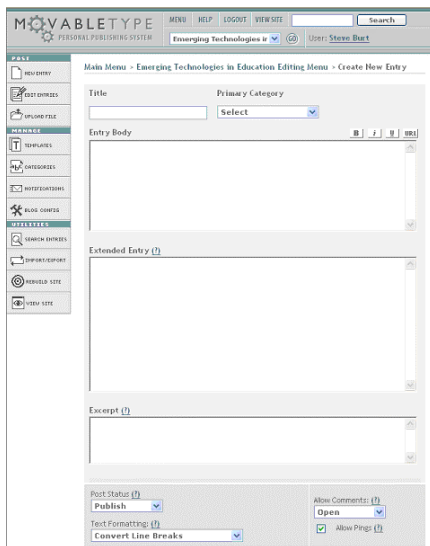
Post to a Blog

We will be using a blog throughout this workshop.

- You can access the blog anytime from anywhere with Internet access.
- You will use the blog throughout the workshop to add posts and respond to other postings.

Post your answer to the following questions using a blog:

- What are the most effective technologies used in education?
- What are current technologies that could be adapted for use in education?
- What are my biggest fears of using technology in education?



Key Points

Notes

Time: 45 min. Slides 8–14

Explain how you will be using a blog throughout the workshop. Visit <http://institutes.edweblogs.org/>.

Have participants create a blog with their answers to the questions on the slide.

Use Blogs in Education

Why are blogs important?

- Distributed knowledge
- Frequently updated and current
- Social and fun

What do they do?

- Personal publishing
- Connect with disparate communities



Key Points

Notes

Time: 45 min. Slides 8–14

Explain the value of blogs.

Provide examples of how blogs might be used in education,

View one of the following:

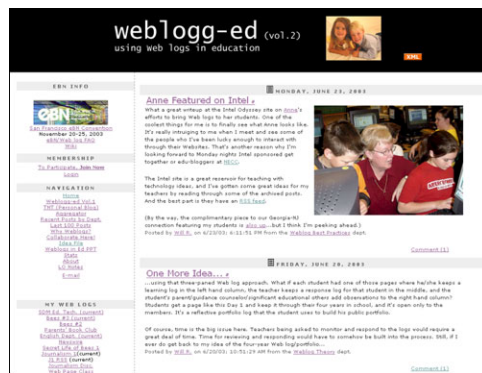
- The Intel® Innovator article about blogging (shown on the slide)
www.intel.com/education/projects/news/vol_05/elementary2.htm
- *An Innovation Odyssey* stories about blogging (Story numbers 299 through 303).
www.intel.com/education/odyssey/Story.aspx?StoryID=299

View a Blog

Weblogs in Education

"Using Weblogs in Education" by Will Richardson

www.weblogg-ed.com*



Key Points

Notes

Time: 45 min. Slides 8–14

Examine the blog by Will Richardson.

NOTE: If you prefer, you may use any other education weblog listed in the right-hand column of any of the Institutes' weblogs).

Personalize Your Blog

You can modify your blog:

- Use categories
- Add links/blogrolls
- Change the look-and-feel
- Use calendar, archives
- Add graphics
- Trackback



Key Points

Notes

Time: 45 min. Slides 8–14

NOTE: This slide is optional—to be used if time permits.

Using a real blog, demonstrate its features (listed on the slide).

Set Up a Blog for Use in Education

Institute Blog

- Edweblogs is the clearinghouse for blogs accompanying each Institute hosted by Intel® Innovation in Education www.edweblogs.org*

General

- Blogger provides a basic introduction, support, and even hosting. www.blogger.com*

Key Points

Notes

Time: 45 min. Slides 8–14

Explain how to set up a blog for use in education.

Ask if there are any questions about using blogs.

Using Handhelds in Education

Handhelds, PDAs, and cell phones in the classroom:

- What is a handheld computer?
- How should schools deal with these technologies?
- How can they be used to positively effect learning?

Discuss the following questions. Post your answer on your blog.

- Which emerging technologies (devices) are you seeing students use? (One example is cell phones.)
- How should schools deal with these technologies?
- How can they be used to positively effect learning?

Key Points

Notes

Time: 45 min. Slides 15–19

Mention that the workshop will cover another technology—the use of handhelds in education.

Discuss the questions on the slide as a large group, or in smaller groups.

Have participants post a blog with their answers to the questions on the slide.

Distribute handhelds for participants to use and become familiar with (if available).

Learning With Handhelds Web Resources

Learning With Handhelds Web Resources
www.intel.com/education/handhelds

Learning With Handhelds

* **Mobile Edition** *

Learning With Handhelds lesson plans to use with your students.

[Introducing Handhelds](#) [Data Collection](#)
[Engaged Learning](#)

Introducing Handhelds Into the Classroom

Before they can make use of handheld computers as learning tools, students need to learn how to use them. Fortunately, even students with little computer experience find handhelds intuitive and easy to learn. There are many ways to help students learn their way around handheld computers.

Lesson Plans:
[Parent's Night](#) [Handheld Use](#) [Guided Learning](#) [Students Teaching Students](#) [Learning About Learning](#) [Risky Behavior](#)

[Back to Top](#)

Data Collection and Research

Handhelds have proven to be highly effective portable tools for inquiry-based learning. They play a critical role in numerous data collection investigations due to their mobility, convenience, and real-time data analysis. Scientific

Key Points

Notes

Time: 45 min. Slides 15–19

Explain about the *Learning With Handhelds* Web resources on the Intel® Innovation in Education Web site.

View the *Learning With Handhelds* Web pages.

Teaching With Handhelds

- How can handhelds extend learning?
- Power and mobility
- Findings from research



Key Points

Notes

Time: 45 min. Slides 15–19

Discuss the questions on the slide.

Review Lesson Plans



Key Points

Notes

Time: 45 min. Slides 15–19

Explain that lesson plan ideas for using handhelds can be viewed on a handheld. This page shows how it appears to a mobile user.

If participants have handhelds with them, they might try accessing these resources.

Post Blog About Handhelds

Post a blog responding to one of the following questions:

- How does your school currently use handhelds?
- How do you envision handhelds being used by students in your school?

Key Points

Notes

Time: 45 min. Slides 15–19

Determine whether participants have questions about using handhelds as a teaching resource.

Have participants post a blog with their answer to one of the questions on the slide.

Review Other Technologies

There are a wide variety of technologies in use and being developed.

- How to adapt them for education
- Additional value added

Mobile Robots as Gateways into Wireless Sensor Networks

Intel's leading-edge research into wireless sensor networks is converging with new advances in [mobile robotics](#). One big question is, can low-cost mobile robots act as intelligent gateways into wireless sensor networks?



[Jim Butler](#), one of Intel's senior researchers, provides some early answers and a glimpse into future applications of [wireless robotics](#) technology.

Photo courtesy of Aconame, Inc.

Key Points

Notes

Time: 20 min. Slides 20–23

Discuss cell phones and any technologies identified by participants in response to questions on Slide 6.

Stress that the workshop has covered two technologies that might be used in education: weblogs and handhelds. There are other technologies, and the remainder of the workshop will cover a few.

What Is Syndication?

- Delivers updated content to your site
- One time setup
- A way to share information with staff and the community

How can syndication impact education?

- *An Innovation Odyssey* example

Setting it up

- HTML, Javascript, and XML, modified to your needs



Key Points

Notes

Time: 20 min. Slides 20–23

Explain what syndication is and how it works.

Show an example of how *An Innovation Odyssey* has been syndicated. Often, it is best to go to www.intel.com/education/syndication and walk through the syndication pages.

Explain the requirements (what it takes) to syndicate *An Innovation Odyssey*.

Wireless Connectivity

Types

- Wireless Fidelity (WiFi) - 802.11b
- Bluetooth
- Infrared

Impact on Education

- Mobility and portability of learning
- Remote access

Key Points

Notes

Time: 20 min. Slides 20–23

NOTE: This and all of the remaining slides on other technologies are optional, depending on time.

Explain, briefly, the various types of wireless connectivity and how they might impact education.

Discuss the primary benefits of wireless connectivity: mobility and portability of learning, as well as remote access.

Collaboration Tools

Integrating and Collaborating

- Identifying and adapting a technology
- Integrating technologies into the classroom for instructional purposes
- Expanding the reach of technology to improve learning

Blog Aggregation

- What is aggregation?
News aggregators (Newswire, NewzCrawler, etc.)
- Adapted for education
Enables a teacher to read, view, and comment on all of a group of students' blogs without viewing each one. "Brings the content to the user, not the user to the content."

Key Points

Notes

Time: 20 min. Slides 20–23

Ask participants whether (and how) technology can help increase collaboration in education.

Briefly introduce collaboration tools.

Wrap Up

Questions?

Post an entry on personal blog.

Please complete the online session evaluation at:

www.inteleducation.com/institute

Key Points

Notes

Time: 10 min. Slide 24

Ask if there are any questions.

Have participants post a blog entry on their overall reaction to the workshop.

Wrap up the workshop.

Thank participants for attending.

Have participants complete the online session evaluation.