Internet Re/search Skills

مقرر: مهارات البحث على شبكة الانترنت

الفرقة: الأولى برنامج اللغة الانجليزية والترجمة

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الفرقة: الأولى برنامج اللغة الانجليزية والترجمة

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الرموز المستخدمة

 **فيديو للمشاهدة.**

 نص للقراءة والدراسة.

 **رابط خارجي.**

 **أسئلة للتفكير والتقييم الذاتي.**

 **أنشطة ومهام.**

الفصل الأول

الإنترنت وتطبيقاته في العملية التعليمية

- مقدمة :

إن من معالم ثورة الاتصالات الحديثة الشبكة العالمية للمعلومات أو ما يسمى الإنترنت (Internet) التي انتشرت في جميع دول العالم ودخلت معظم البيوت والمؤسسات التجارية والترفيهية والسياسية والتعليمية...الخ.
وفيما يلي نبذة مختصرة عن الإنترنت Internet وتطبيقاته في العملية التعليمية :

- تعريف الإنترنت:

هي مجموعة من الشبكات المتصلة ببعضها البعض حول العالم لتبادل المعلومات فيما بينها . أي هي المنظومة العالمية التي تربط مجموعة من الحاسبات بشبكة واحدة وهي اختصار لكلمة internet work وقد بدأت شبكة الإنترنت في الولايات المتحدة الأمريكية شبكة عسكرية للأغراض الدفاعية ، ولكن بانضمام الجامعات الأمريكية ثم المؤسسات الأهلية والتجارية – في أمريكا وخارجها – جعلها شبكة عالمية تستخدم في شتى مجالات الحياة

- مميزات شبكة الإنترنت: أهم المميزات التي شجعت التربويين على استخدام شبكة الإنترنت في التعليم ما يلي:

1- **سرعة وضمان انتقال المعلومات:** حيث يستطيع أي فرد أن يرسل خطاباً إلى ملايين الأفراد في وقت واحد من خلال الإنترنت، بعكس البريد العادي الذي يستغرق أياماً بل أسابيع ، والعكس صحيح أيضاً ، إذ يستطيع ملايين الأفراد تعرف معلومة معينة أو رسالة أو نبأ في وقت واحد إذا عرفت مكانها، وهذا هو المتبع في وكالات الأنباء العالمية ، مثل CNN وغيرها، حيث تضع الأخبار والنشرات الجوية على أجهزة الكمبيوتر ، ويستطيع ملايين الناس الحصول على هذه الأخبار دون انتظار.

2- **سرية المعلومات :** وهذه السرية تأتي من أن كل جهاز مرتبط بالإنترنت له رقم خاص به أو اسم معروف به ، وبالتالي يستطيع أي فرد أن يرسل رسالة إلى جهاز بعينه ويضمن أنها خزنت بداخله ، ويطمئن إن كانت وصلت أم لا ، ووقت الاستلام ، ويستطيع المرسل إليه الرد الفوري على

الرسالة .

3- **تبادل المستندات:** يمكن إرسال واستقبال أي مستند من أي جهاز كمبيوتر مرتبط بالإنترنت مهما كان نوع المستند وحجمه، سواء كان خطابا أو مذكرة أو كتاباً أو شريط كاسيت أو فيديو.

4- **الحديث والمشاورة وعقد المؤتمرات :** لا تحتاج إلى شراء كمبيوتر خاص أو أجهزة اتصال معتمدة، فأي جهاز كمبيوتر يصلح ما دام تم ربطه بخط تليفون، ولا يحتاج الإنترنت إلى مستوى علمي أو فني عال للتشغيل.

5-**التسلية والترفيه :** توفر شبكة الإنترنت مئات الألعاب الإلكترونية البسيطة المجانية بما في ذلك: طاولة الزهر، الشطرنج، الورق، كرة القدم بأنواعها وغير ذلك. ، كما تمكنك شبكة الإنترنت من قراءة ما يكتبه النقاد السينمائيون عن الأفلام الحديثة التلفزيونية والأغاني ذات الموضوع الواحد ونصوص الأفلام السينمائية.

6- **التسوق من خلال شبكة الإنترنت :** يمكن طلب مختلف

أنواع البضائع التي ترغب الحصول عليها دون الذهاب إلى السوق أو مغادرة البيت، فيمكن شراء مختلف المواد كالكتب وبرامج الكمبيوتر والأزهار واسطوانات الموسيقى والبيتزا والأسهم والسيارات المستعملة وغيرها .

7- **مجموعات النقاش**: يمكن الاشتراك مع مجموعات النقاش من خلال شبكة الإنترنت للالتقاء بمختلف الأفراد والشخصيات حول العالم ممن لهم الاهتمامات ذاتها. ويمكن توجيه أسئلة إليهم أو تقديم أفكار أو مناقشة قضايا هامة أو قراءة قصص شائقة.،و هناك الآلاف من مجموعات النقاش التي تناقش مختلف الموضوعات مثل: البيئة والطعام والمرح والموسيقى والسياسة والدين والرياضة والتلفزيون وغيرها.

إن شبكة الإنترنت تعد المساهم الرئيسي فيما يشهده العالم اليوم من انفجار معلوماتي ، وبالنظر إلى سهولة الوصول إلى المعلومات الموجودة على الشبكة مضافاً إليها المميزات الأخرى التي تتمتع بها الشبكة فقد أغرت كثيرين بالاستفادة منها كل في مجاله ، من جملة هؤلاء ، التربويون الذين بدءوا باستخدامها في مجال التعليم ، حتى أن بعض الجامعات

الأمريكية وغيرها ، تقدم بعض موادها التعليمية من خلال الإنترنت إضافة إلى الطرق التقليدية .

8- **الوفرة الهائلة في مصادر المعلومات :**

ومن أمثال هذه المصادر (الكتب الإلكترونية Electronic Book، الدوريات Periodicals، قواعد البيانات Data Bases، الموسوعات Encyclopedias، المواقع التعليمية Educational Sites).

9- **الاتصال غير المباشر (غير المتزامن) :** يستطيع الأشخاص الاتصال فيما بينهم بشكل غير مباشر ومن دون اشتراط حضورهم في نفس الوقت باستخدام :

- البريد الإلكتروني (E –mail): حيث تكون الرسالة والرد كتابياً.

- البريد الصوتي (Voice- mail): حيث تكون الرسالة والرد صوتياً.

10-**الاتصال المباشر(المتزامن):** وعن طريقه يتم التخاطب في اللحظة نفسها بواسطة:

- التخاطب الكتابي (Relay-Chat) حيث يكتب الشخص ما يريد قوله بواسطة لوحة المفاتيح والشخص المقابل يرى ما يكتب في اللحظة نفسها، فيرد عليه بالطريقة نفسها مباشرة بعد انتهاء الأول من كتابة ما يريد.

- التخاطب الصوتي (Voice-Conferencing) حيث يتم التخاطب صوتياً في اللحظة نفسها عن طريق الإنترنت.

- التخاطب بالصوت والصورة (المؤتمرات المرئية) (Video-conferencing) حيث يتم التخاطب حياً على الهواء بالصوت والصورة.

- أسباب استخدام الإنترنت في التعليم:

هناك أربعة أسباب رئيسية لاستخدام الإنترنت في التعليم:

1-الإنترنت مثال واقعي للقدرة على الحصول على المعلومات من مختلف أنحاء العالم.

2 - يساعد الإنترنت على التعلم التعاوني الجماعي ، فنظراً لكثرة المعلومات المتوفرة عبر الإنترنت فإنه يصعب على الطالب البحث في كل القوائم لذا يمكن استخدام طريقة العمل الجماعي بين الطلاب ، حيث يقوم كل طالب بالبحث في قائمة

معينة ثم يجتمع الطلاب لمناقشة ما تم التوصل إليه.

3- يساعد الإنترنت على الاتصال بالعالم بأسرع وقت وبأقل تكلفة.

4- يساعد الإنترنت على توفير أكثر من طريقة في التدريس ذلك أن الإنترنت هي بمثابة مكتبة كبيرة تتوفر فيها جميع الكتب سواء كانت سهلة أو صعبة. كما أنه يوجد في الإنترنت بعض البرامج التعليمية باختلاف المستويات .

كما يتميز الإنترنت الكثير من الإيجابيات منها:

1- المرونة في الوقت والمكان.

2- إمكانية الوصول إلى عدد أكبر من المتابعين في مختلف الأماكن.

3- سرعة تطوير البرامج مقارنة بأنظمة الفيديو والأقراص المدمجة .(CD-Rom)

4- قلة التكلفة المادية مقارنة باستخدام الأقمار الصناعية ومحطات التلفزيون والراديو.

5- تغيير نظم وطرق التدريس التقليدية يساعد على إيجاد فصل مليء بالحيوية والنشاط.

6- سرعة الحصول على المعلومات.

7- إيجاد فصل بدون حائط .(Classroom without Walls)

8- تطوير مهارات الطلاب على استخدام الحاسوب

تطبيقات الإنترنت في التعليم:

نظراً لكون الإنترنت من أهم وسائل المعلوماتية التي يمكن استخدامها في التعليم ،فإنه يمكن اقتراح مجموعة من أهم تطبيقات الإنترنت في التعليم وهى :

1- استخدام البريد الإلكتروني (Electronic Mail) كوسيط بين المعلم والدارس لإرسال الرسائل لجميع الدارسين.

2- كوسيط لتسليم الواجب المنزلي.

3- كوسيلة للاتصال بالمتخصصين من مختلف دول العالم والاستفادة من خبراتهم وأبحاثهم في شتى المجالات.

4- كوسيط للاتصال بين أعضاء هيئة التدريس والإدارة.

5- يساعد الطلاب على الاتصال بالمتخصصين في أي مكان بأقل تكلفة وتوفير للوقت والجهد . 6- كوسيط للاتصال بين الجامعات في المستقبل .فقد ذكر (Scott, 1997)أن الجامعات في اليابان وأمريكا والصين وأوربا اعتمدت البريد الإلكتروني

كوسيلة اتصال معتمدة.

7- كوسيلة اتصال بين الإدارة والدارسين وذلك بإرسال والتعاميم والأوراق المهمة والإعلانات.

8- كوسيلة لإرسال اللوائح والتعاميم وما يستجد من أنظمة لأعضاء هيئة التدريس وغيرهم.

وبالجملة فإن هذه بعض التطبيقات في الوقت الحاضر لخدمة البريد الإلكتروني ولاشك أن الاستخدام سوف يولد استخدامات أخرى أكثر وأكثر مما ذكر.

أخيراً وكما سبقت الإشارة إلى أن البريد الإلكتروني (Electronic Mail) يعتبر من أكثر خدمات الإنترنت شعبية واستخداماً .

<u>وذلك راجع إلى الأمور التالية:</u>

- سرعة وصول الرسالة.

- تتم قراءة الرسالة من المستخدم عادة في وقت قد يكون هيأ نفسه للقراءة والرد عليها أيضا.

- لا يوجد وسيط بين المرسل والمستقبل)إلغاء جميع الحواجز الإدارية.(

- كلفة منخفضة للإرسال.

- استلام الرد خلال مدة وجيزة من الزمن.

- يمكن ربط ملفات إضافية بالبريد الإلكتروني.

- يستطيع المستفيد أن يحصل على الرسالة في الوقت الذي يناسبه.

- يستطيع المستفيد إرسال عدة رسائل إلى جهات مختلفة في الوقت نفسه.

- استخدامات القوائم البريدية (Mailing List) في التعليم:

تتكون القوائم البريدية من عناوين بريدية تحتوي في العادة على عنوان بريدي واحد يقوم بتحويل جميع الرسائل المرسلة إليه، إلى كل عنوان في القائمة .كما أن هناك قوائم بريدية عامة وأخرى خاصة .

وتعتبر خدمة القوائم البريدية (Mailing List)إحدى خدمات الاتصال المهمة في الإنترنت، ولكن كثير من الناس أخفقوا في معرفة توظيف هذه الخدمة في جميع المجالات في الحياة العامة، ومن هنا يمكن القول إن توظيف هذه الخدمة في التعليم

يساعد على دعم العملية التربوية.

ومن أهم مجالاتها التطبيقية ما يلي:

- تأسيس قائمة بأسماء الطلاب في الفصل الواحد)الشعبة (كوسيط للاتصال مع المجموعة.

- توفر إمكانية أن يقوم المشرف الأكاديمي بوضع قائمة خاصة به تشتمل على أسماء الدارسين وعناوينهم بحيث يمكن إرسال الواجبات المنزلية ومتطلبات المادة عبر تلك القائمة، وهذا سوف يساعد على إزالة بعض عقبات الاتصال بين المعلم والدارسين.

- يمكن تأسيس قوائم خاصة بجميع طلاب الجامعات والكليات المسجلين بمادة معينة لكي يتم التحاور فيما بينهم لتبادل الخبرات العلمية.

- تأسيس قوائم خاصة بالمشرفين الأكاديميين حسب الاهتمام، وذلك لتبادل وجهات النظر فيما يخدم العملية التعليمية.

- الاتصال بالمهتمين بنفس التخصص حيث يمكن للطلاب أو الأساتذة الاتصال بزملاء لهم في مختلف أنحاء العالم ممن يشاركونهم الاهتمام في موضوعات معينة لبحث الجديد فيها

وتبادل الخبرات.

- تكوين قوائم بريدية للطلبة والطالبات المهتمين بشئون معينة، حيث تتيح الفرصة للطلاب لتبادل وجهات النظر مع أقرانهم المهتمين بنفس المجال بغض النظر عن أماكن تواجدهم.

- في مجال المناهج الدراسية :

1- استخدام الإنترنت كوسيلة مساعدة في المناهج، بحيث يمكن وضع المناهج الدراسية في صفحات مستقلة في الإنترنت وتتاح الفرص للطالب وولي الأمر بالدخول لتلك الصفحات في المنزل .

2- استخدام الإنترنت كوسيلة تعليمية مساعدة في تناول المناهج وشرح موضوع معين.

- في مجال التدريس:

1-استخدام الإنترنت في الحصول على المعلومات المطلوبة من العديد من المواقع.

2- استخدام الإنترنت في تعزيز طرق وأساليب التدريس تفريد

التعليم والتعليم التعاوني والحوار والنقاش .

3- استخدام الإنترنت في حل مشكلات الطلاب الذين يتخلفون عن زملائهم لظروف قاهرة مثل المرض وغيره وذلك من خلال المرونة في وقت ومكان التعلم وكيفيته

4- استخدام الإنترنت في زيادة ثقة الطالب بنفسه وذلك بتنمية المفاهيم الإيجابية تجاه التعليم الذاتي .

5- استخدام الإنترنت في عمل بنوك الأسئلة.

6- استخدام الإنترنت في الاطلاع على الدروس النموذجية.

في مجال تنمية الموارد البشرية:

1-استخدام الإنترنت في عقد البرامج التدريبية سواء كانت للهيئة الإدارية والتدريسية والتوجيهية وهكذا يمكن متابعة الدورات التدريبية والاستفادة منها لأكبر عدد ممكن،ويمكن لأي فرد متابعة هذه الدورات من المنزل إذا كان مشترك في الإنترنت.

2-استخدام الإنترنت في عقد اجتماعات بين مد راء ومديرات المدارس في دول الخليج العربية دون اللجوء إلى السفر إلى

مكان واحد،بهدف تبادل الخبرات والاطلاع على التجارب التربوية

3- استخدام الإنترنت في استقبال المحاضرات والندوات وورش العمل من أي مكان في دول الخليج العربية.

في مجال تبادل المعلومات:

1- استخدام الإنترنت كوسيلة للبحث والإطلاع، بحيث يمكن للطالب الدخول على مكتبات الجامعات ومراكز البحوث التربوية والبحث فيها وطباعة الملخصات.

2- ربط الوزارة مع جميع أفرعها ومدارسها بحيث يمكن استقبال والتعاميم والمراسلات الصادرة من الوزارة بسرعة.

3- ربط المدارس بشبكة معينة بحيث يمكن للهيئات الإدارية والتدريسية فيها من تبادل الخبرات والتجارب والمستحدثات التربوية مما يؤدي إلى تحقيق الأهداف التربوية المقصودة.

العوائق التي تقف أمام استخدام الإنترنت في التعليم :

إن المتتبع لهذه التقنية يجد أن الإنترنت كغيرها من الوسائل الحديثة لها بعض العوائق، وهذه العوائق إما أن تكون مادية أو

بشرية. ثم إن المتتبع للعقبات التي تواجه الدول الأخرى يجد أن هناك توافق مع الواقع الحالي للتعليم العالي في المملكة العربية السعودية. وأهم العوائق هي:

أولاً: التكلفة المادية:

التكلفة المادية المتاحة لتوفير هذه الخدمة في مرحلة التأسيس أحد الأسباب الرئيسية من عدم استخدام الإنترنت في التعليم في المملكة العربية السعودية. ذلك أن تأسيس هذه الشبكة يحتاج لخطوط هاتف بمواصفات معينة، وحواسيب معينة. ونظراً لتطور البرامج والأجهزة فإن هذا يُضيف عبئاً آخر على الجامعات. ولاشك أن بعض الجامعات لا تستطيع أن توفر هذا خلال سنوات قليلة ثم إن ملاحقة التطور مطلب أساسي من مطالب القرن ولهذا لابد من النظر إلى هذا بعين الاعتبار عند التأسيس.

ثانياً: المشاكل الفنية:

الانقطاع أثناء البحث والتصفح وإرسال الرسائل لسبب فني أو غيره مشكلة تواجهها الجامعات في الوقت الحاضر، مما يضطر المستخدم إلى الرجوع مرة أخرى إلى الشبكة وقد يفقد

البيانات التي كتبها. وفي معظم الأحيان يكون من الصعوبة الدخول للشبكة أو الرجوع إلى مواقع البحث التي كان يتصفح فيها.

ثالثاً: اتجاهات المعلمين نحو استخدام التقنية:

ليست العوائق المالية أو الفنية هي السبب الرئيسي من استخدام التقنية، بل إن العنصر البشري له دور كبير في ذلك ، وقد ذكر (Michels,1996) في دراسته لنيل درجة الدكتوراه التي تقدم بها لجامعة مينسوتا والتي كانت بعنوان (استخدام الكليات المتوسطة للإنترنت : دراسة استخدام الإنترنت من قبل أعضاء هيئة التدريس) أنه بالرغم من تطبيقات الإنترنت في المصانع والغرف التجارية والأعمال الإدارية إلا أن تطبيقات(استخدام) هذه الشبكة في التعليم أقل من المتوقع ويسير ببطيء شديد عند المقارنة بما ينبغي أن يكون. وشدد McNeilعلى " إن البحث في اتجاهات أعضاء هيئة التدريس نحو استخدام هذه التقنية وأهميتها في التعليم، أهم من معرفة تطبيقات هذه الشبكة في التعليم" (McNeil, 1990, P.2).

أما عن أسباب هذا العزوف من بعض أعضاء هيئة التدريس

فهو راجع إلى عدم الوعي بأهمية هذه التقنية أولاً، وعدم القدرة على الاستخدام ثانياً ، وعدم استخدام الحاسوب ثالثاً. والحل هو ضرورة وضع برامج تدريبية للمعلمين خاصة بكيفية استخدام الحاسب الآلي على وجه العموم أولاً وباستخدام الإنترنت على وجهة الخصوص ثانياً، وعن كيفية استخدام هذه التقنية في التعليم ثالثاً.

ربعاً: اللغة:

نظراً لأن معظم البحوث المكتوبة في الإنترنت باللغة الإنجليزية لذا فإن الاستفادة الكاملة من هذه الشبكة ستكون من نصيب من يتقن اللغة وهم قلة قليلة في الجامعات السعودية. ومن هنا يمكن القول لابد من إعادة النظر في ما يلي:

1- إعادة تأهيل أساتذة الجامعات في مجال اللغة.

2- ضرورة بناء قواعد بيانات باللغة العربية لكي يتسنى للباحثين الاستفادة من تلك الشبكة.

خامساً : الدخول إلى الأماكن الممنوعة:

إن الأمن الفكري والأخلاقي والاجتماعي والسياسي من أهم المبادئ التي تؤكد عليها المؤسسات التعليمية بجميع مراحلها

التعليمية، بل أن من أهداف المدارس توفير هذه الحماية السابقة الذكر. ونظراً لأن الاشتراك في شبكة الإنترنت ليس محصوراً على فئة معينة مثقفة وواعية للاستخدام ، لذا فمن أهم العوائق التي تقف أمام استخدام هذه الشبكة هي الدخول إلى بعض المواقع التي تدعو إما إلى الرذيلة ونبذ القيم والدين والأخلاق أو أنها تدعو إلى التمرد والعصيان على ولاة أمر المسلمين وعلمائهم و مشايخهم ، وكل هذا تحت اسم التحرر والتطور ونبذ الدين وحرية الرأي إلى غير ذلك من الشعارات الزائفة. وللحد من هذا قامت بعض المؤسسات التعليمية بوضع برامج خاصة أو ما يسميه البعض بحاجز الحماية (Firewall) تمنع الدخول لتلك المواقع. لكن الحقيقة كما قال ماد وكس Maddox من الصعوبة حصر هذه المواقع لكن التوعية بأضرار هذه المواقع هو النتيجة الفعالة.

سادساً: كثرة أدوات (مراكز) البحث (Search Engines)

من المشكلات أو العوائق التي تقف أمام مستخدمي شبكة الإنترنت هي كثرة أدوات البحث أو كما يسميها البعض بمراكز البحث والتي من أهمها Yahoo، Lycos, Alta-Vista,

. WebCrawler..... ،Excite, Info seek

والإنترنت عبارة عن محيط عظيم الاتساع والانتشار وبالتالي فإن عملية البحث عن معلومة معينة أو موقع معين أو شخص معين سوف تكون في غاية الصعوبة ما لم تتوفر الأدوات المساعدة على عملية البحث (Engines Search). وهناك العديد من مراكز البحوث (أدوات البحث) في الإنترنت وهي (Gopher, Wais, FTP, Telnet) وقد أشرت إليها عند الحديث عن البحث في الإنترنت.

إن السؤال الحقيقي هو ما الطريقة المثلى للبحث في الإنترنت؟

ان الإجابة على هذا السؤال ليست صعبة وليست سهلة في نفس الوقت على حد تعبير مالو.

إن البحث في الإنترنت هو بمثابة البحث في مكتبة كبيرة ، بل إن البعض يسمي الإنترنت " بالمكتبة الكبرى " .

ولهذا السبب - اتساع الإنترنت- يرى الباحث مالو (Malloy) في كتابة المعروف دليل الباحث في الإنترنت(The Internet Research Guide) أنه عند البحث في الإنترنت لابد من إتباع ما يلي:

- ضرورة تحديد الكلمة (الكلمات) الأساسية في البحث.
- حدد الفن (علوم، اجتماع...الخ) الذي سوف تبحث فيه.
- حدد المركز أو الموقع(Search Engine) الذي سوف تبحث فيه.

ومما تجدر الإشارة إليه أن بعض أدوات البحث بدأت تتخصص شيئاً فشيئاً، أعني بذلك أن بعض المواقع مثل Info seek اهتمت في المعلومات الجغرافية والأطالس وغيرها أو على الأقل ركزت عليها أما Yahoo فقد ركز على الأمور التربوية وهكذا. ويتوقع بعض الباحثين في هذه الشبكة نمو التخصص في الإنترنت في القريب العاجل.

كما تجدر الإشارة إلى أن هناك برامج حديثة تقوم بالبحث في أكثر من أداة في آن واحد، وغالباً ما تجمع ما بين 10-20 أداة فقط لكل مرة.

سابعاً: الدقة والصراحة:

أشار قليستر (Glister) إلى أن نتائج البحوث أشارت إلى أن الباحثين عندما يحصلون على المعلومة من الإنترنت يعتقدون بصوابها وصحتها وهذا خطأ في البحث العلمي ذلك أن هناك

مواقع غير معروفة أو على الأقل مشبوهة. ولهذا فقد نَصح سكوت (Scott) الباحثين والمستخدمين للشبكة بأن يتحروا الدقة والصراحة والحكم على الموجود قبل اعتماده في البحث.

الفصل الثاني

تطبيقات تعليمية ومحركات بحث أكاديمية للطلاب

أولاً: محركات بحث أكاديمية

1.Egyptian Knowledge Bank (www.ekb.eg):

The Egyptian Knowledge Bank is an initiative that has been launched by President Abdel-Fattah El-Sissi During the National Science Day of 2014. And through it, the specialized councils of the presidency started to launch several national projects concerned with educational development.

2.Google Scholar:

Google Scholar provides a simple way to broadly search for scholarly literature. From one place, you can search across many disciplines and sources: articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites. Google Scholar helps you find relevant work across the world of scholarly research. Google Scholar aims to rank documents the way researchers do, weighing the full text of each document, where it was published, who it was written by, as well as how often and how recently it has been cited in other scholarly literature. Major features of Google Scholar:

- Search all scholarly literature from one convenient place
- Explore related works, citations, authors, and publications
- Locate the complete document through your library or on the web
- Keep up with recent developments in any area of research
- Check who's citing your publications, create a public author profile

3. **Semantic Scholar** **https://www.semanticscholar.org/**
   Is a free, AI-powered research tool for scientific literature.

ثانياً: تطبيقات تعليمية

- 1) Khan Academy
- 2) Quizlet
- 3) Duolingo
- 4) Read Along
- 5) SoloLearn
- 6) NASA
- 7) Google Earth
- 8) MemRise
- 9) PhotoMath
- 10) Google Arts & Culture
- 11) GoNoodle
- 12) EdX
- 13) Brilliant
- 14) zAmerican English
- 15) Ted Talks for Kids

1) Khan Academy

أحد أفضل تطبيقات تعليمية للطلاب هي أكاديمية خان. فإن أكاديمية خان هي منظمة تعليمية أنشأها سال خان، وهو معلم أميركي بدأ في البداية مشروعه لمساعدة أبناء عمه في التعلم. وكان الغرض من تأسيس أكاديمية خان هو مساعدة الطلاب في تعليمهم من خلال توفير الدروس والتدريب باستخدام الفيديو .

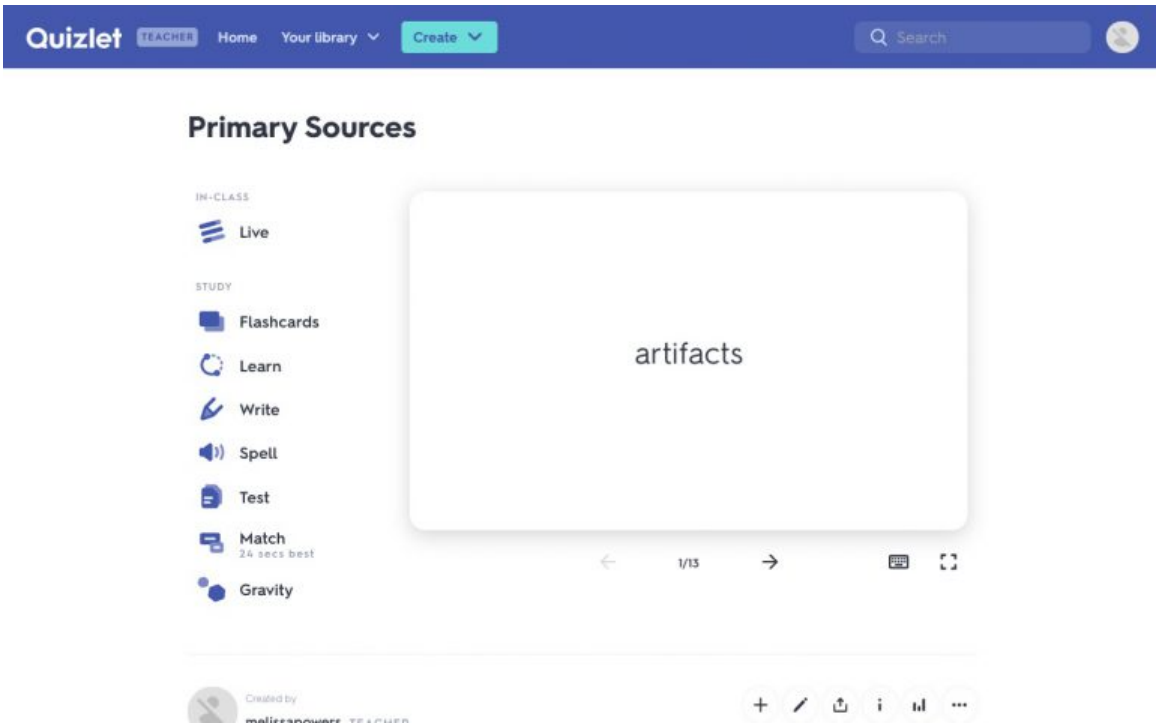
فتكرس الأكاديمية جهودها لتمكين الطلاب من خلال تزويدهم بتجربة تعلم مخصصة يمكنهم من خلالها التعلم بسهولة وإنتاجية .

يقدم الموقع الدروس حول مجموعة من موضوعات K-12 و K-14مثل التاريخ والرياضيات والعلوم والتاريخ والاقتصاد و اختبارات ال (SAT) والمزيد .

ومن بين أفضل فوائد أكاديمية خان هي مواردها المجانية الشاملة التي قد تكون مناسبة للطلاب والمعلمين والآباء على حد سواء. يمكن للمعلمين الوصول إلى لوحة المعلومات الخاصة بهم، وملاحظة تفاصيل الأداء الخاصة بالطلاب الفرديين وكذلك تفاصيل الفصل ككل.

وإحدي فوائد الموقع أيضا هي أن موارد التعلم الخاصة بهم في طور الترجمة إلى أكثر من 36 لغة! وهذا يجعل من الأكاديمية ملاذا تعليميا متنوعا وشاملا للمعلمين والطلاب من مختلف أنحاء العالم .

2) Quizlet



من بين أفضل تطبيقات التعلم للطلاب موقع – Quizlet وهو موقع يركز على المرحلة التقييمية من رحلة التعلم. وهو يشجع الطلاب على الدراسة من خلال القيام بأنشطة مثل إنشاء بطاقات تعليمية والمشاركة في التعلم القائم على اللعب .

إذا كنت معلما، فيمكنك استخدام هذا التطبيق لطلاب السنة الأولى الذين يحتاجون إلى الحفظ الأبجدي والترقيم والمزيد. يمكنك أيضا استخدامه لبناء مفردات للطلاب الأكبر سنا في الفصل الدراسي للغة .

إذا كنت أحد الوالدين ولديك طفل يرفض التذكر أو لديه وقت صعب يركز على دراساته، فمن المؤكد أن هذا التطبيق سيساعد في تعزيز الثقة والمشاركة. يستطيع الطلاب العثور على بطاقات تعليمية جاهزة أو إنشاء بطاقات تعليمية خاصة بهم باستخدام ميزة "التعريف التلقائي" في Quizlet لتسهيل عملية الإدخال.

3) Duolingo

ليس من الضروري أن يكون تعلم اللغة قائما على التعليم والكتاب المدرسي. فإن Duolingo هو تطبيق يجعل تعلم اللغة مسليا من خلال واجهة المستخدم السهلة مع التحديات والشارات والألعاب اليومية .

والهدف النهائي من المنصة هو جعل تعلم اللغة أكثر سهولة بالنسبة للأشخاص الذين لا يستطيعون تحمل تكلفتها أو ببساطة ليس لديهم الوقت لتعلم لغة جديدة .

أفضل شيء في الأمر هو أنه خدمة مجانية! لذا فهو مثالي للطلاب والمتعلمين الذين يريدون توفير أموالهم .

يمكنك استخدام Duolingo أثناء التنقل وفي أي وقت. وهم يعتقدون أن "التعلم أسهل عندما تستمتع بوقتك." وهذا يجعل متعلمي اللغة يتكيفون على استخدام Duolingo لأنهم لا يتعلمون في الفصول الدراسية التقليدية التي قد تكون مملة للبعض .

كما يتضمن" Duolingo التعلم الضمني" ضمن تطبيقه التعليمي. فإن التعلم الضمني يحدث عندما يتعلم الشخص دون أن يكون مدركا بشكل واع لعملية التعلم .

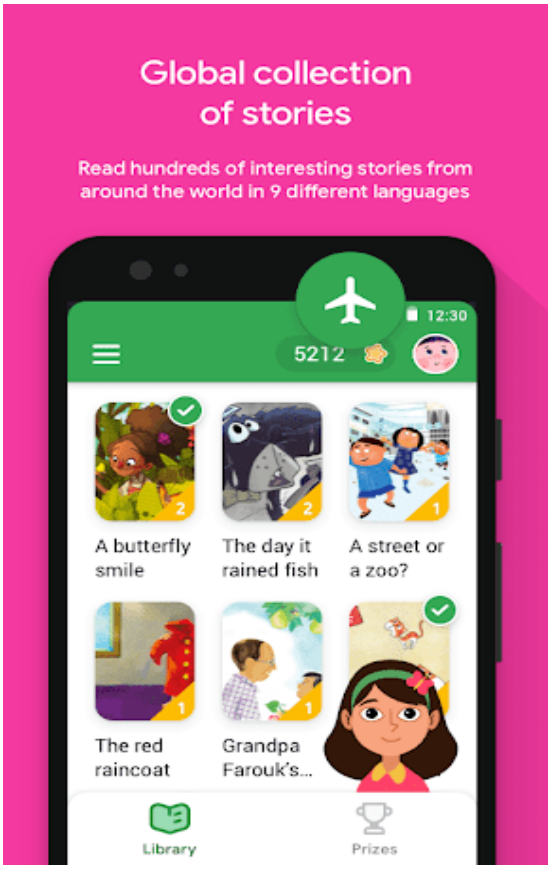
ويعد هذا النمط من التعلم مثاليا للعديد من المفاهيم في اللغة حيث إنه يساعد على بناء أساس قوي لقواعد اللغة وتكوينها.

4) Read Along

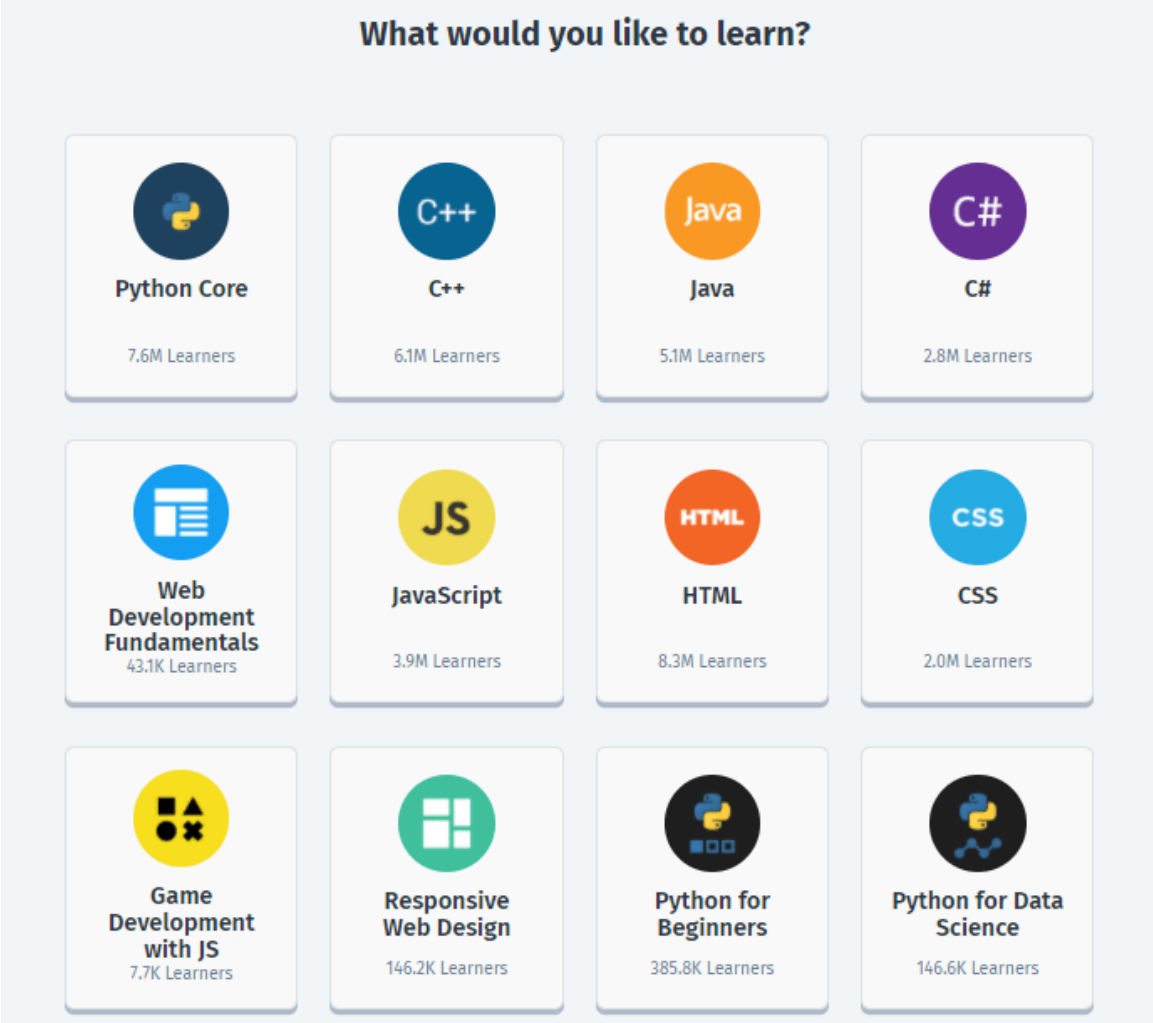
من أفضل التطبيقات التعليمية للطلاب الصغار هي .Read along فإذا كنت معلما في السنوات الأولى وكنت بحاجة إلى تطبيق لائق يساعد طلابك على ممارسة القراءة، فإن تطبيق Read Along دائما هو خيار رائع لاحتياجات غرفة الصف! يمكنك استخدامه للطلاب الذين تزيد أعمارهم عن 5 عاما؛ فهو يساعدهم على القراءة من خلال الإشارات اللفظية والمرئية الفورية أثناء قراءة القصة بصوت عال .

إن أفضل شيء في التطبيق هو أن مطوري التطبيق يقومون باستمرار بإضافة اللغات وتحديث نظامهم من خلال ملاحظات اولياء الأمور وتوسيع نطاق مجموعة الكتب لديهم. وبخلاف اللغة الإنجليزية، يمكنك العثور على التطبيق بلغات مثل الهندية والبرتغالية والإسبانية والفارسية وغيرها .

ويقوم التطبيق بتقييم مستوى قراءة الطفل في البداية للتوصية بالمحتوى المناسب للمستويات المختلفة. كما يدمج التطبيق التعلم التحفيزي لتشجيع الأطفال على مواصلة القراءة والاستمتاع بأوقاتهم؛ ويمكن أن تكون هذه الحوافز على شكل نجوم وشارات وإنجازات .



5) SoloLearn



إن برنامج SoloLearn هو أحد البرامج التعليمية التفاعلية المجانية التي يمكن الاستعانة بها في الفصل الدراسي.

مع تحول دراسة البرمجة إلى دراسة جذابة للعديد من طلاب الجامعات اليوم، فقد تزايدت الحاجة إلى غرس مهاراتهم في الجيل الأحدث سنا. تعد منصة SoloLearn أكبر مجتمع ومنصة في العالم للمبرمجين من مختلف المستويات .

يمكن للمعلمين والآباء تقديم الطالب للبرمجة من خلال SoloLearn إذا كشف الطفل عن أي علامات اهتمام في البرمجة من سن مبكرة. فيوفر التطبيق دورات تدريبية صغيرة

الحجم لتعليم المبتدئين والمتعلمين المتوسطين والمحترفين كل ما يتعلق بالبرمجة. والتطبيق يقدم دورات في برامج ال Pythonوال Javaوتطوير المواقع بل وحتي البرمجة بهدف التسويق. كما يقدم التطبيق المجاني تماما لوحة مناقشة خاصة بالمتدربين من أجل مشاركة الأفكار والأسئلة .

ومن أفضل المزايا لتطبيق SoloLearn أن الموقع يتضمن مدونة يجتمع فيها الفريق والمبرمج. فتناقش المدونة كل الموضوعات المهمة مثل التطوير الوظيفي، وأخبار الشركة، وتعلم التعليمات البرمجية وغيره.

6) NASA

أحد التطبيقات المرنبطة بالتعليم أيضا هي .NASA فيستطيع الطلاب الآن السفر إلى الفضاء من خلال تطبيق NASA الذي يعلم كل شيء عن الفضاء. فبإمكانهم تعلم المزيد من خلال مشاهدة البث التلفزيوني المباشر من وكالة ناسا، وقراءة آخر الأخبار، والجولات الافتراضية، والاستماع إلى البث الصوتي على الإنترنت، ومشاهدة الآلاف من مقاطع الفيديو .

التطبيق الشقيق هو NASA Visualization explorer الذي يجلب الكون بأكمله إلى المستخدم. فسيعجب الطلاب المهتمين بمعرفة المزيد عن كل ما يتعلق ب الشمس والكون بهذا التطبيق .

يمكن للمعلمين استخدام هذين التطبيقين لتعريف الطلاب في المدرسة بعلم الفلك. يتوفر التطبيق مجانا ويمكن العثور عليه على Android و iOS و .Kindle.

7) Google Earth

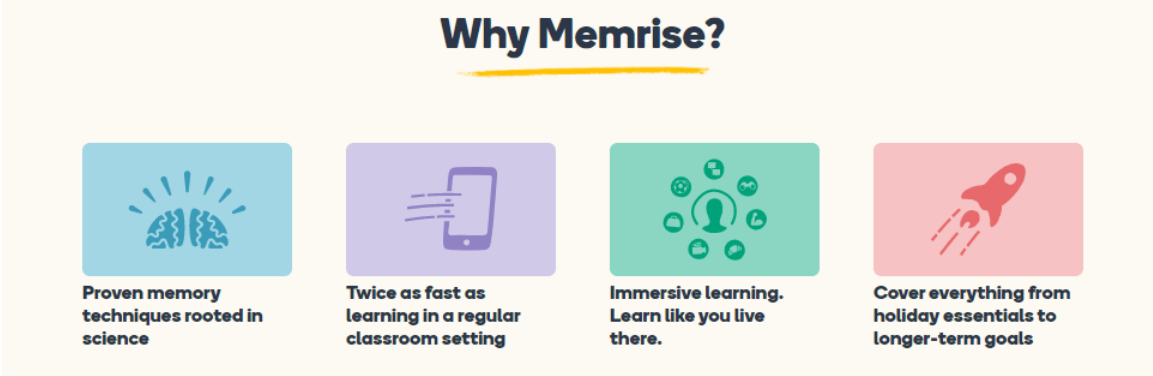
Google Earth هو أحد تطبيقات تحفيز الطلاب التي عادة ما يستخدمها المعلمون في الفصل لإضافة النشاط علي الطلاب.

على الرغم من أن الناس قد يعتقدون أن علم الفلك هو علم جديد، فإنه في الواقع يعود إلى بلاد ما بين النهرين القديمة عندما كانت الثقافات المبكرة تحتاج إليه للملاحة والتخطيط الزراعي وحفظ الوقت. فهذا الاهتمام بعلم الفلك يشغل حتى الآن أجيال من الباحثين. وينبغي تعريف الطلاب بهذا العلم في المدارس حتى في سن مبكرة .

Google Earthهو برنامج كمبيوتر يعرض الأرض باستخدام صور الأقمار الصناعية في الوضع ثلاثي الأبعاد. وهو برنامج مجاني يستطيع أن يستخدمه المعلمون في المدارس لتعليم كل ما هو متعلق بالجغرافيا. وما يعد رائعا في Google Earth هو أنه يساعد الطلاب على تصور المفاهيم الجغرافية .

فإن الطريقة الأمثل لتدريس الثقافة والتاريخ للطلاب هي من خلال الجغرافيا. ويحتوي التطبيق على أدوات يمكن استخدامها لإنشاء مشاريع فردية. وتتراوح هذه الأدوات بين إضافة النقاط والنص والصور ومقاطع الفيديو لإنشاء مشاريع مدرسية .

8) MemRise



MemRiseهو أحد تطبيقات لشرح الدروس المتعلقة باللغات فهو تطبيق مصمم لتعلم اللغات بطريقة ممتعة وخالية من الكتب المدرسية. وتسترشد فلسفتهم بـ 3 مبادئ: تقديم محتوى قيم من واقع الحياة، وتوفير تجربة تعلم تعتمد على التكنولوجيا، والوعد برحلة ممتعة لتعلم اللغة .

وعلى موقعهم الإلكتروني، يقدمون الكتب الإلكترونية لأكثر من 16 لغة لتمكين متعلمي اللغة من التعرف على العبارات اليومية التي يستخدمها المتحدثون الأصليون. سيعجب الطلاب بهذا التطبيق لأنه مجاني وسهل الاستخدام ومجهز بخيار "التعلم مع المحليين" لزيادة مهارات النطق مع متحدثون اللغة نفسها .

لديهم أيضا مدونة حيث يمكنك قراءة المئات من المقالات حول نصائح تعلم اللغة، والعبارات الشائعة، والإصدارات اليومية والمزيد .

9) PhotoMath

تم إنشاء التطبيق في البداية من قبل أب محبط أراد مساعدة أطفاله في الواجبات المنزلية. فأراد تطوير التطبيق كطريقة لشرح المفاهيم المعقدة بسهولة .

التطبيق سهل الاستخدام إلى حد ما؛ كل ما عليك فعله هو تصويرمشكلتك أو معادلتك باستخدام كاميرا الهاتف وسيقوم التطبيق ببقية المهام. فهو يقدم الإجابة بالإضافة إلى الخطوات كما يقدم نصائح وتلميحات لمساعدة الطالب على تذكر تقنية الإجابة .

ويشمل التطبيق مجموعة واسعة من مواضيع الرياضيات، بحيث يمكن استخدامه من قبل طالب في الصف الثاني أو طالب جامعي. وتعتبر الحسابات وعلم المثلثات والإحصائيات ومشاكل الكلمات من بين الموضوعات المختلفة التي يتعامل معها التطبيق .

10) Google Arts & Culture

من التطبيقات التعليمية للطلاب الرائعة هي Google Arts & Culture. فيمكنك تعليم طلابك تاريخ الفن من خلال هذا التطبيق الذي طورته جوجل. فإنها تجربة تعلم غامرة حيث يمكنك مشاهدة اللوحات الفنية فى النماذج ثلاثية الأبعاد والتعرف على

تاريخ اللوحات العالمية الشهيرة ولعب الكلمات المتقاطعة ذات الصلة بالثقافة واستكشاف الفن بخاصية عرض الشارع ولعب الألعاب والمزيد !

إنها مبادرة لا تهدف إلى الربح، لذا فهي مجانية في استخدامها متى ومهما كنت تريد.

ويمكنك أن تطلب من طلابك إجراء بعض الأبحاث حول حركة فنية معينة ومنحهم المساحة لمناقشتها في الصف التالي، أو يمكنك القيام بجولة فنية افتراضية أثناء الحصة مع شرح ذلك للطلاب في الوقت نفسه .

يمكنك أيضا العثور على خطط دروس قابلة للتحميل للمساعدة في تخطيط درس المحفوظات التالي. وهم يقدمون خطط دروس مثل "تعلم العلوم مع الأبطال الخارقين"، و"اكتشف كوكبنا الخطير"، و"امش مع الديناصورات."

11) GoNoodle

من التطبيقات التعليمية للأطفال هو تطبيق GoNoodle الذي تم تصميمه من قبل سكوت مكويج فهو رجل أعمال في مجال التعليم الصحي. وفي يوم ما، أدرك أنه عليه أن يجعل أطفاله يقومون بالمزيد من النشاط البدني بدلا من النظر إلى الشاشات طوال اليوم .

لذلك، قرر استخدام وقت الشاشة لصالحه من خلال تشجيع الأطفال على التفاعل مع الشاشة فعليا من خلال اللعب والرقص والتعلم .

إن GoNoodle عبارة عن موقع تعليمي عظيم يستطيع معلمو المرحلة الابتدائية (K-5) أن يستخدموه لتعزيز طاقة طلابهم في اليوم الدراسي. يحتوي الموقع على عدد كبير من الأنشطة التفاعلية والمشوقة ومقاطع الفيديو التي يتم تنظيمها حسب الموضوعات؛ يمكن أن تكون الرياضيات، الدراسات الاجتماعية، القراءة، اللغة الإسبانية، المهارات البدنية والمزيد .

فيمكنك استخدام الموقع كمقدمة للفصل الدراسي في بدايته. ما عليك سوى تخصيص مدة 15 دقيقة في بداية الدرس للعبة أو اثنتين مع GoNoodle. وهذا من شأنه أن يعزز من طاقة الطلاب وسوف يصبحون مستعدين للتركيز بعد ذلك .

12) EdX

"التعليم هو جواز السفر للمستقبل، فالغد ملك لمن يعدون له اليوم – ".مالكولم إكس، الناشط في مجال حقوق الإنسان

بعبدا عن تطبيقات المدرسة، هناك أيضا تطبيقات لطلاب الجامعات. فإن منصة EdX هي منصة مفتوحة توفر دورات تدريبية عبر الإنترنت. فيقدم الموقع أكثر من 3,500 دورات عالية الجودة للمتعلمين حول العالم. ويتم تدريس هذه الدورات بواسطة أساتذة الجامعة وخبراء من منظمات وجامعات من أعلى المستويات مثل هارفارد ومعهد ماساتشوستس للتكنولوجيا .

تحتوي كل دورة على مقاطع فيديو ومحتوى نصي ومنتديات للمناقشة وتقييمات مختلفة.

وما هو عظيم عن edX هو أنه يمكن استخدامه مجانا كما يمكن للمتعلم تلقي شهادة بنهاية الدورة بعد دفع رسوم بسيطة .

سيحب طلاب الجامعة الذين يبحثون عن وظائف هذا التطبيق بالتأكيد لأنه يقدم مجموعة واسعة من الدورات التدريبية التي تناسب الجميع. وبالنسبة للأشخاص الذين يعملون بالفعل، يمكنهم المشاركة في أي من الدورات التدريبية المتوفرة لتوسيع مهاراتهم وتحسين معرفتهم في مجالات أخرى .

13) Brilliant

إن Brilliant عبارة عن منصة تعلم خاصة قائمة على الألعاب تتيح للطلاب تعلم موضوعات معقدة في مناهج ال (STEM)بطريقة إبداعية وودية. فتضم المنصة فريقا كبيرا من منشئي الدورات التدريبية الذين يتضمنون معلمين وباحثين ومحترفين من Google و Microsoft.

أحد البرامج الشائعة هي التفكير العلمي والجبر وأسس علوم الكمبيوتر والرياضيات اليومية والفيزياء الفلكية وغيرها الكثير. فقد أنشأ مطورو الموقع الإلكتروني على أساس أربعة أهداف :

اتقن ولا تقم بالحفظ

حل المسائل

ابن حدس مناهج الSTEM

بعض الصراع مطلوب

14- zAmerican English

يعتبر هذا التطبيق من أفضل التطبيقات لتعلم اللغة الإنجليزية باللهجة الأمريكية، بكل سهولة وبطريقة أسرع من المعتاد، يضم البرنامج 4 مستويات لكل مستوى كورسات متعددة. يضم كورسات المحادثة والكتابة والقراءة، يبدأ بتعليم الطلاب أساسيات اللغة الإنجليزية ثم تأهيله للمحادثات والكتابة.

15) Ted Talks for Kids

ربما سمعت بالفعل عن محادثات تيد، ولكن هل تعلم أن هناك مجموعة من مقاطع الفيديو المخصصة للأطفال؟ فهي تقدم محادثات مثيرة وجذابة لإلهام العقول الشابة للتفكير واكتشاف وخلق الأفكار .

إذا كنت معلما، فيمكنك زيارة الموقع في غرفة الصف ومشاهدة محادثة مع طلابك، أو يمكنك تعيين فيديو لهم لمشاهدته بأنفسهم للتحضير لمناقشة جماعية. فسوف تستفيد بالتأكيد من الموقع هذا في غرفة الصف؛ فمن الرائع، على أية حال، أن نمنح الأطفال الحيز للتفكير بطريقة إبداعية واكتشاف إمكانيات جديدة .

في النهاية، قبل أن تقرر تطبيق تعليمي لتستخدمه في فصلك ، اسأل نفسك هذه الأسئلة: هل طلابي متعلمين بصريين أم اجتماعيين ؟ ماذا يمكنني أن أفعل لتوفير أساليب التعلم المناسبة والتكيّيف علي قدراتهم ؟ هل يمكنني استخدام تقنيات وتطبيقات مختلفة لأكثر من مجموعة واحدة من الطلاب ؟ عندما تصل إلى قرار، سوف تجد قائمة طويلة من التطبيقات التعليمية للطلاب للتعلم من المنزل المسلية والمفيدة لإشراك طلابك أو أبنائك.

Chapter Three

Using the internet for academic research

The new *MLA Handbook* recommends including URLs in works-cited-list entries for online works, but it also notes their drawbacks: they can cause clutter, become obsolete, and have limited use in a print work. URLs may also be inaccessible when the pages to which they refer are behind a paywall. Although writers can avoid these problems by following the handbook's recommendation to use permalinks and DOIs when such information is available, URLs are often the only option. In this post, I offer commonsense guidelines on treating URLs in works-cited-list entries.

First, it is important to keep in mind that documentation has two main goals: it should testify to the veracity of your research and provide readers with information about your source that allows them to retrace your steps. Ensuring the enduring availability and retrievability of a source is not the primary objective of documentation, even though the Internet allows for the retrieval of online works referred to in other online works. You would document a performance, even though your

readers can't attend it. Similarly, you would document a letter in a private collection, even though it might not be accessible to your readers. By doing so, you are vouching, "I was here."

When deciding whether and how to include a URL in a works-cited-list entry, you should balance the goals of testifying and retracing. A good litmus test might be this: if your works-cited-list entry adequately achieves the primary goal of vouching for your work, then ask yourself whether providing a URL will help readers wishing to retrace your footsteps.

Basic Rule of Thumb

The *MLA Handbook* encourages writers to list the URL that they see in their browsers unless the source identifies a DOI or permalink associated with it.

Inaccessible URLs

If the URL leads to a source that is behind a paywall or defunct by the time you submit or publish your work or if the URL cannot be publicly resolved, then retrieving becomes difficult or even impossible, but readers may still glean information from the URL that helps them

understand the path of your research. For example, the root of the URL may lead to a home page where readers can log in with their own credentials, pay to see the source, evaluate the credibility of the site that published the source, or locate the source under a new URL.

Ridiculously Long URLs

So you have a ten-page-long URL. Now what? As Russell W. Grooms writes, the *MLA Handbook* "values concise citations and one of its guiding principles is, 'Make your documentation useful to readers.' How useful is it to my reader to have six lines of random letters and numbers at the end of every citation?" Indeed, when URLs are so long that they become unreadable, truncating them will be necessary. (Omitting the URL altogether, however, may not make it clear that the source you are citing appears online.)

The question is, How long is too long? If the URL compromises the readability of your entry, then it is too long. Thus judgment is called for, since whether a URL hinders the readability of the works-cited-list entry will depend on the entry. The length of the entry is one factor: if a URL is several lines longer than the rest of the entry, it will run the show. The placement of the URL is another factor: a URL at the end of

an entry generally makes the entry easier to read than does a URL that appears before optional information that is appended to the entry. As a general guideline, a URL running more than three full lines is likely to interfere with the readability of the entry.

Guidelines on Truncating

URLs are composed of a few basic components:

- **the protocol (basically anything before //)**
- **the double forward slash**
- **the host (which encompasses the domain–like World Wide web, or www)**
- **the path**

In addition, sometimes file-specific information or a query string is appended:

https://style.mla.org/app/uploads/sites/3/2016/04/practice-template.pdf

https://www.mla.org/search/?query=pmla

The *MLA Handbook* advises writers to truncate a URL in one specific way (by omitting the protocol and //). If you need to shorten it further,

retain the host, which will allow readers to evaluate the site and search for the source.

Guidelines on Breaking

As long as the URL is accurately recorded, writers of unpublished material should not worry about how a URL breaks. To ensure that a URL is accurately reproduced, never introduce a hyphen or space in it. Note that the freely available formatting guidelines on this site advise writers to turn off their word processors' automatic hyphenation features for just this reason.

Professionally typeset publications in fixed formats, like print or PDF, normally follow rigorous conventions for breaking URLs. Publishers vary in their practices. In its own professionally typeset publications, the MLA breaks URLs before a period and before or after any other punctuation or symbol (e.g., /, //, _, @). We do not break URLs after a hyphen in such publications, to avoid ambiguity.

When is a website a container?

Works-cited-list entries in MLA style are structured according to the concept of containers. But it's often tricky to determine when a work accessed online is contained in another work. This post provides some examples to help you see when a website is and is not a container.

Rule of Thumb

A website is a container when it is the platform of publication of the particular version of the work you consult. It is not a container when it is a passive conduit providing access to the work.

Sites That Are Containers

Here are a few examples of sites that are containers:

- **Twitter is the platform of publication for tweets.**
- **Google Books is the platform of publication for digitized versions of complete print books.**
- **Facebook is the platform of publication for comments by your friends.**

In all these instances, what we are calling a container is the platform of publication of the source.

Sites That Aren't Containers

So what's not a container? A website is not a container when it merely provides a link to a work. Here are some examples:

- **Any site that acts as a mere portal to a work published elsewhere is not a container.**
- **Online stores. If you purchase and download a song or book from the Apple store, the website Apple.com is not the container of the song or book. It's the store you purchased the work from and thus a conduit for access.**
- **Search engine results, like the thumbnail from a Google image search or the results displayed for books by the "look inside" function on Amazon are not works, and thus they are not containers. To consult the work, you must click through to the site hosting the image or buy the complete book sold through the Amazon website.**
- **An app downloaded from a website to a personal device is also not a container for the purposes of the style.**

emoticons
FTP
Gopher
HTML
HTTP
instant messaging
Internet
Internet2
Internet videoconferencing
Internet whiteboard
intranet
listserv
Majordomo
message board
Netiquette
newsgroup
packets
portal
pull technology
push technology
synchronous communication
TCP/IP
Telnet
thread
URL
Usenet
Web browser
Webcasting
Web log
Webmail
Web server
World Wide Web

National Educational Technology Standards for Teachers

The following NETS•T are addressed by the lesson content and learning activities in this chapter:

I. Technology Operations and Concepts

- **A.** Demonstrate understanding of technology concepts and skills
- **B.** Demonstrate continual growth in technology knowledge and skills

VI. Social, Ethical, Legal, and Human Issues

- **A.** Model and teach legal and ethical practice related to technology use
- **B.** Enable and empower diverse learners
- **C.** Identify and use technology resources that affirm diversity
- **D.** Promote safe and healthy use of technology resources
- **E.** Facilitate equitable access to technology resources

National Educational Technology Standards for Students

The following NETS•S are addressed by the lesson content and learning activities in this chapter:

1. Basic Operations and Concepts

- Demonstrate sound understanding of technology
- Be proficient in the use of technology

2. Social, Ethical, and Human Issues

- Understand ethical, cultural, and societal issues related to technology
- Practice responsible use of technology
- Develop positive attitudes toward technology

3. Technology Productivity Tools

- Use technology to enhance learning, increase productivity, and promote creativity
- Use tools to collaborate, prepare publications, and produce creative works

4. Technology Communications Tools

- Use telecommunications to collaborate, publish, and interact with others
- Use varied media and formats to communicate information and ideas

OVERVIEW

The Internet is a loosely structured network of computers that cross geographical, political, educational, and cultural boundaries. The Internet has two main features that can support a wide range of learning activities in the classroom: information resources and communication

■ AN OVERVIEW OF INTERNET TECHNOLOGIES

Although we use the term *Internet* to refer to a single entity or structure, the Internet is actually the infrastructure that provides access to or exchanges of information using several telecommunication services, or technologies, across numerous networks. In contrast to the Internet, an **intranet** is a private network that resides within an organization and is not accessible to the public. It uses networking hardware and software for communicating and storing or sharing files within the intranet. Usually a networked computer can access both an intranet and the Internet.

Internet technologies provide access to information that would have been impossible to access just a few years ago. Using the World Wide Web, students have access to virtual libraries, electronic databases, and powerful search engines. They can manipulate and generate information in artificial or exploratory learning environments. The Internet also permits interaction and communication among peers and with experts outside the local classroom, both synchronously and asynchronously. Internet technologies support interaction and collaboration that allow students to share ideas, ask questions, and discuss classroom projects.

The two salient features of the Internet—information resources and communication technologies—can support a wide range of learning activities. Harris (1998) calls these features teleresearch and telecollaboration processes. The information features of the Internet provide access to and manipulation of the vast resources available on the Internet by locating, organizing, and structuring information in ways that help students build new knowledge and understandings. The communication features of the Internet support multiple formats and contexts for interaction and exchange of information with other persons or interactive programs in ways that, again, help students build new knowledge and understandings. Both of these features of the Internet offer a number of tools and resources that can support varied instructional methodologies to address a variety of learning goals.

As the Internet has evolved, some technologies have been replaced by newer ones or have evolved with the Internet. For example, the use of the World Wide Web has, for the most part, made Gopher obsolete. Yet e-mail, one of the original Internet technologies, has grown in use and popularity as the Internet has grown. The following discussion provides summaries of most of the Internet technologies you may encounter in the classroom but is not intended to be comprehensive. Some technologies may not be appropriate for use in classroom instruction.

The establishment of the World Wide Web is the focal point for classifying Internet technologies as old, recycled, or new (see Table 3–1). Technologies that were created prior to the World Wide Web and are not widely used now are considered to be old technologies. Those that were designed primarily to support the delivery of information or communication through the World Wide Web are new technologies. And those that predated the Internet but have been modified or updated to deliver services through the World Wide Web or are still widely used on the Internet are considered to have been recycled.

Old Internet Technologies

Old Internet technologies were used on the Internet prior to the beginning of the World Wide Web and now are not widely used.

Gopher

Gopher brought hierarchically organized text files from servers all over the world to a user's computer. Gopher was developed at the University of Minnesota (where sports teams are called the Golden Gophers) and was prominently used from about 1992 through 1996, when it was effectively replaced by the World Wide Web. For the most part, Gopher servers are no longer active on the Internet because almost all of the original Gopher content has been made accessible on the World Wide Web.

TABLE 3–1 Classification of Internet Technologies

Internet technology	Old	Recycled	New
Bulletin board service		✓	
Chat			✓
Discussion lists		✓	
E-mail		✓	
File transfer protocol (FTP)		✓	
Gopher	✓		
Hypertext markup language (HTML)			✓
Hypertext transfer protocol (HTTP)			✓
Instant messaging			✓
Message boards			✓
Telnet	✓		
Transmission control protocol/Internet protocol (TCP/IP)		✓	
Uniform resource locator (URL)			✓
UseNet		✓	
Videoconferencing			✓
Web log (blog)			✓
World Wide Web (WWW or Web)			✓

Telnet

Telnet is a protocol that permits basic communication between two host computers. It was developed in the early days of the Internet as an accommodation to overcome simple differences among computers, such as what kind of character set to use. Telnet allowed a person to log on to a host computer through the Internet as a regular user with whatever privileges were granted to the specific application and data on that computer.

Recycled Internet Technologies

Recycled Internet technologies were used on the Internet prior to the beginning of the World Wide Web but were modified to work as a Web service or are still widely used.

Bulletin Board Services

Bulletin board services (BBSs) are electronic message centers that host specific interest groups. A BBS may provide archives of files, personal electronic mail, and any other services or activities of interest to the bulletin board's system operator. Bulletin boards are a particularly good place to find free or inexpensive software products. Messages on BBSs are typically categorized by topics, and any user can submit or read any message.

BBSs were originally a single computer hooked up through a modem to a phone line with special software running that allowed anyone with a modem who called the phone line to connect to the computer, read and leave (i.e., send) messages, and download files. The BBS is unique as an electronic telecommunications service whose origins were not with military or defense organizations but with computer hobbyists and scientists.

The beginning of computer bulletin boards is attributed to Ward Christensen and Randy Suess, who opened the first public BBS in Chicago in the late 1970s. Their Computerized Bulletin Board System went online to the public in 1979 and operated like a virtual thumbtack bulletin board, where participants could read and post messages. As others responded to the messages, an ongoing virtual discussion was created. Christensen and

Suess published an article describing the technology they used, and virtual bulletin boards begin popping up all around the country. America Online (AOL) and CompuServe are examples of commercial BBSs; Microsoft Network (MSN) was originally a commercial BBS.

BBSs supplied their own content and sometimes interconnected with other BBSs, but in the early 1990s BBSs began connecting to the Internet, expanding the range of content available to BBS members, who had previously operated within the confines of one BBS or several interconnected BBSs. By the mid-1990s membership in BBSs began to decline as the graphics-oriented World Wide Web became more widely available, and eventually BBSs either became Web portals or were absorbed into the World Wide Web and were reconstituted as individual websites operated by government, educational, and research institutions.

Electronic Mail

E-mail was one of the original Internet technologies, yet it remains probably the most popular technology used on the Internet. E-mail allows messages comprised of text and other media to be sent between computers. It was invented during the 1960s, when computer scientists devised ways of exchanging short messages within a large time-sharing computer system. By 1970 electronic message traffic was moving smoothly on the Department of Defense network, and by the early 1980s network mail was called *e-mail* and the @ sign became an indispensable component of e-mail addresses. The rise in e-mail traffic was the largest early force contributing to the growth and development of the Internet (Hafner & Lyon, 1996).

E-mail applications usually require both a client program that runs on an individual computer and a server connected to the Internet. Many e-mail servers allow e-mail messages to be retrieved and sent using an application called **Webmail,** which allows e-mail accounts to be accessed through a Web browser program. To use e-mail, you must have an e-mail account on a mail server. Most schools and universities operate mail servers on a local network that is connected to the Internet. You can also obtain e-mail accounts with an Internet service provider (ISP), such as Yahoo! or MSN Hotmail. Students may have accounts at home as well as at school.

An e-mail account is identified by an e-mail address, which has two parts, separated by an @ symbol. To the left of the @ symbol is the account or user name; the part on the right identifies the domain of the mail server where your account resides. The account or user name can be chosen or assigned, but it must be unique within the domain in which it is used. Figure 3–2 illustrates the structure of the e-mail account scm777@hotmail.com. All who use MSN Hotmail will have the same domain—hotmail.com—as the second part of their e-mail addresses; all who use Yahoo! mail will have yahoo.com as the second part of their e-mail addresses; and all who use America Online e-mail will have aol.com as the second part of their e-mail addresses.

There are several ways to set up an e-mail account, but the basics of using e-mail are essentially the same for all applications. Even though different e-mail programs may have

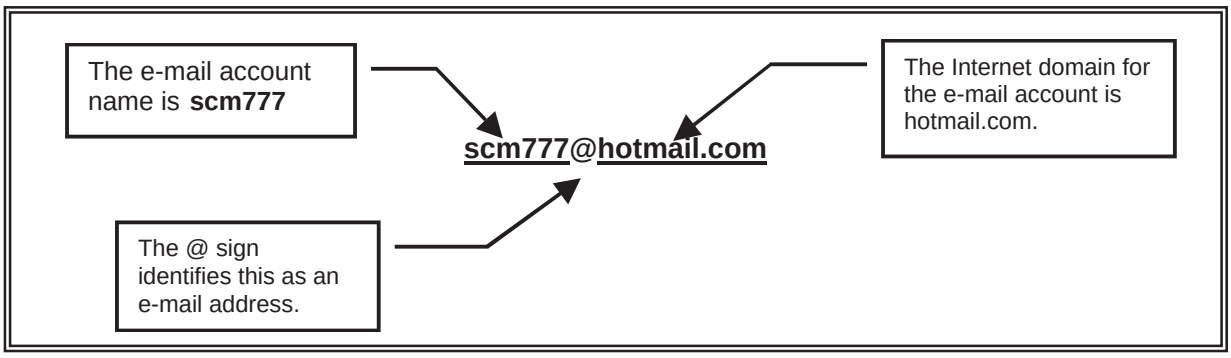


FIGURE 3–2: The Structure of an E-Mail Address

different looks, they all operate fundamentally the same way. An e-mail account will usually operate from one of the following sources:

- *An e-mail account through an ISP*—ISPs usually provide e-mail accounts as part of the fee for a connection to the Internet. This type of account is usually accessed through a phone line or cable connection.
- *An e-mail account through a school or university (or business) network*—These accounts often use a full-featured e-mail program, such as Microsoft Outlook, Outlook Express, or Eudora. These client e-mail applications often come preloaded on a computer or may be downloaded for free or for a small license fee. These programs have many features and are configured by the individual user or a network administrator to operate with an Internet connection through a local area network.
- *An e-mail account through a Web-based e-mail service*—Several **portal** sites that provide a structured gateway to the Internet with supporting tools and resources, such as Yahoo! (http://www.mail.yahoo.com) or MSN (http://www.hotmail.com), provide free e-mail in exchange for exposure to advertisements. These e-mail services are easy to use and are usually accessible through any computer connected to the Internet.

Two popular uses of e-mail are e-mail announcement lists and e-mail discussion lists. Announcement lists are used to send messages to a small or large group or a collection of e-mail accounts. Such lists are usually created around particular products or organizations. When you purchase a product, use a service, or join an organization, you may be subscribed to an announcement list. Discussion lists are used to generate information, comments, or feedback from others subscribing to the lists. Discussion lists are usually organized around a particular topic, and you usually subscribe to the list voluntarily because of your interest in the topic.

Announcement lists use a top-down approach: E-mail announcements flow from the manager of the list to the subscribers. Discussion lists use a bottom-up approach: E-mail discussions flow from subscribers to the list manager and then out to other subscribers. With a discussion list you send an e-mail to a specific e-mail address, and the message goes to possibly hundreds or thousands of people who have subscribed to the list.

File Transfer Protocol

File transfer protocol **(FTP)** is a standard Internet protocol that permits the exchange of files between computers on the Internet. Like Telnet, FTP was developed in the early days of the Internet (it was released as a standard protocol in 1972) to make it possible to share files between computers. FTP is now commonly used to transfer Web page files from the Web page author's computer to a Web server. FTP is also commonly used to download programs and other files from a Web server to a user or client computer. FTP permits deleting, renaming, moving, and copying of files on a server. It can be used as a stand-alone program or application, or it can be built into other programs, such as a program for authoring Web pages that requires the author to move files back and forth between the user computer and the Web server. A Web browser can also perform FTP requests to download programs selected from a Web page. You need to log on to an FTP server, but publicly available files are easily accessed using an anonymous FTP.

Listservs or Discussion Lists

Discussion lists (or **listservs,** discussion forums, electronic mailing lists, or just mailing lists) are automated mail lists—basically, e-mail distributed to a large group. A listserv, or mailing list manager, is a program that receives messages and automatically sends them out to the e-mail addresses of a group of users who have subscribed to the list. Thus, list subscribers can communicate with other list subscribers without having to send individual e-mails to everyone on the list. Each subscriber can post a message to the e-mail address of the mailing list, which serves as an alias for all list subscribers' addresses.

Messages to and from mailing lists are sent and received in the same way that other e-mail messages are. Some of the most popular mailing list management programs are LISTSERV, ListProc, and Majordomo. Even though LISTSERV is a proprietary and copyrighted name owned by L-Soft International, Inc., the term *listserv* has become the generic name to describe discussion lists. This textbook will use the terms *discussion list, listserv,* and *mailing list* interchangeably to refer to the same asynchronous communication tool so that you will become comfortable with all the terms.

Discussion lists allow many people in diverse locations to exchange information and/or have a discussion through a single e-mail address. Discussion lists focus on a common topic, such as online education in the classroom. To use a discussion list, you subscribe by sending an e-mail message to the specific list address. Once you subscribe, you will usually receive a confirmation message that tells you the guidelines of the list and the way to unsubscribe. You should always save the confirmation message so you will have information about how to send messages to the list or how to unsubscribe from the list.

Discussion lists can be structured in several ways:

- *Moderated*—A discussion list can have a moderator who reviews and approves each message posted to the list.
- *Unmoderated*—Without a moderator messages are automatically posted to all subscribers on the list without approval.
- *Open*—A discussion list can allow anyone to subscribe.
- *Closed*—A discussion list can be limited to certain subscribers, who must get approval before joining.
- *One-way or broadcast*—A discussion list can allow subscribers to receive messages from the list but not post new ones.
- *Two-way*—A discussion list can allow subscribers to post as well as receive messages.

There are several primary ways to host and manage a discussion list. First, the discussion list can be hosted on your own server, using mailing list software such as Majordomo or LISTSERV. Your school or school district network may provide the capability of setting up and hosting a classroom discussion list. If not, you can pay an Internet service provider to host a discussion list for you, although the best choice for a classroom is to use a free mailing list hosting service. However, free services usually include advertisements attached to the bottom of posted messages, which may not be appropriate for some classrooms. For a small fee most free services allow you to run an advertisement-free list. For example, Yahoo Groups charges a small monthly fee per list for messages without advertisements.

Newsgroups

Newsgroups began as a means of communication between mainframe computers at large universities. Newsgroups use a network service called **Usenet,** which was originally implemented between 1979 and 1980 by Steve Bellovin, Jim Ellis, Tom Truscott, and Steve Daniel at Duke University and has evolved into a large distributed news network (Hafner & Lyon, 1996). Usenet permits any member to participate in a public dialogue with everyone else in the newsgroup. As it grew to become international in scope, it became probably the largest decentralized information resource in existence until the advent of the World Wide Web.

UseNet is not a formal network but is comprised of networked computers that exchange articles tagged with predetermined subject headers for groups with specific areas of interest (i.e., newsgroups). Any computer that can attach itself to the Internet can become part of UseNet. News articles are handled as electronic mail messages by most computers and are processed as news information by applications called news readers, which send and receive the messages, although most Web browsers are capable of processing Usenet articles.

Usenet newsgroups are distributed among thousands of computers called news servers, which are operated by Internet service providers, universities, companies, and other

FIGURE 3–3 Newsgroup Discussion Categories

- **alt.** Any conceivable topic
- **news.** Info about Usenet news
- **biz.** Business products, services, reviews
- **rec.** Games, hobbies, sports
- **comp.** Hardware, software, consumer info
- **sci.** Applied science, social science
- **humanities.** Fine art, literature, philosophy
- **soc.** Social issues, culture
- **misc.** Employment, health, and much more
- **talk.** Current issues and debates

organizations. Each server receives copies of all messages in a newsgroup and stores them in a database. News servers automatically exchange, or propagate, these messages among themselves, to keep each other's databases up to date.

Newsgroups can be unmoderated, with anyone able to post submissions, or moderated, with submissions automatically directed to a moderator, who edits or filters and then posts the article. Postings to unmoderated groups are automatically propagated to the newsgroup, whereas postings to moderated groups are not propagated until approved by the moderator.

Newsgroups are hierarchically classified (see Figure 3–3). Newsgroup discussion categories, such as alt, are organized into topics, such as alt.animals, which are again divided into even more specific topics, such as alt.animals.dogs. Ultimately, the classification leads to a newsgroup containing messages from people who are interested in one particular topic, such as alt.animals.dogs.beagles. The different parts of a newsgroup's name are always separated by a period.

Each newsgroup contains threads that are more or less a continuous chain of messages on a single topic. Messages, or articles or postings, are linked to one another by a common subject in much the same way that you link to an originating e-mail message when you reply to it.

Because alt newsgroups, especially, may contain content and discussions that are inappropriate for classroom use, Internet filters in schools may limit or prevent access to newsgroups.

Newsgroups are different from discussion lists in several ways. Postings to a newsgroup are made to a central location rather than to e-mail accounts, and Usenet articles remain on a server, whereas discussion list messages come to an e-mail account. Further, discussion lists need only an e-mail program to view the discussion; newsgroups need a news reader or Web browser.

Transmission Control Protocol/Internet Protocol

TCP/IP (transmission control protocol/Internet protocol) is the basic communication language, or protocol, of the Internet. It can also be used in a local area network. The collection of networks eventually called the Internet was named for the first word of Internet protocol (Hafner & Lyon, 1996).

The Internet can best be described as one large worldwide network connecting many smaller networks. It is a packet-switching network. **Packets** are like little envelopes of information packaged and routed according to network availability. Each packet has a destination address and is transported from one place to another until it is delivered to the correct address. A packet may go through a series of networks before it reaches its final destination; the protocols that make the packet transformation possible are called transmission control protocol and Internet protocol, or TCP/IP.

TCP/IP is a two-layer program. TCP manages the assembling of a message or file into smaller packets that are transmitted over the Internet and are then reassembled into the original message. The other layer, IP, handles the address part of each packet so that it gets to the right destination. A Gateway computer checks the address to see where to forward the message.

TCP/IP uses a client/server model of communication, in which a computer user (i.e., a client) requests and is provided a service, such as receiving a Web page, by another computer (i.e., a server) in the network. TCP/IP communication is primarily point to point, meaning each communication is from one point, or host computer, in the network to another point, or host computer.

New Internet Technologies

New Internet technologies support the use of the World Wide Web.

Chat

Chat is real-time communication between two or more people using computers, usually through the Internet. Any online, real-time conversation is chat or a form of chat. Most networks, online services, and conferencing programs offer a chat feature. A **chat room** is a virtual space where a chat session takes place. Technically, a chat room is a communications channel, but the term *room* supports the chat metaphor.

Because chat is intended for two-way communication, it supports a high level of interactivity among users. The client application installed on the user computer transmits every character typed in real time or a complete message that is sent when the user presses the ENTER key. The standard for establishing chat among large groups of people is known as Internet relay chat (IRC). IRC uses chat rooms for people to meet and discuss topical issues related to the overall theme set by the room. IRC could be considered the real-time equivalent of newsgroups.

In a chat session the participants may be physically located anywhere in the world but are able to communicate almost instantly by typing text, which immediately appears on the screens of all participants in the chat session. A newer browser, such as Netscape Communicator 4.x or Internet Explorer 4.x, is often all that is needed to participate in Web-based chats.

Chat can be used effectively to support Web-enhanced learning in the classroom. Some of the benefits include the following:

- Chat sessions are a good way to access experts in a field of study. For example, a science class might invite a renowned scientist to join the class's chat session at a specific time, allowing the expert to remain at home or in the office.
- Teachers can provide online office hours as a chat session, allowing more than one person to benefit from the discussion. When others participate, varied points of view are expressed to all participants.
- Most chat tools keep a record or a log of conversations. Students can then use the transcript of the conversation to recall important parts of the discussion. And students who are unable to participate in the chat can review the transcript of the discussion. Transcripts can also be used by the teacher to evaluate student participation.
- Chat sessions can be relatively spontaneous. For example, if a controversial topic is in the news, an instructor can schedule a chat session that day to discuss it.

Hypertext Transfer Protocol

Hypertext transfer protocol **(HTTP)** is the underlying protocol used by the World Wide Web. HTTP defines how messages are formatted and transmitted and what actions Web servers and Web browsers should take in response to various commands. For example, when you enter a URL in your browser, you send an HTTP command to the Web server

directing it to fetch and transmit the requested Web page. In contrast to FTP, HTTP transfers the contents of a Web page into a Web browser only for viewing, whereas FTP transfers the contents of entire files from one device to another and stores them on the receiving computer. FTP is a two-way system in which files can be transferred back and forth between server and client computers. HTTP is a one-way system in which files are transferred from the Web server into the Web browser of the client computer. When HTTP appears in a URL, it means that the user is connecting to a Web server and files are transferred but not downloaded and stored.

Hypertext Markup Language

Hypertext markup language **(HTML)** is the language in which Web pages are written. HTML uses a simple system for denoting instructions, called tags, to convey the content and structure of a hypertext document, or Web page. Hypertext is a term coined by Ted Nelson in 1965 to describe text that includes links or shortcuts to other documents, allowing the reader to easily jump from one text to related texts, and consequently from one idea to another, in a nonlinear fashion. In addition to hypertext, Web pages now commonly include other media, and it may be more accurate to use the term *hypermedia* instead of *hypertext*. HTML files, or Web pages, use HTTP to transfer Web pages from a Web server through the World Wide Web to a client computer, where they are parsed and displayed using a **Web browser** program.

Instant Messaging

Instant messaging is a form of chat that provides a more personal or private interaction between chatters but requires specialized software to be downloaded to a user's computer. There are several different instant messaging systems available, including ICQ (I Seek You), AOL Instant Messenger, Yahoo! Messenger, and MSN Messenger. With instant messaging you create buddy or contact lists of other users with whom you wish to correspond, all of whom must be using the same instant messaging program. When one of the people on your list logs on to the system, you are notified by some means, such as a sound, a pop-up box on the screen, a flashing menu bar, or some other attention-getting device. You can then chat interactively or transfer files. If you happen not to be online, a message may still be sent but is not delivered until you log in. In this case, instant messaging reverts to an asynchronous communication similar to e-mail.

Because of the lack of an instant messaging standard, instant messaging may not be a good choice for Web-enhanced learning in the classroom. It is difficult for a teacher to provide instant messaging support to students without installing multiple programs. If you do use instant messaging in your classroom, you must decide which program to use and then provide students with instruction. Each student should establish buddy lists and should add the teacher to the list so that the teacher will be notified and can simply respond instead of having to actively enroll each student. Students can take responsibility for creating their own contact lists with each other.

Instant messaging has a number of advantages over online chat rooms. Instant messaging programs are popular, and many students will have some form of instant messaging installed on their computers. In addition, instant messages are delivered even if the contact is not currently online. However, the best use of instant messaging is for online office hours. Students with questions usually like to receive help immediately, and instant messaging lets them know whether the teacher is currently available.

Internet2

Internet2 is a consortium of over 200 universities working in partnership with industry and government to develop and deploy advanced applications for learning and research. The Internet2 project is not a single, separate network but joins its members together through many advanced campus, regional, and national networks.

Internet2 is itself a collection of communication and information-sharing technologies. For example, a major function of Internet2 is adding sufficient network infrastructure to support real-time multimedia and high-bandwidth interconnections and thus to enable applications such as telemedicine, digital libraries, and virtual laboratories that are not possible with the technology underlying today's Internet.

Internet2 is not intended to be a future replacement for the Internet but is intended to investigate and develop new ways to use the Internet and the Internet2 infrastructure for educational and research purposes. Its organizers plan to share their developments with other networks, including the Internet.

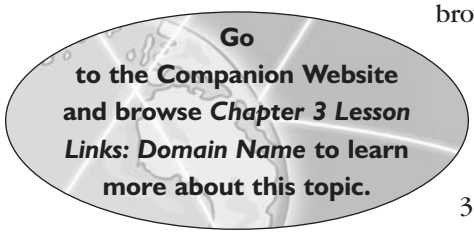
Message Boards

Message boards, bulletin boards or forums, or threaded discussions usually refer to a Web-based asynchronous communication tool that allows you to post a message for people to read at their own convenience. Message boards work similarly to newsgroups but function differently from discussion lists. With discussion or mailing lists, messages are received in subscribers' e-mail inboxes because messages are pushed from the Web server to the client computer. Message boards require messages to be pushed from the client computer to a Web server, participants go to a bulletin board on a Web server to read the messages. A message or bulletin board is the equivalent of a newsgroup on the Web.

With an Internet-based message board, you go to a specific location on the Web and post a message consisting of a subject title and a message body. When other people have read the message, they can post a message in reply or post a different message with a different subject heading. Multiple posts referring to one particular subject title are called a **thread** of discussion. The series of messages, or posts, can evolve into complex, multilayered conversations that are similar in many respects to face-to-face conversations.

Uniform Resource Locator

A uniform resource locator **(URL)** is the address or location on the World Wide Web of a document or file that resides on a Web server connected to the Internet. The URL is the most fundamental innovation of the Web, it is the specification used by any program, computer, or server connected to the Internet to locate a resource on the Web. The URL allows a Web document or resource that is published on a Web server to be found by any Web browser.



Because URLs generally use HTTP to transfer documents or files to the Web browser of a requesting computer, URLs usually begin with http://. An understanding of the structure of URLs is useful for determining the accuracy and reliability of information on a website. For example, a Web address of **http://www.mysite.com/myfolder/mydoc.html** uses http to transfer a Web document named **mydoc.html** from the folder, **my folder,** in a → domain named **www.mysite.com** on a public Web server (see Figure 3–4) to a Web browser on a computer connected to the Internet.

Videoconferencing Technologies

Webcasting is a term taken from *World Wide Web* and *broadcast*. Sometimes called *Netcasting,* Webcasting refers to the real-time transmission of encoded video under the control of a server to multiple recipients who all receive the same content at the same time. Webcasting is used to deliver live or delayed versions of sound or video broadcasts. It also refers to the delayed or preview versions of movies, music videos, or regular radio and television broadcasts, which promote the live broadcasts.

Webcasting uses so-called **push technology,** in which a Web server seemingly pushes information to the user, in contrast to **pull technology,** in which the user seeks and downloads information, as with a Web browser. In reality, the pushing of information is triggered by a user or a network administrator who preselects the service, it arrives only as the result of client requests. Webcasting is a feature of the Microsoft Internet Explorer browser and

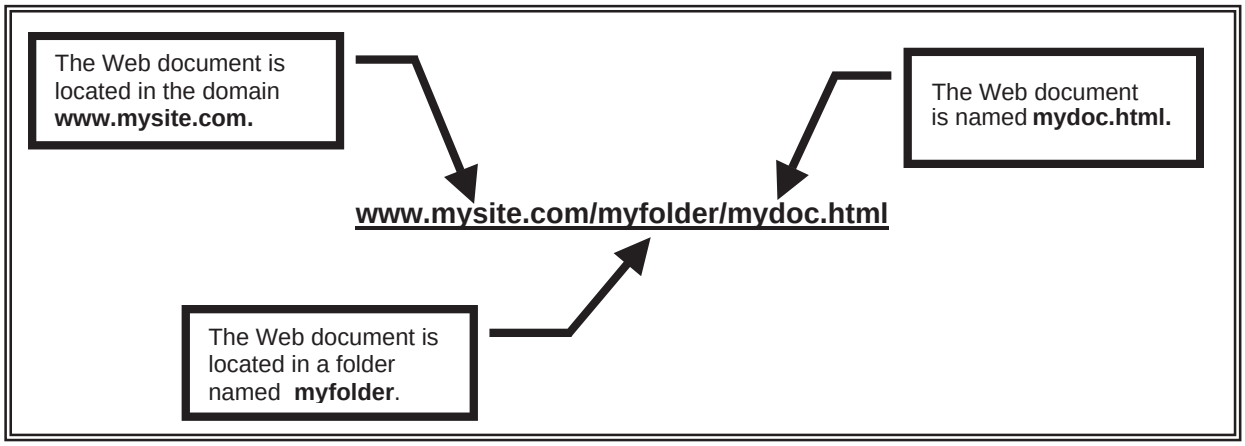


FIGURE 3–4: The Structure of a URL

Netscape's Netcaster, part of its Communicator suite. Webcasting is also available through separate applications, such as Pointcast and Backweb, which run on current versions of browsers.

An Internet whiteboard is an Internet application that allows users to draw objects that can then be transmitted to other users who are simultaneously using the same application. This electronic concept is similar to that of a real-world whiteboard: One participant draws objects that others can see, and the other participants can then add to or delete these drawings. An electronic whiteboard allows communicating parties to share textual and graphic information in real time. Internet whiteboards are used in the context of some other communication channel, such as an Internet videoconference or a presentation.

Internet videoconferencing is becoming a widely used technology. Its applications and services are usually based on technologies that allow real-time video and audio to be sent and received through computer networks. The advantage of these technologies over older videoconferencing is that they allow videoconferencing to occur over the Internet rather than only through phone lines. Two popular software programs that allow videoconferences are CUSee-Me from Cornell University and NetMeeting from Microsoft. In both cases you need a video camera and a digitizing card to transmit video signals. A microphone, speakers (or headset), and an audio card are required for audio transmission.

Web Log

A **Web log,** or blog, is an online journal in the form of a Web page that is comprised of links and postings in reverse chronological order. The activity of updating a blog is called *blogging,* and the person who maintains a blog is a *blogger*. The totality of Web logs on the World Wide Web is often called the *blogosphere*.

Web logs are not actually an Internet technology but use Web publishing technologies and tools to disseminate information on the Web. The format of Web logs varies from simple bullet lists of hyperlinks to article summaries with user-provided comments and ratings. Individual Web log entries are usually date- and time-stamped, with the newest post at the top of the page. Some Web logs are maintained by single authors, whereas others have multiple authors. Most are interactive and allow visitors to leave public comments, creating a community of readers centered around the Web log.

Two features common to Web logs are blogrolls and commenting, or feedback. A blogroll is a list of other Web logs that are linked to a Web log entry or article. Blogrolls are one way a blogger creates a context for a blog by listing other blogs that are similar. Blogrolls can be used as a measure of blog authority, ranking blogs according to the number of references found in other blogs—much like Google rankings of search results.

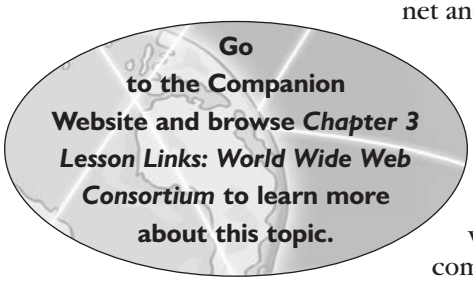
A feedback or comment system allows users to post their own comments on a Web log entry or an article. Some blogs do not allow comments or have a closed commenting

system, which requires approval from those running the blog. However, for many bloggers comments are a critical feature. Regular comments on a blog are referred to as the blog's *community.*

Many Web logs are syndicated on the Web by distributing their headlines along with hyperlinks and summaries through a technology called Really Simple Syndication (RSS). An RSS feed simply repackages the content of an entry in a Web log as a list of data items, such as the date of the posting, a summary of the article, and a link to it. A program known as an *RSS aggregator,* or feed reader, can then check RSS-enabled Web log pages for a user and display any updated articles it finds. This process is more convenient than repeated visits to favorite Web logs because it ensures that the reader sees only material that has not been previously viewed.

World Wide Web

The **World Wide Web** (WWW, or just Web) is the second most popular Internet application, second only to e-mail. The Web is an application built on top of the Internet and used to access information resources through the Internet, using specific protocols to identify and locate that information. The Web allows documents to be viewed in a semiformatted manner, regardless of what brand of computer is viewing them. Although the World Wide Web is one Internet technology, or application, like e-mail, Web browsers such as Internet Explorer or Netscape Navigator are used so extensively to access the Internet that we often think of the Internet in terms of the World Wide Web. Certainly in everyday use the Internet and the World Wide Web can be considered one and the same.



The World Wide Web was invented in 1989 by Tim Berners-Lee while working at CERN (Conseil Européen pour la Recherche Nucléaire), the European Particle Physics Laboratory. Berners-Lee, now director of the →World Wide Web Consortium (W3C), wrote the first Web browser and Web server programs in 1990 (Berners-Lee, 1999). The World Wide Web is a body of software, protocols, and conventions that provide for the viewing and publication of text and multimedia documents stored on computers known as **Web servers.**

Building Your Toolkit: Using a Web Browser

To create learning activities that are supported by Internet technologies, you need to be proficient in surfing the Net so that you can model this skill for your students. You surf the Net (actually the World Wide Web) using a computer program called a **Web browser,** which allows you to view Web pages and other Web documents, usually stored on Web servers. Microsoft Internet Explorer and Netscape Browser are the most widely used Web browsers.

Current statistics indicate that most Web surfers are using Microsoft Internet Explorer running on a computer that uses the Microsoft Windows operating system. Therefore, many of the screen shots in this book will also follow that convention. The tutorials, however, will be applicable to any browser, any browser version, and any computer operating system (e.g., Microsoft Windows, Macintosh, and Linux) on which the Web browser is running.

You probably already know how to use a Web browser and already have your preferred Web browser. The following exercise is intended to review the basic skills needed to use a Web browser and to sharpen and expand those skills. Start by opening the Web browser program on your computer. Opening the browser also opens the website that has been set as the home or default website. Thus, home is the website to which the browser links when you first start the program (or when you click on the Home icon or button on your browser). The following steps demonstrate the use of the main features of a Web browser on a computer using the Windows operating system. These steps may differ slightly for different browser versions or for browsers on a Macintosh computer. Figure 3–5 illustrates all the buttons that are used in Steps 2–13 in the following exercise using the Internet Explorer browser.

(Continued)

Building Your Toolkit: Using a Web Browser (Continued)

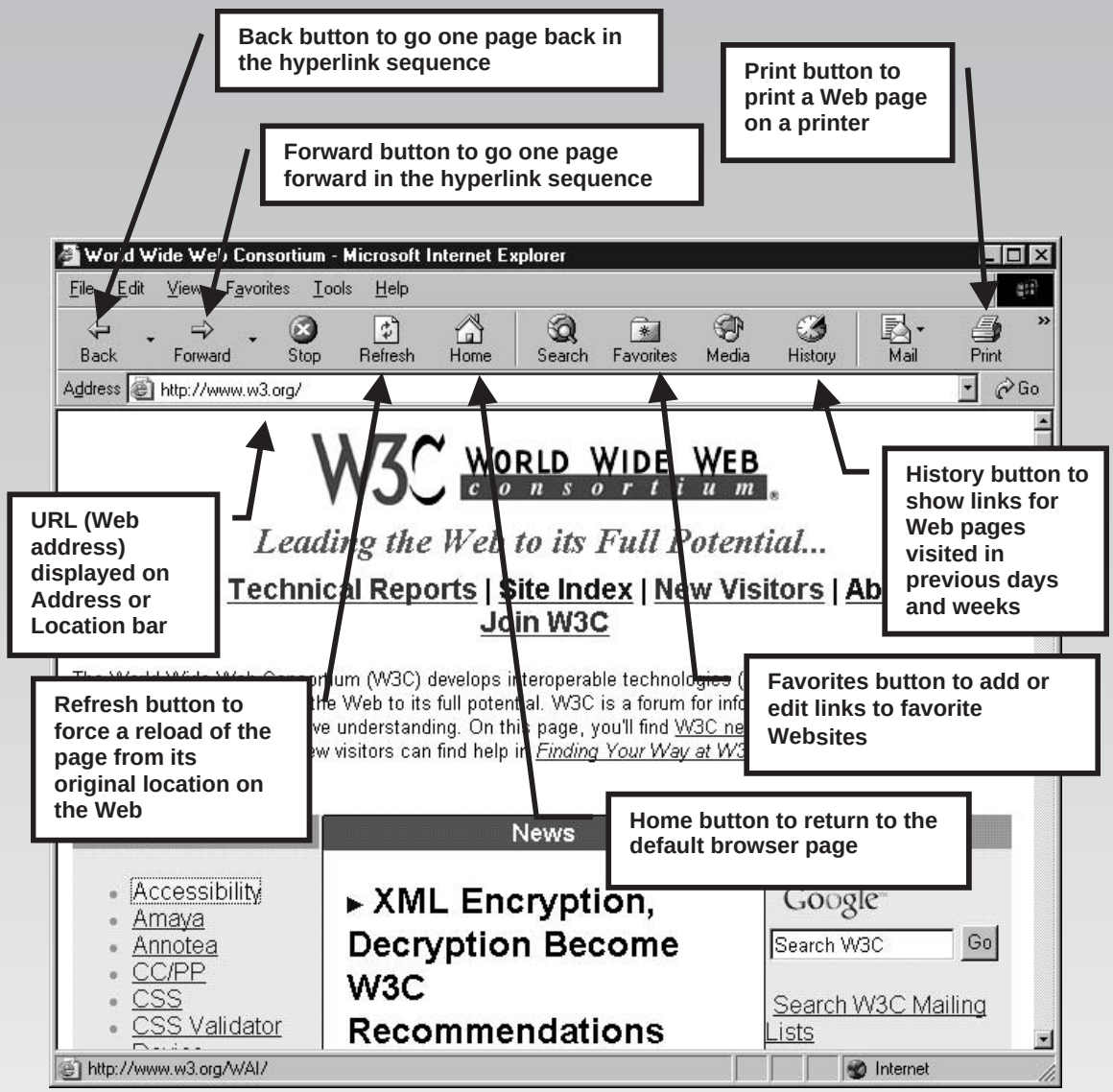


FIGURE 3–5: Components of the Internet Explorer Web Browser

STEP	INTERNET EXPLORER	NETSCAPE BROWSER
1.	To view home Web address, select **Tools > Internet Options,** and then select the **General** tab. Click **OK** to close the Internet Options dialog box.	To view home Web address, select **Edit > Preferences** and then select the **Navigator** category. Click **OK** to close the Preferences dialog box.
2.	In the **Address** bar of the browser window, type in the following URL: **www.w3c.org**. Press **ENTER**.	In the **Location** bar of the browser window, type in the following URL: **www.w3c.org**. Press **ENTER**.

NOTE: Because most versions of Web browsers now add http:// to the Web address, you do not need to include it when entering Web addresses in the Address or Location bar of your browser window.

3. Click the **Back** icon or button. The Back button reverts the browser display to one page back in the sequence of Web pages to which you have hyperlinked (or just linked) during the current browser session.

(Continued)

Building Your Toolkit: Using a Web Browser (Continued)

STEP	INTERNET EXPLORER	NETSCAPE BROWSER
4.	Click the **Forward** icon or button. The Forward button advances the browser display one page ahead in the sequence of pages you have hyperlinked (or just linked) to during the current browser session.	
5.	Click the **Home** icon or button. The Home button returns you to the page set as the default home page for the browser program on your computer.	
6.	Enter the following URL into the Address bar: **www.discovery.com**. Press **ENTER**.	Enter the following URL into the Location bar: **www.discovery.com**. Press **ENTER**.
	NOTE: When you start typing the information in the Address or Location bar—or in a field on a Web page or in a box for a user name or password—the AutoComplete lists possible matches as you type, if you've typed a similar entry before. If a suggestion in the list matches what you want to enter in that field, click the suggestion. If no suggestion matches what you are typing, continue typing.	
7.	Surf the Discovery website by clicking hyperlinks on the Web page and by using the navigation bars and buttons (displayed as either text or graphics) on the sides, top, or bottom of the Web page. Consider how you might use some of the information found on the website as content for a lesson or instructional activity.	
8.	When you view a Web page with content that is interesting or appropriate for a subject you teach, bookmark it for future reference by selecting **Favorites** from the **menu bar** and then selecting **Add to Favorites** from the pop-up menu. Enter different information in the **Name** box if the default information does not provide a distinctive title for the Web page name. Click **OK**.	When you view a Web page with content that is interesting or appropriate for a subject you teach, bookmark it for future reference by clicking the **Bookmarks** button and selecting **Add a Bookmark** from the pop-up menu. (You can use **Edit Bookmark** to change the name of the page. Click **OK**.)
9.	Print the content of the Web page you are viewing by selecting **File > Print** or clicking the **Print** icon. (Check with your instructor before actually printing.)	
10.	To view a list of the sites you have previously visited, click the **History** button. The History bar appears on the left side of the window, listing links for websites and pages visited in previous days and weeks. In the History bar, click a week or day, then click a website folder to display individual pages, and then click the page icon to display the Web page. You can hide the History bar by clicking the **History** button again. A drop-down list of recently viewed pages is also available by clicking the down arrow at the right end of the Address bar.	To view a list of the sites you have previously visited, select **Communicator > Tools** and then select **History**. A window with a list of links for websites and pages visited in previous days and weeks is displayed. Close the History window after viewing it.
11.	To delete Web address history from the browser, click **Tools > Internet Options** and select the **General** tab. Under **History** click **Clear History**. All Web address history (including history used for the AutoComplete feature) is deleted from the computer. Click **OK** to close the Internet Options dialog box.	To delete Web address history from the browser, select **Edit > Preferences** and select the **Navigator** category. Under **History** click **Clear History**. All Web address history (including history used for the AutoComplete feature) is deleted from the computer. Click **OK** to close the Preferences dialog box.
12.	Your Web browser stores Web pages and related files (such as graphics) in a temporary folder. These files are stored on your computer to increase the speed with which a Web page is displayed for pages you frequently visit or have already visited by opening Web pages first from your hard disk instead of from a remote Web server.	
	This folder is named the Temporary Internet Files folder. If you think a newer version of a Web page is available after you have already viewed it, click the **Refresh** icon or button to force the browser to reload the Web page from its original location on the Web server.	This folder is named Cache. If you think a newer version of a Web page is available after you have already viewed it, click the **Reload** icon or button to force the browser to reload the Web page from its original location on the Web server.

(Continued)

Building Your Toolkit: Using a Web Browser (Continued)

STEP	INTERNET EXPLORER	NETSCAPE BROWSER
13.	Increasing the size of the Temporary Internet Files or Cache folder can increase how fast previously visited pages are displayed while also decreasing the space available for other files on your computer. Emptying the folder decreases the amount of space it uses on your hard disk. You may find it necessary occasionally to clear the Temporary Internet Files or Cache folder when files become corrupted and do not display correctly or when a newer version of the Web page is available.	
	To delete the file contents of the Temporary Internet Folder from the browser, select **Tools > Internet Options,** then select the **General** tab, and click the **Delete Files** button.	To delete the file contents of the Cache folder from the browser, select **Edit > Preferences** and expand the **Advanced** category, then select **Cache**, and click the **Clear Disk Cache** button.

Go to the Companion Website and browse *3.1 Building Your Toolkit Enrichment Activity: Creating a Web Archive for Off-Line Browsing*. Follow the procedure in the enrichment activity for storing Web pages on your computer in a Web archive for off-line browsing.

Go to the Companion Website and browse *3.1 Project Sample: Understanding the Internet*. Use the project sample as the foundation for a learning activity to introduce the Internet into the classroom. Adapt the project sample to the subject area and/or grade level that you teach.

Lesson 3.2 Online Communication

FOCUS QUESTIONS

- What is the difference between synchronous and asynchronous communication on the Internet?
- What are examples of synchronous and asynchronous communication technologies?
- What rules, social conventions, and techniques are used for online communication?

SYNCHRONOUS AND ASYNCHRONOUS MODES

The Internet supports both synchronous and asynchronous communication channels. **Asynchronous communication** is communication that occurs without regard to time or location; it is not necessary for all communicating parties to be present when communication occurs. With asynchronous communication a message is sent but is not necessarily received (accessed and read) immediately. **Synchronous communication** is communication that occurs in real time and is highly interactive; all communicating parties are simultaneously present. With synchronous communication a message is sent and immediately received.

Information exchanges using the Internet, whether synchronous or asynchronous, can support both individual and group learning. Communication over the Internet can take place by individuals communicating with other individuals, individuals communicating with groups, or groups communicating with other groups (Harris, 1998). For educational purposes this textbook classifies Internet communication technologies in two categories: interpersonal communication and group communication. Interpersonal communication occurs one to one

between individuals holding a private or public conversation. A student having an e-mail conversation with a teacher or a chat with a peer is an example of interpersonal communication. Group communication is used to communicate the same information to multiple individuals and occurs when an individual communicates with a group. Group communication is always a public conversation. A teacher distributing assignment information to a class, using a distribution list or message board, is an example of group communication.

When using synchronous or asynchronous communication to support information exchanges, it is important to establish classroom guidelines for online communication and specific learning objectives for each information exchange assignment. Additionally, students should learn online communication techniques and use appropriate communication practices when engaging in information exchanges.

■ NETIQUETTE

Because of the unstructured nature of asynchronous and synchronous communication, it is important to establish clear rules and expectations for Internet communication sessions. You should establish ground rules ahead of time that focus discussions on learning goals and make it easier to evaluate student participation. For example, prior to an information exchange, you might provide a list of topics for discussion so that students can be prepared to conduct a meaningful conversation. Complex questions should also be distributed prior to the session, but online brainstorming activities may not need advance preparation.

Rules and expectations for information exchanges should be made clear in general guidelines for online communication. **Netiquette** means network etiquette and refers to the dos and don'ts of online communication. It covers both common courtesy and the informal rules of surfing the Net (see Figure 3–6).

FIGURE 3–6 The Core Rules of Netiquette

Rule 1: Remember the human. Be polite and courteous. Do not be offensive. There's a real person behind the computer that is accessing your online communication. Furthermore, whenever you communicate through the Internet, your words are written, and chances are good that they are stored somewhere where you have no control over them.

Rule 2: Adhere to the same standards of behavior online that you follow in real life. Be ethical and do your best to act within the laws of society and cyberspace.

Rule 3: Know where you are in cyberspace. When you enter a domain of cyberspace that is new to you, spend some time listening to the chat or reading the archives. Get a sense of how the people who are already there act before you participate.

Rule 4: Respect other people's time and bandwidth. It's your responsibility to ensure that the time spent reading your e-mail or posting to a discussion list is not wasted.

Rule 5: Make yourself look good online. In cyberspace you will be judged by the quality of your writing, so spelling and grammar do count.

Rule 6: Share expert knowledge. Do not be afraid to share what you know. It is especially polite to share the results of your questions with others.

Rule 7: Help keep flame wars under control. *Flaming* is what people do when they express a strongly held opinion without holding back any emotion. Netiquette forbids the perpetuation of flame wars, that is, a series of angry letters, most of which come from two or three people and are directed toward each other, dominating the tone and destroying the camaraderie of a discussion group.

Rule 8: Respect other people's privacy. Do not snoop into other people's e-mail.

Rule 9: Don't abuse your power. Knowing more than others, or having more power than they do online, does not give you the right to take advantage of them.

Rule 10: Be forgiving of other people's mistakes. If you do decide to inform someone of a mistake, point it out politely and preferably by private e-mail rather than in public. Give people the benefit of the doubt; assume they don't know any better.

Adapted from Netiquette by V. Shea, 1994, San Francisco: Albion Books. Available online at http://www.albion.com/netiquette/book/.

FIGURE 3–7 Emoticons for Online Conversations

EYES : =		NOSE − * ^ (or blank)		MOUTH >) 0 (<	
:−>	ambivalent or indifferent	:-9	delicious, yummy	: O	shocked
:−(	angry or frowning	:-6	exhausted	:) or :−) or =)	smile
>−]	asleep			:−0	surprised
(: : ( ) : : :)	bandage	^ 5	high five	^	thumbs up
\−0	bored			:−&	tongue tied
:−c	bummed out	:−#	lips are sealed	:−\	Undecided
: ( )	can't stop talking	:~/	mixed up	:−0	wow
: *)	clowning	:−@	screaming	>−O	Yawning

The composition of online messages often ignores conventional rules of capitalization, punctuation, and other grammatical rules. Although online communication facilitates a sense of freedom, it does not accommodate nonverbal communication or changes in inflection, thus making it much easier for the recipient of a message to misunderstand its meaning or to draw the wrong conclusion based solely on its written content, style, and formatting.

Using written communication styles and techniques that are appropriate, positive, and easy to understand is important for Web-enhanced learning activities. Messages should not contain ambiguous or inaccurate content but should clearly communicate and clarify the positions of the sender. The appropriate use of **emoticons** can be a good way to express emotion in written, text-based, asynchronous communications. Emoticons use text symbols to represent a face that is turned 90 degrees counterclockwise (see Figure 3–7).

Building Your Toolkit: Subscribing to a Professional Discussion List

K–12 teachers can sometimes become isolated in their classrooms because of scheduling requirements and teaching duties. Professional discussion groups provide an opportunity for ongoing discussions among teachers without interrupting the class schedule. Teachers.net (http://www.teachers.net/) is a sponsored website containing a variety of resources, including chat rooms, lessons plans, live meetings, discussion groups, and an online newsletter. Teachers.net calls its discussion lists mailrings and offers several, including grade-level and subject groups. There is no cost to join, you subscribe to a group(s) by completing a Web form. Anyone who subscribes receives instructions for posting to and receiving e-mail from teacher colleagues around the world.

STEP	PROCEDURE
1.	Open your Web browser and then the Teachers.net discussion group page at **www.teachers.net/mailrings**. A Web page with a form similar to that in Figure 3–8 should be displayed.
2.	Complete the form to join a discussion group appropriate to the grade level and/or subject area you teach.

- Select one or more discussion groups by clicking the check box beside the name of the discussion group you want to join.
- If you want to join a discussion group with teachers in your state, click on the down arrow of the pull-down list for **Your State Mailrings,** and select your state from the list. If you do not want to join a state mailring, uncheck the check box beside **Select State**.
- If you do not want to receive the online newsletter or information about events, uncheck the **Teachers.Net Gazette** and **EVENTS@Teachers.Net** check boxes.
- Enter your e-mail address in the **E-Mail** field.
- Click the **Subscribe** button to join the discussion group(s) you have selected.

(Continued)

Building Your Toolkit: Subscribing to a Professional Discussion List (Continued)

FIGURE 3–8: A Subscription Form for Teachers.net Mailrings
Source: Retrieved from http:// teachers.net. @ Copyright 2004 Teachers.net. All rights reserved. Reproduced with permission.

3. Teachers.net mailrings and many other discussion lists use a common Internet management program called **Majordomo**, which automates the management of Internet mailing lists. Majordomo controls a list of addresses through existing e-mail systems but performs no mail delivery itself. When you click the subscribe button, Majordomo requires you to confirm your subscription by sending a message similar to the following to your e-mail account:

Someone (possibly you) has requested that your e-mail address be added to or deleted from the mailing list "[group]@lists.teachers.net."

If you really want this action to be taken, please send the following commands (exactly as shown) back to "majordomo@lists.teachers.net":

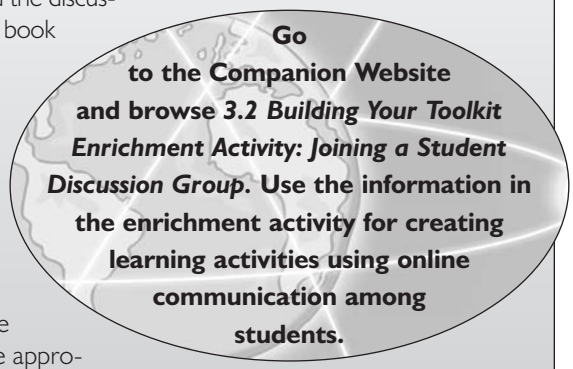
auth [authorization number] subscribe [group] [e-mail address]

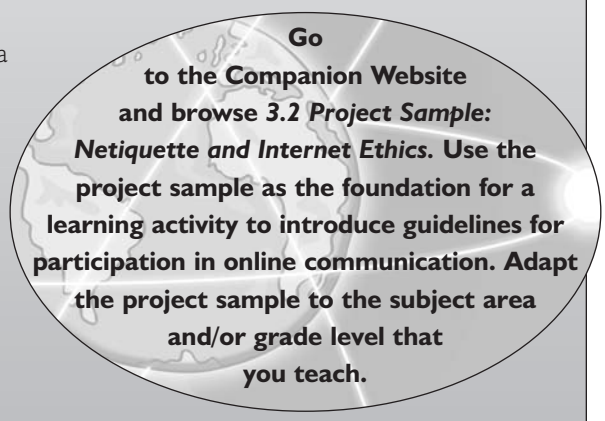
If you do not want this action to be taken, simply ignore this message and the request will be disregarded.

(Continued)

Building Your Toolkit: Subscribing to a Professional Discussion List (Continued)

STEP	PROCEDURE
4.	The best way to confirm your subscription without making any typing errors is to copy and paste the authorization command to a new e-mail message. You would copy the command, reply to the Majordomo confirmation e-mail, paste the authorization command into the body of the e-mail, delete all other text from the e-mail, and send your confirmation. When you have successfully confirmed your subscription to a discussion list, Majordomo sends you a notification and a welcome message.
5.	Once you receive notification that you have successfully joined the discussion list, you should enter an e-mail address into your address book for the discussion group(s) you have joined. (If you had joined the WebTalk group, you would enter webtalk@lists.teachers.net into your address book.) You can initiate a discussion by sending an original e-mail to your discussion group, or you can reply to messages received from other members of your discussion group.
6.	Send an e-mail message to the discussion group you have joined concerning a question or issue appropriate to the discussion group, and solicit the views of other members of the group. Respond to someone's comments, being sure to use appropriate netiquette when writing your messages.
7.	Majordomo provides instructions for unsubscribing from a discussion group, but you can easily unsubscribe by using the Web form at Teachers.net. On the Web form at **www.teachers.net/mailrings**, scroll down to the **Unsubscribe from a Mailring** section of the form, click on the down arrow for the pull-down list, and select the appropriate discussion group(s) from the list. If you wish to unsubscribe, enter your e-mail address (exactly as you subscribed), and click the **Unsubscribe** button. You will receive a confirmation from Majordomo when you have successfully unsubscribed.





REFLECTIONS

Internet technologies and information resources make it possible to organize classrooms into learning communities with students, teachers, and community members all playing vital roles in directing the course of education (Riel, 1998). Using synchronous and asynchronous communications on the Internet, students can interact with many more people and ideas. According to Riel, the structure of future learning environments will be determined by how students, teachers, and the community use these new educational tools (see Table 3–2).

The powerful technologies and information resources available on the Internet can bring learning to life in the classroom. It can even make learning exciting and fun. Internet technologies and resources have the potential to motivate and engage students as active learners because of the capacity for informative communication and collaboration and relevant multimedia resources. There are a number of ways teachers can use the Internet in the classroom:

- Access worldwide information sources such as newspapers and magazines, online encyclopedias, historical documents, government documents, research papers, books, maps, directories, and guides

TABLE 3–2 The Evolution of Instructional Tools

Past tools for learning	Promising power tools for learning
Textbooks and worksheets	Primary sources and student-created materials
Linear text student writing	Hypertext, multimedia productions
Models and materials	Virtual creatures and simulations
Direct observations	Tools for remote observations
Educational films, broadcast reality	Virtual worlds interact with reality
Teacher delivers lectures	Many expert voices in classroom
Student reports to teacher on learning	Student generates lessons for others

Source: From *Education in the 21st Century: Just-in-Time Learning or Learning Communities* by M. Riel, 1998. Retrieved September 25, 2003, from http://gsep.pepperdine.edu/~mriel/office/papers/jit-learning/index.html. Reprinted with permission.

- Communicate with experts on almost any subject
- Take a virtual field trip to the Smithsonian or other museums, space missions, sports teams, or television and movie studios
- Work on projects with schools located thousands of miles away
- Listen to music while your class learns about composers and musicians
- View video clips created by other students from around the world
- Obtain access to free government and scientific databases worldwide
- Find thousands of free graphics, pictures, and animations
- Use online programs and simulations to demonstrate scientific and mathematical principles and calculations
- Access thousands of educational resources such as lesson plans and WebQuests, most of which are free for use in your classroom

EXERCISES TO REVIEW AND EXPAND YOUR SKILLS

Set 1: Reflecting on Practice

- *Closing the Case.* The case study scenario presented a middle-school computer teacher, Carla Hockenbury, who has identified the 10 best ways to use the Internet in the classroom. What role would you want the computer teacher in your school to have in relation to your students and the other teachers in the school? What technology information and assistance should the computer teacher provide to your students and the other teachers in your school? What is your favorite example of a way to use the Internet in the classroom, and why is it your favorite?
- *World Wide Web Consortium.* In small groups discuss the role and importance of the W3C for
  - developing common protocols to ensure the interoperability of the Web and promote its evolution
  - encouraging an open forum for discussion of the technical evolution of the Web

  Should the Internet have more control? Who/what should control the Internet? Summarize those points on which the group reaches consensus, and report to the whole class.
- *Domain Names.* You (or your team) have been assigned the task of recreating a new system or hierarchy for naming locations on the Internet. Develop a new naming

system, and use charts or graphs and narrative as necessary to demonstrate how your new naming system works. You might want to use design or outline software such as Inspiration for this activity.

- *Emoticons.* The use of emotion in asynchronous conversations is often discouraged, especially when it leads to heated discussions that result in flaming.
  - What role should emotion play in asynchronous communication?
  - Do emoticons provide an appropriate outlet for displaying emotion or nonverbal behavior in an asynchronous conversation? Why?
  - Do emoticons serve to increase understanding about the intentions of the author? Why?

  Create one or two emoticons for emotions or nonverbal behavior that are not included in Figure 3–7.
- *Newsgroups.* Setting up a newsgroup may not be feasible for most teachers because it is a much more complex procedure than setting up a message board. Because newsgroup articles are propagated throughout Usenet, you must have the consent of Usenet administrators, and different hierarchies of newsgroups have different rules for creating new groups. If the topic is of broad international interest, one of the so-called Big 8 hierarchies (comp, humanities, misc, news, rec, sci, soc, or talk) or alt is logical. If the topic is basically of local or regional interest, you should look for an appropriate national, regional, or local newsgroup hierarchy. On the Google Groups website (http://www.google.com/groups) you can select the link for Help and find an FAQ about setting up a newsgroup. Then just follow the links that describe the official procedures for setting up a newsgroup.
  - What newsgroup hierarchy would be appropriate for setting up a classroom newsgroup?
  - List the procedures for starting a newsgroup under the hierarchy that you have selected.

Set 2: Expanding Your Skills

Advanced Web Browsing and Customizing Your Browser. You can customize the operation of the Web browser on your computer through several settings: You can set the home page, set default programs, and customize the look and feel of the browser.

- *Setting Your Home Page.* You can change the home page that comes up when you load your Web browser program. For Internet Explorer select **Tools > Internet Options** and then select the **General** tab (see Figure 3–9). For Netscape Browser select **Edit > Preferences.** Then enter the URL for the Web page you want to use as the home page for your browser and click **OK** to close the dialog box. Test what you have done by clicking on the **Home** button on your Web browser.

FIGURE 3–9: Setting the Internet Explorer Home Page

FIGURE 3–10: Setting Default Programs in Internet Explorer

- *Setting Default Programs in Internet Explorer.* You can set which program the browser automatically uses for different Internet services. For Internet Explorer select **Tools > Internet Options**, and then select the **Programs** tab (see Figure 3–10). If you set your e-mail program to Outlook Express, your browser will automatically run Outlook Express if you click on an e-mail address on a website. You can configure other programs, such as your HTML editor, your newsgroup reader, your calendar, and so on. You can also set whether you want Internet Explorer to be the default Web browser. (You may not want it to be if you use another Web browser more often than Internet Explorer.)
- *Customizing the Look and Feel of the Web Browser.* By modifying the advanced options, you can control the look and feel of the Web browser. For Internet Explorer select **Tools > Internet Options**, and then select the **Advanced** tab (see Figure 3–11). For Netscape Browser select **Edit > Preferences**, and then expand **Advanced** in the Category frame on the left side of the dialog box (see Figure 3–12). Features include launching the Web browser directly into a full screen window when you run it, displaying error messages or not, automatically checking for updates or not, and showing friendly URLs. In Internet Explorer if you are unsure of what a feature does, you can click the **?** icon in the top right-hand corner and then click on the option you want more information about. A dialog box will appear with more information. You can always restore the default settings by clicking the Restore Defaults button on the bottom right.

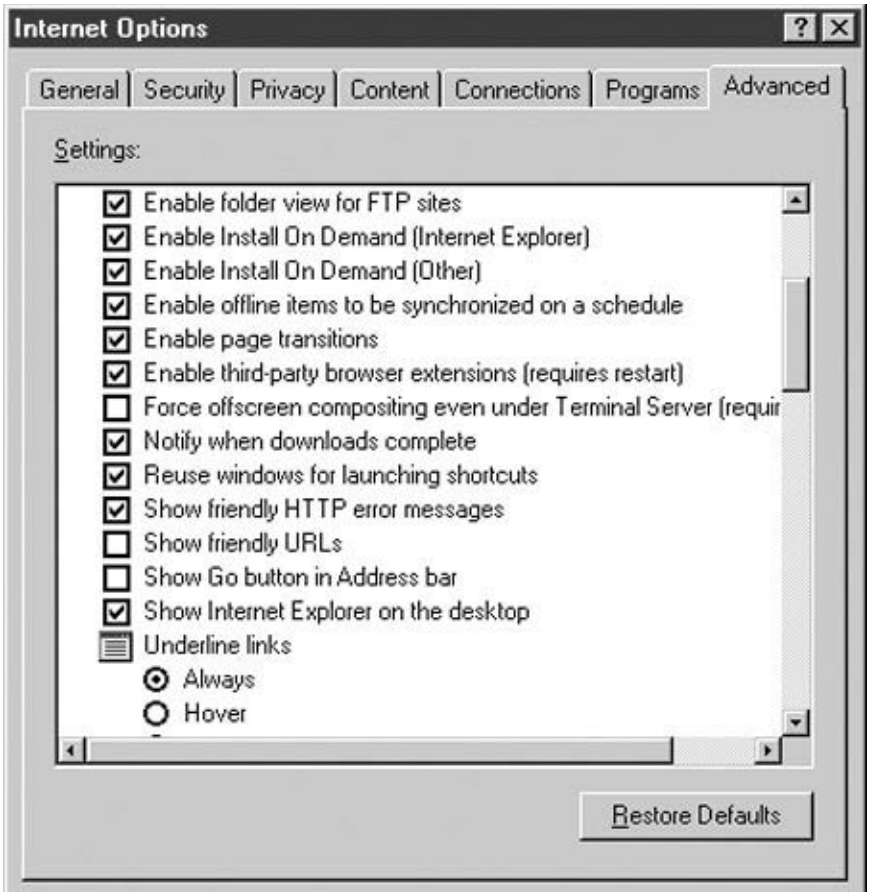


FIGURE 3–11: Customizing the Internet Explorer Browser

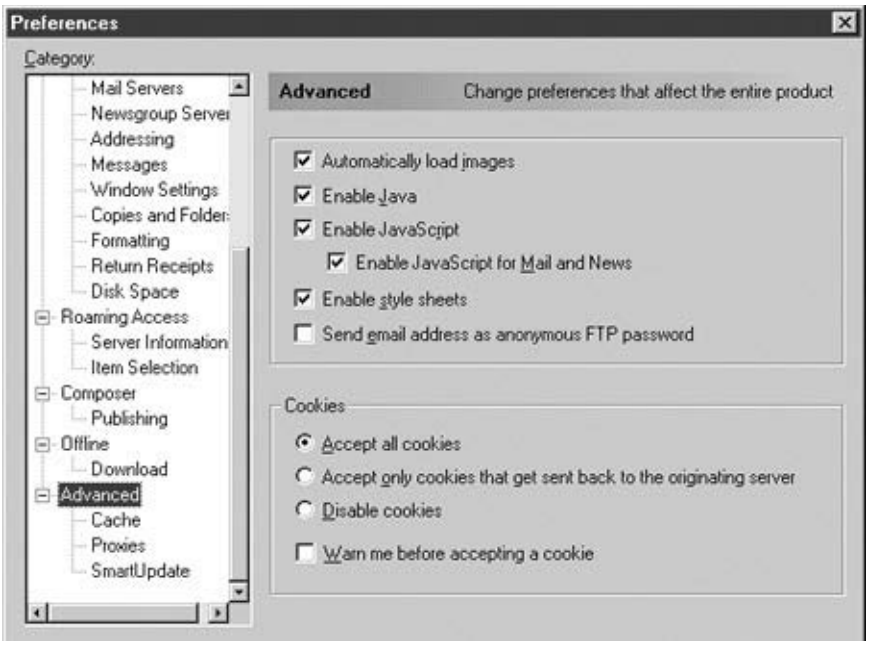


FIGURE 3–12: Customizing Netscape Browser

Set 3: Using Productivity and Web-Authoring Tools

- *Internet Technologies Presentation.* Use a multimedia presentation program such as PowerPoint to create a lesson you can present to your class on Internet technologies. Use the information in this chapter to develop the talking points for your presentation and make the content appropriate for the grade level you teach. Insert clip art in your presentation to correspond to each of the Internet technologies you include.
- *Internet Technologies Handout.* Create a student handout of Internet technologies that is appropriate for the grade level you teach. Insert clip art to correspond to each of the Internet technologies you describe. Use Inspiration or another diagramming tool to create a diagram that identifies and gives an overview of the Internet technologies you describe and any relationships among them. Paste the diagram into the student handout document.
- *Workshop on the Best Uses of the Internet in the Classroom*. Use Ms. Hockenbury's 10 best uses of the Internet in the classroom as the basis for a multimedia presentation you could share with other teachers in a workshop on using the Internet in the classroom. As you advance through this textbook, use the information in the various chapters to determine your own top 10 list of best uses and to develop the talking points for your presentation.

Set 4: Creating Your Own Web-Enhanced Project

- *Internet Technologies.* Plan a project that uses one or more of the Internet technologies described in this chapter. You can use the project sample you developed in Set 4 at the end of chapter 2 or a new topic. Plan a curriculum-based, Web-enhanced learning project using the WEL project sample template, and include an element that addresses Internet technologies and resources (see Figure 3–13).
- *WEL Lesson Plans.* Expand one of the project samples for this chapter from the Companion Website—Understanding the Internet or Netiquette and Internet Ethics—into a WEL lesson plan that is appropriate for the grade level and/or subject that you teach.

FIGURE 3–13

Title/topic	State an interesting, attention-getting title.
Standards of learning	State subject-specific standards and grade-specific technology standards to be addressed by the project.
Problem/task and/or Background information	State the problem or task the learner needs to solve or perform. Provide orienting or organizing information about the project.
Procedures	Describe proposed procedures the learner should follow to complete the project. Describe any alternative approaches or adaptations that learners may use.
Resources	State what Web resources are available for the learner to appropriately and successfully complete the project's stated goals, objectives, or purpose. Identify other resources that would enhance the learning experience.
Teaching/learning strategies	Describe the teaching and learning methods used to complete the project (may be included in the procedures). Consider teaching methods that address different learning needs. If appropriate, consider alternative teaching methods for teaching the same information or skills.
Assessment	State what the learner will do to demonstrate understanding and mastery of objectives.
Credits/references	If the project was adapted from another project or lesson plan, provide credits or URL.

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CHAPTER 4

Using the Internet for Communication

Janet Peterson is a high-school English teacher in a large suburban high school. She has been a teacher for almost 30 years and has taught at the same school for most of that time. During her career she has experienced many initiatives intended to engage students in learning and make the educational experience more meaningful. Although some of these educational initiatives have been useful, from her point of view none of them has been as effective for engaging students as online discussions. She maintains that the communication features of the Internet have motivated her students to engage in more meaningful discussions about their reading assignments than have any other innovations she has implemented in the classroom.

For the last several years Ms. Peterson has been creating a closed online discussion group for her two literature classes using Yahoo's e-groups. A closed group is a members-only group. The discussion group has allowed her students another option for entering into classroom discussions; they can continue discussions started in class or start discussions that can be continued in class. In addition, Ms. Peterson can pose questions for discussions, provide links to related information, take polls, and post messages to the class. She can also remind students of upcoming events, homework assignments, schedule changes, and even days when there is no school.

Ms. Peterson has found that with the online discussion group some students who might otherwise hesitate to ask a question in class or enter into a classroom debate are more likely to become engaged because they have time to reflect before asking questions or making comments. Ms. Peterson says that for other students the online discussion group is a great way to keep them on track. Although she is nearing the end of her career, Ms. Peterson thinks that Internet technologies make it a great time to be a teacher.

NEW TERMS

chatiquette
flaming
keypals
spam
virus

National Educational Technology Standards for Teachers

The following NETS•T are addressed by the lesson content and learning activities in this chapter:

I. Technology Operations and Concepts

- **A.** Demonstrate understanding of technology concepts and skills
- **B.** Demonstrate continual growth in technology knowledge and skills

VI. Social, Ethical, Legal, and Human Issues

- **A.** Model and teach legal and ethical practice related to technology use
- **B.** Enable and empower diverse learners
- **C.** Identify and use technology resources that affirm diversity
- **D.** Promote safe and healthy use of technology resources
- **E.** Facilitate equitable access to technology resources

National Educational Technology Standards for Students

The following NETS•S are addressed by the lesson content and learning activities in this chapter:

1. Basic Operations and Concepts

- Demonstrate sound understanding of technology
- Be proficient in the use of technology

2. Social, Ethical, and Human Issues

- Understand ethical, cultural, and societal issues related to technology
- Practice responsible use of technology
- Develop positive attitudes toward technology

3. Technology Productivity Tools

- Use technology to enhance learning, increase productivity, and promote creativity
- Use tools to collaborate, prepare publications, and produce creative works

4. Technology Communications Tools

- Use telecommunications to collaborate, publish, and interact with others
- Use varied media and formats to communicate information and ideas

OVERVIEW

Communication and information sharing among computers on the Internet occur through a number of technologies, including e-mail and the World Wide Web. Person-to-person online communication occurs between two or more individuals holding a private or public conversation—for example, a student can have an e-mail conversation or a chat with a teacher or a peer. Online group communication includes more participants and is used to communicate the same information to multiple individuals—for example, a teacher can pose a question to a discussion list, and students can respond at any time. Person-to-person communication tools include e-mail and chat, and group communication tools include discussion groups and message boards.

As was mentioned earlier, e-mail (electronic mail) refers to messages sent via the Internet. Many Internet users got their start using e-mail, which is a fast and easy way to send messages from one person to another or to a group. Messages are typically delivered within seconds or minutes of the time the message is sent.

As discussed in chapter 3, chat is real-time communication between two or more people using computers, usually through the Internet. A chat room is a virtual space where a chat session takes place. During a chat session participants can be physically located anywhere in the world but are able to communicate almost instantly by typing text that immediately appears on the screens of all participants in the chat session.

Listservs or discussion lists are useful for facilitating communication among a group of individuals. A listserv is basically a program on an e-mail server that keeps track of the e-mail discussion lists that are available and the members of each discussion list. When messages come in for a particular list, the listserv program rebroadcasts that message to all of the members of the list.

Message boards or Web-based bulletin boards allow users to post a message that can be read by anyone who accesses the bulletin board. Message board discussions are threaded, meaning that messages about a particular topic are grouped together. Thus, users are able to reply and associate their messages with a specific message already posted.

Lesson 4.1 Person-to-Person Information Exchanges on the Internet

FOCUS QUESTIONS

- How can e-mail be used to enhance teaching and learning in the classroom?
- What are keypals, and how can you use keypal projects in the classroom?
- How can chat be used to enhance teaching and learning in the classroom?
- What are the rules and procedures for communicating with others using chat?

■ USING ELECTRONIC MAIL

When Ms. Peterson started using the Internet in the classroom, she soon realized that it is important for students to have a personal or classroom e-mail account. In the classroom free e-mail service is a good option; although students may have to endure some advertising, these accounts are accessible, functional, and easy to use. However, you should always check with your network administrator and school district policies to learn how e-mail works at your school and what is the best way to create student e-mail accounts.

Although e-mail and the other online communication tools discussed in this chapter have several distinct advantages, they may not always be the best choice for every classroom at every grade level. School policies may limit or prohibit the use of e-mail by students, and filtering programs may prevent access to Web-based e-mail services. If such services can be used, you should remember that they demand no accountability on the part of students and, therefore, may circumvent your school district's policy on proper use of e-mail. Elementary-school teachers may want to set up a classroom e-mail account so that they can monitor messages that are sent and received by young students.

E-mail is a simple way to begin using asynchronous tools in the classroom. Because e-mail programs are relatively simple to use, it does not take long for students to use them effectively; many students probably already have personal e-mail accounts. At least one computer with a connection to the Internet is needed, and access to a computer network connected to the Internet is better. Many classrooms in schools and universities have computers or computer labs that are connected to the Internet.

E-mail penpals, or keypals, are the most basic form of student e-mail projects (see Harris, 1998). **Keypals** are penpals who communicate with one another through the Internet. In a keypal project students are paired with students in classes at other schools; they use e-mail to communicate on any topic and at a frequency they determine between themselves. To be worthwhile, a keypal's project should include assignments that students work on in teams or groups and for which a product is required as the final goal.

The primary advantage of using e-mail in classroom learning activities is that students become engaged in intellectual conversations that are less contrived than those of textbook- or teacher-centered activities. Using e-mail requires students to use and type words carefully and appropriately to express their thoughts. A lot of time is needed, however, to plan and conduct learning activities using e-mail, which often require finding classes with similar learning goals. There are websites available on the Internet to help you find other classrooms to participate in a keypals project.

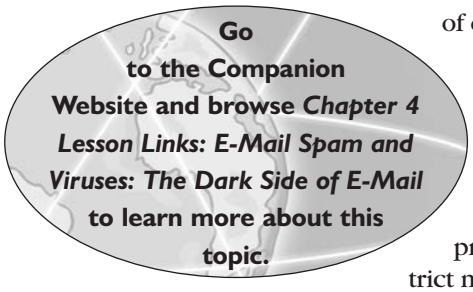
E-mail and other online communication tools can effectively complement instructional activities. Synchronous and asynchronous online discussions are a pedagogically sound

practice because they provide more opportunities for students to become actively involved with curriculum content (Markel, 2001). Online discussion, however, should be used primarily as an addition to in-class discussion, rather than as a substitution for it (Tiene, 2000).

An e-mail assignment can be used as an introductory device for using asynchronous communication. For example, students can e-mail one another and the teacher, and the messages received can be used to create an address book for the class. Later, students can send mail to students in other classes and to keypals in other parts of the country or the world, or they can contact experts and sources for research projects.

Because the amount of correspondence can be overwhelming when you use e-mail for learning activities, you should establish a structure for asynchronous communications in the classroom and should state your policies to students. For example, you might notify your students that you will reply to e-mails within 24 hours. You might also want to set up an additional e-mail account for assignments and then use the auto-reply feature to automatically let your students know that you have received their e-mails. You can use folders to help organize the messages according to their appropriate project, group, or class; students should use key words such as a project title or a class name in the subject line of their messages to assist in sorting and grouping the messages. You should also require students to use signature files so that their names and important contact information appear at the bottom of every message.

When using student e-mail accounts in the classroom, students should be instructed about → e-mail spam and viruses. **Spam** is unsolicited e-mail sent by an individual or a company with which the recipient has had no previous dealings. **Viruses** are self-replicating pieces of computer code, which can be spread by e-mail and can damage a computer by partially or fully attaching themselves to files or applications. Most e-mail programs, including those offered by Internet portals and service providers, have features that allow users to filter in-coming e-mail messages. These filters, however, are not always effective in blocking spam and questionable e-mail messages. Before using e-mail accounts with young children, teachers should be knowledgeable about available measures to prevent or reduce the impact of spam and virus attacks. School or school district networks that provide e-mail accounts for students may offer some antispam and antivirus measures at the server level.



Building Your Toolkit: Managing E-Mail Accounts and Sending/Receiving File Attachments

An e-mail address is becoming as common as a phone number; it provides a convenient method of communicating with friends, family, colleagues, and students. E-mail accounts have several advanced features that you should be able to use—adding signature information to e-mail messages, sending and receiving file attachments, forwarding e-mail messages from one person to others, and informing others that you are away from your account for an extended period of time. These features allow you to use your e-mail account more productively and effectively. For this tutorial you will need to have a personal e-mail account. If you do not already have an e-mail account, you can sign up for a free Yahoo! Mail account at **http://mail.yahoo.com/** or an MSN Hotmail account at **http://www.hotmail.com/**. Use the e-mail application of your e-mail account to perform each of the following operations:

STEP	PROCEDURE
1.	Locate the formatting options for your e-mail program. Then set up a signature for your e-mail account that includes your name, e-mail address, mail address, phone number, and other appropriate information, perhaps a title or position and institution name. Apply the signature to all new e-mail messages you send.
2.	Send an e-mail with one or more file attachments. E-mail attachments are files sent along with an e-mail message. An attachment can be any kind of file, including formatted word-processed documents, spreadsheets, databases, graphics, and even software. The e-mail message should explain to the recipient the type of file or file format (e.g., Word document, Excel spreadsheet, text file, picture).

(Continued)

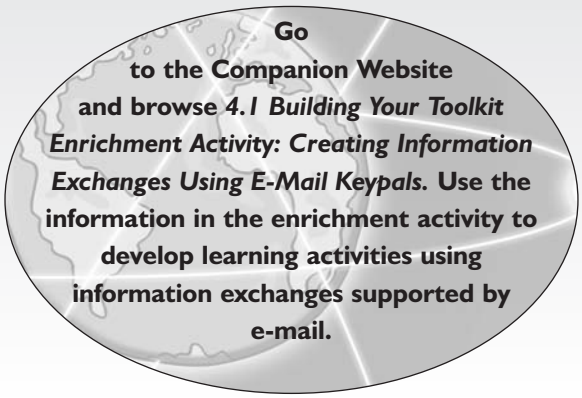
Building Your Toolkit: Managing E-Mail Accounts and Sending/Receiving File Attachments (Continued)

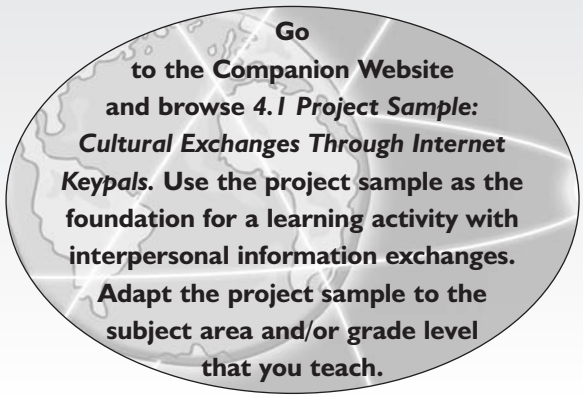
STEP PROCEDURE

- **Sending an attachment.** With most e-mail programs it is easy to send and receive messages containing attachments. To attach a file to an e-mail message, open a new mail message and use your e-mail program to attach a file (usually by clicking on a paper clip icon). The program will display a Find or Browse dialog box, and you can then select the file you want to attach from your computer. A copy of the file will then accompany the message to your recipient.
- **Opening an attachment.** If you receive a file attachment, you should see a note or an icon with your message, indicating that it includes an attachment. Some types of files may be viewable within the message, depending on the e-mail program you use. Usually, files must be viewed with an application that is capable of opening the file. You can either double-click on the file's icon in the message to launch the program and open the file, or you can save the file on your computer. E-mail programs may designate a default folder on your computer where attachments are automatically saved. It is best to save the file to your computer and then launch the application that can find the file on your computer and open it. If you do not have the right program to open a file, you may need to ask the sender to send the file in a format that a program on your computer can read, or you may need to take the file to a different computer with the right program installed and open the file there.

3. To forward a copy of an e-mail you have received to someone else, select the **forward** option while you are viewing the e-mail. Then type in the address field the e-mail address of the intended recipient, add any additional message, and press **Send.**

4. Again, locate the formatting options for your e-mail program. Then activate the auto-reply or vacation mail function; it is useful when you are away and cannot check your e-mail account. Create an auto-reply message, explaining that you are unable to reply to the e-mail message. You can provide information in the auto-reply message about the day of your return or the name of the person who is handling your responsibilities in your absence.





USING CHAT

Tommy Eldridge is a high-school social studies teacher and an assistant football coach who frequently used computers at home and in his classroom. Although he commonly required his students to search Internet resources, he did not allow them to use the Internet for communication. He realized, however, that many of his students had considerable experience communicating via e-mail and in chat rooms.

As Coach Eldridge began adapting his social studies courses to include problem solving, he realized that the subject matter could not be adequately addressed with information searches alone. Students need to communicate with experts and peers to better understand the context of a problem and to obtain other perspectives in developing solutions. Consequently, he invited online quest lecturers to chat with his classes, and his students enjoyed the opportunity to interact directly with political leaders and scholars.

In addition, because his coaching duties limit his availability during the school day and after school, Coach Eldridge incorporated online office hours into his schedule and encouraged his students to e-mail their questions to him. He found that he could be virtually available to any student at any time. Coach Eldridge has now become a dedicated user of Internet communication features, which he affirms can add a rich and appealing dimension to classroom learning activities.

Whereas e-mail permits asynchronous person-to-person communication, chat provides real-time Internet conversations. Chat can be difficult to use in the classroom, however, because it is completely unstructured and often confusing. Furthermore, chat rooms are not always safe educational environments; they are susceptible to uninvited guests contributing misinformation or offensive remarks.

Nonetheless, if a teacher is comfortable using chat and moderating a chat room, this communication tool can be quite effective. One of the best uses of chat is to provide access to experts, which would otherwise not be possible. A class chat session allows teachers and students as a group to interact with a guest speaker in real time, thus providing students with real-world experiences related to their subject matter. Before interacting online, students should thoroughly research the topic to be discussed, checking the FAQ page at the guest speaker's website, if available, and any online biography about the speaker. Students should create questions ahead of time for such sessions; they might use an interview approach to ask about a speaker's profession, rather than a specific topic. After the chat session students should be discouraged from sending unsolicited e-mail to the speaker.

Go to the Companion Website and browse *4.1 Building Your Toolkit Enrichment Activity: Using Online Experts to Support Classroom Learning*. Use the information in the enrichment activity to create learning activities using information exchanges with external experts.

Chat can also be used to conduct debates and student-led discussions. Students can post a position on a topic, to which others can respond with their own arguments, followed by a critique of those arguments. A student can also submit a question to the classroom chat forum about material read or discussed in class. That student, then, is responsible for leading the discussion that ensues from the question. Thus, students can become facilitators of their own chat sessions.

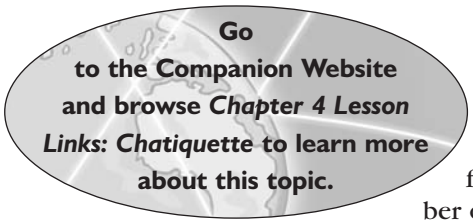
Moreover, as Coach Eldridge discovered, chat is a good way to provide additional support for students through virtual office hours. Having a virtual office hour outside the regular school day allows teachers to provide instructional support for homework assignments at a time when students are most likely to need assistance. However, the effectiveness and fairness of virtual office hours (and other online communications with students) beyond the regular school day is dependent on their having out-of-school access to the Internet.

Chat session transcripts can also provide an excellent resource for a number of activities; logs of a chat session can provide a study tool for students and an evaluative tool for teachers. After each chat session teachers can post the transcript to a Web page or send a copy to students through e-mail or a discussion list. Students can then read and review the conversation that took place during the chat. And transcripts permit students who were not present in a chat session to review what transpired.

FIGURE 4–1 Procedures for Chat Sessions

1. A participant with a comment or a question should type ! for a comment or ? for a question.
2. Participants type comments one sentence or clause at a time and then press ENTER so the group does not have to look at white space while typing occurs. Individuals with poor typing skills should type an entire statement before submitting it to the chat session.
3. Participants type three forward slash marks (///) at the end of a comment or a question to indicate that the next participant can begin.
4. To request the floor, participants can type ? or ! at any time; the first person to enter a ? or ! has the floor. All participants are responsible for maintaining the flow of conversation.
5. Requests to change the topic of conversation are signaled by typing *new ?* or *new !* If no one objects by typing ! or ?, the participant proceeds with the new topic.
6. Private chats during the discussion are not acceptable.

Because students can get lost in the unstructured atmosphere of a chat session and can fail to participate, chat sessions should always have a clear focus and a way to keep student discussion on track. The teacher should act as a moderator, encouraging all students to contribute to the chat discussion.



Chat rooms follow their own procedures (see Figure 4–1) and have their own form of etiquette, called → **chatiquette**, which defines the social conventions that structure and organize chat sessions. The purpose of chatiquette is not to diminish conversation but to facilitate clear and unambiguous communication. It is a way to make the nonverbal cues of face-to-face conversations available to all participants. To reduce the number of keystrokes when posting messages online, chatiquette permits abbreviations and acronyms (see Figure 4–2).

FIGURE 4–2 Chat Expressions

AAIK	as far as I know
AFK	away from keyboard
ASAP	as soon as possible
BBFN	bye bye for now
BBL	be back later
BBS	be back soon
BRB	be right back
BTW	by the way
BWL	bursting with laughter
C&G	chuckle and grin
CID	cringing in disgrace
CP	chat post
C YA	see ya
C YA L8R	see you later
EMSG	e-mail message
EOF	end of file
FC	fingers crossed
FMG	filling my glass
FWIW	for what it's worth
FYI	for your information
G	giggle
(G)	grin
GFN	gone for now
GMTA	great minds think alike
GTSY	glad to see you
HAGU	have a good un
HHIS	hanging head in shame
IC	I see
IMHO	in my humble opinion
IMO	in my opinion
IOW	in other words
IRL	in real life
JMO	just my opinion
JTLYK	just to let you know
KIT	keep in touch
L8R	later
LMHO	laughing my head off
LOL	laugh out loud/laughing online
LTNS	long time no see
LTS	laughing to self
OBTW	oh, by the way
OIC	oh, I see
OTOH	on the other hand
OTTOMH	off the top of my head
PM	private message
PMFJI	pardon me for jumping in
POAHF	put on a happy face
POD	piece of data
POOF	left the chat room
QSL	reply
RFD	request for discussion
ROFL	rolling on floor laughing
RSN	real soon now
RTSM	read the stupid manual
RUOK?	are you OK?
SETE	smiling ear to ear
SITD	still in the dark
SO	significant other
SUL	see you later
SWL	screaming with laughter
SYS	see ya soon
TA	thanks again
TIA	thanks in advance
TIC	tongue in cheek
TNX	thanks
TPTB	the powers that be
TTYL	talk to you later
WB	welcome back
WRT	with regard to

Lesson 4.2 Online Group Communication

FOCUS QUESTIONS

- How can discussion lists be used to enhance teaching and learning in the classroom?
- How do you subscribe to and unsubscribe from a discussion list?
- How can message boards be used to enhance teaching and learning in the classroom?
- How do message boards support online communication?

■ USING GROUP COMMUNICATION TOOLS ON THE INTERNET

Like interpersonal communication tools, group communication tools can expand the geographical boundaries of your classroom. The tools presented in this lesson utilize asynchronous communication, so that time zones and geographical locations will not make a difference. Thus, discussion can be initiated and continued indefinitely as it evolves into new topics.

Group communication tools are also useful in the classroom for facilitating group work and collaborative learning. For example, like Ms. Peterson, the high-school English teacher you met at the beginning of this chapter, you can establish online discussion groups or classroom message boards to provide other options for engaging students in discussing curriculum content.

Before using group communication tools, however, you should have a clear understanding of how they work, and you should be proficient in their use. If you model confidence and enthusiasm, your students are much more likely to participate eagerly in the learning activities you have planned.

The instructional strategies you employ using Internet communication technologies are not much different from what you would do in the conventional classroom. For example, you want to use Internet technologies to support a community of learning in the classroom, which can flourish when students understand the proper techniques for exchanging views that contribute to the collective creation of knowledge. When students conduct their own research and discuss it with peers, they increase the probability of correctly solving a problem or successfully completing a project.

■ USING DISCUSSION LISTS

E-mail discussion lists are useful for facilitating communication among individuals. The Internet contains thousands of discussion groups that are managed by a list server, commonly referred to as a listserv, a list processor, or a list. As mentioned previously, the basic operation of a listserv is to keep track of available e-mail discussion lists and the members of each list. When messages come in for a particular list, the listserv program rebroadcasts that message to all of the members of the list—as if someone had sent an e-mail message to all of the members of a group by entering all of their e-mail addresses in the To field of the message. The listserv program merely automates the process. Lists are often moderated by a list owner, but some lists are simply a free-for-all discussion without anyone filtering the messages.

Most lists can be provided to the user either in a digest form or on a post-by-post basis. Listservs can distribute electronic journals, or e-journals, and newsletters. Most lists and e-journals can be joined by posting an e-mail to the listserv address. Any member of a discussion list can take part in a conversation or can begin a new topic.

To use a discussion list in her classroom, Ms. Peterson had to decide whether to have her own classroom discussion list or to join an existing Internet discussion list. Several listserv programs are freely distributed on the Internet, and many school or school district networks are capable of supporting classroom listservs. Tools are also freely provided on the Internet for setting up your own discussion group.

FIGURE 4–3 Netiquette for Online Discussions

- **Be brief.** Remember that the longer your message is, the fewer the people who will bother to read it.
- **Use descriptive subject lines.** Provide a title for the content of your message.
- **Avoid typing in uppercase letters.** Typing in uppercase is considered shouting on the Internet.
- **Avoid getting flamed or flaming others**. Members of discussion groups who do not follow the rules for the discussion group or who ask stupid questions may receive flame mail. **Flaming** is a heated retort of a personally demeaning or derogatory nature. Try to avoid sending flame mail even when someone else has not followed the list rules.
- **Summarize and snip.** Either summarize the previous person's post and add your comments, or include the parts to which you would like to respond and delete the rest.
- **Be careful with humor and avoid sarcasm.** Because nonverbal cues and facial expressions are an important part of humor and sarcasm, it is easy for dry humor and sarcasm to be offensive in Internet communications.
- **Pay attention to the reply address.** Using the reply function on your e-mail program can send your reply directly to the person who posted the original message, or it can send your response to the entire group.
- **Get to know the culture of the group.** You may want to lurk for a while before offering your comments.
- **Know your list addresses.** Send commands to the administrative address and messages to the list address.
- **It is more blessed to give than to receive.** Take the time to share what you know when others make requests or submit questions to the group.
- **Your posts are a reflection on you.** Read your message through before sending it because you will likely find misspellings, missing words, or breaks in logic.
- **Be careful what you say.** Thousands of people may read your message, and what you say may come back to haunt you.
- **When summarizing, summarize!** When you request information from a discussion group, it is common courtesy to offer to summarize and report your findings so that others can benefit as well. The best way to do this is to take all the responses you received and edit them into a single message.
- **Avoid dittos and me-toos.** If you agree with what is posted, there is no need to add to the volume of mail in people's boxes by saying ditto.
- **Mark your spoilers.** If the topic of your post could be difficult or painful for other list members to read, be sure to indicate this in your subject.
- **Take it private.** If a subject has evolved into a conversation between two or three people, correspond privately rather than sending your messages to the list.
- **Save the welcome message.** The system-generated message you receive when you have successfully subscribed to a list usually also contains other useful information (such as how to unsubscribe).

Source: From University of Kansas Academic Computing Services at http://www.ku.edu/acs/documentation/docs/listproc/netiquette.shtml. Reprinted with permission.

Ms. Peterson decided to implement her own classroom discussion list. Thus, she had to monitor list traffic, provide thoughtful questions, recommend useful resources, and work behind the scenes to enforce the list guidelines and help list subscribers stay on topic. As with face-to-face discussions in the classroom, good discussion list managers set a welcoming tone, shape the focus of the discussion, manage technical issues and any debates that ensue, and summarize the discussion.

There are social conventions and common courtesies that guide online discussions. For example, when replying to a listserv message, you need to decide whether your reply should go only to the original sender or to the whole list. If the original poster is asking for a specific piece of information that would not be of interest to other list members, it is probably best to reply directly to the individual. But if the original e-mail and your reply are about topics of general concern to list members, then replying to the list would allow them all to follow the ongoing discussion. In general, the same rules of discourse and discussion that pertain to the classroom should be applied to listserv discussions as well. Figure 4–3 provides some basic guidelines for Internet discussions.

FIGURE 4–4 Five Simple Rules for Subscribing to and Unsubscribing from a Discussion List

1. **Send e-mail messages as plain text.** Allow message recipients to select for themselves what size and font they prefer. Do not set your e-mail system to send formatted text.
2. **Always read and keep a copy of the instructions/guidelines when you or your students subscribe to a discussion list.** You may need these instructions later for help in using the list appropriately and for unsubscribing instructions.
3. **Set up e-mail accounts in your contacts list or address book with the e-mail address for posting messages as well as the e-mail address for the list manager.** The e-mail address for managing a list may be different from the e-mail address for posting messages to the list.
4. **Never send subscribe or unsubscribe commands to the e-mail address you use for posting a message.** Posting such requests to the entire discussion list can be embarrassing to you and frustrating to the members of the discussion list.
5. **Unsubscribe from the exact e-mail address from which you subscribed.** If you have several e-mail addresses or your e-mail address can be written in several ways, make sure you use the same address for subscribing and unsubscribing.

Subscribing and unsubscribing from discussion lists is accomplished by sending e-mail messages to a prescribed address. With some discussion lists you can subscribe (or even unsubscribe) from a link on a Web page that automatically sends an e-mail message. Correct spelling and syntax are critical for subscribing and unsubscribing operations because key phrases are parsed by a computer to automatically add you to or delete you from the list.

When you subscribe to a mailing list, you may receive a confirmation that includes the e-mail address for unsubscribing from the list. You should keep that e-mail and any information about additional addresses related to general questions and requests. It is important that you understand the distinction among addresses. E-mail messages that you want distributed to other members of the list should be sent to the list address, whereas e-mail messages to the listserv program should be sent to the administrative address. Figure 4–4 provides a list of guidelines to help you remember the most important steps in subscribing to and unsubscribing from a discussion list.

Building Your Toolkit: Setting Up a Yahoo! Groups Account and Discussion List

You may be able to create discussion lists through your school or school district network. If not, you can create a personal listserv, bulletin board, and/or chat forum using Yahoo! Groups, which is a free service that allows you to create and moderate your own discussion list. Yahoo! Groups is an easy-to-use, privacy-protected, and spam-protected discussion environment. You can use the service from the Yahoo! website or through any e-mail program.

Before setting up your discussion list, you should make certain preparations; you should define the purpose of your list, decide who will participate, and choose your list format. Refining the focus of your list will increase its chances for success. Ask yourself the following questions:

- What is the main purpose of the list (e.g., discussion, information exchange, coordination of learning activities)?
- What is my goal in creating a list (e.g., addressing a topic or issue, building a learning community, facilitating teamwork)?
- Which topics are appropriate for discussion, and which are not?
- How much message volume, or traffic, will there be on the list (usually measured by the number of e-mails per subscriber per day)?
- Do I want the list restricted to specific participants or open to anyone?
- Do I plan to moderate the mailing list?

(Continued)

Building Your Toolkit: Setting Up a Yahoo! Groups Account and Discussion List (Continued)

- How much time can I spend managing and moderating the list?
- Are the advertisements at the bottom of messages appropriate for my subscribers?

Once you have answered these questions, you are ready to develop guidelines for your mailing list to inform subscribers about the objectives and operating parameters of the list. Because it is your list, you can designate any agenda and establish any rules as long as you declare these rules at the start. If subscribers repeatedly violate list guidelines, you can unsubscribe them from the list.

Mailing list software usually allows you to send a welcome or confirmation message to each new subscriber. Mailing list managers can also send list guidelines periodically to remind subscribers of the rules. When using discussion lists in your classroom, you may want your students to initiate the subscription process themselves, but in this exercise you will register the e-mail addresses yourself. Thus, before starting the tutorial, you should invite two or more participants to join the group created by this activity and obtain their e-mail addresses.

STEP	PROCEDURE
1.	Open your Web browser and then the Yahoo! Groups website **at http://groups.yahoo.com/**.
2.	To sign up for membership in Yahoo! Groups, you must register. If you already have a Yahoo! e-mail account, click on the **Sign In** link. If you do not have a Yahoo! account, go to New User? and click on **Sign Up**. Complete all necessary information fields.
3.	Once your registration is complete, go to Create Your Own Group, and click on **Start a group now**. • Select a Yahoo! Groups category for your group. For example, you might choose to select **Schools & Education > K-12**. Then click on **Place my group here**. • Enter a name, an e-mail group name, and a short description of the group. Click on **Continue**. If required, enter the verification text, and click on **Continue** again. • Once the group is set up, a confirmation screen will be displayed.
4.	Return to the Yahoo! Groups home page. Go to My Groups and select the link for the group you created.
5.	On the navigation bar on the left side of the window, select **Invite** to ask members to join the group. Enter the e-mail addresses of the participants who agreed to join your group. If you enter a message explaining why you are inviting these people to join your group, it will be included with the e-mail invitation. Click the **Submit Invite** button.
6.	When your invited participants subscribe to your list, welcome them by e-mail, and provide list guidelines.
7.	From the navigation bar select the **Management** link, and review the management categories listed. Manage your own discussion list by performing the following functions: • Post a general reminder of list guidelines and Netiquette. • Post a friendly message to thank subscribers for their contributions. • Encourage list members to introduce themselves. • Encourage and summarize discussions. • Provide content to begin discussions. • Post some resources that are relevant to the discussion. • Subscribe and unsubscribe users as necessary.

Go to the Companion Website and browse *4.2 Building Your Toolkit Enrichment Activity: Searching UseNet and Posting to a Newsgroup*. Use the information in the enrichment activity to create learning activities involving newsgroup discussions among students.

■ USING MESSAGE BOARDS

Before there were e-mail accounts, a World Wide Web, or even an Internet, online communication meant posting text messages on electronic bulletin boards where others could read and reply to them. Now electronic bulletin board services are asynchronous communication tools on the World Wide Web. Message boards are useful for online communication

because they are relatively easy to access. The information shared resides in an archive, and discussions are threaded, making it easy to check student participation.

Unlike discussion lists, message board messages do not come to students directly by e-mail; students must go to the message board to be able to read and post messages. An advantage to this approach is that postings are collected in one place, specific to the subject at hand. Furthermore, students do not have to have an e-mail account of their own to view messages. However, posting to a message board usually requires an e-mail account.

Online message boards are a great way to extend class participation beyond the classroom. A message board allows students to discuss course topics online, respond to each other's comments, and share ideas. With a message board you can designate the participants, suggest topics for discussion, and monitor students' participation. When using message boards in the classroom, you should build online discussions into your curriculum; students are more likely to participate in online discussions if credit is given for participation.

Online discussions can increase the participation of students who are shy or uncomfortable speaking in front of the whole class. Because some students like to take time to reflect and write their comments, teachers can accommodate a variety of learning styles or preferences by grading participation based on in-class as well as message board discussions. In addition, because message boards provide an opportunity for students to edit their postings, another obvious benefit is the potential for students to practice and enhance their writing skills.

When using online discussions, teachers should allow students enough time to consider their responses and post them. Teachers should also consider the size of the discussion groups; students and teachers find it difficult to keep up with discussions if there are too many responses to read. An effective strategy is to create several smaller discussion groups for one class.

Teachers may choose to be active in the discussion or limit their participation, based on the instructional goals of the discussion. However, successful discussions using message boards are usually the result of the teacher taking an active role in structuring meaningful discussions that are relevant at the current time and motivate students to think and make contributions. Teachers can offer guidance by posing new questions and providing feedback, perhaps organizing discussion by chapter topics in an associated textbook. Teachers should always validate student postings and provide more information when needed.

Online discussions work best if topics discussed on the message board are introduced in class. Meaningful topics that relate to classroom learning activities will promote discussion and facilitate a deeper level of thinking about a discussion topic. One useful instructional strategy is online debates. Individuals or groups can be assigned different sides of a controversial topic, and a vote can be taken at the end to see who had the most convincing argument.

Policies for online discussions need to be clear and well defined and should include how individual students or groups are graded for their contributions to discussions. Guidelines might also specify a minimum number of responses and the minimum length of messages, to encourage students to think harder about the content of a message rather than just replying with very short, superficial comments.

Building Your Toolkit: Creating a Connected Classroom

Nicenet's Internet Classroom Assistant (ICA2) allows virtually any classroom, even those with modest technology resources, access to powerful Internet tools and technologies. ICA2 is a sophisticated communication tool that offers the following features:

- ***Conferencing:*** You can create your own private, threaded conferencing on topics you choose for the class or allow students to create their own topics.
- ***Scheduling:*** You can put the class schedule online. With a 7-day advance notice on your class home page, students will have a heads-up display of upcoming assignments and class events.

(Continued)

Building Your Toolkit: Creating a Connected Classroom (Continued)

- ***Document sharing:*** Both students and teachers have the ability to publish their documents on the site, using simple Web-based forms. No knowledge of HTML is needed. Students are one click away from turning in their assignments online, giving their peers feedback on published papers, and receiving teacher comments.
- ***Personal messaging:*** Similar to traditional e-mail but fully integrated with document sharing and conferencing, personal messaging is a great way to communicate with students, comment privately on conferencing postings, or give private feedback on published papers.
- ***Link sharing:*** You can share links to pertinent Internet resources sorted by topics that you create.

Nicenet provides the ICA2 free of charge for public use with no advertising. Nicenet makes no profit from your participation, but you must register with the Nicenet website to take advantage of its e-mail and chat features.

Go to the Companion Website and browse *4.2 Building Your Toolkit Enrichment Activity: Using a Classroom Message Board*. Use the information in the enrichment activity to create learning activities using information exchanges among students and the teacher.

STEP	PROCEDURE
1.	Open your Web browser and then the website Nicenet.org at http://www.nicenet.org. On the navigation bar on the right side of the window, select the link **Teachers: Create a Class** in the **New Users Start Here** box.
2.	Complete the registration information, and click the button **Create a Class.** After you create a class, you will be sent a class key code that students can use to sign up for the class. Click **Finish Registration.**
3.	Log in to see your classroom home page. Try out the various features of ICA2 (see Figure 4–5) by making sample postings for the following features: • **Conferencing** • **Link Sharing** • **Documents** • **Class Schedule** • **Class Members**
4.	After you have browsed the features of ICA2, click the **Log out** link on the navigation bar on the left side of the window.

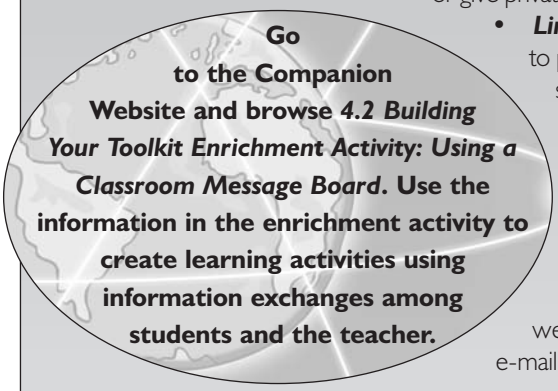


FIGURE 4–5: The Features of Nicenet's Internet Classroom Assistant.

Source: Retrieved August 25, 2004, from http://www.nicenet.org. Reproduced with permission.

Go to the Companion Website and browse *4.2 Project Sample: Ask an Expert About a Topic*. Use the project sample as the foundation for a learning activity that includes interpersonal information exchanges. Adapt the project sample to the subject area and/or grade level that you teach.

CHAPTER 5

Locating and Evaluating Information on the Internet

The computer has become one of Sherry Alarcon's most valuable tools in the classroom. Ms. Alarcon, a fifth-grade teacher, says that when teachers integrate technology into good instructional practices, they add a new dimension to their teaching that can motivate and engage students. According to Ms. Alarcon, most students today, even those in low socioeconomic areas, come from homes that are media rich with electronic games, television, radio, CDs, and DVDs. She maintains that her students learn better when they are in a classroom in which lots of technology resources are available for students to experience.

Ms. Alarcon has integrated computer technology and Internet use into almost every aspect of her teaching. For example, while studying geography, her students use the Internet to explore geography resources in the United States, getting material from websites such as the U.S. Geological Survey (**http://www.usgs.gov**) and the National Geographic Society (**http://www.nationalgeographic.com/**) to plan a class field trip. After searching the Internet, the school library, and the classroom book collection, student teams choose a place or a location and map out the trip, describing the sights that can be seen on the field trip. Next, students use a spreadsheet program to estimate the cost of the field trip and create graphs or charts to project how much money needs to be made from various fund-raising activities. Then, each student team creates and presents a multimedia slideshow or video to promote its field trip idea, using maps and pictures downloaded from related websites. All class members then discuss which field trip they would most like to take and vote on the various proposals.

Ms. Alarcon says that information is growing so fast that the main problem faced by her students is how to look at it and make judgments and decisions about it. She says her students need to know whether information is good and how to use it appropriately. At the beginning of each school year Ms. Alarcon presents an orientation to the Internet, explaining that information on the Internet is not always valid. She then explains how to find reliable information on the Internet and how to evaluate its authenticity.

NEW TERMS

differentiated classroom
digital library
electronic journal
evaluation criteria
hybrid search engines
Google

information literacy
invisible Web
metasearch engines
search engines
searchable databases
search directories
task-relevant knowledge
virtual library

National Educational Technology Standards for Teachers

The following NETS•T are addressed by the lesson content and learning activities in this chapter:

I. Technology Operations and Concepts

- **A.** Demonstrate understanding of technology concepts and skills
- **B.** Demonstrate continual growth in technology knowledge and skills

V. Productivity and Professional Practice

- **A.** Use technology for ongoing professional development
- **B.** Continually evaluate and reflect on professional practice
- **C.** Apply technology to increase productivity
- **D.** Use technology to communicate and collaborate

VI. Social, Ethical, Legal, and Human Issues

- **A.** Model and teach legal and ethical practice related to technology use
- **B.** Enable and empower diverse learners
- **C.** Identify and use technology resources that affirm diversity
- **D.** Promote safe and healthy use of technology resources
- **E.** Facilitate equitable access to technology resources

National Educational Technology Standards for Students

The following NETS•S are addressed by the lesson content and learning activities in this chapter:

1. Basic Operations and Concepts

- Demonstrate sound understanding of technology
- Be proficient in the use of technology

2. Social, Ethical, and Human Issues

- Understand ethical, cultural, and societal issues related to technology
- Practice responsible use of technology
- Develop positive attitudes toward technology

3. Technology Productivity Tools

- Use technology to enhance learning, increase productivity, and promote creativity
- Use tools to collaborate, prepare publications, and produce creative works

5. Technology Research Tools

- Use technology to locate, evaluate, and collect information
- Use technology tools to process data and report results
- Evaluate and select new information resources and technology

OVERVIEW

Many constructive learning activities involve students collecting, compiling, comparing, and reporting different types of information. Web-enhanced learning activities often involve information searches and the acquisition and processing of information. Both searching for and validating information obtained from the Internet are important learning activities when using Internet information resources.

The wealth of information available on the Web greatly broadens the scope of information that is available to students in classrooms. There are virtual libraries and digital collections, websites for professional and standards-oriented organizations, government resources, periodicals, newspapers, magazines and journals, books, encyclopedias, and educational content sites—all on the Web. When students are taught to use search technologies and effective search strategies to solve problems and complete projects, they are better able to transfer search techniques to other problem-solving contexts. Developing an information search strategy for the classroom is the first step in addressing complex problems and issues requiring critical thinking.

Because there are no universal quality controls for publishing documents on the Internet, anyone with the know-how and access rights to a Web server can publish pages on the Web. Thus, the information published on Web pages may not have undergone the scrutiny of peers, experts, or professionals and thus may be inaccurate. When an Internet search is conducted, it is important for teachers and students to distinguish resources that are relevant and appropriate from those that are not.

Lesson 5.1 Identifying Internet Sources of Educational Information

FOCUS QUESTIONS

- What kinds of information resources are available on the Internet?
- How can Internet information resources be used for educational purposes?
- What is the invisible Web?

LOCATING EDUCATIONAL INFORMATION ON THE INTERNET

The information students need and use to complete project-based learning activities can come from a number of sources, including personal experiences, books, articles, expert opinions, encyclopedias, and the World Wide Web. One of the greatest features of the Internet is that it offers students relatively inexpensive access to a wealth of information across a vast range of fields, which can increase students efficiency in searching for information. Indeed, information searches are the most basic function of Web use. However, the increased amount of information that can be accessed requires students to become adroit at locating appropriate sources. A variety of Internet search technologies, content-related websites, and Web databases are available to help them.

Virtual Libraries and Digital Image Collections

A **virtual library** is designed to extend or simulate in a virtual space many of the services and capabilities of brick-and-mortar libraries. Usually managed by libraries and librarians, these virtual libraries identify electronic resources referred and reviewed by professionals, particularly librarians. Virtual libraries filter out many of the irrelevant, personal, and corporate pages that commercial search engines produce. Although copyright and subscription issues may limit the capability of virtual libraries to provide references to scholarly articles and books, newspaper articles, and professional magazine pieces, many of these resources can be acquired by academic or fee-based library or subscription services. Some examples of virtual libraries include the following:

- The Librarian's Index to the Internet (http://lii.org/) is a searchable, annotated subject directory with thousands of Internet resources selected and evaluated by librarians for their usefulness to users of public libraries. This index provides a well-organized point of access for reliable and trustworthy Internet resources.
- Infomine (http://infomine.ucr.edu/) is a virtual library of Internet resources relevant to faculty, students, and research staff at the university level. It contains useful Internet resources such as databases, electronic journals, electronic books, bulletin boards, mailing lists, online library card catalogs, articles, directories of researchers, and many other types of information. Infomine was built by librarians from several colleges and universities.
- The Internet Public Library (http://www.ipl.org) is a project of the University of Michigan School of Information and is designed to provide students and professionals

in the library and information science profession with a place to learn about the practice of librarianship in the digital age. Hundreds of students have been involved in designing, building, creating, and maintaining this website and its various services, and volunteer librarians throughout the world have been involved remotely in answering reference questions.

These virtual libraries are designed to be user friendly; the records produced by basic and advanced searches are filtered through librarian checks for authenticity, currency, and impartiality of content. Teachers should encourage students to use virtual libraries because of their reliability.

A **digital library,** digital collection, or digital image collection uses electronic-information technologies to digitize primary source documents, assemble them into collections, and present them online. The Digital Library Federation (DLF) is a consortium of libraries and related agencies that are pioneering the use of electronic-information technologies to extend their collections and services. The DLF promotes sustainable, scalable digital collections and encourages the development of new collections and collection services. The DLF website at http://www.diglib.org/ provides links to over 30 DLF partners. Some examples of digital libraries include the following:

- The National Science Digital Library (NSDL; http://nsdl.org) is a digital library of resource collections and services in support of science education at all levels. NSDL is a comprehensive, online source for science, technology, engineering, and mathematics education. Its purpose is to extend science literacy through access to materials and methods that reveal the nature of the physical universe and the intellectual means by which it is discovered and understood. A partnership of NSDL-funded projects, the NSDL is a center of innovation for digital libraries and a virtual community center for groups focused on digital-library-enabled science education.
- The Library of Congress (http://memory.loc.gov/) features a digital library with over 100 collections, as well as a section for teachers (i.e., The Learning Page) that provides lesson plans, interactive puzzles, learning games, classroom projects, and professional development activities.
- Exploratorium (http://www.exploratorium.edu) is a virtual museum. The bricks-and-mortar Exploratorium is a museum of science, art, and human perception located in San Francisco, California. In 1993 it became one of the first science museums to build a site on the World Wide Web, which now includes more than 12,000 Web pages and many sound and video files exploring hundreds of different topics. Many of the resources on the website are simple uses of information technology. For example, the site presents over 500 simple experiments, for which instructions can be viewed on any type of Web browser and easily printed out. The website extends the educational experiences available on the museum's floor.

Professional and Standards-Oriented Organizations

Professional and standards-oriented organizations publish curriculum standards, teaching resources, and lesson plans on the Web. The following professional organizations cover almost all of the national curriculum standards in various subject areas:

- National Council of Teachers of Mathematics (NCTM; http://illuminations.nctm.org/) provides Internet resources to improve the teaching and learning of mathematics, including ready-to-use, interactive multimedia math lessons, lessons developed by expert math teachers, interactive programs to demonstrate math concepts, video vignettes, research reports, and articles.
- National Council for the Social Studies (http://www.socialstudies.org/) provides teaching resources categorized by the 10 themes of the curriculum standards for social studies, lists of online classes and learning opportunities, forums to discuss social

studies education, classroom tips, general topics related to the education of effective citizens, listings of organizations, article citations, and resources related to social studies education.

- National Council of Teachers of English (NCTE; http://www.ncte.org/) provides links to teaching ideas selected from NCTE publications or submitted directly by teachers and organized according to ESL, journalism, literature, reading, technology, writing, and vocabulary, as well as a forum where teachers share ideas, strategies, problems, and solutions. The NCTE and the International Reading Association (IRA) sponsor a website called Read•Write•Think (http://www.readwritethink.org/), which provides educators and students with access to teaching practices and resources in reading and language arts instruction, including a collection of lessons, a description of IRA/NCTE standards, and Web resources reviewed by an expert panel to ensure selection of the best resources for English language arts teachers.
- American Association for the Advancement of Science (AAAS; http://www.aaas.org/) sponsors an educational website, Science NetLinks (http://www.sciencenetlinks.org/), which provides Internet-based learning activities for the classroom, Web resources reviewed by a panel of editors and supportive of standards-based teaching and learning, and the benchmarks for science literacy established by an AAAS initiative addressing K–12 science education.
- National Geographic Society (http://www.nationalgeographic.com/) sponsors a website, Xpeditions (http://www.nationalgeographic.com/xpeditions/), which describes U.S. geography standards and provides forums to discuss geography education, an interactive learning museum, online and off-line learning activities, and lesson plans written by educators and tested in the classroom. In addition, the National Geographic Society website provides an education section (http://www.nationalgeographic.com/education/) with lesson plans, online adventures, and online mapping, including dynamic maps, atlas maps, country profiles, printable maps with black-line masters optimized for overhead transparencies, and star charts.
- National Council on Economic Education (NCEE; http://www.ncee.net/) sponsors a website called EconEdLink (http://www.econedlink.org/), which provides classroom-tested, Internet-based economics lesson materials for K–12 teachers and their students. The materials are centered on curriculum standards and the essential principles of economics.

National standards and examples for arts education are provided by the ArtsEdge website (http://artsedge.kennedy-center.org/). ArtsEdge includes teaching materials focused on national art education standards and provides K–12 teachers with curriculum units, lesson plans, activities and other ideas for integrating the arts into classroom teaching, a directory of instructional Web resources, and a lesson submission and exchange system.

Government Resources

Federal and state government departments and agencies publish a considerable amount of information on the Internet. Most online government publications, books, articles, statistics, and releases are authored by specialists and scholars and are closely reviewed by field experts. In general, teachers can encourage students to utilize electronic government resources with little concern over quality or authorship. Most of these resources are available at no charge and without subscription requirements.

The information available at specific departments or agencies is probably the most useful information resource for students. For example, the U.S. government sponsors a website with health and nutrition information at http://www.nutrition.gov/. And the National Archives and Records Administration provides excellent history and social studies resources, including document-based lesson plans and student research activities, in its digital classroom at http://www.archives.gov/. In addition, the U.S. Department of Justice

sponsors a website called Justice for Kids and Youth (http://www.justice.gov/kidspage/), which provides information on safety, substance abuse prevention, criminology, current events, technology, science, and history.

The FirstGov for Kids website (http://www.kids.gov) is an interagency portal for children that provides links to U.S. government children's sites and some of the best children's sites from other organizations. Further, federal agencies and institutions like the National Aeronautics and Space Administration (http://www.nasa.gov/), the Smithsonian Institutes (http://www.si.edu/), the National Weather Service (http://www.weather.gov/), and the U.S. Geological Survey (http://www.usgs.gov/) maintain websites that are rich in educational resources and suitable for use in developing Web-enhanced learning activities. Several agencies, such as the Bureau of Labor Statistics at http://www.bls.gov/ and the Census Bureau at http://www.census.gov/, produce student-friendly materials relevant to multiple curriculum themes and career information.

Much of the content contained on these governmental websites can help students obtain data and information for project-based learning activities. However, these sites also provide numerous documents intended for an advanced audience, which may require instructor intervention and guidance to prevent students from becoming overwhelmed with massive amounts of information not intended for educational purposes.

Regional Technology in Education Consortia

Regional Technology in Education Consortia (R*TECs) help states, schools, teachers, school library and media personnel, school administrators, and other education personnel and entities successfully integrate technologies into K–12 classrooms, library media centers, and other educational settings, including adult literacy centers. The Office of Educational Research and Improvement of the U.S. Department of Education funds 10 R*TECs (http://www.rtec.org) to establish and conduct regional activities that address professional development, technical assistance, and information resource dissemination to promote the effective use of technology in education. R*TECs put special emphasis on meeting the documented needs of educators and learners in the region they serve and foster regional cooperation and resource sharing. They provide a number of Web tools and resources that are useful for creating Web-enhanced learning activities.

Encyclopedias

Online encyclopedias are a good place to begin research on a topic that may be unfamiliar to a student, especially a younger student. Some useful online encyclopedias include the following:

- *Encyclopedia.com* (http://www.encyclopedia.com/) is a good place to start a research activity. It is a free Internet service that provides more than 57,000 frequently updated articles from the *Columbia Encyclopedia* (sixth edition). Each article is enhanced with links to newspaper and magazine articles as well as pictures and maps. Each entry is short but includes hyperlinked references to other encyclopedia articles, as well as links to periodicals and images in the fee-based e-Library. A Search Encarta button in each article performs a related search of Encarta.
- *Encyclopedia Britannica* (http://www.britannica.com/) provides free access to condensed articles by keyword search, by browsing alphabetically, or by subject, with access to the full text of the hard-copy *Encyclopedia Britannica* available only to paying subscribers.
- *Encarta* (http://encarta.msn.com/) offers thousands of articles from the CD-ROM encyclopedia, hundreds of related multimedia clips, a talking dictionary, a world atlas, and a resource for educators. The Web pages do contain a fair number of advertisements.
- *Encyclopedia Smithsonian* (http://www.si.edu/resource/faq/start.htm) features answers to frequently asked questions about the Smithsonian Institution and links to

Smithsonian resources on subjects from art to zoology. Because there is no search function, A-to-Z the only way to navigate is to browse through a topic listing.

- Information Please (http://www.infoplease.com/) is an encyclopedia, dictionary, and almanac that integrates the various *Information Please Almanacs* on sports, entertainment, and general knowledge with *Random House Webster's College Dictionary* and the *Columbia Encyclopedia*. It can be navigated by an integrated search function, and the almanacs can be browsed by topics.

Educational Content Sites

Educational content sites on the Internet can provide high-quality content for use in lesson building, primarily lesson plans and curriculum resources. Some of the most popular Internet content sites include the following:

- Blue Web'n (http://www.kn.pacbell.com/wired/bluewebn/) is an online library of hundreds of Internet sites categorized by subject, grade level, and format (i.e., lessons, activities, projects, resources, references, and tools). You can search by grade level, subject area, or specific subcategories. New sites are added regularly, and you can receive a list and description of these additions by e-mail by registering with the website.
- DiscoverySchool.com Lesson Plans Library (http://school.discovery.com/lessonplans/) provides innovative teaching materials for teachers, useful and enjoyable resources for students, and advice for parents about how to help their kids enjoy learning and excel in school. A link to Teaching Tools gives access to Puzzlemaker, Lesson Planner, Quiz Center, and Worksheet Generator. The site is constantly reviewed for educational relevance by practicing classroom teachers in elementary school, middle school, and high school.
- Education World (http://www.educationworld.com) is designed as a kind of Web portal for educators, a place for teachers to gather and share ideas, as well as a complete online resource where educators can find lesson plans and research materials. Website resources include a search engine for educational websites only, lesson plans, practical information for educators, information on how to integrate technology in the classroom, articles written by education experts, website reviews, daily features and columns, teacher and principal profiles, chats with important individuals in education, and employment listings.
- Educator's Reference Desk Lesson Plans (http://www.eduref.org/Virtual/Lessons/index.shtml) is a collection of more than 2,000 unique lesson plans that have been written and submitted by teachers from all over the United States and the world.
- EduScapes (http://www.eduscapes.com) is designed to work with teachers, parents, and children around the world to effectively integrate technology into teaching and learning environments. The website includes a weekly project section that contains a thematic topic with selected Web resources, ideas and activities, vocabulary, lesson plans, WebQuests, and student-produced materials.
- Federal Resources for Educational Excellence (FREE) (http://www.ed.gov/free/) provides easy, one-stop access to learning resources from dozens of federal organizations, including the Library of Congress, National Aeronautics and Space Administration (NASA), National Archives and Records Administration (NARA), National Endowment for the Humanities (NEH), National Gallery of Art, National Park Service, National Science Foundation (NSF), Peace Corps, and Smithsonian Institution. Resources include teaching ideas, learning activities, photos, maps, primary documents, data, paintings, sound recordings, and more—on thousands of topics.
- Gateway to Educational Materials (GEM; http://www.thegateway.org/) provides educators with quick and easy access to thousands of educational resources found on various federal, state, university, nonprofit, and commercial websites. GEM is a

consortium of over 400 organizations and individuals providing substantial but uncatalogued collections of Internet-based educational materials.

- MarcoPolo Internet Content for the Classroom (http://www.marcopolo-education.org/) provides high-quality educational resources for teachers and students: lessons plans, student materials, reviewed Web resources, primary source materials, interactive learning activities, and assessments. All are developed by world-renowned organizations that are experts in their fields. MarcoPolo content covers arts integration, economics, geography, the humanities, mathematics, reading, language arts, and science; and all lessons are developed to support, align with, or extend national standards. Classroom-ready lesson plans and other teaching materials make it easy to begin integrating Internet resources into the classroom. And grade-specific research lists help teachers customize materials to teaching style and needs.
- PBS TeacherSource (http://www.pbs.org/teachersource/) provides educational resources by curricular subject, topic, and grade level; in-depth professional development services; tips on how to effectively teach with technology; best practices information from other teachers; tools for teaching, such as recommended books and websites; and much more.

Electronic and Online Journals

Electronic journals include journals, magazines, e-zines or webzines, newsletters, and any other type of serial publication that is available on the World Wide Web. There are many electronic journals currently available, and new ones are always being added, so it is best to use a directory to locate electronic journals in a particular field. Many different libraries, consortia, and organizations have developed lists and guides. Some of the better and more comprehensive sites with directories of electronic journals are listed here:

- Electronic Journal Miner (http://ejournal.coalliance.org/) is sponsored by the Colorado Alliance of Research Libraries. This site includes primarily e-journal sites as they are offered by the publishers, accessed through a series of indexes. No evaluation of the titles is provided, but a unit record that gives some information about scope and content must be viewed before launching to a title of interest. New titles are added as they are discovered.
- New Jour: Electronic Journals & Newsletters (http://gort.ucsd.edu/newjour/) is the Web archive of the New Jour discussion list for new journals and newsletters available on the Internet. The website provides a daily listing of new serial publications. This website is located at the University of California, San Diego but is actually a collaborative effort of many librarians at different institutions.
- University of Pennsylvania Library E-Resources (http://www.library.upenn.edu/ and then select E-Resources > È-Journals) allows a search of electronic journals by title and more than 70 broad subject categories. It also has a listing of newspapers and other electronic journal sites.

Searchable Databases

Searchable databases are useful for organizing large amounts of disparate information; most search engines like Google contain searchable databases. For many of these databases the search results are dynamically generated and then virtually delivered in Web pages associated with a specific search. Such pages are not stored anywhere because it is easier and cheaper to generate the answer page for each query than to store all the possible pages containing all the possible answers to all the possible queries.

The visible Web refers to the links listed on the results pages from general search engines and in directories. The → **invisible Web** refers to what is not returned with the search results, that is, the contents of thousands of specialized searchable databases. You can

Go to the Companion Website and browse *Chapter 5 Lesson Links: The Invisible Web* to learn more about this topic.

find searchable databases and other invisible Web content in the course of routine searching in most Web directories:

- Direct Search (http://www.freepint.com/gary/direct.htm) consists of several long pages listing and describing searchable databases on many academic topics.
- Profusion (http://www.profusion.com/) from Intelliseek is a Yahoo-like directory with a large collection of searchable databases, including many academic subjects. It is a high-quality, human-edited and indexed collection of highly targeted databases that contain specific answers to specific questions.
- The Big Hub (http://www.thebighub.com/) maintains a directory of over 1,500 subject-specific searchable databases in over 300 categories. Listings for each database feature both annotations and search forms to directly access the database. However, these search forms do not include most advanced searching features offered by each database on its own site.
- Web Lens (http://www.weblens.org/invisible.html) provides a collection of research tools for mining the invisible Web.

Building Your Toolkit: Building a Classroom List of Educational Resources on the Internet

You should start building a list of Internet resources that are appropriate for the grade level and/or subject you teach. You can create your list by browsing through the Internet resources that were discussed in this lesson; and if a particular resource (or some part of it) seems appropriate for use in your classroom, you can include the title, URL, and a short description on your list.

STEP	PROCEDURE
1.	Open your Web browser and browse through several of the Internet resources discussed in this lesson.
2.	A virtual library: Librarian's Index to the Internet at **http://lii.org/**.
3.	A digital library: National Science Digital Library at **http://nsdl.org/**.
4.	A virtual museum: Exploratorium at **http://www.exploratorium.edu/**.
5.	Curriculum standards: National Geographic Society Xpeditions at **http://www.nationalgeographic.com/xpeditions/**.
6.	Government resources: FirstGov for Kids Web at **http://www.kids.gov**.
7.	Regional Technology in Education Consortia: High Plains R*TEC at **http://www.hprtec.org/**.
8.	Online encyclopedia: Encyclopedia.com at **http://www.encyclopedia.com/**.
9.	Educational content: Gateway to Educational Materials at **http://www.thegateway.org/**.
10.	Online journals: Electronic Journal Miner at **http://ejournal.coalliance.org/**.
11.	Searchable databases: The Big Hub at **http://www.thebighub.com/**.

Go to the Companion Website and browse *5.1 Building Your Toolkit Enrichment Activity: U.S. Government and R*TEC Online Resources*. Use the Web resources listed in the enrichment activity to create learning activities that specify information resources on the Internet.

Go to the Companion Website and browse *5.1 Project Sample: Planning a Research Project Using an Online Encyclopedia*. Use the project sample as the foundation for a learning activity that builds skills for conducting Internet-based research. Adapt the project sample to the subject area and/or grade level that you teach.

Lesson 5.2 Searching for and Researching Information on the Internet

FOCUS QUESTIONS

- What types of search engines are available to search the Internet, and how are they used?
- What are the advantages of using Google as a search engine in the classroom?
- How are Internet search engines used as part of a general research strategy?

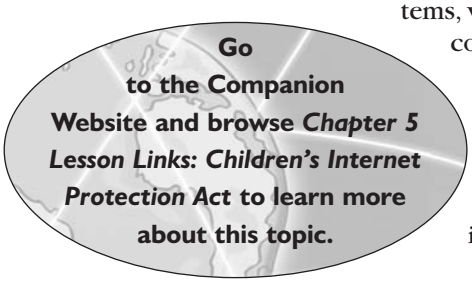
USING COMMERCIAL SEARCH ENGINES

Commercial search engines are usually employed to support project-based learning activities. To perform productive searches, teachers and students should be skilled in using search engines effectively. Internet searches can be as much about eliminating inappropriate sources as about locating appropriate ones. Well-known, commercially backed search engines are usually the best choice because they are more likely to be well-maintained and upgraded, producing more dependable results. And because search engines do not cover every Web page published on the Internet, you should use more than one. The website SearchEngineWatch.com (http://www.searchenginewatch.com/) provides an online guide to the major search engines.

Search engines are most useful when you first begin a research task. The main rule to remember is that it is important to be specific because of the vast quantity of information available. You usually go through several trials to refine your search for more specific and appropriate information.

Types of Search Engines

Search engines have a variety of ways to refine and control searches. Some use menu systems, whereas others require special commands as part of the query; some use a combination of approaches. Some search engines provide filtering settings to control searches; children's search engines can filter results and/or search criteria. As a consequence of the → Children's Internet Protection Act, most public schools run filters that prevent students from accessing inappropriate links as the result of a search. Because there are numerous Internet search engines and various ways in which they perform searches, it is important to understand how they work.



Search Directories

Search directories are hierarchical databases with references to websites. The websites that are included are handpicked by real people and classified according to the rules of that particular search service. Yahoo! is an example of a search directory. Directories are useful when you have only a general idea about how to search. The first page normally gives you the most general categories, and then you click down through the hierarchy to the appropriate category and select a website. If you use the search form with a search directory, you are not searching the text of actual Web pages but are searching the text of the site title and the site description, as composed by the directory editors. Most directories also search the words contained in category titles and descriptions.

Search Engines

Search engines use programs that *crawl,* or *spider,* the Web. The spider visits a Web page, reads the information in it, and then follows links to other pages within that site.

The spider returns to each website periodically to look for changes. Everything the spider finds goes into a catalog, or index. Much like the index of a book, the search index contains a reference to every Web page the spider finds. If a Web page changes, the index is updated with new information. Search engines then examine the millions of pages referenced in the index to find matches to the search subject and rank them by relevancy. Search engines should be your first choice when you know how to search for your topic because they cover a much larger part of the Web than do the directories.

Hybrid Search Engines

Hybrid search engines use both crawler-based results and human-powered listings. The distinction between search engines and search directories is not always clear because all the major search directories provide results from a search engine if they cannot find the subject in their own directory. For example, Yahoo! uses the search engine Google for this purpose. Hybrid search engines may provide information from search directories before data from the search engine's database and may even favor one type of listing over another. For example, MSN Search is more likely to present human-powered listings although it also presents crawler-based results.

Metasearch Engines

Metasearch engines search several search engines and directories at the same time and extract the most relevant hits, or results, from all of them. Metasearch engines are useful for gaining a general understanding of what information is available on a topic. Examples of metasearch engines are Vivisimo (http://vivisimo.com) and Ixquick (http://www.ixquick.com). Sherlock is a metasearch engine on Macintosh. For complex searches you should use the relevant search engine because metasearch engines provide only a small number of the results from each individual search engine. Metasearch engines send queries to multiple search engines and other data sources and then collate the results and format them together into a single hit list for display. (Metasearch engines do not search Google.) The data sources used by metasearch engines may include internal indexes, associated-text search engines, database search engines, message archives, and Web search engines. Like single search engines, metasearch engines generate lists of documents that must be evaluated, but they do provide a quick way to determine which engines are retrieving the best results for a search.

Searches with Google

Google (http://www.google.com) is a widely used search engine that provides dependable search results and will be used for many of the examples in this textbook. Google ranks Web pages based on algorithms that examine the entire link structure of the Web and determine the importance of a Web page based on which other Web pages link to it and how often. Google then determines which pages are relevant to the specific search being conducted. Although Google runs related ads above and next to its results, it does not sell placement within the results themselves; thus, no one can buy a higher page ranking. Google searches are an easy, honest, and objective way to find websites with information relevant to a specific search.

To learn more about Google features, services, and tools, browse the following pages on the Google site:

- Google Web search features at http://www.google.com/help/features.html
- Benefits of a Google search at http://www.google.com/technology/whyuse.html
- Google services and tools at http://www.google.com/options/index.html

Building Your Toolkit: Search Engine Basics

The following exercise demonstrates techniques that increase the precision of search criteria to produce more relevant and useful search results with Google.

STEP PROCEDURE

1. Open your Web browser and then the Google search engine at **http://www.google.com**. A Web page similar to that shown in Figure 5–1 should be displayed.

FIGURE 5–1: Google Search Screen

Source: Retrieved September 30, 2003, from http://www.google.com. Reproduced with permission.

2. The plus (+) symbol is useful when you do a search and are overwhelmed with information. To ensure that a search engine finds pages that contain all the keywords you enter, use the + symbol. For example, to find information about the English colonization of North America, enter **Pilgrims** and notice that you obtain more than a half-million hits. To refine your search by locating references to both Pilgrims and Plymouth, enter **+Pilgrims +Plymouth**, using a space before the plus sign (case does not matter). Because the number of results is still substantial, try to refine your search further by entering **+Pilgrims +Plymouth +Mayflower**.

NOTE: Google ignores common words and characters such as *where* and *how* and certain single digits and single letters that can slow down a search without improving the results. Google indicates such an exclusion by displaying details on the results page below the search box. If a common word is essential to a search, you should put a + in front of it. Another method is to conduct a phrase search by putting quotation marks around two or more words (see Step 4).

3. The minus (−) symbol is also useful when you get too many hits that are unrelated to your topic. To ensure that a search engine finds pages that contain one keyword but not another, use the − symbol. To find information about the pilgrims in relation to the colonization of American, enter **+pilgrims −pilgrimage**, again using a space before the minus sign. Continue to subtract terms until you get better results. Most major search engines allow you to exclude certain words to narrow a search. If you want to locate information about Baron Manfred von Richthofen, Germany's greatest WWI fighter pilot, but do not know his name or even how to spell it, enter **red baron**. Your hit list includes references to a well-known comic strip, so enter **red baron –peanuts –snoopy**. Your hit list still includes many irrelevant hits, so enter **red baron –peanuts –snoopy –game –pizza –motorcycle**.

4. A phrase search is a good way to obtain specific results, words enclosed in double quotation marks appear together in all results. Phrase searches are especially useful when searching for famous sayings or proper names (e.g., "to be or not to be"). Enter **"Pilgrims at Plymouth"** to locate pages about the settlement of Plymouth by the English colonists.

(Continued)

Building Your Toolkit: Search Engine Basics (Continued)

STEP	PROCEDURE
5.	Once you have mastered adding, subtracting, and "multiplying," you can combine symbols to easily create targeted searches. For example, the Red Baron search would be better conducted as a phrase search. Enter **"red baron"** and then combine it with other search criteria, using both addition and subtraction. Enter each of the following terms, one at a time, and check the number of hits as you include each term: **"red baron" –peanuts –snoopy –game –pizza –motorcycle +war**.

Go to the Companion Website and browse *5.2 Building Your Toolkit Enrichment Activity: Google Advanced Search Features.* Practice the skills presented in the enrichment activity to perform advanced searches with Google.

■ USING RESEARCH STRATEGIES

Information that is relevant to a learning task can have a direct effect on search performance (Spilker & Barrick, 2001); therefore, teachers may need to advocate different research strategies for different learning tasks. The San Diego State University (SDSU) library and information-access website suggests the following strategy to provide a benchmark for teaching search and research techniques to students. This resource is located at http://infodome.sdsu.edu/research/guides/strategy.shtml.

1. *Analyze your research problem.* What do you need to know about the topic of your research? What do you already know about this topic? What do you need to learn about the topic?
2. *Determine your information requirements.* What types of information do you need to find—brief or thorough, scholarly or popular, factual or descriptive, historical or current, primary or secondary?
3. *Identify your information source needs.* What sources of information do you need to search—books, periodical articles, Web documents? What library resources will help you fulfill your information needs? Are these resources accessible electronically or in print or both?
4. *Conduct your information search.* Translate your research topic into phrases or keywords. Gather relevant information using appropriate resources.
5. *Critically interpret, evaluate, and synthesize your information search results.* Conduct additional information searches if necessary.

You can adapt this research strategy to your own classroom by focusing or broadening its scope to support a specific learning activity in a way that is appropriate for your specific grade level or subject matter.

Researchers have provided insight into factors influencing the search process that ultimately affect decisions. For example, Spilker and Barrick (2001) considered the effects of **task-relevant knowledge** and decision aids. They maintained that task-relevant knowledge affects the search strategy, which affects search performance. Specifically, they analyzed the extent to which decision makers implemented *directed* search strategies (searching for specific information) and *sequential* search strategies (searching available data according to its presentation order). The researchers found that in an unaided search more knowledgeable subjects implemented more directed search strategies than less knowledgeable subjects did. They also concluded that the presence of a keyword(s)

helped less knowledgeable subjects locate relevant resources to a greater extent than it helped more knowledgeable subjects.

Go to the Companion Website and browse *Chapter 5 Lesson Links: Differentiated Classrooms* to learn more about this topic.

In planning Web-enhanced learning projects, Ms. Alarcon takes into account the search strategies that students will use. Understanding the influence of search strategy on search performance is not only important in improving the efficiency and effectiveness of search processes, but it also allows teachers to support students at their varied points of readiness to learn. In → **differentiated classrooms** teachers can provide mechanisms that allow students at multiple knowledge levels to optimize their search for relevant information and thus their achievement of learning objectives.

Building Your Toolkit: An Online Research Strategy

It is important to establish a procedure for conducting Internet searches that is appropriate for the grade level and subject you teach. You may want to present a lesson about searching. The library at the University of California, Berkeley provides an online tutorial that features the latest searching strategies and tools.

STEP	PROCEDURE
1.	Open your Web browser and then the University of California, Berkeley library tutorial. "Finding Information on the Internet" at **http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html**.
2.	On the tutorial page browse each of the following topics: • **Things To Know before you begin searching. . . .** • **Recommended Search Strategy: Analyze Your Topic & Search with Peripheral Vision** • **Three Families or Types of Search Tools**
3.	Choose a topic such as a hobby or an interest to use for an Internet search.
4.	Open the Recommended Search Engines and Recommended Directories at **http://www.lib.berkeley.edu/Help/search.html**. Use the search engines and directories to conduct a comprehensive search of your topic.

Go to the Companion Website and browse *5.2 Building Your Toolkit Enrichment Activity: Developing a Comprehensive Research Strategy.* Practice the skills presented in the enrichment activity to develop a comprehensive search strategy for your classroom.

Lesson 5.3 Evaluating the Quality of Internet Information

FOCUS QUESTIONS

- What criteria are used to evaluate the quality and credibility of websites?
- How can a URL be examined to provide information about the quality and credibility of a website?
- What procedure should be used to evaluate websites?

A SOURCE OF GOOD AND BAD INFORMATION

While two middle-school students were researching the Holocaust together as part of a unit on World War II, they located information on the Internet that contradicted their textbooks' and their teacher's versions of events. A website claimed that Nazis had not really murdered millions of Jews, as falsely reported elsewhere. The students also read on the website that these false reports were the result of a worldwide conspiracy, and the website listed numerous national governments, religions, industries,

and ethnic groups that were participating in this conspiracy. The students began to think that their teacher and the school might be part of the conspiracy and, at first, were afraid to ask about their new information. In this case a website not only misinformed these students but generated mistrust and suspicion as well.

Information searches on the Web are essential to Web-enhanced learning activities. Unfortunately, the wealth of information on the Internet presents teachers and students with the enormous challenge of determining when information is accurate and credible and when it is incorrect and unreliable. Students can participate safely in the many benefits of the Internet if they are taught to protect themselves from misinformation. Thus, the evaluation of information published on the Web is an important aspect of information collection.

Unlike information published in textbooks and journals, which have usually undergone a rigorous procedure called *peer review,* the information published on Web pages may not have been subjected to the scrutiny of anyone knowledgeable of the topic. There are no universal quality controls for Internet publication. Consequently, a person browsing a particular Web page who is unfamiliar with the content presented may have difficulty distinguishing between accurate and inaccurate, reliable and questionable, current and outdated, or authoritative and fallacious information.

■ STRATEGIES FOR EVALUATING INFORMATION QUALITY

The evaluation of websites is an important skill for both teachers and students. Not only do they need to find information on the Internet, but they also need to utilize it appropriately and effectively. Both teachers and students should learn to judge the value of any facts, figures, reports, or other information found on the Internet, much as they evaluate what they hear on the radio, see on television, or read in newspapers and books.

Although there is no single set of criteria to be applied to Internet information, the **evaluation criteria** of accuracy, authority, objectivity, currency, and coverage that are applied to other media can also apply to the Internet. Appropriate evaluation criteria also depend on the needs of the user and the purposes of the information. For example, the criteria applied by researchers to online articles used in scholarly research would differ from the criteria applied by a librarian developing a subject guide or a teacher developing a lesson plan. There can even be differences in the evaluation criteria applied by elementary and secondary classrooms. Kathy Schrock's Guide for Educators provides evaluation guides for elementary-, middle-, and high-school levels (http://school.discovery.com/schrockguide/eval.html).

Alan November (2001) contends that an examination of the uniform resource locator (URL) can be the first step in determining whether an online resource is credible. Much can be learned from deconstructing a URL into its component parts, removing one element at a time from right to left. Thus, students should be taught the general structure of URLs, which are composed of words separated by dots (.) and slashes (/). Table 5–1 describes the component parts of the URL just presented for Kathy Schrock's evaluation guides.

Once credible URLs have been identified, further evaluation is still necessary. The Web document and the home page of the website publishing it should be evaluated using one of several protocols or procedures. November (2001) recommends the following plan:

1. Examine the structure of the URL, and know how different search engines order their results.
2. Identify the sponsor of the website, and/or investigate the credentials of the website author.
3. Determine the purpose of the website, whether to present objective information, or to advocate for a cause or an issue.

TABLE 5–1 The Components of the URL for Kathy Schrock's Evaluation Guides—http://school.discovery.com/schrockguide/eval.html—Deconstructed from Right to Left

Component	Description
eval.html	The name of the Web page, or file, containing the evaluation guides (html is the file name extension)
shrockguide	The name of the folder containing the Web pages
com	The domain, or Internet classification, of this website (***com*** suggests a commercial enterprise)
discovery	The name of the primary Web server for the domain (similar to a family's last name)
school	The name of a secondary Web server or a location on a Web server (similar to the first name of a family member)
www	Indicates a location on the World Wide Web (included in some URLs but not in others, like this one)
http	Indicates the protocol the browser will use to load the Web page (most modern versions of browsers default to http)

The evaluation of websites is important in determining the authority, authenticity, and applicability of information located on the Internet. You should adopt, adapt, or develop an evaluation procedure that is appropriate for the grade level that you teach and that your students can use easily as part of their Internet research strategy.

Building Your Toolkit: Evaluating a Website

Kathy Schrock's Guide for Educators (http://school.discovery.com/schrockguide) is a website started in June, 1995, to help teachers identify curriculum-related Web resources to enhance teaching and learning in the classroom. In 1999 Schrock partnered with Discovery Channel School to provide a well-rounded and robust site. Schrock is the technology administrator of the Nauset Public Schools in Orleans, Massachusetts, but is well known for her website, which provides tools and advice for integrating technology in the classroom. In the following exercise you will use some of Kathy Schrock's tools for evaluating websites.

STEP	PROCEDURE
1.	Open your Web browser and then Kathy Schrock's home page at **http://www.KathySchrock.net**.
2.	Click on the **Support for Presentations** tab, and on the next page select the text link that says **Web Evaluation** to open **The ABC's of Website Evaluation** page (http://www.kathyschrock.net/abceval/).
3.	In the bulleted list after the first paragraph, click on the link to **Classroom Connect** (or **Updated 7/15/02** for the most recent version). Read (or print and read) "The ABC's of Website Evaluation" article. Go **Back** to **The ABC's of Website Evaluation** home page.
4.	The sites listed below the bulleted list are useful for viewing pages with a specific critical purpose in mind. Several questions are asked about each site to cause you to reflect on the appropriateness of the website. If available, work with a partner or a small group, click the links to some of the sites, and answer the questions about the sites.
5.	In the bulleted list after the first paragraph, click on **Links** to critical evaluation sheets and other articles, and then click on the **Critical Evaluation Survey** for the grade level you teach (HTML or PDF version). Review and print the evaluation survey. Go **Back** to **The ABC's of Website Evaluation** home page.

(Continued)

assignment schedules) and a list of the kinds of information that would be appropriate for static Web pages. As you create these two lists, remember that the information contained in the databases (i.e., the invisible Web) would not be found by search engines, whereas the information on static pages would be.

- *Differentiated Classrooms.* Write a short position paper on one or more of the following issues related to the role of technology in differentiating instruction in the classroom:
  - Is differentiating instruction feasible in the typical one-teacher classroom? Why or why not?
  - In what ways can technology support differentiated classrooms?
  - What roles do intelligence, meaning, and challenge play in differentiating instruction in the classroom?

Set 2: Expanding Your Skills

Advanced Searching Techniques. You can increase the power and accuracy of a search by including some operations that refine the searching capability of your keywords.

Step	Procedure
1.	One of the powerful features of a search engine is the ability to control which sites are included in or excluded from a search. If you want to limit your search to a particular website, you can use Google to search only that domain by using the site command. For example, if you wanted to prepare a lesson on nutrition, you might want to see all the pages on the U.S. Department of Agriculture website that reference the word *nutrition.* You could enter nutrition site:www.usda.gov. *NOTE:* There is no space between *site:* and the domain. You could also place the search criteria at the end of the search command: site:www.usda.gov nutrition. To obtain all pages about nutrition from any U.S. government website, you would enter nutrition site:gov. You can also use the plus (+) and minus (−) symbols to further refine your search. For example, to search the USDA website for the food guide pyramid for children only, you would enter +children −adults site:www.usda.gov "food guide pyramid". *NOTE:* You can place the search criteria at either end of the search command or at both.
2.	Several search engines offer the ability to search within the text of a URL. If you start a search with *inurl:*, Google will restrict the results to those pages with the search criteria in the URL. For example, to find any Web page that contains *nutrition* in the URL, you should enter **inurl:nutrition.** If you start a search with *allinurl:*, Google will restrict the results to pages containing those words in the URL. For example, to find Web pages with the words *nutrition* and *children* in the URL, you should enter **allinurl:nutrition/children**. *NOTE:* Use a slash between the search criteria. Google will return results with the search criteria in any order in the URL. In this example the search could return Web pages with URLs in which *children* comes before *nutrition.*
3.	You can search for variations of words using a wildcard character, which is useful when you do not know the spelling of a word. The asterisk (*) symbol is used as the wildcard symbol in most major search engines. For example, to find Web pages that have *nutrition* and *child* or *children* on the Web page, you would enter **+nutrition +child*.**
4.	Boolean search commands are also useful for refining a search. The Boolean *OR* command is used to allow any of the specified search terms to be present on the Web pages listed in the results. Some search engines perform an *OR* search by default. Google supports the use of the *OR* operator if you include an uppercase *OR* between search criteria. To locate pages with either *nutrition* or *healthy* on the Web page, you should enter **nutrition OR healthy.**

Step	Procedure
	The Boolean *AND* command is used to require that all search terms be present on the Web pages listed in the results. For example, to retrieve pages that contain both *nutrition* and *healthy* on the Web page, you should enter **nutrition AND healthy.** *NOTE:* Some search engines such as Google perform an *AND* search by default so that you obtain the same results by entering **+nutrition +healthy** or simply **nutrition healthy** as the search criteria. The Boolean *NOT* command is used to require that a keyword not be present on Web pages listed in the results. The *NOT* operator is the same as an exclude search. You would use the command like this: **nutrition children NOT adult.** *NOTE:* You could accomplish the same search by entering **+nutrition +children –adult.** The plus, minus, and phrase searches you learned earlier in this chapter provide most of the same basic functionality as Boolean commands and are also supported by all the major search engines.
5.	Nesting allows you to build a complex search by using parentheses. For example, to search for Web pages containing *nutrition* and either *fast food, junk food,* or *snack food* on the Web page, you should enter **nutrition AND ("fast food" OR "junk food" OR "snack food")**.

Set 3: Using Productivity and Web-Authoring Tools

- *Develop a Research Strategy.* Use a graphic organizer program such as Inspiration to create a research protocol that can be used by students in your classroom for collecting and evaluating Internet resources.
- *Develop a Web Evaluation Tool.* From Kathy Schrock's Guide for Educators (http://school.discovery.com/schrockguide/eval.html), download the document version of the evaluation survey that is appropriate for the grade level you teach, and modify it for use in your classroom.

Set 4: Creating Your Own Web-Enhanced Lesson

- *A Project for Internet Searching and Researching.* When designing WEL lesson plans, you should perform the procedures specified in the lesson plan prior to using it in the classroom. The following WEL lesson plan uses the Berkeley library Web tools and resources presented earlier in this chapter, as well as other search tools and resources, to identify an Internet search strategy. Use this WEL lesson plan as an example for developing your own project lesson plan for searching and researching strategies.

Title Topic	Simply Searching the Internet
Problem task	Productive searches require an established search procedure using efficient and effective search strategies and appropriate Internet and Web resources.
Curriculum area	Information technology
Grade level	6–12
Standards of learning	ISTE NETS•S: Technology research tools • Students use technology to locate, evaluate, and collect information from a variety of sources. • Students use technology tools to process data and report results. • Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

Title Topic	**Simply Searching the Internet**
Objectives	Students will • use basic and advanced features of common search engines • identify different types of search engines and explain how they work • develop effective and efficient Internet search strategies • locate appropriate Internet and Web information resources
Background information	Because the Internet and the Web allow for relatively inexpensive access to large volumes of information, it is important to become skillful and efficient in locating appropriate sources of information. A variety of Internet search technologies, content-related websites, and Web databases are available to facilitate searches. Commercial search engines also provide a useful and practical means of locating information.
Scenario	Students will conduct a Web search of a hobby or an interest, answering the following questions as they conduct their search: Which search engine(s) did you use? What keywords did you use to find your information? What other resources or tools did you discover or use for your search?
Procedures	1. Students should individually complete the following online tutorials and exercises: • "What Is the Internet, the World Wide Web, and Netscape?" • "Things to Know Before You Begin Searching" • "Noodle Tools: Choose the Best Search Strategy for Your Information Need" 2. In small groups students should use the resource "Recommended Search Strategy: Analyze Your Topic & Search with Peripheral Vision" to conduct their search of a hobby or an interest. Each group should keep a record or notes of its search strategy, including keywords, search results, and resources. 3. Each small group should create a graphic organizer representing the steps of the search process it used and should then present it to the whole class. 4. The class should select the best graphic organizer (or should synthesize all into one) and should then develop a high-quality version to be posted in the classroom.
Resources	• "What Is the Internet, the World Wide Web and Netscape?" from http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/WhatIs.html • "Things to Know Before You Begin Searching" from http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/ThingsToKnow.html • "Noodle Tools: Choose the Best Search Strategy for Your Information Needs" from http://www.noodletools.com/debbie/literacies/information/5locate/adviceengine.html • "Recommended Search Strategy: Analyze Your Topic & Search with Peripheral Vision" from http://www.lib.berkeley.edu/Help/search.html
Teaching learning strategies	• Uses individual, small-group, and whole-class learning activities • Uses several Internet search engines and information resources

Title Topic	Simply Searching the Internet
Assessment	• A written record of search engines, keywords, results, and resources used • Participation in small-group and class discussions about search strategies and techniques • A graphic representation of effective search strategies (developed in small groups)

- *WEL Lesson Plans.* Expand one of the project samples presented on the Companion Website for this chapter—Planning a Research Project Using an Online Encyclopedia or Just Because It's on the Internet Doesn't Mean It's True: Critically Evaluating Web Pages—into a WEL lesson plan that is appropriate for the grade level and/or subject that you teach.

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A

adware: A type of malicious code that displays unsolicited advertising on your computer.

anti-virus software: Computer software designed to block malicious programs, code, and software (called *viruses* or *malware*) from your computer.

B

blog: A diary or personal journal posted on a Web site, usually updated frequently. A blog may be set as private or available to be viewed by the general public.

bots: Computer programs that automatically perform repetitive tasks, such as searching through Web sites or indexing information.

browser: Software, such as Firefox, Safari, and Internet Explorer, used to navigate and search the Internet. Most browsers have several security and privacy settings built in.

buddies (buddy list): A list of friends you interact with online through various services such as instant messaging.

buddy search: When two (or more) Internet users search the Web together; both users see the search results at the same time.

C

chat room: An online site used for socializing with others, usually based on a topic or theme.

content filter: A program that allows you to block certain types of content from being displayed on your computer screen. Some of the things you can screen for include coarse language, nudity, sex, and violence. In addition, many Internet browsers have parental controls to help protect your grandchildren from stumbling onto inappropriate sites. You can often choose separate levels of security for yourself and each child based on ages and maturity levels.

cookie: A small piece of code that is downloaded to computers to keep track of the user's activities or preferences. Cookies may simply help a site enhance it's service for consumers, or may be used by criminals to track personal information.

cybercriminals: People who commit criminal activity that targets computers — or people who leverage computers and online information to find real-world victims.

cybersex: Also called *computer sex*, *Net sex*, and *hot chat*. People can have virtual sexual encounters through text, images, voice, and/or video.

D

discussion board: Also called *Internet forums*, *message boards*, and *bulletin boards*. This feature of some Web sites allows users to post comments on a particular topic and respond to each other.

download: Transfer of material from a server or remote computer to your computer, mobile device, or game console.

E

e-mail: A message initiated in an e-mail program, such as Outlook, that is sent to another e-mail user electronically via the Internet.

e-mail signature: A block of text added to the end of e-mail messages, usually automatically. A signature might contain your full name, your job description, location, phone number, and an inspirational quote.

emoticons: Small graphic symbols (such as smiley faces) used to indicate emotional state, opinion, or response. Emoticons are useful when no body language provides clues to feelings.

F

file sharing: The ability to store files either in a central place that one or more people can share. Files can be stored on the Internet or on any computer that provides access to other computers. File sharing allows those who have permission to access shared files to modify or download them.

firewall: A security system, usually made up of hardware and software, that is used to block hackers, viruses, and other malicious threats to your computer. It is delivered through a network such as the Internet. Installing or activating a firewall feature on your computer is one of the most important actions you can take to help protect your computer and information.

for-pay items (winks, avatars): Low-cost add-on products that allow users to customize their experiences on cell phones or other instant messaging devices. These may be cartoon-like images (called *avatars*) or animated cartoons (called *winks*) that you receive or send to others.

G

game console: A machine that is specifically designed for playing video games (although it might also play movies), often hooked up to a TV or computer monitor for viewing. Not all game consoles are capable of Internet connections, but if they are connected, they allow users to play games with others remotely.

gamer tag: The nickname that a user is identified by when playing interactive games.

gaming: Playing or participating in online games.

grooming: The systematic way in which sexual or financial predators manipulate their victims into trusting and depending on them. Sexual predators groom with the goal of meeting a contact in person. Grooming usually involves invoking sympathy, using subtle techniques to alienate the victim from others, and flattery. Grooming might also involve money or gifts.

GSM (Global System for Mobile communications): A digital cellular telephone technology. This system is used mainly in Europe, Australia, and the Middle East, and it is now becoming popular in the United States.

H

handle: (as in *blog handle*) A nickname that an Internet user chooses to display to others online.

I

identity theft (ID theft): Stealing someone's identity in order to impersonate him/her, usually for financial gain.

instant messaging: A real-time, text-based communication used on desktop computers, cell phones, and other devices to send short messages between individuals.

interactive gaming: The act of playing games online, interacting with other players. The term covers a broad spectrum of activities, from children's games to online gambling.

Internet: The large network of computer servers that host and enable the transmission of information via computer connections.

K

keystroke logging: A legitimate way for software developers to understand what is happening as they write code. This technique is also used to track a user's activities online to either monitor or spy on (depending on motivations) what users type and which sites they visit. This type of program can also be downloaded onto your computer without your knowledge by a cybercriminal, who then can gain information about your online activities and even steal your account numbers and passwords.

L

location application: A program that enables you to locate anybody logged onto the Internet physically using a variety of devices (such as a cell phone).

M

malware: Malicious software. This includes any type of harmful code (Trojans, worms, spyware, adware, and so on) that infiltrates a computer without the user's consent. Malware is designed to damage a computer, collect information, or allow the computer to be taken over and used remotely to send spam.

Multimedia Messaging Services (MMS): A method for sending messages that may include audio, video, or images from mobile phones.

mobile computing: Use of a portable device that provides computer functions and can usually connect to the Internet when such access is available.

P

parental controls: Products or services that offer options to parents and other caregivers to help restrict their child's experiences with media or filter media content. These restrictions are currently applied to television services, computer and video games, and Internet access.

peer-to-peer: A method of sharing files directly over the Internet from one Internet-enabled device to another (computer, mobile phone, and so on). This is often done with music files, for example, which might violate copyright laws if the people involved make copies of the material without permission.

persona: The person an Internet user chooses to appear to be, rather than using his true identity. For example, a 65-year-old man might assume the persona of a 12-year-old girl to meet other 12-year-old girls on a social networking site.

personal digital assistant (PDA): A small, handheld computing device typically used to track appointments, contacts, and e-mail.

phishing: The practice of scamming someone into divulging confidential information that she normally would not provide to a stranger. The lure is typically via e-mail that brings the user to a scam Web site. The purpose of phishing is to gather information needed to steal a victim's money or identity.

posting: Uploading information to the Web.

predator: Anyone who preys on others.

R

remote access: The ability to access somebody's computer from another location. Remote access is often used in technical support as a way to fix problems, as it provides full access to the information stored on the computer through a data link.

S

scam: To con, cheat, trick, swindle, sting, or rip off others. Online scams may take the form of deceptive e-mails or other communications via instant messaging, blog comments, and so on, designed to part you from your money or identity.

search engine: An Internet service that allows you to search for information and documents on the Web.

smart phone: A handheld device that incorporates features of a mobile phone, with PDA functions such as a calendar or contact database. Smartphones allow you to install additional features.

SMS (Short Message Service): A form of text messaging used on cell phones, sometimes used between computers and cell phones.

social networking: A category of Internet applications used to help connect friends, business associates, or others using a variety of communication tools.

spam: Unsolicited e-mail messages that attempt to sell you something. Also known as *junk e-mail*.

spim: Spam sent via instant messages.

splog: Spam sent via blogs.

spyware: Software that collects information about you without your knowledge or consent and sends it back to whoever wrote the spyware program. Spyware might look for your bank account numbers, personal information, and so on. Spyware is illegal and pervasive.

Subscriber Identity Module (SIM card): A small card used in most cell phones that holds your identity, authentication, address book, and so on.

surfing: Similar to channel surfing on television, Internet surfing involves users browsing around various Web sites, following whatever interests them.

T

text messaging: A method of sending short messages (also called *SMSes, texts,* or *texting*) between mobile phones, other computing devices, and even some landline phones.

U

URL (Uniform Resource Locator): A unique Internet address of a file or destination. To find a particular site or document online, type the URL into the address field of a browser and press Enter.

upload: To post content on the Internet.

username: The name a person chooses to be identified by, for example on a computer within a network, or in an online gaming forum (also called a *nickname* or *gamer tag*).

V

videocams: Also called *Web cams,* these video cameras are attached to or built into computers. Web cams are used to send a video images to others while communicating online.

virus: A self-replicating software program that spreads by sending copies of itself to other devices hidden in code or attached to documents. Viruses are often deliberately destructive to any device that becomes infected, often destroying data or disabling the device's operating system.

Voice over Internet Protocol (VoIP): Use of an Internet protocol to transmit voice communications. VoIP allows you to hold voice conversations over the Internet.

W

Web browser: See browser.

Web site: A collection of documents called Web pages.

Web hosting: A service that provides individuals, organizations, and businesses with online storage space to store and share information, images, blogs, video, or any other content accessible through the Web.

Wiki: A collaborative tool which allows users to contribute information and ideas on a Web site.

World Wide Web (Web): The system of documents stored online, which you can locate using a Web browser such as Internet Explorer.

REFERENCES

The contents of this textbook have been reproduced from other original sources for educational purposes only. The topics covered in this course have been selected carefully so that they address the varying needs of ESL students. The major sources for this textbook are the following:

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