**Expert Pack:** The Internet: Yesterday, Today, and Tomorrow

Submitted by: Clark County School District, NV

Grade: 4-5 Date: May 2015

|  |
| --- |
| **Topic/Subject**  The Internet |
| **Texts/Resources**  Book(s)   1. *But I Read It on The Internet!* \*(If too expensive, replace with *CyberSense and Nonsense* video.) 2. *The Internet* 3. *The Internet and Email*   Article(s)   1. “Imagining the Internet” 2. “Internet” (and other various smaller articles from *World Book Kids*)   Video(s)   1. Today’s Tech vs. Tech of the 80’s 2. How Does the Internet Work? 3. CyberSense and Nonsense: The Second Adventure of the Three Cyberpigs \*(Use in lieu of *But I read it on the Internet!*) 4. Prophetic 1995 Student Internet PSA   Other Media   1. What Happens in an Internet Minute? [Infographic] 2. The Internet of Things [Infographic] 3. The Internet Map [Interactive Website]     Each expert pack contains a variety of selections grouped to create as coherent and gradual a learning process for students as possible, generally beginning with lower levels as measured by quantitative and qualitative measures and moving to more complex levels in the latter selections. This gradated approach helps support students’ ability to read the next selection and to become ‘experts’ on the topic they are reading about.  *Refer to annotated bibliography on the following pages for the suggested sequence of readings.* |
| **Rationale and suggested sequence for reading:**  This expert pack begins with the video *Today vs 1980 Technology*. Students are introduced to the changes that the Internet has made to the world around them. The next resource, an animated video, gives a brief visual overview of the Internet which will connect to their first book, *The Internet.* This book provides vocabulary, definitions, and the history necessary for understanding the workings of today’s Internet. Students will continue to explore today’s cyberspace as they read chapters 1-4 from the book *The Internet and Email*. After learning more about the past, students will then explore an interactive site that will allow students to explore the amount of website traffic found on the Internet and learn how to evaluate a website by reading the picture book *But I Learned It On The Internet!* If this book is not available for purchase, teachers may use the *CyberSense and Nonsense* video as a different resource for students to learn about factual and objective information found online. Students will then return to the book *The Internet and Email* and read chapters 5 through 9 to begin reviewing the past as they start to learn about the present day Internet, social networks, and chat rooms. To further expand their knowledge on today’s Internet sources, students will select from a series of articles from *World Book Kids*. The infographic *What Happens in an Internet Minute?* will allow students to see how frequently people use these resources on a daily basis. Students will then complete the book, *The Internet and Email* to read about how cyberspace continues to expand and influence technological advancements on the web and in reality. The infographic *The Internet of Things* contains a time line that leads students into the future of the Internet. Students will watch a video clip entitled *Prophetic 1995 Student Internet PSA* to see the predictions students made over 20 years ago and reflect on their relevance today. The informational article *Imagine your Future* will allow students to explore scientific predictions about the future of the Internet. The culminating activity will have students completing their wonderings about the future of the Internet and its impact on their lives. |
| **The Common Core Shifts for ELA/Literacy:**   1. Regular practice with complex text and its academic language 2. Reading, writing and speaking grounded in evidence from text, both literary and informational 3. *Building knowledge through content-rich nonfiction*   Though use of these expert packs will enhance student proficiency with most or all of the Common Core Standards, they focus primarily on Shift 3, and the highlighted portions of the standards below. |
| **College and Career Readiness Anchor Standards for Reading Literary and/or Informational Texts** *(the darkened sections of the standards are the focus of the Expert Pack learning for students)***:**   1. ***Read closely to determine what the text says explicitly and to make logical inferences from it*;** cite specific textual evidence when writing or speaking to support conclusions drawn from the text. 2. ***Determine central ideas or themes of a text*** *and analyze their development*; summarize the key supporting details and ideas. 3. **Read** **and comprehend complex literary and informational texts independently and proficiently** |

**Annotated Bibliography**

and suggested sequence for reading

**N/A “Kids of Today vs. 1980’s Technology”**

Author: Jeremy Auten

Genre: Entertainment Video

Length: 2:35 minutes

Synopsis: Kids of today meet the electronic toys of yesterday. This is a fun story about the difference between the past and present technologies. Students can watch today’s kids figure out the “tech toys” of the 1980’s. This is an introductory activity to the Expert Pack.

Citation: JeremySeanA [Screen Name]. (2011, March 10). *Kids of Today vs. 1980’s Technology* [Video File]. Retrieved from <https://www.youtube.com/watch?v=7v75QpvISUs>

Cost/Access: $0.00 YouTube <https://www.youtube.com/watch?v=7v75QpvISUs>

Recommended Student Activities: Wonderings

**N/A “How Does the Internet Work?”**

Author: Naked Science Website

Genre: Animated Informative Video Podcast

Length: 5:33 minutes

Synopsis: The Naked Scientist Organization from Cambridge University is a team of scientists, doctors, and communicators providing the general public with engaging ways to understand the world of science, technology, and medicine. This video podcast provides a simple explanation of how the Internet works.

Citation: The Naked Scientist (Producer). (2012, July 29). *How Does the Internet Work? - Science Scrapbook Episode* [Video Podcast]. Retrieved from <http://www.thenakedscientists.com/HTML/podcasts/scrapbook/show/20120730-1/>

Cost/Access: $0.00 The Naked Scientist <http://www.thenakedscientists.com/HTML/podcasts/scrapbook/show/20120730-1/>

Recommended Student Activities: Pop Quiz (Refer to *Learning Worth Remembering* for questions and answers)

**600L *The Internet***

Author: Meg Greve

Genre: Informational, includes clear section headings and definitions

Length: 24 pages

Synopsis: This book details just what the Internet is, how it works, the hardware it uses and what protocols are. Students will enhance their basic understanding of the Internet and begin to learn about ways to stay safe while exploring the different elements of the Internet.

Citation: Greve, Meg (2015). *The Internet (How it works).* Vero Beach, FL: Rourke Educational Media.

Cost/Access: $6.93 for paperback and $25.64 for library binding

Available through American Reading Company at <http://americanreading.com>

Recommended Student Activities: A Picture of Knowledge

**1010L *The Internet and Email***

Author: Don McLeese

Genre: Informational, text characteristics similar to a simple textbook

Length: 19 pages (Chapters 1-4)

Synopsis: This book covers the Internet’s development and features such as search engines, social networks, and chat rooms. It also discusses demographics of use and safety for children. The first four chapters focus on explaining the Internet and defining important vocabulary terms. It also addresses how to “surf” the net.

Citation: McLeese, Don (2009). *The Internet and Email.* Vero Beach, FL: Rourke Publishing LLC.

Cost/Access: $9.95 for paperback and $22.95 for hardback

Available through American Reading Company at <http://americanreading.com>

Recommended Student Activities: Quiz Maker

**N/A The Internet Map**

Author: Unknown

Genre: Informational Website; includes data and statistics

Length: N/A

Synopsis: *The Internet Map* is an interactive website allowing students to manipulate the links between websites on the Internet. Every site is a circle on the map, and its size is determined by website traffic; the larger the amount of traffic, the bigger the circle. Students can explore the various sites and see the percentage of visitors and compare usage with other sites.

Citation: The Internet map. (n.d.) Retrieved February 27, 2015, from <http://internet-map.net/>

Cost/Access: $0.00 The Internet Map <http://internet-map.net/>

Recommended Student Activities: N/A (Website is interactive); Students may access links to learn more about sites or students may just read pop-ups to compare and contrast information given. Have students complete a Wondering after looking at several sites.

**580L *But I Read It On The Internet!***

Author: Toni Buzzeo

Genre: Informational picture book; fictional narrative

Length: 32 pages

Synopsis: This is a fun educational book about verifying information sources, both traditional and online. Students will learn how to evaluate Internet resources for accuracy, ease of use, and information. Students can actually use “Mrs. Skorupski’s Website Evaluation Gizmo” to evaluate a website of their choice.

Citation: Buzzeo, Toni (2013). *But I Read It On The Internet!* Madison, WI: Upstart Books.

Cost/Access: $14.73 for hardback

Available through Barnes and Noble at <http://www.barnesandnoble.com/>

\*\*If not available for purchase, use ***CyberSense and Nonsense: The Second Adventure of the Three CyberPigs*** video and read-along.

Recommended Student Activities: Students will use Mrs. Skorupski’s Website Evaluation Gizmo to evaluate a favorite website.

**N/A *CyberSense and Nonsense: The Second Adventure of the Three CyberPigs***

Author: Media Awareness Network

Genre: Informational video; includes animation, narrative setting, and focus on Internet validity

Length: 14 minutes (may go longer depending upon student’s reading ability)

Synopsis: This animated video is presented in a read-along format. It is designed to help students understand the difference between biased and prejudicial information, and factual and objective information. Just because it is on the Internet doesn’t make it true. It also introduces students to the concepts of stereotyping and cyberbullying. It addresses the need for a code of conduct expected of participants on the Net. A few words reflect the Canadian spelling and may need to be addressed prior to student reading (i.e. centre, behaviour, favourite).

Citation: Media Awareness Network (Producer). (2005). CyberSense and Nonsense: The Second Adventure of the Three CyberPigs[Video File]. Retrieved from <http://mediasmarts.ca/sites/mediasmarts/files/games/cybersense_nonsense/cybersense/start.html>

Cost/Access: $0.00 Media Smarts Canada <http://mediasmarts.ca/sites/mediasmarts/files/games/cybersense_nonsense/cybersense/start.html>

Recommended Student Activities: A seven question “cyberquiz” occurs throughout the video to assess students’ grasp of the concepts presented.

**1010L *The Internet and Email***

Author: Don McLeese

Genre: Informational, text characteristics similar to a simple textbook

Length: 14 pages (Chapters 5-9)

Synopsis: The next four chapters of this book review the history of the Internet and make a connection to the growth of the personal computer. Students will be able to understand how email works and learn the language of computers.

Citation: McLeese, Don (2009). *The Internet and Email.* Vero Beach, FL: Rourke Publishing LLC.

Cost/Access: $9.95 for paperback and $22.95 for hardback

Available through American Reading Company at <http://americanreading.com>

Recommended Student Activities: Quiz maker

**710L *World Book Kids***

Author: Unknown

Genre: Informational; text characteristics similar to a simple textbook

Length: 465 words

Synopsis: This text provides a basic overview of what the Internet is, how it is used and when it began. Students will review what they know about the Internet and then will use various smaller articles accessed as links from this site to gain a deeper understanding of essential components associated with the Internet. These articles include: *Amazon.com, Inc.* (1200L), *Apple Inc*. (700L), *Artificial Intelligence* (740L), *Berners-Lee, Tim* (820L), *Blog* (840L), *Brin, Sergey* (650L), *Computer Network* (820L), *Computer Virus* (820L), *E-book* (740L), *Google, Inc.* (800L), *Podcast* (880L), *Web Browser* (670L), *Website* (730L), *YouTube* (940L), and *Zuckerberg, Mark* (640L).

Citation: Internet (2015). In *World Book Kids.* Retrieved from <http://www.worldbookonline.com/kids/home#article/ar831039>

Cost/Access: \* $0.00 World Book Kids <http://www.worldbookonline.com/kids/home#article/ar831039>

* This site is available for free with a school subscription to World Book Online.
* World Book Online offers a free 7 day trial period that includes World Book Kids access.
* World Book Online also provides schools with a free trial period.

Recommended Student Activities: A Picture of Knowledge

**N/A “What Happens in an Internet Minute?”**

Author: Intel Corporation

Genre: Informational (Infographic); heavy use of statistics and images

Length: N/A

Synopsis: This infographic provides students with facts and data in regards to how much and what type of information is transferred on the Internet in a single minute.

Citation: Intel Corporation (2014). Retrieved February 27, 2015, from <http://www.intel.com/content/www/us/en/communications/internet-minute-infographic.html>

Cost/Access: $0.00 Intel.com <http://www.intel.com/content/www/us/en/communications/internet-minute-infographic.html>

Recommended Student Activities: Student will do a one-minute “number write,” starting with the number one and writing numbers until a minute timer signifies stop. After the minute, students will see how many numbers they managed to write and compare their “number” to the percentages and numbers provided on the infographic. Students will complete a Wonderings after this activity.

**1010L *The Internet and Email***

Author: Don McLeese

Genre: Informational, text characteristics similar to a simple textbook

Length: 12 pages (Chapters 10-13)

Synopsis: The last four chapters of this book delve into student safety online and the expansion of cyberspace. Students will be able to review a timeline that will begin to take them towards imagining the future of the Internet.

Citation: McLeese, Don (2009). *The Internet and Email.* Vero Beach, FL: Rourke Publishing LLC.

Cost/Access: $9.95 for paperback and $22.95 for hardback

Available through American Reading Company at <http://americanreading.com>

Recommended Student Activities: Pop Quiz (Refer to *Learning Worth Remembering* for questions and answers)

**N/A “The Internet of Things”**

Author: Unknown

Genre: Informational (Infographic); includes timeline of Internet of Things Technology

Length: N/A

Synopsis: This infographic provides students with an explanation of the Internet of Things. Students will learn about the past, present and future of a fully connected world. Students will be able to look at the various types of items considered to be part of the Internet of Things. They will not be able to access links provided as they merely loop back to the infographic.

Citation: *The Internet of Things: The Past, the Present and the Future* (2014). Retrieved February 27, 2015 from <http://www.visualistan.com/2014/02/the-internet-of-things-infographic.html?m=0>

Cost/Access: $0.00 Visualistan.com <http://www.visualistan.com/2014/02/the-internet-of-things-infographic.html?m=0>

Recommended Student Activities: A Picture of Knowledge

**N/A “Prophetic 1995 Student Internet PSA”**

Author: Young Montana Media Group

Genre: Persuasive Public Service Announcement Video

Length: 1:01 minutes

Synopsis: This PSA was created in 1995 by 5th graders in Helena, Montana. All the Internet possibilities mentioned in the script are a reality today. Students will see what other students predicted 20 years ago. This is an introductory activity for students before reading about the future of today’s Internet and making their own predictions.

Citation: cgMediaWorks [Screen Name]. (2009, December). *Prophetic 1995 Student Internet PSA* [Video File]. Retrieved from <https://www.youtube.com/watch?v=4m4KZHDVWRE>

Cost/Access: $0.00 YouTube <https://www.youtube.com/watch?v=4m4KZHDVWRE>

Recommended Student Activities: This is an introduction to the *Imagine Your Future* readings. Students will do a “Before and After” question with this video. Before viewing, students will write down what they predict someone from 1995 might think about computers in the year 2015. After viewing, students will write down what surprised them the most about the predictions.

**1040L “Imagine Your Future”**

Author: Unknown

Genre: Informational; includes headings and graphics

Length: 1967 words

Synopsis: This article defines “futurists” and lists scientists’ predictions for the future of the Internet. The article is divided into four sections: *What Will Your Future be Like?*; *Guessing What Might Happen*…; *More About Your Possible Future*; and *Kids Predictions for our Future.* Students will learn about advances in technology and what the future of the Internet is predicted to become. Students will then read what today’s average 5th grade predicts about the future of the Internet before creating their own predictions and wonderings about the Internet.

Citation: Imagine Your Future (n.d.) In *Imagining the Internet: A History and Forecast*. Retrieved February 27, 2015, from <http://www.elon.edu/e-web/predictions/kidzone/yourfuture.xhtml>

Cost/Access: $0.00 Elon University School of Communication <http://www.elon.edu/e-web/predictions/kidzone/yourfuture.xhtml>

Recommended Student Activities: Wonderings; Students should end the expert pact with making their own predictions about the future of the Internet.

Supports for Struggling Students

By design, the **gradation of complexity** within each Expert Pack is a technique that provides struggling readers the opportunity to read more complex texts. Listed below are other measures of support that can be used when necessary.

* Provide a brief **student-friendly glossary** of some of the academic vocabulary (tier 2) and domain vocabulary (tier 3) essential to understanding the text
* Download the Wordsmyth widget to classroom computers/tablets for students to access student-friendly definitions for unknown words. <http://www.wordsmyth.net/?mode=widget>
* Provide brief **student friendly explanations** of necessary background knowledge
* Include **pictures or videos** related to the topic within and in addition to the set of resources in the pack
* Select a small number of texts to **read aloud** with some discussion about vocabulary work and background knowledge
* Provide **audio recordings** of the texts being read by a strong reader (teacher, parent, etc.)
* **Chunk the text** and provide brief questions for each chunk of text to be answered *before* students go on to the next chunk of text
* Pre-reading activities that focus on the **structure and graphic elements** of the text
* Provide **volunteer helpers** from the school community during independent reading time.

Why Text Sets Support English Language Learners

Those acquiring English as a second language have to learn many words in English to catch up with their English-only peers. Vocabulary builds at a much quicker pace when reading a set of connected texts. Text sets are an adaptable resource perfect for building knowledge and vocabulary. Student use of text sets can vary in terms of independence or teacher supports based on the individual needs of the students in the room. Activities found within the text set resources reflect several best practices for English Language Learner instruction including:

* Providing brief, engaging texts that provide a high volume of reading on a topic.
* Providing web-based resources and/or videos that are tied to the content of the texts students are reading.
* Providing opportunities for students to learn new vocabulary through the use of student-friendly definitions in resource-specific glossaries.
* Allowing for options to reinforce newly learned vocabulary and/or content through graphic organizers.
* Providing opportunities for students to reinforce new vocabulary through multi-modal activities including written work, group discussion, viewing visual content, and reading texts that feature the vocabulary.

Teachers of ELLs may use the protocols on the following pages to provide additional support to students who are struggling to access the content within text sets because they are new to English.

ELL Text Set Protocol Grades 3-12

The goal of text sets is to help students build knowledge through a volume of independent reading, and it is important that educators provide scaffolds to allow English Language Learners to be successful in engaging meaningfully with the texts, even as students are still developing English language skills. The protocol below can be used for teaching with text set resources as a full class. Students can also be trained on the protocol so that they can utilize text sets in small groups or partnerships as a resource for independent or reciprocal reading and study.

Please note that this protocol includes options for teachers. Individual decisions should be made considering the needs of the students and the demands of the content, keeping in mind that the goal of each scaffold is to allow students to meaningfully access the text and move toward independent, knowledge-building reading.

**Step one: Build knowledge and vocabulary.**

Introduce students to the overall topic/content of the text set, including knowledge demands needed to engage in the content, and domain-specific vocabulary necessary for comprehension. This should be done prior to engaging with the texts themselves; time allotted to this activity should reflect student needs (anywhere from 5 minutes prior to reading, to a full day’s lesson is appropriate).

*Options for this step include:*

* Engage students in reading and discussing auxiliary texts (of lesser complexity) and resources (illustrations, photographs, video clips) on the topic of the text set.
* Pre-teach a few key content-specific terms prior to students engaging with a text set. (Ideas for text-focused vocabulary instruction can be found [here](https://achievethecore.org/content/upload/Selecting%20and%20Using%20Academic%20Vocabulary%20in%20Instruction.pdf).)
* Provide the student-friendly glossary included in the text set prior to reading each text.
* When possible, allow students to read texts in their home language about the topic under study.

**Step two: Read text orally.**

Focusing on one resource at a time, allow students to listen to a fluent read of the resource, while following along with their own copy of the text.

*Options for this step include:*

* Have a fluent reader model the first read of a text or resource.
* Have students engage in a buddy/partner read.
* Use recordings of the text to provide additional opportunities to hear expert reading.

**Step three: Engage in group discussion about the content.**

Allow students time in partnerships or small groups to discuss the content of the resource.

*Options for this step include:*

* + Allow for discussion/conversation (in the students’ home language if possible) with a small group of students reading the same text set prior to writing or provide heterogeneous language groupings to talk about content and discuss what students are learning.
  + Have students refer to the student-friendly glossary included with each text set to identify meanings for new vocabulary necessary for comprehension.

**Step four: Write about what was read.**

*Options for this step include:*

* Use the “Rolling Knowledge Journal” and/or “Rolling Vocabulary Journal” as a shared writing routine/ graphic organizer to help to scaffold the writing process and capture student knowledge over time.
* Provide students with several supports to help students engage in writing/drawing about what they read:
  + Use mentor texts about which students can pattern their writing.
  + Allow them to write collaboratively.
  + Show students visual resources as prompts, etc.
  + Provide language supports such as strategically chosen sentence starters.

## **Repeat steps one through four with each resource in the text set as appropriate.**

**Text Complexity Guide**

*The Internet and Email* by Don McLeese

1. **Quantitative Measure**

Go to <http://www.lexile.com/> and enter the title of the text in the Quick Book Search in the upper right of home page. Most texts will have a Lexile measure in this database. You can also copy and paste a selection of text using the Lexile analyzer.

2-3 band 420 -820L

4-5 band 740 -1010L

6-8 band 925 - 1185L

9 -10 band 1050 – 1335L

11 – CCR 1185 - 1385

1010L

1. **Qualitative Features**

Consider the four dimensions of text complexity below. For each dimension\*, note specific examples from the text that make it more or less complex.

The clear, straightforward purpose of this informational text is to explicitly state what the Internet is, how it works, and how to use the Internet responsibly. The first four chapters define commonly used vocabulary terms. The book covers the development of the Internet and its features such as search engines, social networks, and chat rooms. It also discusses surfing the net, demographics of use, and safety for children.

The structure is clearly organized to build an understanding of the Internet. First, important vocabulary is defined. The book then presents the history of the Internet followed by current uses of the Internet. The text is supported by photographs with captions, graphic organizers, a timeline, a glossary, and an index. The visual aids also include many screenshots to exemplify concepts. The text includes heavy use of vocabulary, facts, and statistics which may require reader stamina.

The text contains heavy use of content-specific vocabulary (modem, cyberspace, ISP, domain), some of which may add to the difficulty of the text. The vocabulary is supported by graphics and students should have had prior exposure to the terms in prior texts. The text uses some analogies to clarify meaning (the Internet is like the ocean). Many sentences are long and complex, containing dependent clauses. The information is frequently structured in a question-response manner, which may be confusing for some readers.

The students should have some prior knowledge to the information presented in the text from previous exposure to other resources in the expert pack. Some of the concepts may be part of the everyday knowledge of Internet concepts. Ideas are review and elaborated upon as they are exposed to this text in two different chunks with other resources dispersed in between. Students may need support with the statistical information presented.

**Meaning/Purpose**

**Structure**

**Language**

**Knowledge Demands**

1. **Reader and Task Considerations**

*What will challenge students most in this text? What supports can be provided?*

* Using pre-reading strategies such as taking a picture walk and examining the features of non-fiction text will help students familiarize themselves with vocabulary prior to reading the text.
* Attending to the graphic organizers while reading the text will aid in comprehension of the vocabulary and sequencing of the process of information transfer.
* Rereading, chunking the text into sections, and peer discussion could support students with comprehension.
* Making text-to-self and text-to-text connections from previously read resources in the expert pack could help students deepen their understanding of the Internet.
* Students can use real-world objects (school servers and various devices) to explain concepts and make text-world connections.

**Expert Pack:** The Internet: Yesterday, Today, and Tomorrow

Submitted by: Clark County School District, NV

Grade: 4-5 Date: May 2015

**Learning Worth Remembering**

**Cumulative Activities** – The following activities should be completed and updated after reading each resource in the set. The purpose of these activities is to capture knowledge building from one resource to the next, and to provide a holistic snapshot of central ideas of the content covered in the expert pack. *It is recommended that students are* ***required*** *to complete one of the Cumulative Activities (Rolling Knowledge Journal or Rolling Vocabulary) for this Expert Pack.*

1. **Rolling Knowledge Journal**
2. Read each selection in the set, one at a time.
3. After you read *each* resource, stop and think what the big learning was. What did you learn that was new *and important* about the topic from *this* resource? Write, draw, or list what you learned from the text about (topic).
4. Then write, draw, or list how this new resource added to what you learned from the last resource(s).

**Sample Student Response**

|  |  |  |
| --- | --- | --- |
| **Title** | **Write, Draw, or List** | |
|  | **New and important learning about the topic** | **How does this resource add to what I learned already?** |
| 1. “Today’s Tech vs. Tech of the 80’s” | Students are introduced to the changes that the Internet has made to the world around them. |  |
| 1. “How Does the Internet Work?” | This podcast explores the interworking of the internet and how communication is shared across networks. | Explains how information is shared over the Internet. |
| 1. *The Internet* | This book details just what the Internet is, how it works, the hardware needed to use the Internet and what a protocol is. | This book enhances basic understanding of the Internet and discusses ways to stay safe while exploring the different elements of the Internet. |
| 1. *The Internet and Email (Ch. 1-4)* | This book covers the Internet’s development and features of the Internet such as search engines, social networks, and chat rooms. | This book introduces how to use search engines effectively and builds vocabulary necessary to the understanding of the Internet. |
| 1. “The Internet Map” | *The Internet map* is an interactive website allowing students to manipulate the links between websites on the Internet. | This interactive website shows the use and the amount of traffic that the various Internet sites receive. |
| 1. \*But I Read It On The Internet! | This is a fun educational book about verifying information sources, both traditional and online. | This book evaluates Internet resources for accuracy, ease of use, and information. |
| 1. \*“CyberSense and Nonsense: The Second Adventure of the Three CyberPigs” | This online read-along story teaches the lesson that not everything you read on the Internet is true. | This video shows that cyberbullying can happen very easily if you do not check out your facts and find out what is true and what is not true. |
| 1. *The Internet and Email (5-9)* | The next four chapters of this book review the history of the Internet and make a connection to the growth of the personal computer. | Explains how email works and the language of computers. |
| 1. *World Book Kids* | This text provides a basic overview of what the Internet is, how it is used and when it began. | This site has various articles that to deepen understanding of essential components associated with the Internet. |
| 1. “What Happens in an Internet Minute?” | This infographic provides facts and data in regards to how much and what type of information is transferred on the Internet in a single minute. | Increases understanding of just how fast information is shared on the Internet. |
| 1. *The Internet and Email (10-13)* | The last four chapters of this book delve into student safety online and the expansion of cyberspace | A timeline is used to review Internet advances and move towards imagining the future of the Internet. |
| 1. “The Internet of Things” | This infographic provides an explanation of the Internet of Things. | This infographic builds on the past, present and makes future predictions of how the Internet may be used. |
| 1. “Prophetic 1995 Student Internet PSA” | This public service announcement was created in 1995. It features students predicting what advances might be made on the Internet. | Seeing what students predicted 20 years ago helps me to make predictions about the next 20 years. |
| 1. “Imagine Your Future” | This article defines “futurists” and lists scientists’ predictions for the future of the Internet. | Review the advances in technology and what the future of the Internet is predicted to become. |

1. **Rolling Vocabulary: “Sensational Six”**

* Read each resource then determine the 6 words from each text that most exemplify the central idea of the text.
* Next use your 6 words to write about the most important idea of the text. You should have as many sentences as you do words.
* Continue this activity with EACH selection in the Expert Pack.
* After reading all the selections in the Expert Pack, go back and review your words.
* Now select the “Sensational Six” words from ALL the word lists.
* Use the “Sensational Six” words to summarize the most important learning from this Expert Pack.

|  |  |
| --- | --- |
| **Title** | **Six Vocabulary Words & Sentences** |
| “How Does the Internet Work?” | **Words: Internet, interconnected, backbone, packages, routers, POP**  **Sentences:**   1. The Internet is a computer network that links a billion devices across the world. 2. Some computer networks are interconnected by different wires. 3. The backbone of the Internet relies on fiber optic wires to send things fast. 4. Data on the Internet is sent in the form of different packages. 5. A router allows one computer to connect to other computers on the Internet. 6. An access point to the internet is known as POP or point of presence. |
| *The Internet* | **Words: network, protocols, hardware, servers, packets, online**  **Sentences:**   1. Not all computer networks are connected with cables or wires. 2. Without protocols, data would not be able to move across the Internet. 3. Monitors and keyboards are part of a computer’s hardware. 4. If the server goes down, none of the computers will be able to reach the Internet. 5. Information on the Internet is broken down into packets so that it can be sent quickly. 6. The only way to search the Internet is to be online. |
| *The Internet and Email (Ch. 1-4)* | **Words: cyberspace, surf, browser, domain, download, upload**  **Sentences:**   1. Cyberspace is an imaginary world of technology that I would like to visit. 2. I can spend a lot of time online when I surf the web for pictures of dogs. 3. You need a browser to surf the World Wide Web. 4. A domain is like the name of the website. 5. I like to download jokes from the Internet and share them with my brother. 6. Bob wanted to upload a picture of his cat to share with people on the pet website. |
| *But I Read It On The Internet!* | **Words: verify, reliable, navigate, evaluate, source, cite**  **Sentences:**   1. A good website is one that I can verify the information given. 2. Education websites are usually very reliable. 3. Kids need to be safe when they navigate the Internet. 4. It is a good idea to evaluate a website so you know the facts are true. 5. A source is a place where you get data online. 6. When I cite a source I give credit to the person who wrote it. |
| \*“CyberSense and Nonsense: The Second Adventure of the Three CyberPigs” | **Words: flaming, netiquette, chatting, cyberfriend, burn, surfer**  **Sentences:**   1. People can be very mean when they are flaming another person online. 2. It is important to have good netiquette when you are talking to others in chat rooms. 3. When you are chatting online, you are actually typing not talking. 4. You usually only talk to a cyberfriend online instead of actually meeting him in person. 5. I am so fast at typing that I can burn my way through a conversation online. 6. Since I spend a lot of time looking at websites, my friends call me a great surfer. |
| *The Internet and Email (5-9)* | **Words: spam, inbox, login, interchange, snail mail, World Wide Web**  **Sentences:**   1. Some people think it’s funny to send spam to others, but I don’t like sending junk mail. 2. I have to check my inbox so it doesn’t get overloaded with emails. 3. You have to login to a computer if you want to be able to use it. 4. When computers transfer information, it is call an interchange. 5. Regular mail is called snail mail because it is so much slower than the Internet. 6. When you see WWW on an address it means that you are on the World Wide Web. |
| *World Book Kids* | **Words: malicious, software, vast, process, clients, digital**  **Sentences:**   1. The malicious program caused my computer to completely freeze. 2. Arcade type games are my favorite type of software to buy for my computer. 3. There are a vast number of people who use Facebook and I am one of them. 4. A process is any type of program that runs on your computer. 5. A client is an application that runs on a personal computer or workstation. 6. The digital language of computers consists of only ones and zeros. |
| “What Happens in an Internet Minute?” | **Words: wiki, traffic, peak, mobile, staggering, zettabyte**  **Sentences:**   1. A wiki is a web site that lets a visitor edit its contents. 2. Website owners like to see a lot of traffic or visitors on their site. 3. There is no peak time to be on the Internet because it is always in action. 4. Smart phones have become tiny mobile computers. 5. There is a staggering amount of things happening in an Internet minute! 6. A zettabyte is so large that all of the world’s data is estimated to be only a few zettabytes big. |
| *The Internet and Email (10-13)* | **Words: social, predator, attachment, virus, chat room, message board**  **Sentences:**   1. Social networking allows people to become part of an online community. 2. Online predators try to trick children and that is why I am careful on the Internet. 3. My cousin sent me an email with a photo attachment of his dog. 4. Sometimes an attachment might have a virus, so don’t open it if you don’t know who sent it. 5. A chat room can be a nice place to meet people if you are very careful and follow certain rules. 6. If you leave a nice comment on a message board, sometimes the website will send you a free download. |
| “The Internet of Things” | **Words: debut, real time, connectivity, dynamic, quantifiable, programmable**  **Sentences:**   1. Because of the advancements in technology, the Internet of Things is making its debut. 2. Real time means that the computer is responding to things immediately. 3. The Internet has allowed connectivity for anyone at anyplace at any time. 4. The Internet is a dynamic network because it is constantly changing to meet the needs of new technology. 5. Smart phones are quantifiable personal gadgets belonging to the Internet of Things. 6. In the future we may have a programmable world where you can communicate with almost every device in your home. |
| “Imagine Your Future” | **Words: nanotechnology, futurist, virtual-reality, spawn, superintelligence, singularity**  **Sentences:**   1. Nanotechnology allows scientist to create robots that are a billion times smaller than we can see. 2. A futurist will research the present to make predictions about the future. 3. A lot of computer games use virtual-reality so that the player feels like he is really in the game. 4. Technology can spawn many new ideas for the Internet. 5. Some people think that one day robots may have superintelligence and be smarter than any human on earth. 6. Singularity is the imaginary future where computers will develop their own intelligence and humans will not be able to control them. |
| **Sensational Six** | **Internet, network, World Wide Web, cyberspace, programmable, singularity** |
| **Summary:**  The **Internet** is a system of computer **networks** linking together billions of computers and other devices. The U.S. military developed the early Internet in the 1960s. In the 1990s a scientist developed the **World Wide Web**. This allowed people to have access to websites and webpages. Today we consider the Internet to be the imaginary world of **cyberspace**. Because phones and other wireless devices can connect to the Internet, many people spend a lot of time surfing in cyberspace. This may lead to a future where many things will become **programmable**. Ordinary devices may one day become connected to computers and the Internet. Some people think that this will one day lead to **singularity**, and computers will become smarter than humans. The Internet has changed our lives and will continue to change our future. | |

**Learning Worth Remembering**

**Singular Activities** – the following activities can be assigned for each resource in the set. The purpose of these activities is to check for understanding, capture knowledge gained, and provide variety of ways for students to interact with each individual resource. Students may complete some or none of the suggested singular activities for each text. Singular activities should be assigned at the discretion of the teacher.

1. **A Picture of Knowledge** (Recommended for *The Internet*, *World Book Kids*, and *The Internet of Things*)

* Take a piece of paper and fold it two times: once across and once top to bottom so that it is divided into 4 quadrants.
* Draw these shapes in the corner of each quadrant.

1. Square
2. Triangle
3. Circle
4. Question Mark

**?**

1. Write!

Square: What one thing did you read that was interesting to you?

Triangle: What one thing did you read that taught you something new?

Circle: What did you read that made you want to learn more?

Question Mark: What is still confusing to you? What do you still wonder about?

* Find at least one classmate who has read [selection] and talk to each other about what you put in each quadrant.

1. **Quiz Maker** (Recommended for *The Internet and Email* Ch. 1-4 and *The Internet and Email* Ch. 5-9)

* Make a list of # questions that would make sure another student understood the information.
* Your classmates should be able to find the answer to the question from the resource.
* Include answers for each question.
* Include the where you can find the answer in the resource.

|  |  |
| --- | --- |
| **Question** | **Answer** |
|  |  |
|  |  |
|  |  |
|  |  |

1. **Wonderings** (Recommended for *Kids of Today*, *The Internet Map,* and *Imagine Your Future*)

On the left, track things you don’t understand from the article as you read.

|  |  |
| --- | --- |
| I’m a little confused about: | This made me wonder: |
|  |  |

On the right side, list some things you still wonder (or wonder now) about this *topic*

1. **Pop Quiz** (Recommended for *How Does the Internet Work?* and *The Internet and Email* Ch. 10-13)

Answer the following questions.

|  |  |
| --- | --- |
| **Questions for *How Does the Internet Work?*** | **Possible Answer** |
| 1. What two words is Internet made up of? | Interconnected and network |
| 1. How is the Internet like a post office? | You need to have an address to send items. Things need to be sorted correctly. If you don’t have the right information or the item is too large, it can’t get to where it needs to go. You have to follow certain rules to send and get information. |
| 1. Why is data chopped into pieces? | Things that are too large won’t go through properly. Having data chopped into packets allow the information to travel quickly and get to where it needs to go. |
| 1. What does a router do? | It sorts all the packets and sends them to the right places so that the packets can reassemble into data. |
| **Questions for *The Internet and Email*** | **Possible Answer** |
| 1. What types of hardware are connected by the Internet? | Computers, mobile phones, other devices. |
| 1. What carries information such as text, photos and videos over the Internet? | Electronic signals move quickly over the Internet’s hardware. |
| 1. Explain some uses of the Internet. | Store information, work, shop, play games, watch movies, listen to music. |
| 1. What are software protocols and what are their purposes? | Special sets of rules that control how signals move over the Internet. Software protocols are like laws that guide traffic. |

**Expert Pack:** The Internet: Yesterday, Today, and Tomorrow

Submitted by: Clark County School District, NV

Grade: 4-5 Date: May 2015

Expert Pack Glossary

**The Internet**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| device | A device is a computer or other electronic machine used to connect to the Internet. Popular devices include smart phones, iPads, and gaming consoles. |
| network | A network is a group of things that are connected. A computer network is a group of computers joined together by cables or by signals that go through the air. The purpose of a network is to enable the sharing of files and information. The Internet could be described a global network of networks. |
| online | To be online means that one is connected to the Internet, the World Wide Web, or a website. Technically, computers that are on a network are online even if they are not connected to the Internet. When a computer or other device is not online, it is said to be offline. |
| packets | Packets are small pieces of a complete piece of information that are sent over the Internet. Each packet contains part of the message. The packets are sent off to their destination by the best available route. This makes the network more efficient. |
| protocols | Protocols are a set of rules about how data is moved between computers or over a network. When computers communicate with each other, there needs to be a common set of rules and instructions that each computer follows. Because of the many ways computers can communicate with each other, there are many different protocols- too many for the average person to remember! |
| server | A server is a computer that is shared by multiple users in a network. It provides data to other computers. When you go to a website, you are connecting to that site’s web server computer. The web server computer is what delivers the webpage. |
| hardware | Hardware refers to the physical parts of a computer and related devices. These are the items that you can see and touch. Disks, keyboards, monitors, chips, computers, wires, etc. are all hardware items. Printers and scanners are also considered to be hardware. |
| World Wide Web | The World Wide Web is a group of Internet servers linking computers around the world. These computers serve documents and files that have links allowing you to jump from one location on the Web to another. It is important to know that the World Wide Web is NOT a synonym for the Internet. The Internet is the actual network of networks where all the information resides. |
| Uniform Resource Locator | The Uniform Resource Locator is commonly known by the letters URL. It is basically a web address. Every item on the Internet has an address. A web browser uses the URL to retrieve its intended target. |

**The Internet and Email**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| attachment | An attachment is a file that is sent along with an email. It can be an image file, a Word document, or one of many other supported file types. When the receiver opens the message, he can double-click on the attached file to open it with a program assigned to that file type on his computer. |
| chat room | A chat room is a special part of a website, or even its own website, that allows people to communicate instantly. It is like an imaginary room where people who have signed on to enter it can “talk” with each other. Usually chat rooms have a theme that attracts people who are interested in that topic. |
| cyberspace | Cyberspace has become a slang term for the Internet. It is the electronic world of computer networks. It is the invisible space where the Internet exists, and computers communicate with each other. |
| delete | Delete is word that means to remove or erase. You can delete text from a document if you don’t like what you have typed. When you delete a file from your computer, you remove it so that it is no longer there. |
| domain | A domain is used to identify a website. It is like the website’s name. Businesses commonly have a domain name that is their name with the “.com” domain suffix after it, for example, Amazon.com. No two parties can ever hold the same domain name. |
| downloading | Downloading is when you copy something from the Internet or another computer and you save it on your computer. Saving an email attachment is an example of downloading. |
| email | Email, short for “electronic mail,” is one of the most widely used features of the Internet. It allows you to send and receive message to and from anyone with an email address, anywhere in the world. |
| icon | Icons are a visual representation of something on your computer. When you click on the picture on your screen, you can open a computer program or file. |
| indefinitely | Indefinitely means continually or for an unending period of time. It is like it could go on forever. Because the World Wide Web is so large and constantly changing, you might feel like you can go from one site to another indefinitely without seeing the same site twice. |
| ISP | ISP stands for Internet Service Provider. In order to connect to the Internet, you need an ISP. It is the company that you (or your parents) pay each month in order for you to connect you to the Internet |
| message board | A message board is part of a website or an Internet site where people can post and read messages or comments, usually on a specific topic or area of interest. Sometimes it is called a discussion board.  It is a place where people from all over the world can post messages that other people can read and reply to. |
| modem | A modem is a device that that provides an online connection. The word modem is actually short for Modulator/Demodulator. (There’s something you can impress your friends with!) It allows one computer to connect with another computer and transfer data over telephone lines. |
| obvious | When something is obvious, it is easy to see or to understand. If you stay up late at night, it is obvious that you will be tired in the morning. When you look at a picture of an old computer from 20 years ago, it is obvious, or easy to see, how much technology has changed. |
| spam | Spam is Email that is sent to thousands or millions of addresses without anyone asking for it. Most people consider it to be electronic junk mail. |
| virus | Just like a virus that can make a human sick, computer viruses work the same way. A virus is something in a computer file or attachment that can make your computer, or certain programs on it, stop working. They are small programs or scripts that negatively affect the health of your computer. |
| website | A website is not the same thing as a webpage. A website is a central location for related web pages on the Internet, or in other words, a website is a collection of webpages. |

**The Internet Map**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| estimated | When you estimate, you make a reasonable guess based on the information you have. I can look at a stack of books and estimate if there will be enough for everyone without having to actually count the books. I made a guess based on what I saw. Facebook is a popular form of social media. You don’t have to count every person who uses it to estimate that the number will be very high. |
| global | If something is global, it involves the entire earth. It is worldwide. The Internet is a global communications network. It is available to people across the world. |
| link | A link is a reference to another application or location. By clicking on a link, you can “jump” to a new webpage or a different website immediately. Links are what make the World Wide Web a web because you can go to one location to another very quickly. |
| percentage | A percentage is a part of a whole. If you think of a whole as being 100%, then 90% would be a large percentage and 10% would be a small percentage. The higher the number, the bigger the part, or percentage, is. Because the Internet is global, we can estimate that a large percentage of people in the world use it. |
| rank | When you rank something, you give it a certain position. Because I like sweets, cookies rank high for my snack choice. If your soccer team has won every game this year, it may be ranked in first place. However, losing the next three games may change your rank to second place. |

**But I Read It on the Internet**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| accuracy | Accuracy means to be exact and free from any mistakes. Since anyone can create a website, it is important to check the site for the accuracy of the factual information. |
| cite | To cite something means to do right by whoever said it and give them credit — for instance, if you add a brilliant statement to a paper but you’re not the one who originally wrote it, you should cite*,* or point to, the original author. |
| contamination | Contamination means to infect by contact. A bacterial contamination means that bacteria have infected something. Carmen drops her granola bar on the floor, picks it up and then eats it. She claims that the Internet says that it takes five seconds before bacterial contamination actually happens. |
| gizmo | Gizmo is a real word. It means a gadget, especially an unnecessary one or one whose user can’t remember its name. Many times it is a nonsensical name for something that one does not know what to call. |
| infallible | Infallible means that something or someone is incapable of making mistakes or being wrong. A synonym for this word would be the word *perfect*! Many people think that the Internet is infallible, but we know that not everything on the Internet is correct. |
| reliable | If something is reliable, it is likely to be dependable, true, or correct. We can’t write a report without reliable data. You can’t get good information unless you have a reliable source. That is why we check websites for accuracy. |
| rope into | “Rope into” is an idiom or an expression that does not literally mean what the words say. To “rope into” means to persuade someone to do something by means of trickery or deception. When Hunter saw the newly decorated bulletin board, he wondered which students got roped into helping the teacher. |
| source | In terms of computers, a source is a place from which data is taken. Many computer commands involve moving data. The place from which the data is taken is called the source while the place it is move to is called the destination or target. |
| verify | To verify is to prove, show, find out, or state that something is true or correct. One way to verify the accuracy of a website is to use a Website Evaluation Gizmo like they did in the book. You should always try to verify what you read on the Internet before you claim that it is true! |

**CyberSense and Nonsense: The Second Adventure of the Three CyberPigs**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| “burned” | This is a slang term that means to have moved very quickly through something. If the student burned through his assignment, then he completed it very quickly. |
| caribou | A caribou is a large North American reindeer. Although some people think they are different, reindeer and caribou are actually the same species. |
| carnivores | A carnivore is an animal that gets food from killing and eating other animals. Wolves are carnivores because they eat other smaller animals. |
| cunning | To be cunning means to be very clever, especially in the sense of tricking someone. For example, the cunning little boy was able to trick his sister into doing the dishes by pretending to be allergic to soap. |
| “flaming” | Flaming is a slang term. It is when an Internet user is hostile or insulting to another user. You are attacking someone in a very mean way. Sometimes people say very mean things online when they are flaming someone they don’t like. |
| habitat | A habitat is the natural home or environment of an animal. A den is a habitat for a wolf. |
| intergalactic | If something is intergalactic it occurs in outer space between the different galaxies. Star Wars is a movie about intergalactic travel and war. |
| international | If something is international it is considered to be global or worldwide. An international sign for a good job is the thumbs up. |
| netiquette | 1. The word netiquette is a combination of “net” (as in Internet) and “etiquette.” It means respecting other people’s views and having common courtesy when posting to online discussion groups. To have good netiquette means that you are very polite online. |
| surfers | 1. Surfers are people who spend time looking at different websites on the Internet. Although you may expect to find a surfer only at the beach, you can also find them at home going from site to site on their computer. |

**World Book Kids Articles**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| broadcast | A broadcast is an audio or video program that is transmitted or sent over a communication network. A podcast is a type of broadcast that you can download from your computer. In some ways it is like listening to a show on the radio except that you are listening to it on your computer. |
| commerce | Commerce is the buying and selling of a product especially on a large scale and between different places. An example of commerce is when a farmer in California sells his vegetables to a grocery store in Nevada. Amazon.com is a popular electronic commerce site. It sells products online that people from all over the world can buy. |
| communicate | When computers communicate, it involves the transmission of data from one computer to another or from one device to another, like a modem to the computer. Computers are communication devices that allow human-to-human communication without being there in person. |
| data | Computer data is information processed or stored by a computer. This information may be in the form of text documents, images, audio clips, software programs, or other types of data. Computer data is stored in files and folders on the computer's hard disk. |
| digital | Digital information is stored using a series of ones and zeros. Computers are digital machines because they can only read information as on or off -- 1 or 0. This method of computation, also known as the binary system, may seem rather simplistic, but it can be used to represent incredible amounts of data. |
| executive | An executive is the person who manages or directs others. The chief executive officer would be the main person in charge. |
| gateway | A gateway is a hardware device that acts as a "gate" between two networks. It may be a router, firewall, server, or other device that enables traffic to flow in and out of the network. |
| hobbyist | A hobbyist is a person who devotes a lot of his time and energy to an activity or interest that makes the person happy. A computer hobbyist would probably spend a lot of time online. |
| hyperlink | A hyperlink is a word, phrase, or image that you can click on to jump to a new document or a new section within the current document. Hyperlinks are found in nearly all Web pages, allowing users to click their way from page to page. |
| hypertext | Hypertext is text that links to other information. By clicking on a link in a hypertext document, a user can quickly jump to different content. Though hypertext is usually associated with Web pages, the technology has been around since the 1960s. |
| malicious | Malicious means to do mean things for pleasure In terms of computing, a malicious attack can be any physical or electronic action taken with the intent of obtaining, destroying, modifying, or accessing a user’s data without permission. |
| process | A process is a program that is running on your computer. This can be anything from a small background task, to a full-blown application like Internet Explorer or Microsoft Word. |
| retailers | Retailers are businesses or people that directly sell their products to the buyer. Wal-Mart is an example of a popular retailer where many people go to buy things. Amazon is considered to be an Internet retailer because people buy its products online. |
| robotics | 1. Robotics is the branch of technology that deals with the design, construction, operation, and application of robots. Robots are automatic machines that can sense and respond to their surroundings. This happens because of the built-in computers that send and receive information with radio waves. Artificial intelligence is important in robotics, especially if you want a robot to “think” like a human. |
| search engines | Google, Excite, Lycos, AltaVista, Infoseek, and Yahoo are all search engines. They index millions of sites on the Web, so that Web surfers like you and me can easily find Web sites with the information we want. By creating large databases of Web sites, search engines can locate relevant Web sites when someone enters search terms or phrases |
| tags | On clothes, tags usually tell us the brand, the size, the fabric used and sometimes the washing instructions. In computer terms, a tag is a short description of a link. It is an identifying label. These tags allow other people to quickly find things that might interest them. In other words, tags are descriptive keywords that you can add to something you upload to help people find your content. Hashtags have become a popular way to tag items. |
| Trojan horses | In Greek mythology, there is a story about the Trojan War. This war lasted many years, as the Greeks could not penetrate the heavily barricaded city of Troy. So one day, a few of the Greek soldiers brought the people of Troy a large wooden horse, which the people of Troy accepted as a peace offering. The horse was moved inside the city walls, where it sat until the night. After the people of the city had fallen asleep, Greek soldiers jumped out of the wooden horse, opened the gates to let their fellow soldiers in, and took over the city. Trojan horses are software programs that masquerade as regular programs, such as games, disk utilities, and even antivirus programs. But if they are run, these programs can do malicious things to your computer and can even allow other people access to information stored on your computer. |
| upload | While downloading is receiving a file from another computer, uploading is the exact opposite. It is sending a file from your computer to another system. Sometimes, I upload my homework for my teacher to correct it on the computer. |
| worms | Just like regular worms tunnel through dirt and soil, computer worms tunnel through your computer's memory and hard drive. A computer worm is a type of virus that replicates itself, but does not alter any files on your machine. However, worms can still cause problems by multiplying so many times that they take up all your computer's available memory or hard disk space. |
| vast | If something is vast, it is very great in extent, size, amount, degree or intensity. In other words, if something is vast, it is enormous. The Internet is like a vast library because it stores a huge amount of information! |

**“What Happens in an Internet Minute?”**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| app | App is an abbreviation for application. An application is a piece of software. It can run on the Internet, on your computer, on your phone, or on other electronic devices. An app is really the same thing as a program. Instagram is an example of a popular app that people will often download. |
| GB | GB stands for gigabyte. A gigabyte is one billion bytes. A byte is one of the smallest units of measurement of digital-information storage. Gigabyte is the most common term to describe the size of a hard drive or how much information your computer can store. One gigabyte of data is almost twice the amount of data that a CD-ROM can hold. One gigabyte could hold the contents of about 10 yards of books on a shelf. |
| IP | IP stands for Internet Protocol. This is a set of rules for computers connected to the Internet that determines the format for addresses and data sent. IP works like a post office. It determines when and what packages will be delivered to the receiver’s address. Remember, data is broken up into packages, all with the same address. Eventually each piece will arrive at the receiver, but usually by different routes and at different times. Just like when you send letters in the mail! |
| mobile | Mobile refers to a cell phone or a portable, wireless computing device. Smart phone and iPads are examples of mobile devices. They can be carried with you from place to place. |
| peak | If something is at its peak, it is at its highest level or filled with the most activity. Phone calls may cost more during peak calling times because more people are trying to make phone calls. |
| staggering | Staggering means very large, shocking, or surprising. There are still a staggering number of people who believe everything they read on the Internet. But we know better, don’t we? |
| traffic | In computer terms, traffic is the total volume of packets or data being sent through the computer network. During high traffic periods a computer or computer network may slow down. This is similar to auto traffic on a freeway. If there are too many vehicles, then you may move very slowly. Some people think that in the next five years, mobile traffic from cellphones and tablets will cause more Internet traffic than desktop computers. |
| transferred | When something is transferred, it is moved from one place to another. When you connect to the Internet, data transfer occurs. Data from a web page is sent to your browser and then displayed on your computer. Anytime you send information online, you are transferring data or information. |
| wiki | Wikis are websites where users can update information themselves. A user can add, delete, or revise what is on the site by using a web browser such as Internet Explorer or Firefox. Wikipedia is one of the most popular wikis on the World Wide Web. |
| “X” | When the letter X is found next to a number, such a 3X, the letter represents the word “times” or “to multiply.” With that in mind, 3X means 3 times as much. If someone had 4X the amount of candy than I did, and I had 2 pieces, that person would have 4 times the amount of candy. They would have 4 multiplied by 2 pieces which equals 8 pieces of candy. |
| zettabyte | A zettabyte is a unit of data or information that is equal to 1,000,000,000,000,000,000,000 bytes. A gigabyte is only one billion bytes. There are 1,099,511,627,776 gigabytes in one zettabyte. If a gigabyte can hold the contents of about 10 yards of books on a shelf, just imagine how much information can be found in just one zettabyte! |

**The Internet of Things**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| coined | Coined is a verb that means invented or made up. Kevin Ashton coined, or created, the phrase “The Internet of Things” to describe a future where everything will be interconnected through the Internet. He was the first person to ever use that phrase. |
| connectivity | Connectivity is the ability to “connect to” and communicate with other computer systems or the Internet. Sometimes our computers at school have trouble with connectivity. When that happens we cannot use the Internet because we are not connected to it. |
| debut | When something makes a debut, it appears in public for the very first time. It is like a special occasion. The World Wide Web made its debut in 1991. Before that, we did not have access to the Internet. |
| dynamic | When something is dynamic it is always active and energetic. When things are dynamic there is a lot going on. It is very exciting. The Internet is a very dynamic network that is constantly changing with new technology. |
| efficiency | Efficiency is the ability to do something or produce something without wasting materials, time, or energy. Turning off the lights when you leave the room can improve energy efficiency because you are not wasting the electricity on an empty room. |
| ingestible | If something is ingestible, it can be taken into the body just like food. In other words, you can swallow it. It might sound like something out of the future, but there are ingestible sensors the size of a pill that can wireless report a body’s vital signs. They actually monitor a person’s sleep, activity, breathing and heart rate from inside the body! |
| monitor | When you monitor something, you watch, observe, listen to, or check it for a special purpose over a period of time. When you read aloud, I am monitoring you to see how much you have improved. If you had to stay in a hospital, a nurse would monitor you for as long as you were there. |
| physiological | Physiological refers to the normal, healthy operation of your body and its organs. The physiological function of vitamins is to keep you healthy. Your heart performs in a physiological manner by pumping blood throughout the body. It is a normal and healthy operation. |
| quantifiable | If something is quantifiable then it is capable of being measured or counted. An example of quantifiable is the number of students in this room. It would be easy to count how many of you there are. |
| real time | Real time is the actual time in which a process or event occurs. To say something takes place in real time is that same as saying it is happening “live.” It is occurring immediately. The Smart Belly Trash Can provides data in real time so that the trash can be emptied before it overflows. |
| RFID | RFID stands for Radio Frequency Identification. RFID technology is similar to how bar codes are used in a store when making a purchase. RFID uses an electronic tag that can relay information by the use of radio waves. Just like how a cashier swipes the bar code at the check-out stand, an RFID tag can be read the same way. The difference is that an RFID tag does not have to be swiped. It has a tiny computer chip that sends out the information instead. |
| sensor | A sensor is a device that detects or senses heat, light, sound, motion, etc., and then reacts to it in a particular way. For example, I have a motion sensor near my front porch. When someone comes near it at night, it turns on the front porch light. Digital cameras use image sensors. This is what helps the camera to automatically focus when it detects an image. |

**Imagine Your Future**

|  |  |
| --- | --- |
| *Word* | *Student-Friendly Definition* |
| breakthrough | A breakthrough is a sudden, dramatic, and important discovery or development. Scientific breakthroughs help us to progress in many areas of our lives. |
| genetics | Genetics is a branch of biology that deals with the heredity and variation of organisms. In other words, it is the study of our genes: what they are and how they work. |
| implanted | If something is implanted, it is inserted into the body, usually by surgery. Some people have implanted tiny microchips in their pets in case their pets get lost. Scanning the microchip reveals the pet’s id number so that the owner can be contacted. Some people believe that in the future, humans will be implanted with microchips as a form of identification. |
| incorporate | To incorporate is to include something as part of something else. When you work in groups, you incorporate the ideas of everyone in the group. Although everyone contributes something, the group acts as a single unit. |
| singularity | Singularity is the idea that one day artificial intelligence will become smarter than human intelligence. Artificial intelligence is the ability of a computer or machine to perform those activities that are normally thought to require human intelligence such as visual recognition, speaking, and decision making. If singularity were to actually occur, robots could build themselves and operate without any help from humans. The computer would become like a living being! |
| spawn | Spawn means to cause something to happen or begin. It can also mean to produce or create something. Some people think that too much technology may spawn, or create, computers that won’t need humans to operate them. |
| virtual reality | Virtual reality is an artificial world that consists of images and sounds created by a computer and is affected by the actions of the person who is experiencing it. Virtual means being very close to being something without actually being it. Many computer games use virtual reality to make you feel like you are part of the game. You are not just playing the game, you are experiencing it. |