Empowering Independent Learners:
Web Searching Skills in the Fifth Grade

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Thank you

- Committee members:
  - Dr. Ann Schulte
  - Dr. Michael Kotar
- Palermo School District and its staff, faculty and especially the students
- Faculty members at CSU, Chico

Introduction to Research

Action Research

- Concern arose when students became frustrated when conducting academic searches on the internet and instead turned to 1970s encyclopedias.

Research Question

How can I enhance students' Web literacy, and what impact will enhanced Web literacy have on information-seeking efficacy and choice in a rural fifth grade classroom?

- Web Literacy definition for this study: Possessing the ability and efficacy to independently complete academic search tasks and assess the validity of the source.

Literature Review

- Students in K-6 education lack needed Web-searching skills (Enochsson, 2005; Kolikant, 2010).
- These students believe their Internet skills are strong but they are unable to complete academic tasks (Kolikant, 2010).
- Students are able to learn Web searching by the time they are in kindergarten (Spink et al., 2010).
- There is significant research suggesting the fifth grade is an appropriate level for teaching Web skills (Enochsson, 2005; Kuiper, 2008).

Significance of Research and Major Theory

Importance of research

- Students are in the "Zone of Proximal Development" and are ready to learn to search (Spink et al., 2010)
- By middle school students are no longer in the "Zone of Proximal Development" as they lack the web skills needed to **research** topics (Heil, 2005)

Theory

- Vygotsky - With support, students in the "z**one of proximal development**" can successfully engage in a learning task (Vygotsky, 1978).

Significance of Research and Major Theory

Importance of research

- The Internet is part of students' lives and proper use of the Internet must be part of the curriculum
- Students in rural schools have few opportunities for learning outside the classroom (libraries, museums, science presentations) and the Internet offers one of the few opportunities for ongoing learning making Internet skills critical

Theory

- **Constructivist Learning Theory**
- Students construct knowledge so lessons must adapt to students' learning background (Dewey, 1940).

Significance of Research and Major Theory

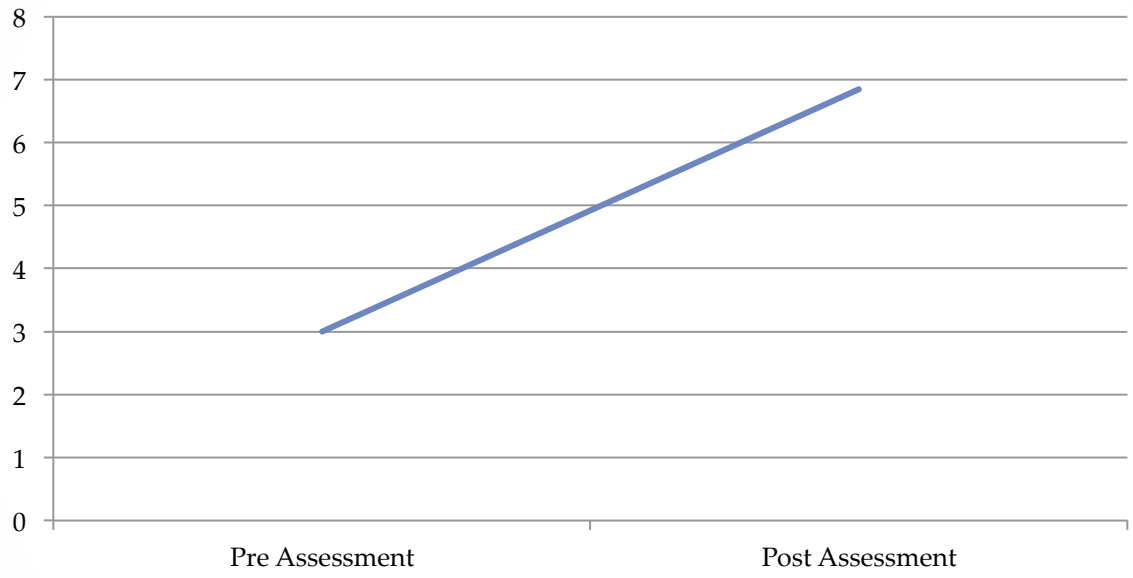
Importance of research

- Students will take full advantage of the potential of the Internet if they possess not only the skills needed for Internet searching but also a high level of self-efficacy related to Web searching

Theory

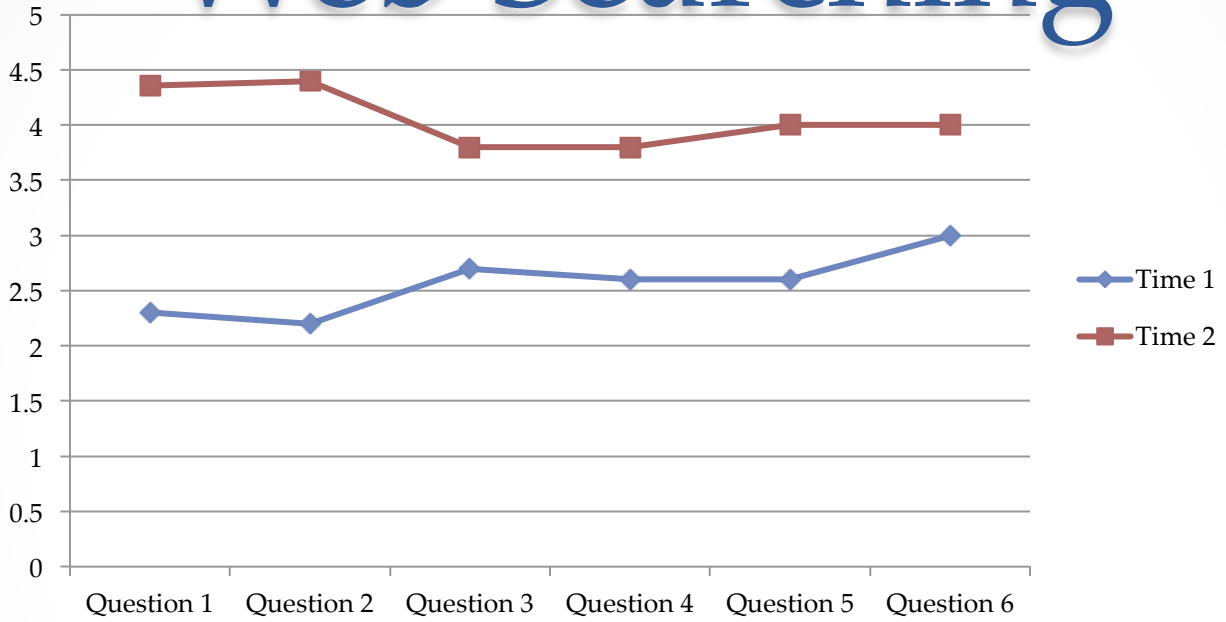
- **Social Cognitive Theory**- Students with a high degree of self-efficacy with respect to a particular task or activity, will be able to engage in the task or activity, without being impeded by fear of failure or potential negative outcomes (Bandura, 1995).

Scavenger Hunt



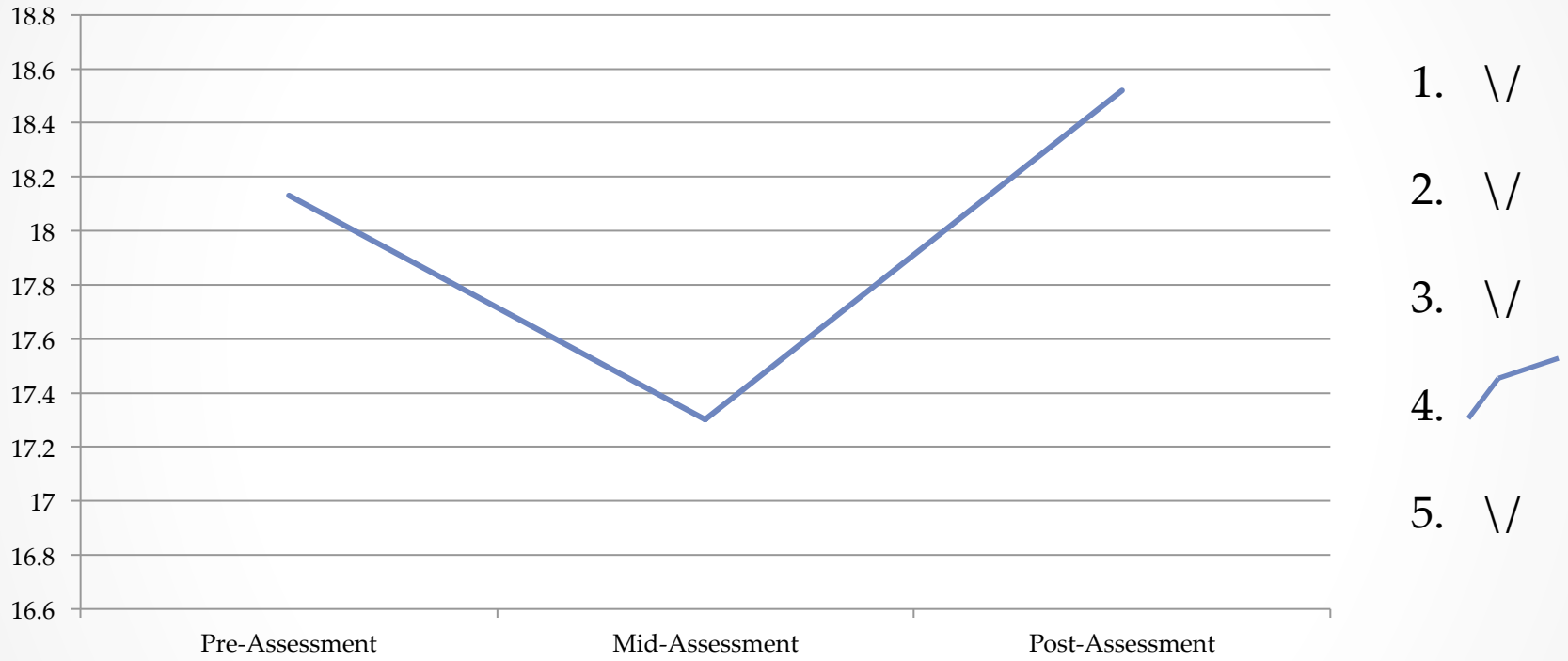
There was a significant difference in the scores for searching performance at the start of the project (M=3.0, SD=1.26) and at the end of the project (M=6.85, SD=0.366) conditions; t(19)=-13.15, p=0.000.

Web Searching



Q1 Time 1 score of (M=2.3, SD=0.80) and time 2 score of (M=4.36, SD=0.91); t(24)=-8.45, p=0.000
Q2 Time 1 score of (M=2.2, SD=0.75) and time 2 score of (M=4.4, SD=0.96); t(24)=-9.616, p=0.000
Q3 Time 1 score of (M=2.7, SD=0.84) and time 2 score of (M=3.8, SD=0.03); t(24)=-4.956, p=0.000
Q4 Time 1 score of (M=2.64, SD=0.76) and time 2 score of (M=3.8, SD=1.05); t(24)=-5.494, p=0.000
Q5 Time 1 score of (M=2.64, SD=0.70) and time 2 score of (M=4.0, SD=1.0); t(24)=-6.323, p=0.000
Q6 Time 1 score of (M=2.96, SD=0.93) and time 2 score of (M=4.0, SD=1.12); t(24)=-3.887, p=0.001

Self-Efficacy



Overall Self-Efficacy

The one significant difference in the scores was in question 2 related to assessing information in URLs which dropped significantly between the start (M=4.04, SD=1.04) and the midpoint of the study (M=3.29, SD=1.04); t(22)=2.344, p=0.028. This score rose between the midpoint of the study to a level near the starting point (3.92) though the change fell short of statistical significance.

Trustworthiness

- Trustworthiness is a trait that can be referred to as deserving confidence and trust. Students must believe that they will gain trustworthy data when they search. Validating a source, or assessing the trustworthiness of a source was taught through:
  - Assessing the URL
  - Triangulation of a finding
  - Seeking advice from a parent, teacher or other trusted source

Choice

- Students indicated their enthusiasm for using the computers for searching through:
  - In-class discussions
  - Internet-based projects
  - Journals
- Classroom environment for Web searching is challenging
  - Limited access to computers
    - The school is working on acquiring more computers
  - Internet filters
    - Filtering Internet traffic is necessary but can be frustrating

Conclusion

The academic literature makes strong and compelling calls for the teaching of Web-searching skills. This is a necessary component of Web literacy which is growing increasingly important given the need to access Web-based information. The need for Web searching skills was evident in my class as well and students demonstrated they are able and eager to attain these skills.

Questions

Limitations and Future Studies

- Limitations of the Study:
  - Too few computers in the classroom during regular instruction time. A computer cart was made available once per week which limited adequate assess to the computers
  - Internet filters, while necessary, sometimes limit information available to students on important tasks.
  - The study was completed in only one classroom which limits the strength of the findings.
- Future Studies:
  - Repeating the study with an adjusted question set to properly assess self-efficacy is needed.
  - Repeating the study in a classroom with computers for each student is needed.
  - Completing the study over a longer time period is necessary to develop effective counts on the extent to which students use computers for academic Web-searching tasks before and after instruction is needed.

Outcomes of Study

- Students had fun while learning
- Student journals reflected increased confidence in their Web literacy.
- Leveled students' Web-searching ability in the class as a whole.
- Students gained web searching skills that will be valuable in middle school

Quotes from Students

- *"It was fun I hope we do it again. I got a lot of answers."*
- *"I learned about researching it was fun."*
- *"My favorite thing that I learned is how to tell if the internet site is trustworthy."*

Method & Analysis

- Analyses
  - Scavenger Hunt – Students were given seven questions and asked to find the correct answer. Scavenger hunts were completed before and after the instruction.
  - Web searching queries – Students were given six questions but no computers. Students formed the best possible queries which were judged by the mentor teacher and I based on a rubric and scored on a scale of 1 – 5. The assessment was administered before and after the instruction.
  - Self-Efficacy – Students were asked about their perceived abilities and responded on a 5-point Likert scale. The self-efficacy questions were administered before the start of the project, after the first week of assessments but before instruction began and after instruction was completed.
  - Trustworthiness – Students were presented with an assignment intended to measure their understanding of the trustworthiness material presented which was administered after instruction.
  - Choice – I was not able to assess choice as there were too few computers in the classroom to determine whether students would have selected a computer or print material to complete information-seeking tasks.
- Methodology
  - Direct Instruction
  - Hands-on projects

Scavenger Hunt Questions

- Pre Assessment
  - Who was the silversmith that made the midnight ride during the American Revolution?
  - What was the name of the first colony in America?
  - What 5 colonies made up the New England region?
  - Who was born in Boston on January 17, 1706. He was an American printer, author, philosopher, diplomat, scientist, and inventor?
  - Who was an English Quaker who spoke out on Civil War and religious freedom? He founded Pennsylvania, which he named after his father.
  - What 4 colonies made up the Middle Colonies region?
  - What 4 colonies made up the Southern Colonies region?
- Post Assessment
  - Who sewed the first American flag?
  - How many people signed the Declaration of Independence?
  - Who had the largest signature on the Declaration of Independence?
  - When did the American Revolution start?
  - Who was known as the Father of the Bill of Rights?
  - Who wrote the book "Home Life in Colonial Days"?
  - In what city was the first school in America located?

Web Searching Questions

- **Pre-questions (1/6/2011):**
  - Which language do the inhabitants of the Island of Madagascar speak?
  - Which take-and-back pizza restaurant was voted best in Chico by the Chico News and Review in 2008 and 2009?
  - What are the names of President Obama's daughters?
  - Who is the author of the book *The Good Earth?*
  - Who is the author of the book *Closed for the Season?*
  - In what year did the French Indian War end?

- **Post- questions (2/15/2011):**
  - What is the native language of Hungary?
  - In what year was the Oroville Dam built?
  - What are the first names of Vice-President Joe Biden's three children?
  - Who is the author of the book *Wuthering Heights?*
  - Who is the author of the book *Freak the Mighty?*
  - In what year was Shasta Dam completed?

Self-Efficacy

- Questions were asked on a five-point Likert scale ranging from strongly disagree to strongly agree.
  - I believe I have the ability to find information I need on the Internet.
  - I believe I have the ability to use effective search terms to find information on the Internet.
  - I believe I have the ability to select the best search engine for my search tasks.
  - I believe I have the ability to use logic modifiers for example (not, and, or) to refine my searches.
  - I am confident I can find information I need on the Internet.

Significance of Research

Students enter middle school without the Internet searching skills they require (Heil, 2005), yet they are already capable of learning Web searching in kindergarten (Spink et al., 2010). While students view themselves as tech savvy, their Internet-searching skills are not sufficient for academic searching tasks (Kolikant, 2010).

References:

Heil, D. (2005). the Internet and student research: teaching critical evaluation skills. *Teacher Librarian*, *33*(2), 26-29.

Kolikant, Y. B.-D. (2010). Digital natives, better learners? Students' beliefs about how the Internet influenced their ability to learn. *Computers in Human Behavior*, *26*(6), 1384-1391.

Spink, A., Danby, S., Mallan, K. & Butler, C. (2010). Exploring young children's web searching and technoliteracy. *Journal of Documentation*, *66*(2), 191-206.

Zone of Proximal Development

With support, students in the "zone of proximal development" can successfully engage in a learning task (Vygotsky, 1978).

Instructional scaffolding, such as modeling, thinking aloud, asking questions at critical junctures of instruction can provide the needed support to make Web-searching tasks accessible to students (Lutz, Guthrie, & M. H. Davis, 2006; Rogoff, 2003).

Lutz, S. L., Guthrie, J. T. & Davis, M. H. (2006). Scaffolding for Engagement in Elementary School Reading Instruction. *Journal of Educational Research*, *100*(1), 3-20.

Rogoff, B. (2003). *The cultural context of human development*. Oxford, England: Oxford University Press.

Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Constructivist Learning Theory

Teachers must acknowledge that students come into the classroom with interests and abilities that must be honored and built upon. Students construct knowledge so lessons must adapt to students' learning background (Dewey, 1940).

Dewey, J. (1940). *Education today*. Oxford England: Putnam.

Social Cognitive Theory

Students with a high degree of self-efficacy with respect to a particular task or activity, will be able to engage in the task or activity, without being impeded by fear of failure or potential negative outcomes (Bandura, 1995).

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Instruction Methods

Type of instruction:

- Direct instruction
- Hands-on Project
- 8-10 hours of direct instruction over 5 weeks
- History was the context that was used to teach web searching.

Methods:

Web building

- Narrow search to key words and not the whole question.
- Quotation around a string of words. For example title of a book "The Good Earth"
- Boolean expressions (and, or , not)

Assessing Validity of the web site:

- Talked about what trustworthy is through connecting it to their lives; then what it means on a website.
- URL endings (.gov and.edu)
- Verify the data on multiple sites
- Teacher, parents, librarians.

Finally, a hands on project where student chose a famous person from the American Revolution and found details on that person. I provided the questions they had to look up for their person.