

**Teaching,
Learning and
Computing, 1998:**

First Report from a National Survey

Hank Becker

Ron Anderson

Margaret Riel

Jason Ravitz

What Conditions Facilitate these New Uses of Technology?

- Is it the TEACHER?
- Is it the ENVIRONMENT?
- Or does the environment CHANGE the TEACHER?

Two Samples

- A Representative Sample of All U.S. Teachers Grades 4-12 (Probability Sample)
- A sample of teachers from schools involved in major reform projects or from schools with high-end technology (Purposive Sample)

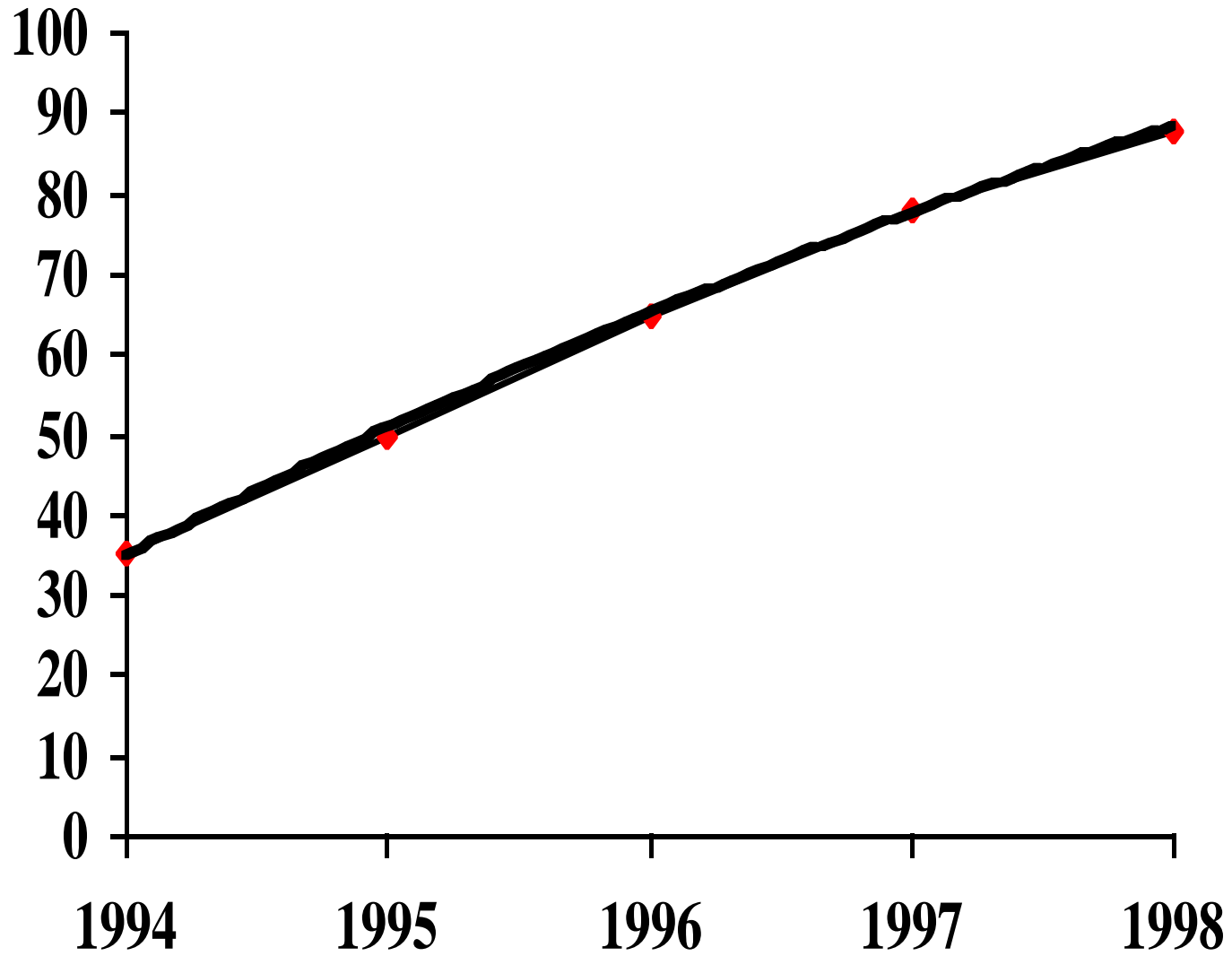
Today's Presentation

- Internet Presence in U.S. Schools—
Survey of Technology Coordinators
- Internet Use by Teachers and Students—Survey of Teachers
 - Compared to other uses of technology
 - Different ways of using the Internet
 - What conditions affect use?

Internet Presence in U.S. Schools

- Nearly 90% have instructional access
- Few have fast access
- Few classrooms have access
- Other conditions restrict access

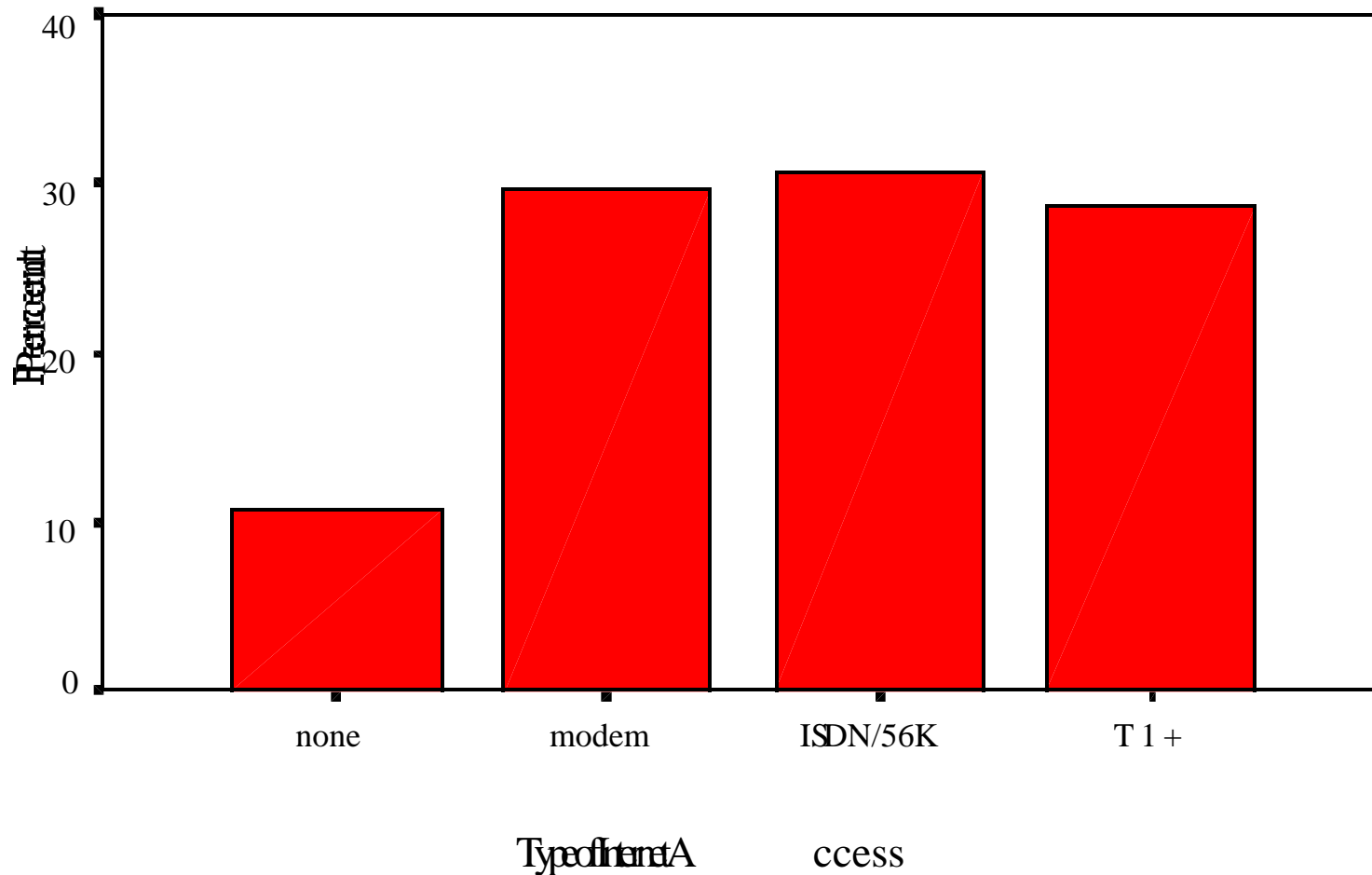
Public Schools with Any Internet Access, 1994-1998



Source: Data for 1994-1997 from NCES Issue Brief 98-031

Only One Third of Schools have

High Bandwidth Access

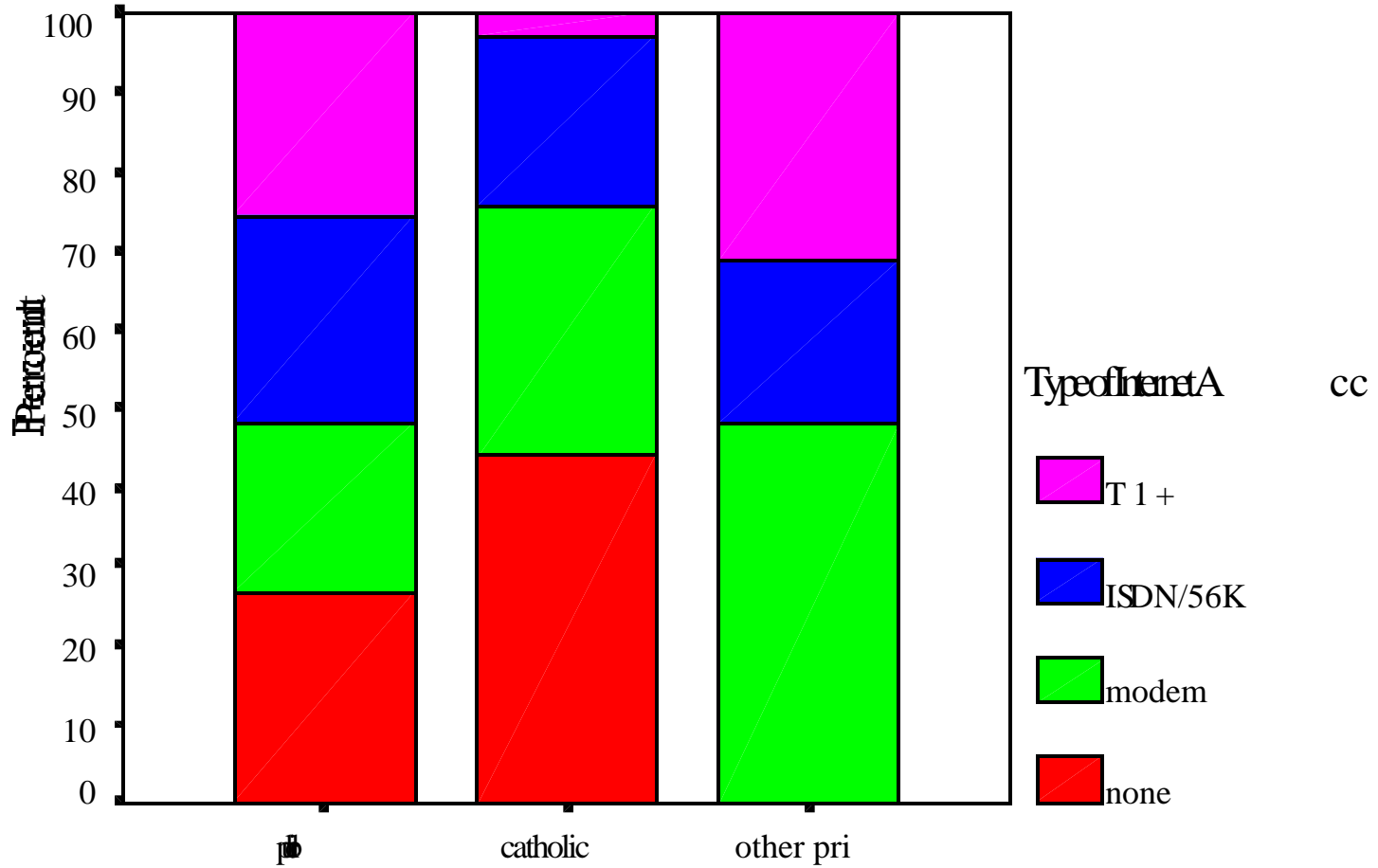


Source: ILC Primary Results for US

Schools, 1998

Type of Internet Access in

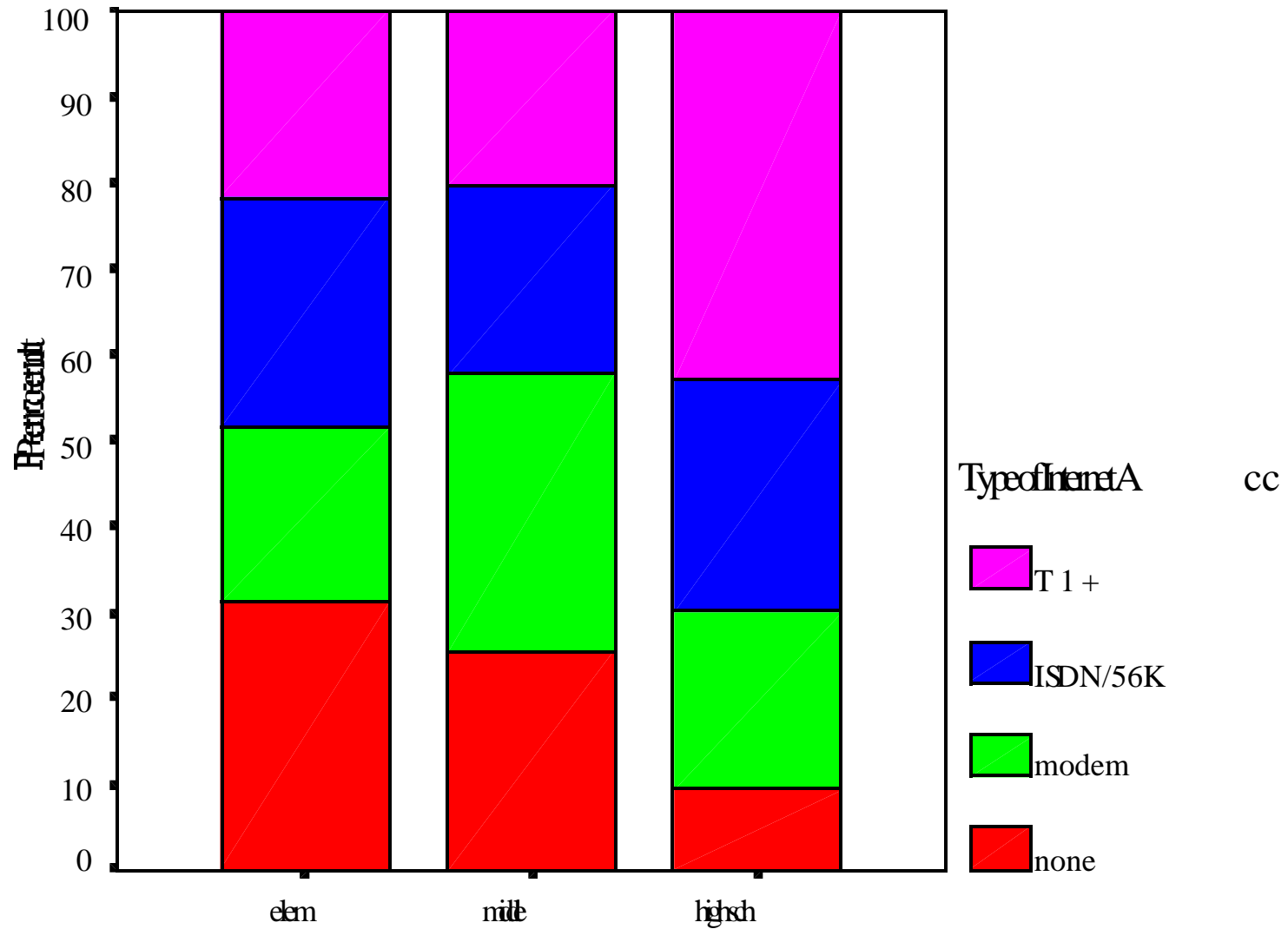
Public versus Private Schools



Source: ILC Primary Results of US

Schools, 1998

Type of Internet Access by School Level

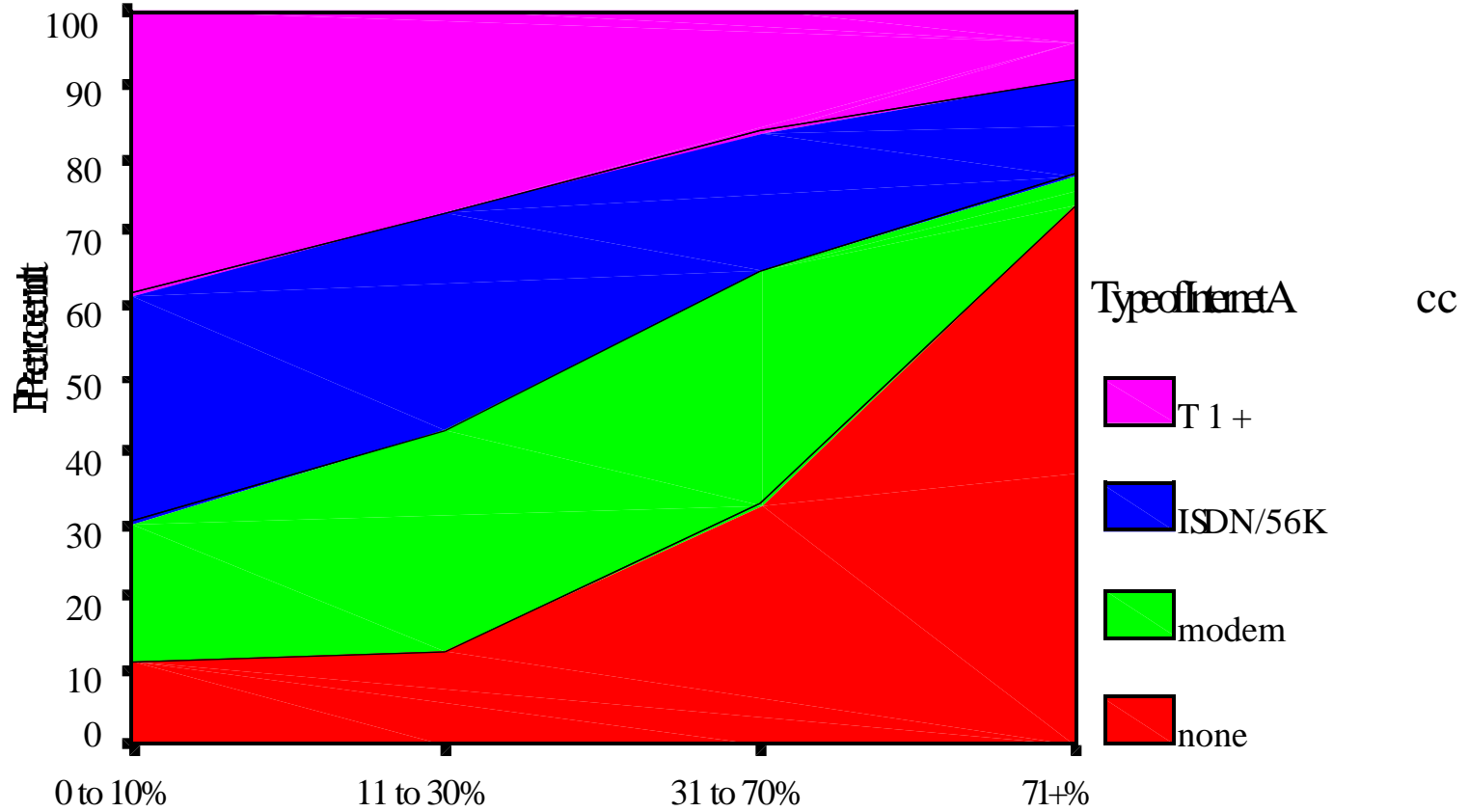


Source: U.S. Department of Education, Survey of Schools, 1998

U.S. Schools, 1998

Type of Internet Access by Poverty Index

(Percent Chapter 1 Eligible)

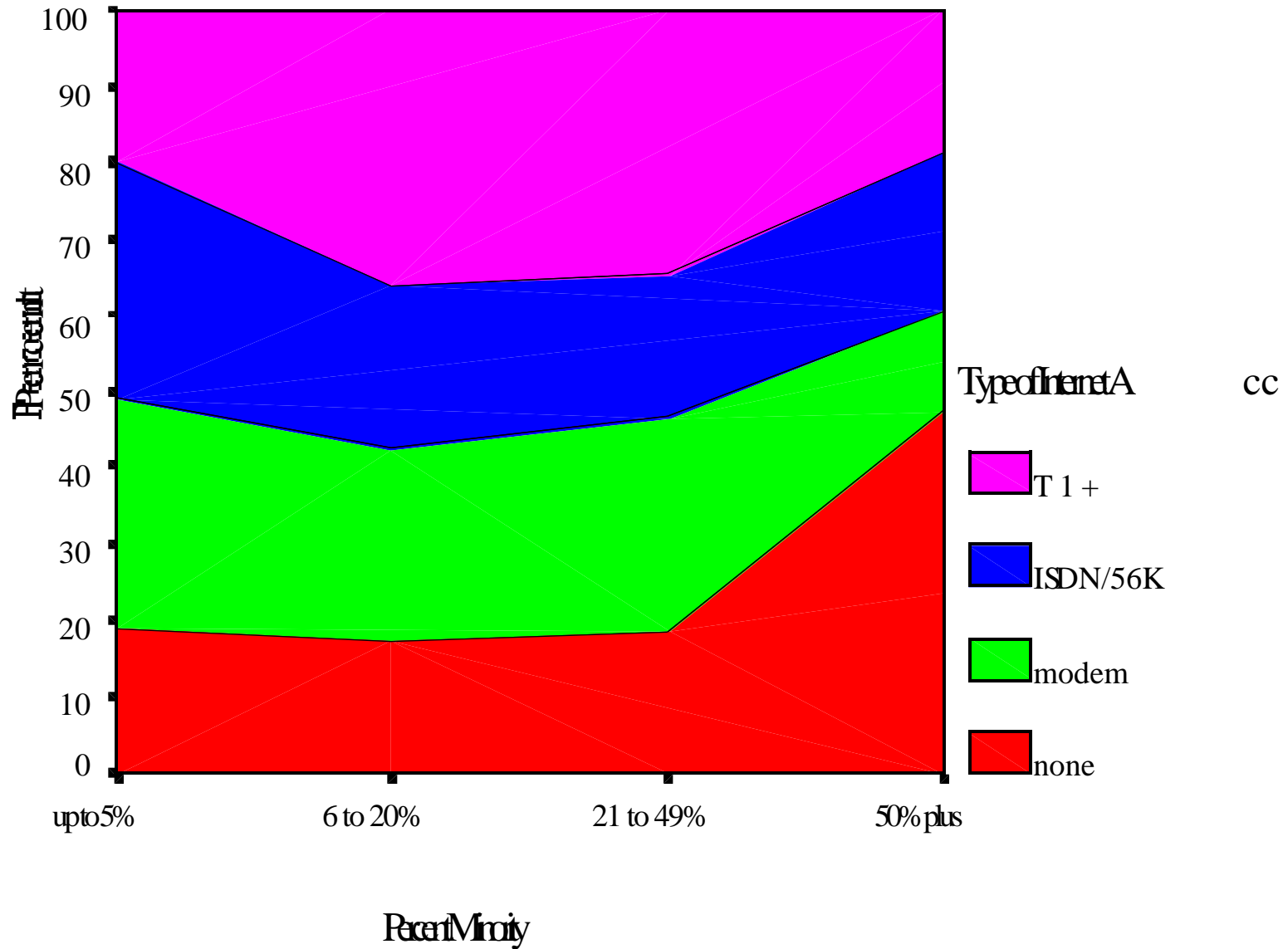


Percent Eligible Chapter 1

Source: ITC Primary Results of US

Schools, 1998

Type of Internet Access by Minority



Source: ILCP Minority Results

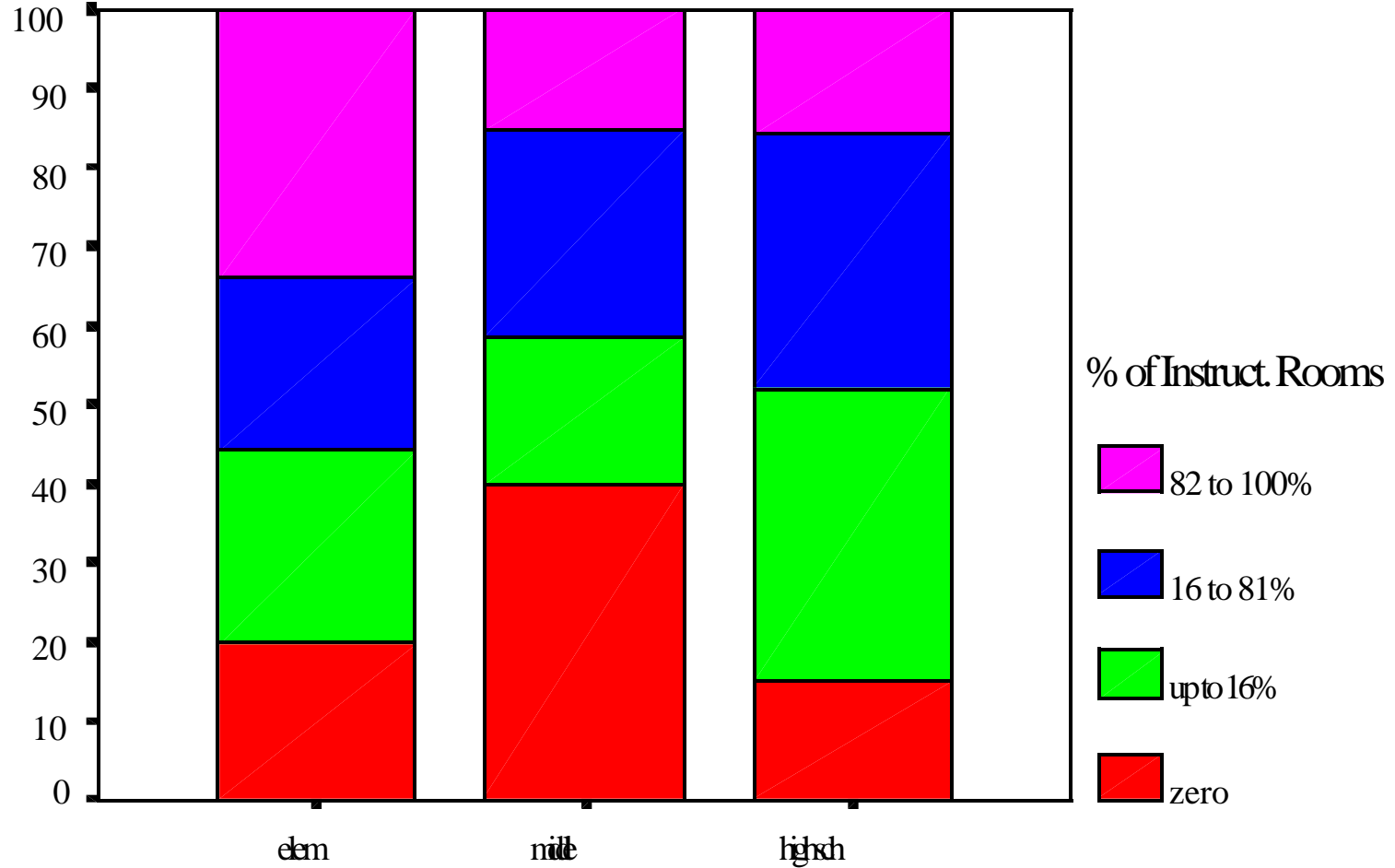
Schools, 1998

Instructional Rooms with either LAN or “Hi-Speed” Connection

- Half of schools report neither
- 10% of schools have it in 80% or more of their instructional rooms
- For all Schools, Mean=18%, Median=3%

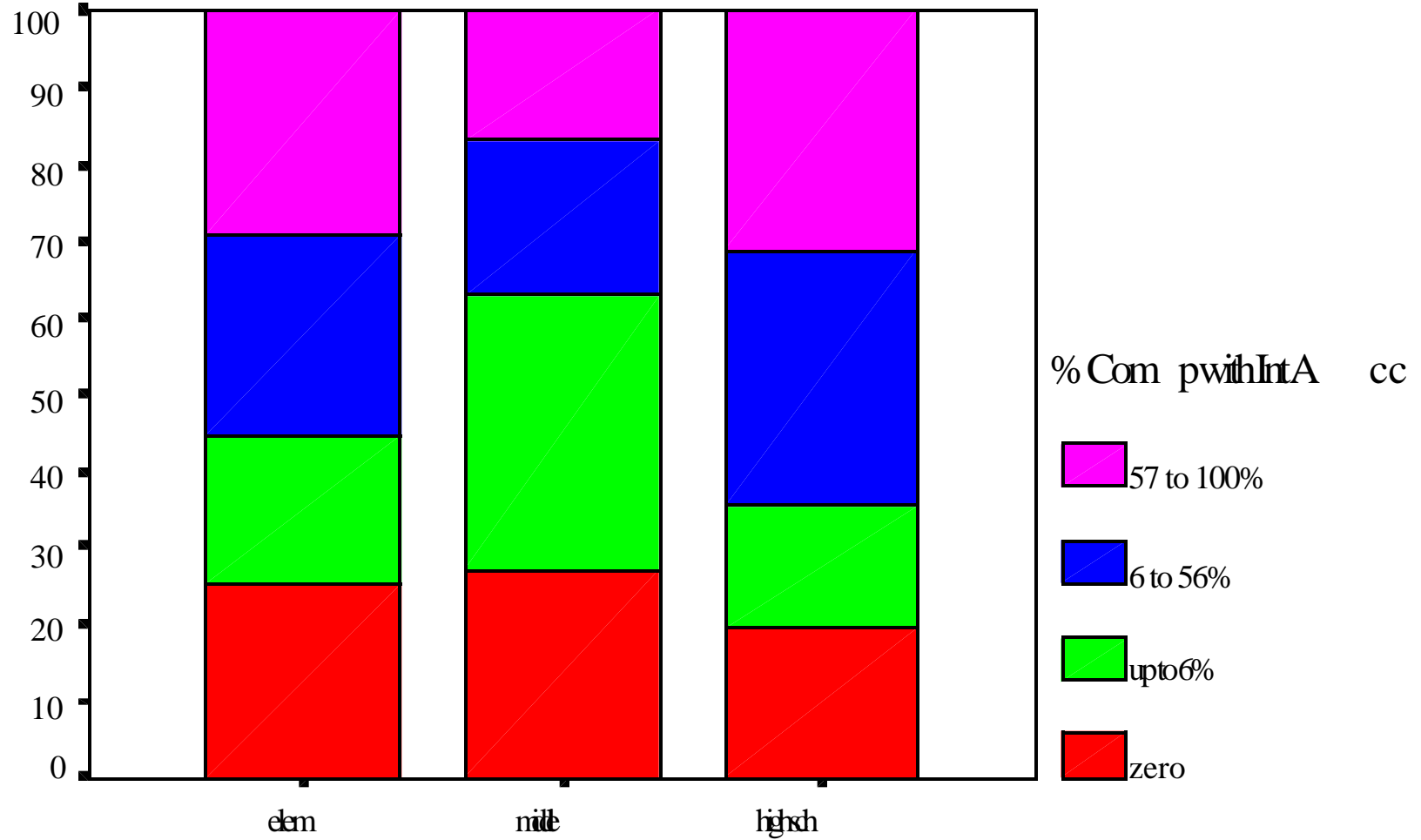
Percent of Instructional Rooms with 1 or more

High Speed Connections by School Level



Percent of Computers with Simultaneous

Internet Access by School Level

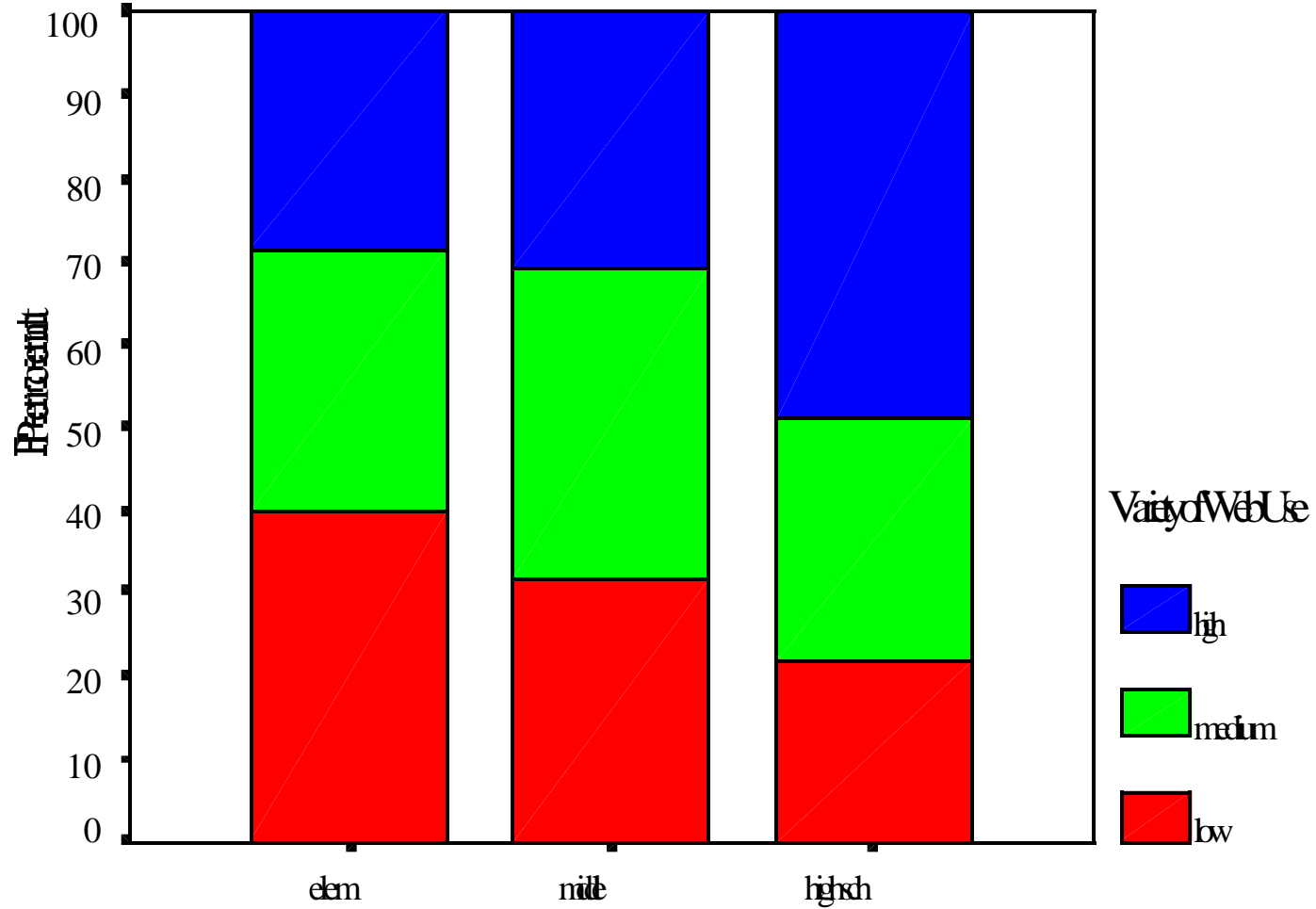


Source: ILC Primary Results of US

Schools, 1998

Variety of Web Use

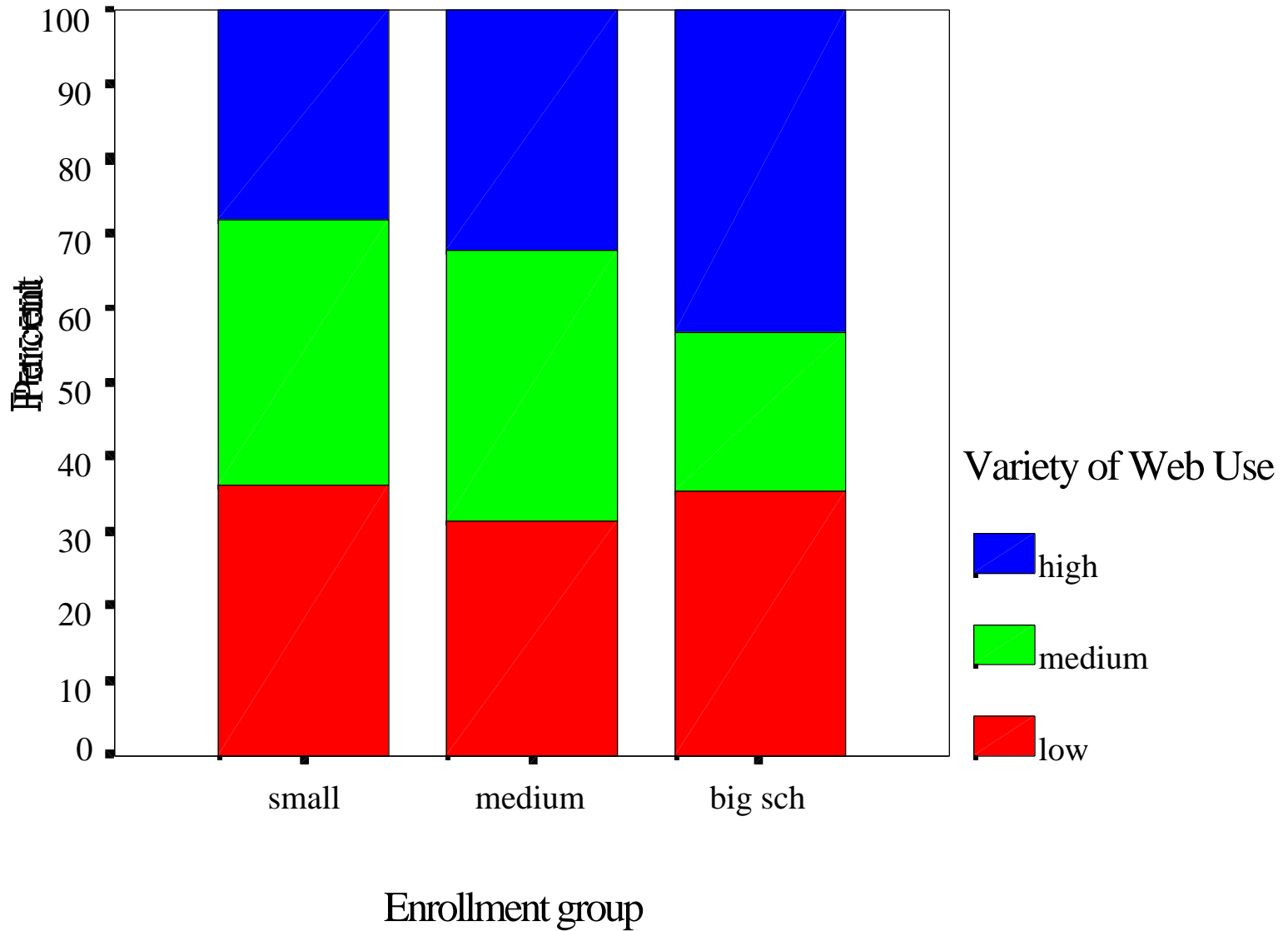
by School Level



Source: ILLC Primary Results of US

Schools, 1998

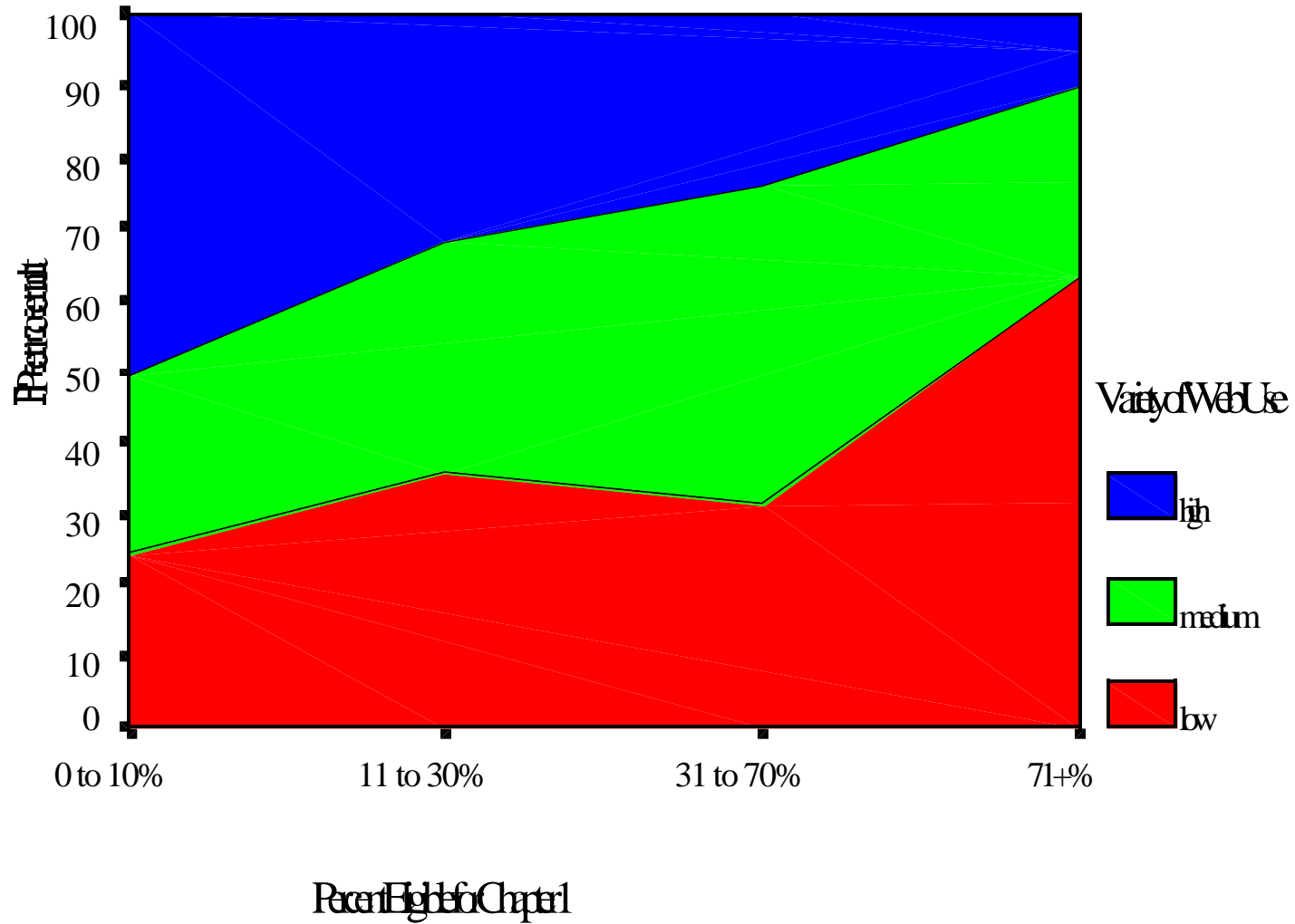
Variety of Web Use by Size of School



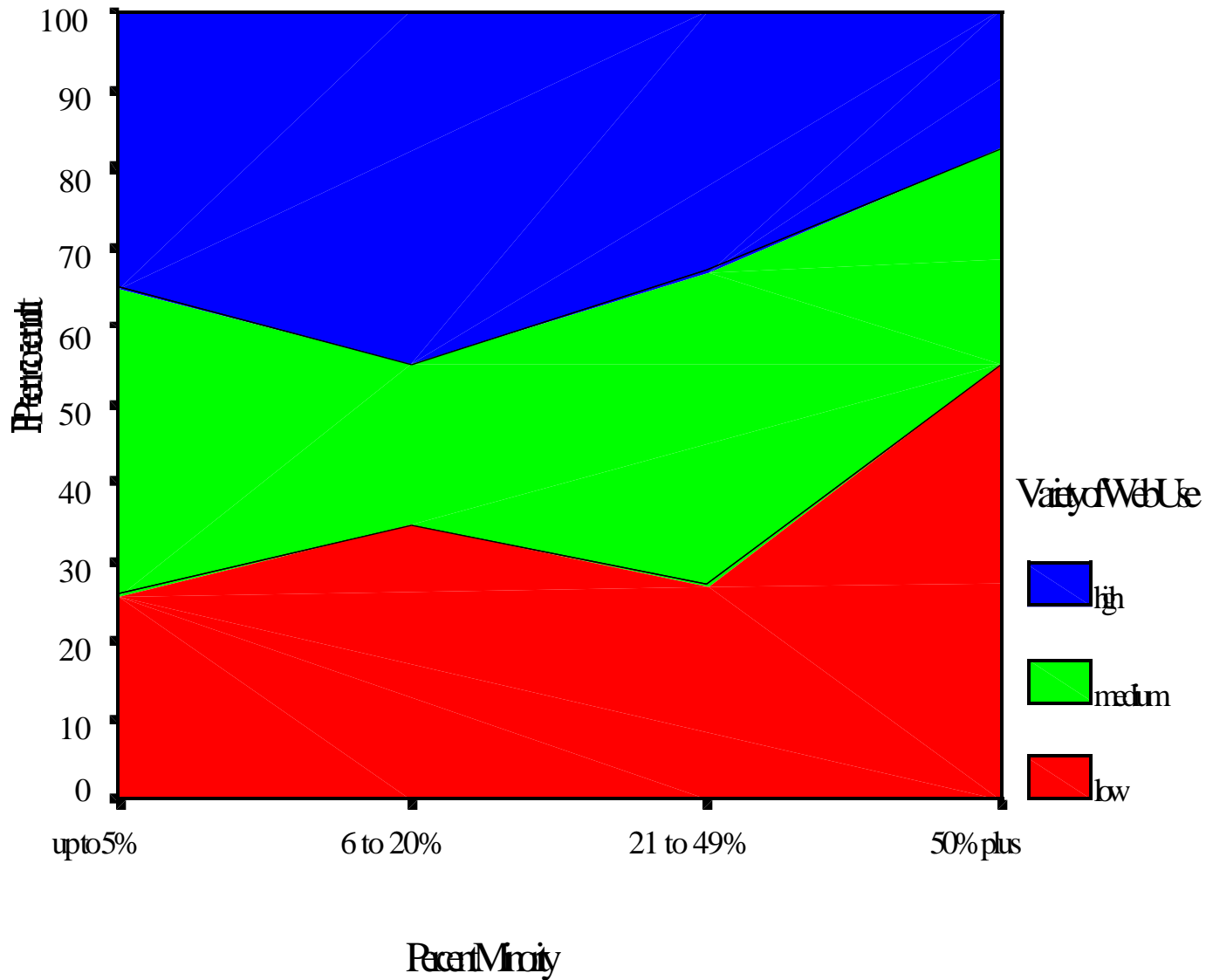
Source: TLC, Preliminary Results of U.S. Schools, 1998

Variety of Web Use by Poverty Index

(Percent Chapter 1 Eligible)



Variety of Web Use by Minority

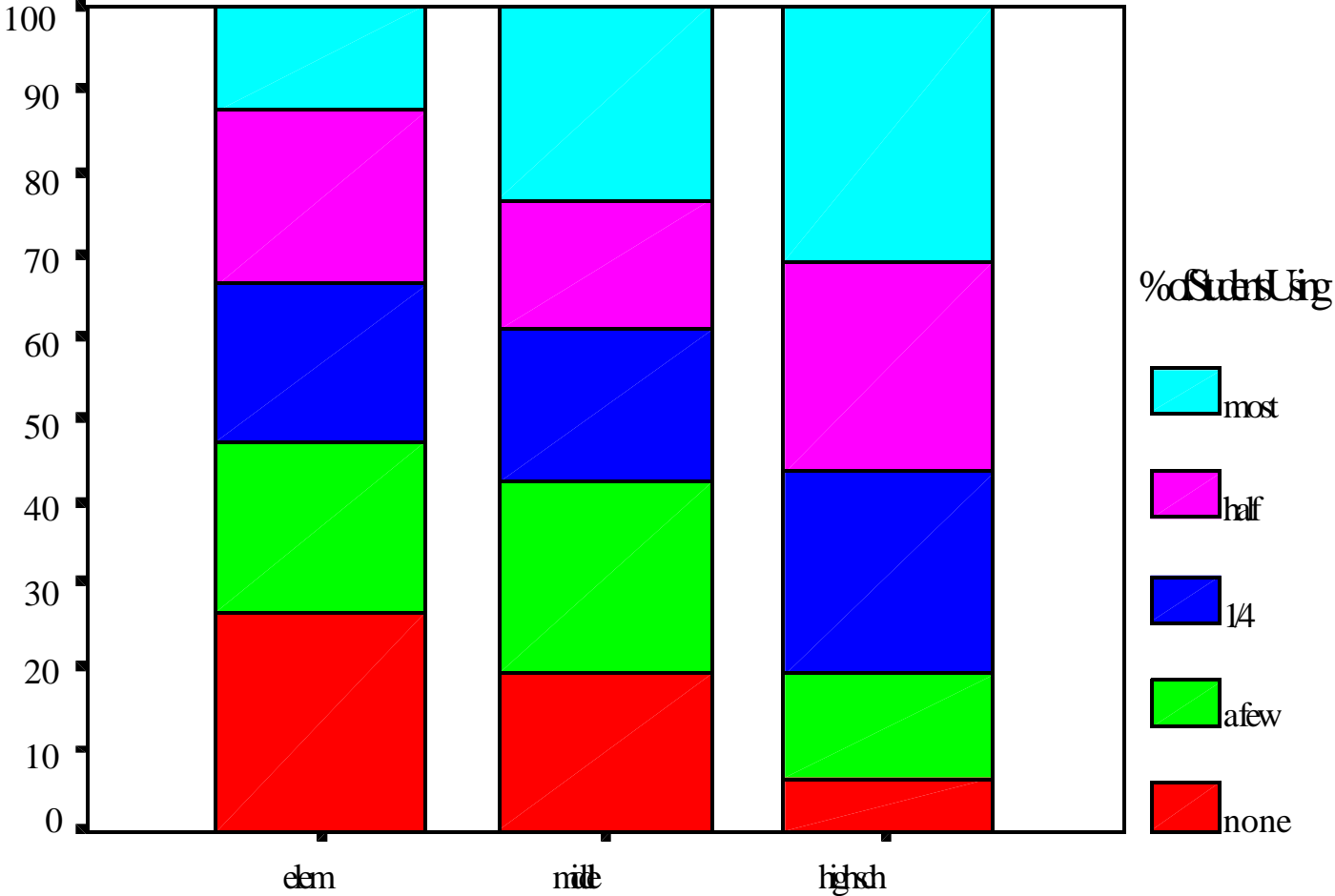


Source: ILC Primary Results of US

S. Schools, 1998

Percent of Students Using Web

by School Level

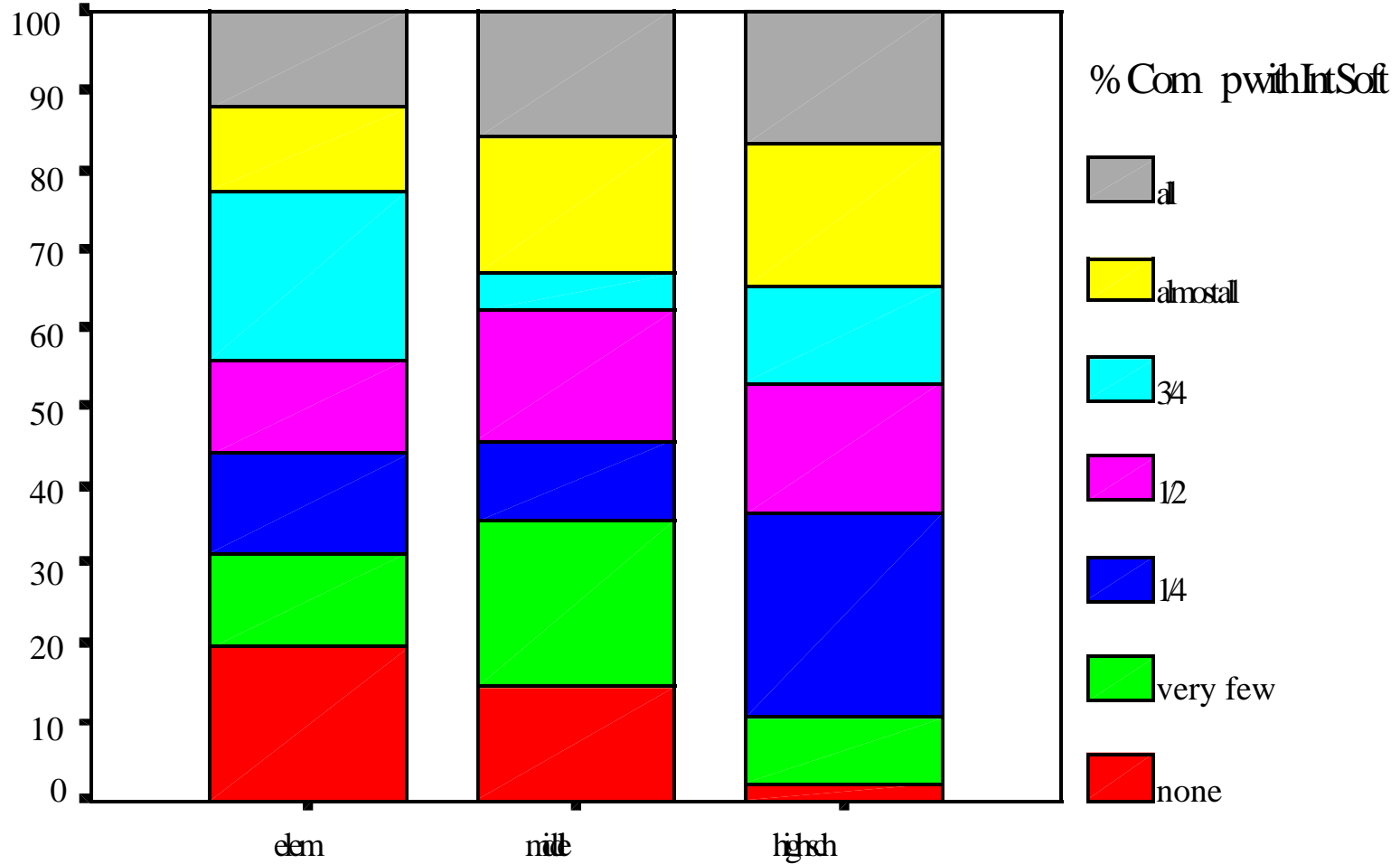


Source: ILC Primary Results of US

Schools, 1998

Percent of Computers with Internet

Access Software by School Level

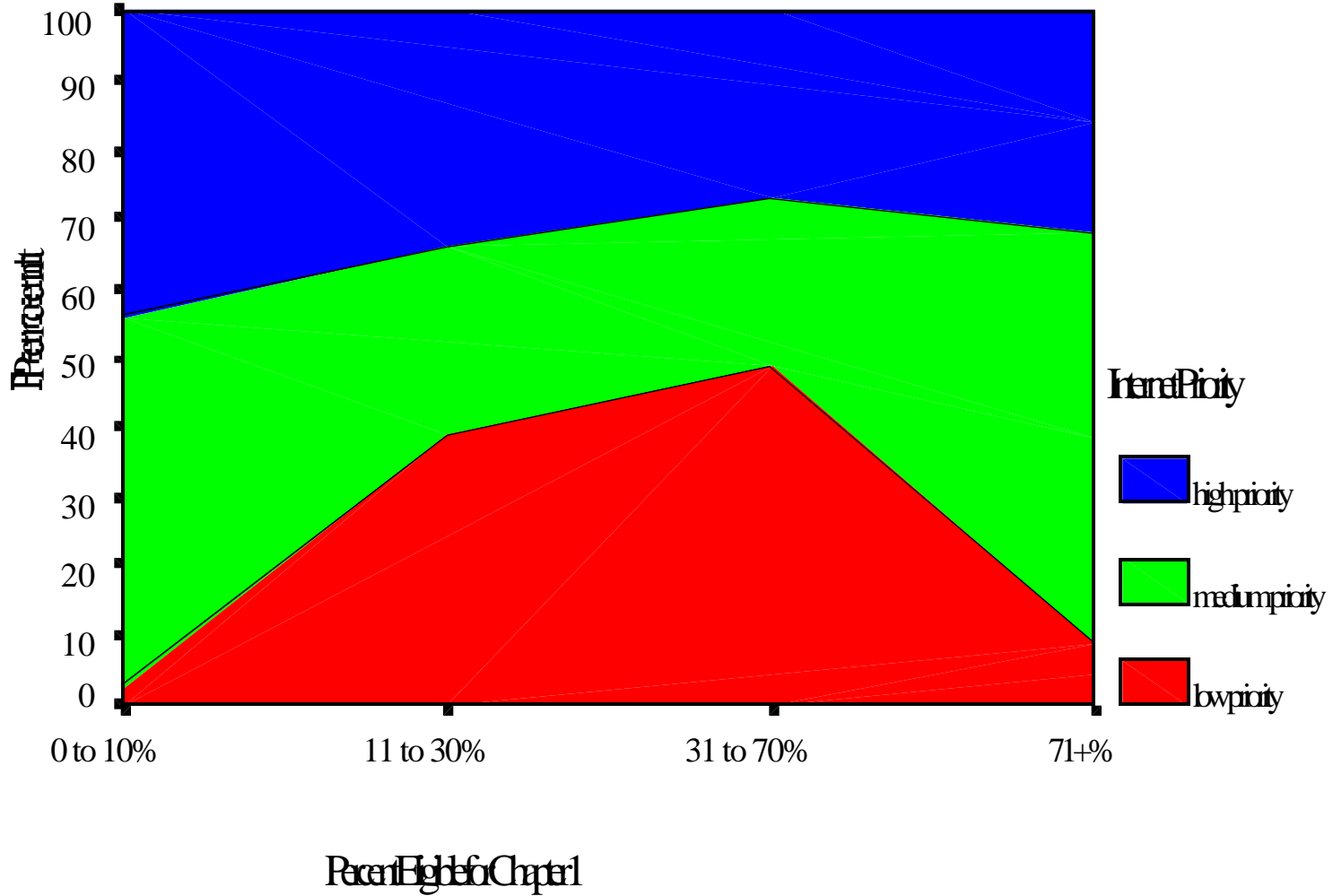


Source: ILLC Primary Results of US

Schools, 1998

Internet Priority by Poverty Index

(Percent Chapter 1 Eligible)



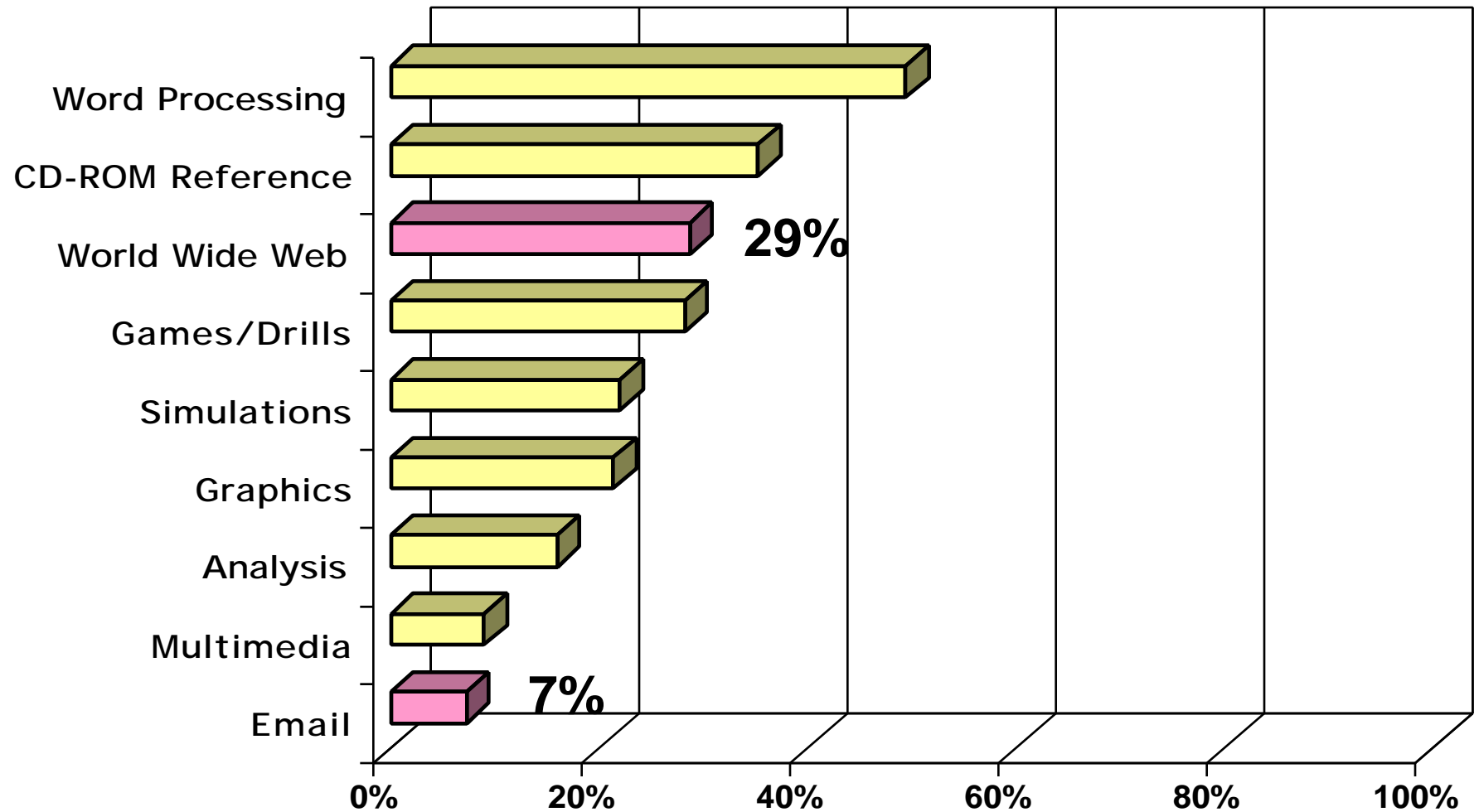
Source: ILCP Primary Results of US

Schools, 1998

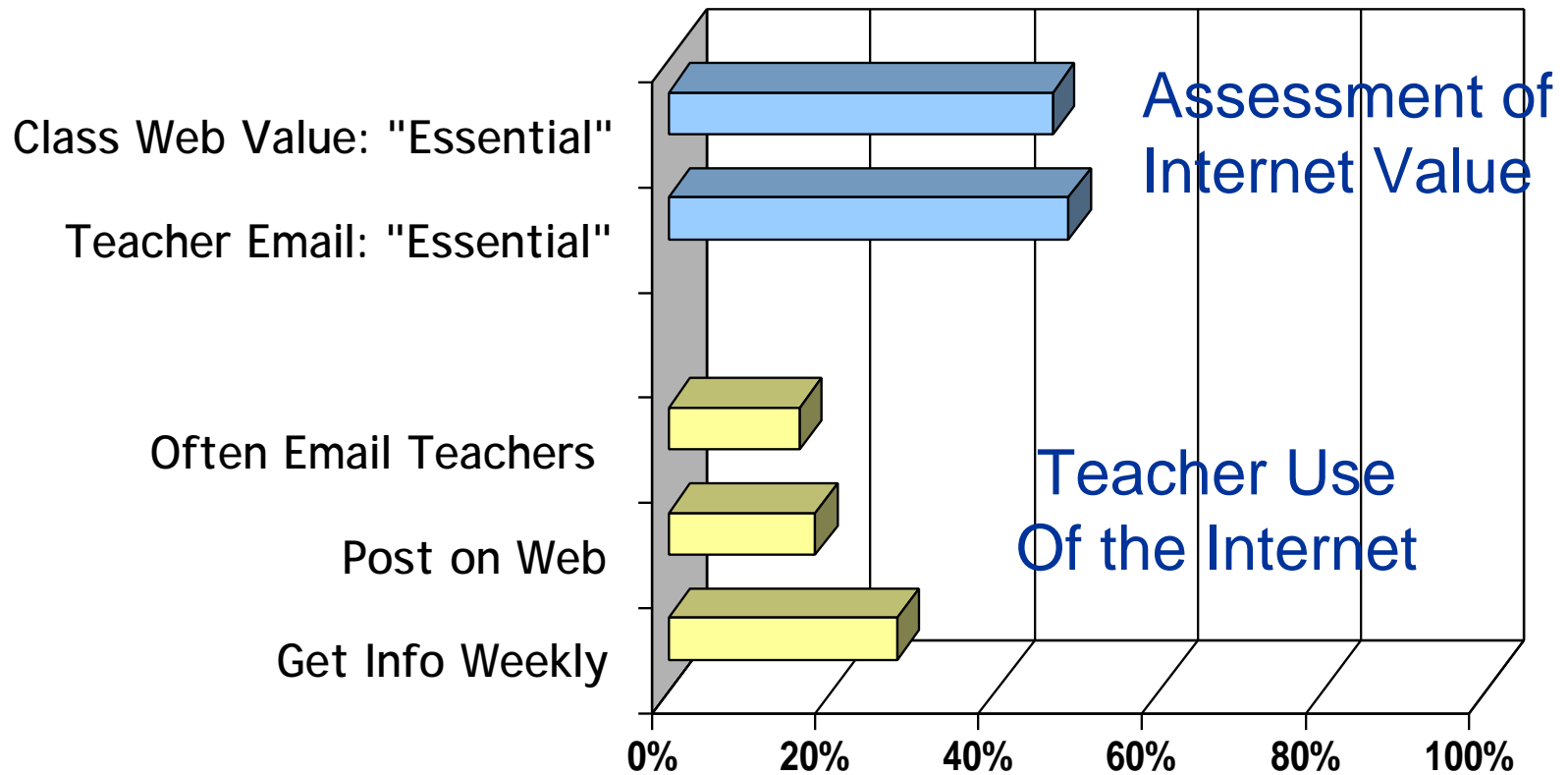
Educational Policy Implications:

- Internet Connections:
Many Schools, Few Students & Classes
- The Internet Gap: Haves Have More and
Have-Nots Have Less
- Full Internet Presence Requires
 - more, faster connections in more classrooms
 - more software with more variety in applications
 - help for schools with the will but not the way

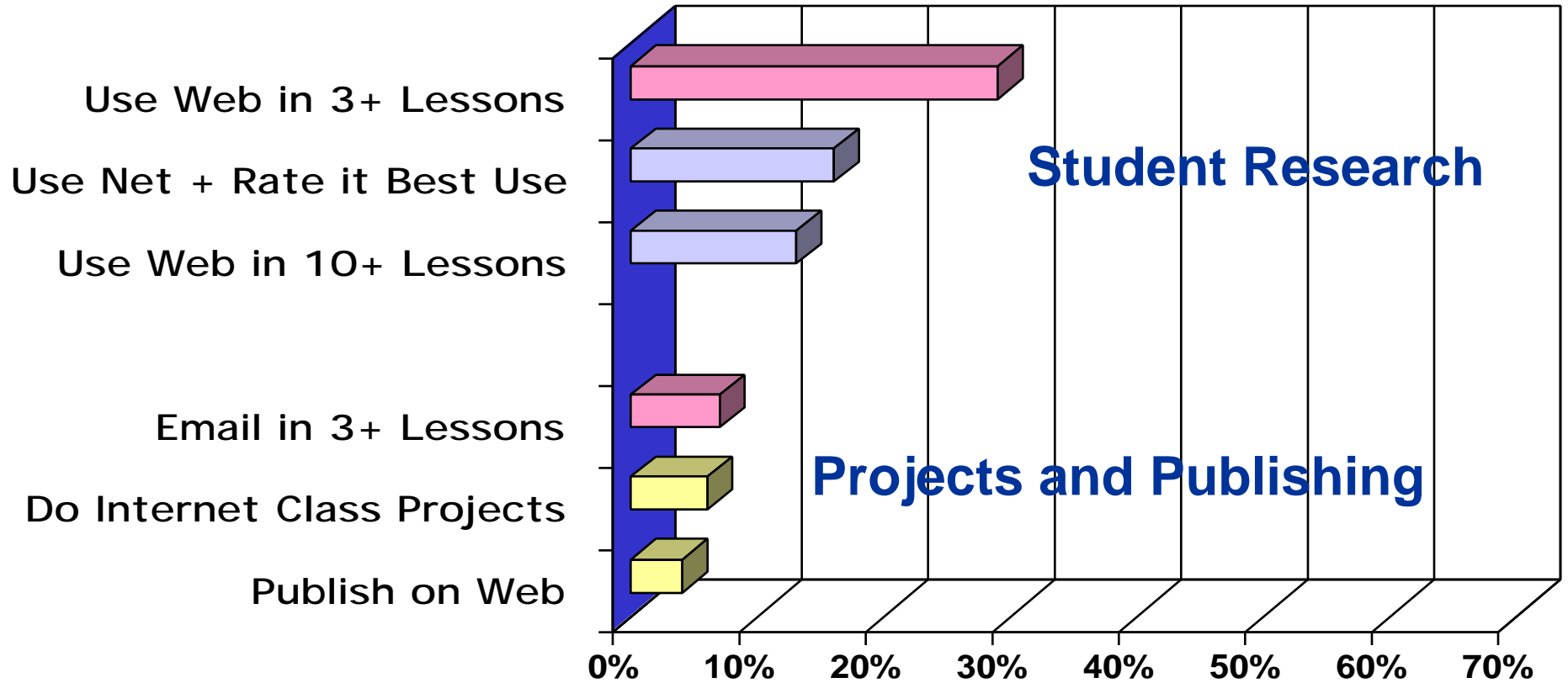
The Percent of Teachers Have Their Students Use...



Teacher Value and Use of the Internet



Teachers Report that their Students Used the Internet in these Ways:



Variables for Next Comparisons

- **Value**
 - Teacher E-mail is Essential for Teaching
 - Class Web Access is Essential for Teaching
- **Teacher Use**
 - Use Internet Information in Lessons weekly
 - Post on Web Occasionally
 - Often Send E-mail to Teachers Elsewhere
- **Research**
 - Web Used in 3+ Lessons
 - Teacher Rates Internet Among Best Software Used
 - Web Used in 10+ Lessons
- **Projects and Pub. (Students)**
 - Students E-Mailed in 3+ Lessons
 - Participate in Internet Projects
 - Kids Publish on Web

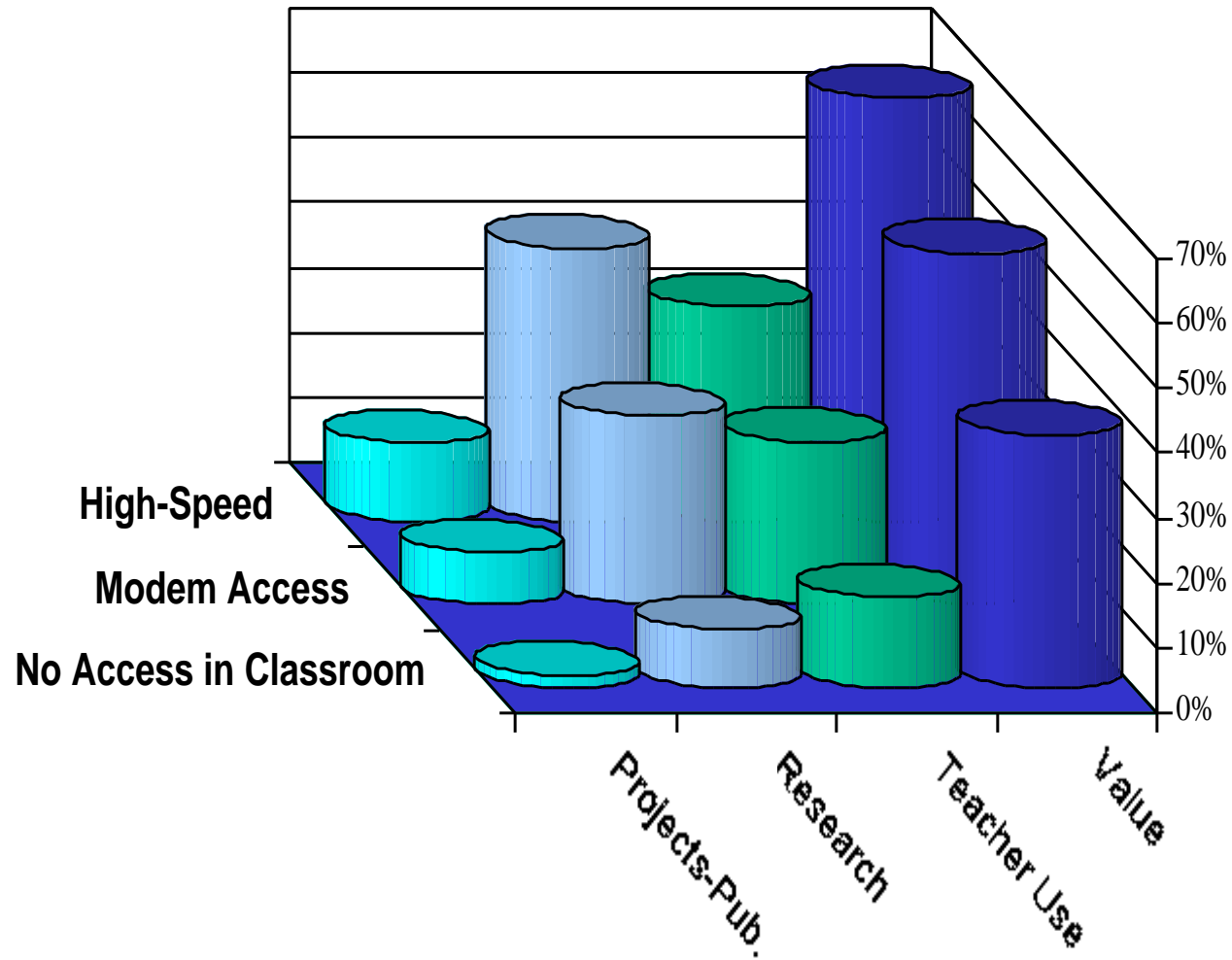
Conditions that Might Favor Internet Use

- Access to Technology
- Teaching Responsibilities
- Experience and Expertise with Technology
- Training and Support
- Personal Characteristics
- Pedagogical Approach

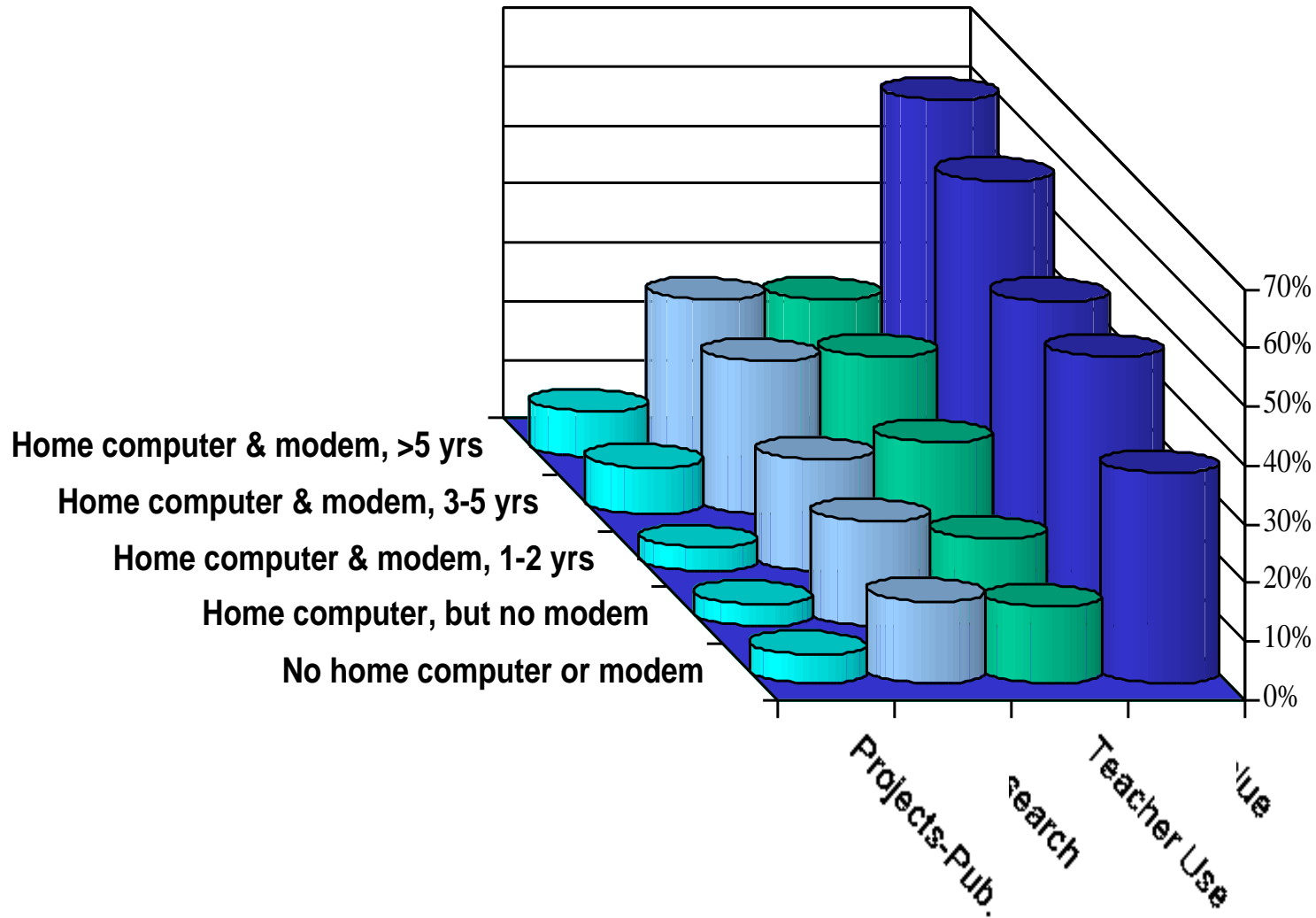
Some of the Specific Conditions Examined

- High-Speed Internet Access in the Teacher's Own Classroom (or just modem access)
- Number of Computers in their Classroom
- Duration of Having Home Computer and Modem
- Subject-Matter and School Level Taught
- Self-reported Computer Skills (scale across 6 items)
- Ability Levels of Classes Taught
- Formal Staff Development on Internet Use
- Informal Contacts with Other Teachers at School (Colleagual Learning)
- Professional Leadership Activities
- Constructivist Pedagogical Beliefs and Practices

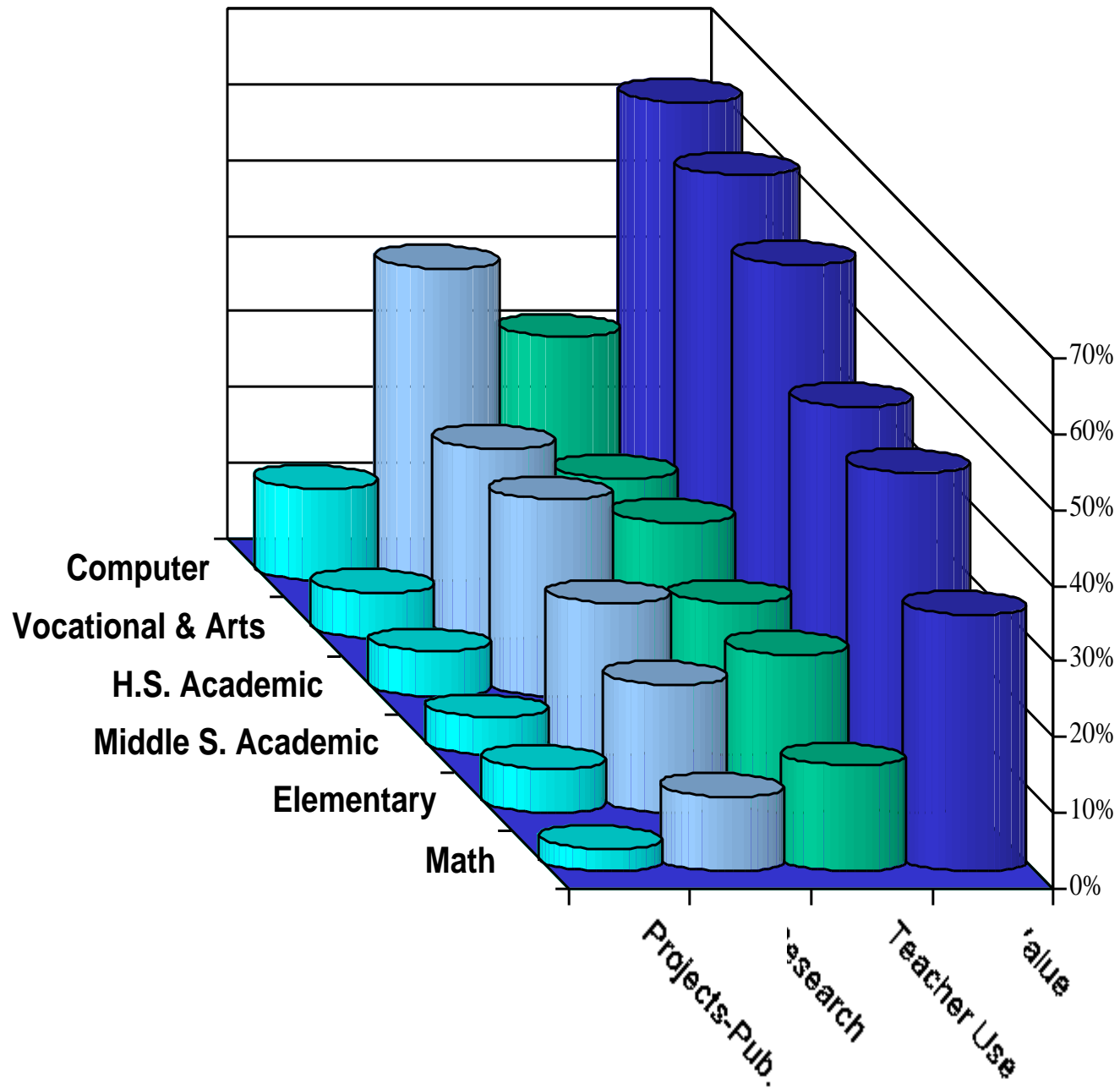
Internet Use by Speed of Access in Classroom



Internet Use by Presence of Home Computer and Modem



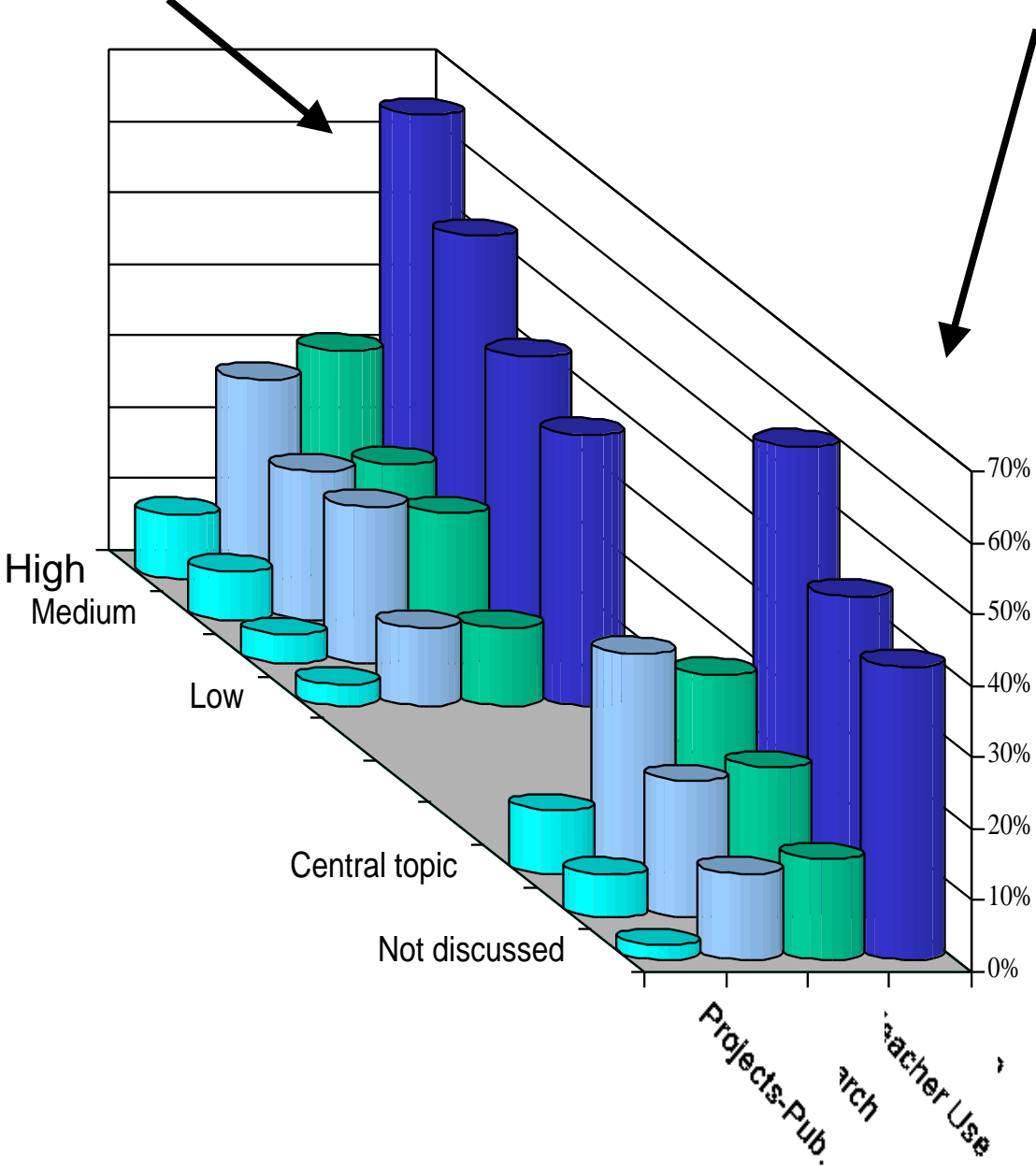
Internet Use by Subjects & School Level



Staff Development vs. Colleague Learning

- Informal Contact with Other Teachers at School: frequency of discussions about...
 - How to teach a concept
 - Ideas for student or group projects
 - Computers, software, or the Internet
 - Personal matters
 - Issues in the subject-matter field
 - Informal observations of each other's teaching
- Formal Staff Development
 - Internet or on-line activities was central topic, mentioned, or not discussed

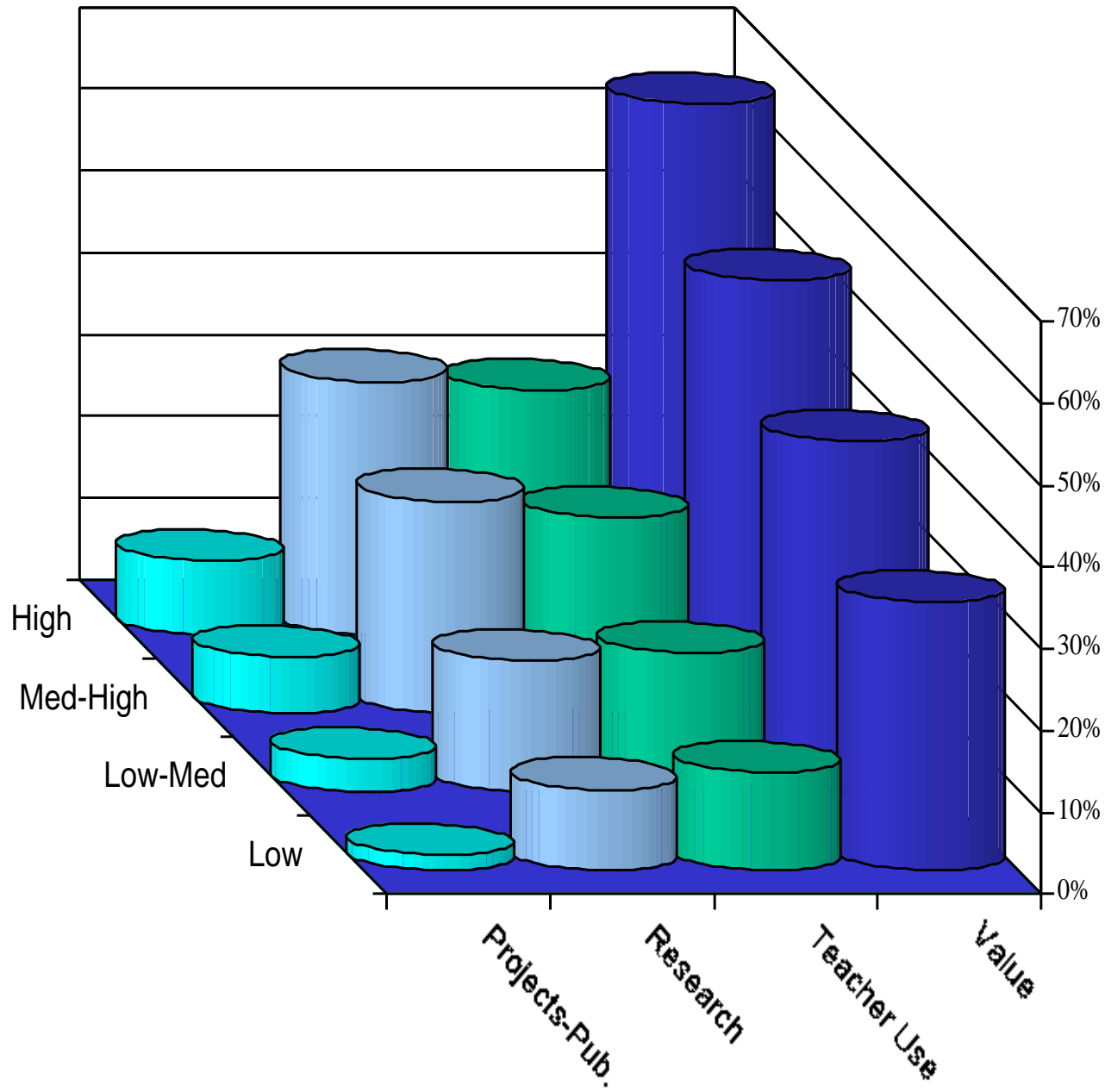
Colleagual Learning and Staff Development



Pedagogical Beliefs and Practices: Constructivism

- **Student responsibility:** determine how to go about solving problems; working together to solve problems; designing their own problems to solve; planning classroom activities; moving freely in class; assessing their own work.
- **Authentic tasks:** demonstrating their work; making a product used by others; do projects that take a week or more; hands-on lab activities
- **Intellectual work:** writing in a journal; attacking problems with no obvious solution or correct answer; holding a debate
- **NOT traditional assignments and viewpoints:** write answers to questions; quiet classroom; teachers explain things to students rather than “facilitate” learning; basic skills must precede “meaningful learning”; background knowledge emphasized; uniform assignments to whole class

Internet Use and Constructivist Pedagogy



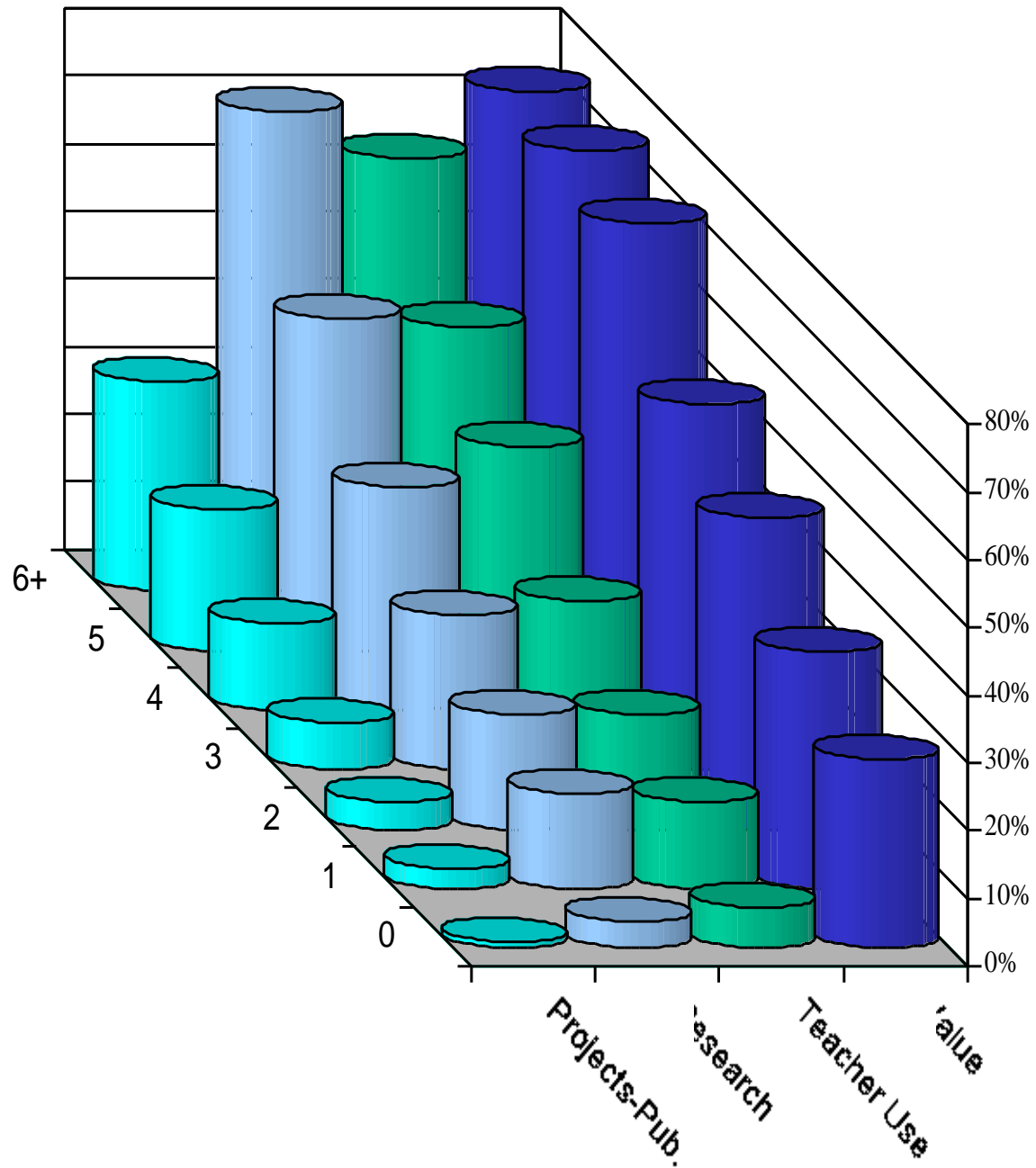
Things that Did Not Affect Internet Use

- College GPA
- Years of Teaching Experience
- Number of Computers in Classroom (some difference)
- Ability levels of classes taught (some difference)

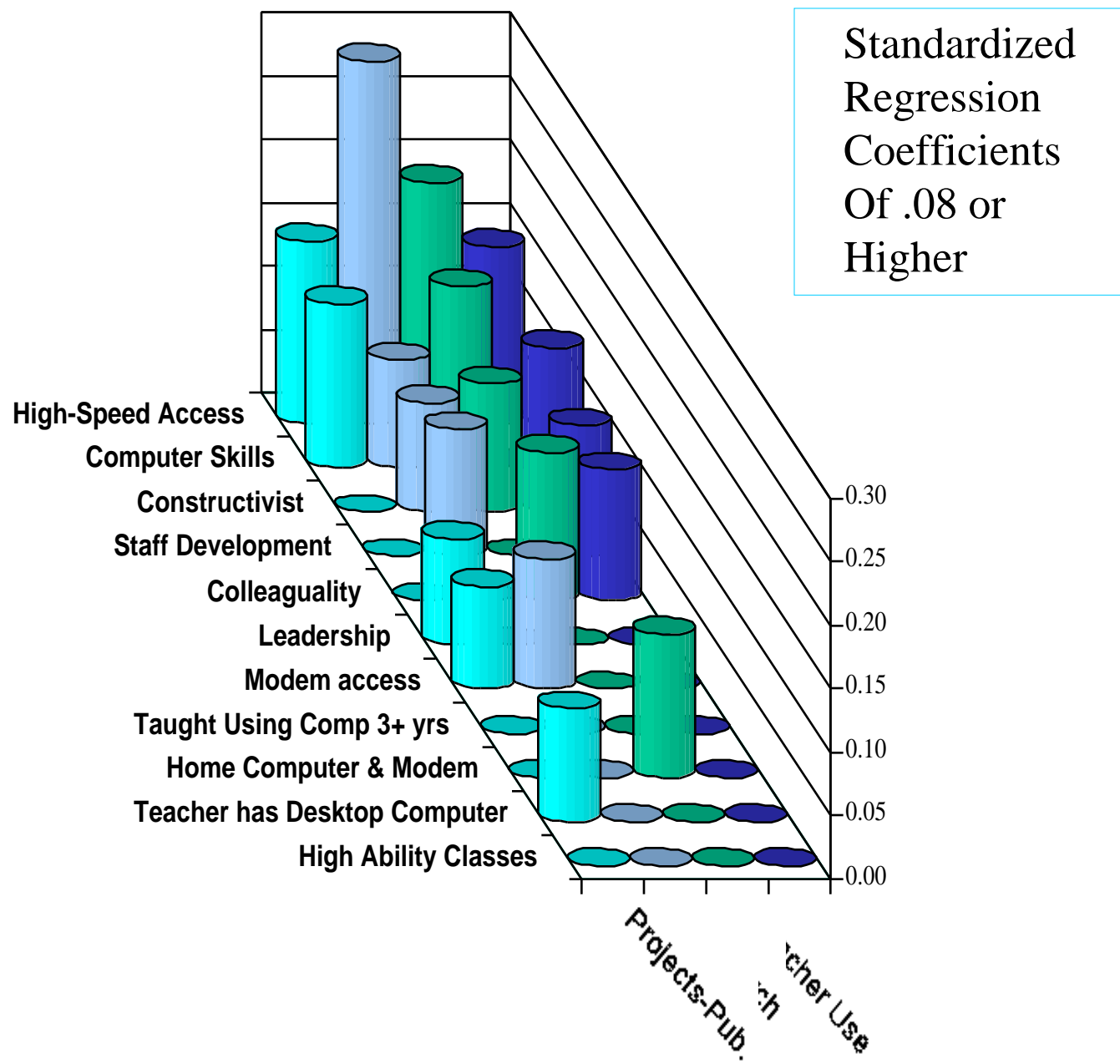
The Big Eight

- **High-Speed Internet Access in the Teacher's Own Classroom**
- **Constructivist Pedagogical Beliefs and Practices (high score on scale)**
- **Self-reported Computer Skills (high score on scale)**
- **Have Computer and Modem at Home**
- **Informal Contacts with Other Teachers at School (high score)**
- **Professional Leadership Activities (high score)**
- **Formal Staff Development on Internet Use**
- **Have Used Computers with Students for at least 3 Years**

Internet Use by Number of Conditions Present



Which Conditions Are Best Predictors of Internet Use?



Future Reports from the Teaching, Learning, and Computing Survey

- School Technology Investment Practices & Teachers' Use of Technology
- Computer Use by Teachers with varying Pedagogical Beliefs and Practices
- Teaching and Computer Use in School Reform and High-Tech Schools
- Technology Coordination, Support, and Staff Development and Teachers' Uses of Technology
- Professional Climate and Culture, Teachers' Pedagogies, and Their Uses of Technology
- Teachers' Assessment of the Impact of Technology on their Teaching Practice
- Computer Use and Pedagogy in Social Studies, Science, Math, etc.
- Computer Use in the Middle Grades
- Conference Presentations at NCSS, SITE, NCTM, NSTA, AERA, and others

For More Information visit our
Research Project Web Site:

www.crito.uci.edu/tlc

- New Findings Presented Weekly
- Discussion group
- Newsletters available by e-mail or hard copy
- Archive of previous newsletters and findings