

Rural Connectivity: What Difference does it Make?

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What difference did it make?



Historical Context

- **Early studies on mass media**
 - Educational radio and TV
- **Early research on interactive communications**
 - Telemedicine, satellite experiments
 - Impacts of rural telephony
- **Internet and mobile communications**
 - Studies on community access to the Internet
 - Mobile applications in developing regions
- **Digital divides**
 - Measuring access and lack of it
 - Telephony, Internet, broadband

Key Concepts

- **Power of networking**
 - Metcalfe's Law:
 - Value of the network: potential connections $n(n-1)$
- **Externalities**
 - Indirect benefits, often overlooked
 - Benefits accrue to others besides users
- **Infomediaries or Digital Navigators**
 - Help others to find information
 - May provide training in digital skills
- **Diffusion**
 - Early adopters, laggards, etc.
 - Importance of collecting demographic data about users
- **Chain of inference**
 - Links between early use and eventual benefits
 - E.g. educational certification → jobs

Connectivity: Necessary but not Sufficient

- **Context**
 - **Economic:**
 - existing economic activities
 - **Cultural**
 - Languages, traditions such as consulting with elders
 - **Infrastructure:**
 - Electricity: availability, reliability, affordability
 - Transportation: roads, aviation, public transportation
- **Content**
 - **Relevance**
 - To local population and conditions
 - **Languages**
 - Is content available in local languages?
- **Capacity**
 - **Digital literacy:**
 - Finding information
 - Assessing quality and veracity of content
 - Using popular software and apps
 - **Organizational capacity**
 - Putting information tools to constructive use

Research and Evaluation

- **Need for micro, not only macro, studies**
- **Need research on users and usage**
- **Research from several disciplines**
- **Sector-specific research**
 - **Distance education**
 - **Telehealth, telemedicine**
 - **Businesses and organizations**
- **Costs and benefits**
- **Sustainability**

Distance Education

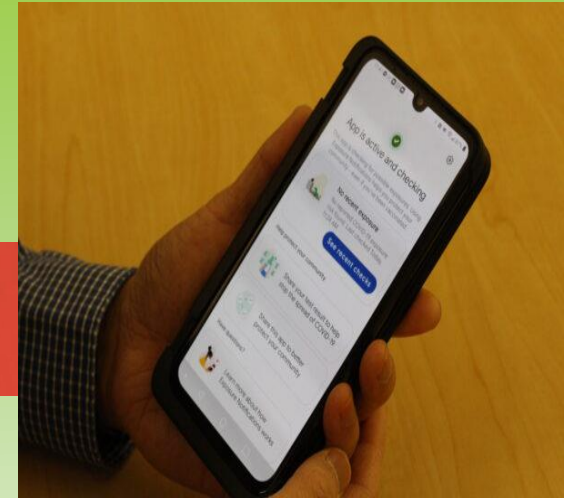
- **What we know:**
 - **Motivated students can learn from anything:**
 - **Teachers, books, audio, video, games ...**
 - **Dropout rates for distance education are high**
 - **Interactive support can reduce dropout rates**
 - **Tutors, study groups, online mentors**
- **What we are learning from pandemic research**
 - **Many students fell behind because of lack of motivation, technical problems, distractions at home, poor teachers' skills, or combination of these**
 - **Students with better home Internet access experienced fewer problems**
- **We need a better understanding of how or under what conditions online instruction CAN become more effective**

Connectivity during the Pandemic

Increased reliance on ICTs

- Telemedicine and telehealth
- Education from home
- Data on COVID 19
- Ordering supplies
- Substitution for travel

Alaska
COVID ENX



Challenges

- Affordability
- Bandwidth
- Quality of service
- Digital skills



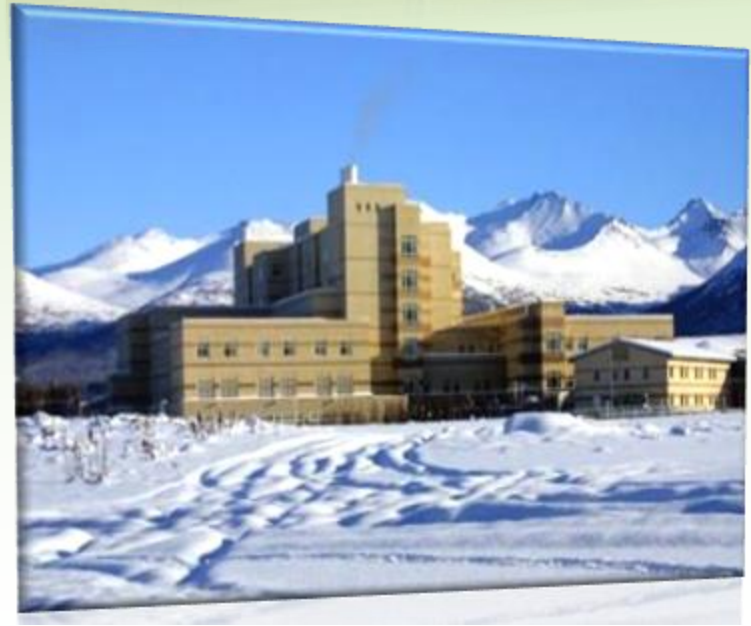
Telemedicine

- **Early research: daily audio consultation between village health aides in Alaska and regional doctors improved both diagnosis and treatment**
- **The Alaska Native Tribal Health Consortium (ANTHC) now provides telemedicine services to all Indigenous Alaskans**
 - **Research on teleconsults for Medicaid cases over six years found that travel was avoided for 75 percent of cases, resulting in net savings to Medicaid of more than \$2.8 million.**
 - **For every dollar spent by Medicaid on reimbursement, \$10.54 was saved on travel costs.**
 - **Teleconsultations that resulted in avoiding travel prevented an estimated 4,777 lost days at work and 1,444 lost days at school for patients**
- **But telemedicine (diagnosis and treatment) and telehealth (training and patient outreach, etc.) were not widely adopted in the U.S., mainly because of institutional barriers**
- **Adoption increased dramatically during the pandemic:**
 - **What have we learned?**

Telemedicine in Alaska: Rural clinics linked to regional hospitals



and major referral hospital: Alaska Native Medical Center, Anchorage



Business and Institutional Benefits

- **Back office functions to support rural businesses such as fisheries and retail**
 - Logistics, benefits, payroll, etc.
- **Improved connectivity can support tourism**
 - Marketing, ecotourism, guest services
- **Connectivity for “guest workers” reduces turnover**
- **Electronic funds transfers help community businesses such as general stores**
- **Online shopping offers more choices, better prices**
 - But requires reliable transportation
- **Training:**
 - Webinars offer online training for employees
- **Governance:**
 - Videoconferencing can replace and augment in-person meetings

But We need more Research...

- **What difference did it make – or could it make?**
- **Distance education:**
 - How to improve completion rates at all levels
 - How online ACP courses can enhance rural education
 - What difference these offerings can make:
 - In future careers? In savings? In economic impact?
- **Telemedicine and Telehealth**
 - Analysis of cost savings
 - Analysis of patient impact
- **Businesses and organizations**
 - Savings in time and/or money
 - Employee recruitment/retention
 - New economic activities or jobs

Research Design

- **Beyond anecdotes**
- **Case studies: helpful, but not conclusive**
- **Defensible field study research designs:**
 - Before and after surveys, data
 - After-only with retrospective data
 - Matched communities: with/without
 - Multiple measurements
- **Engagement**
 - On research plans
 - Local interviewers, etc.
- **Sharing results**
 - Accessible formats

Challenges to Effectiveness: Sustainability

- Often ignored in evaluation research
- Why do positively evaluated projects die?
- Funding:
 - Capex vs. Opex
 - Short term vs. longer term
- Organizational issues
 - Volunteers vs. paid staff
 - Training in management and planning
- Covering operating and maintenance costs
 - Grants
 - Subsidies
 - Providing services to anchor tenants
 - Charging users

Challenges to Effectiveness: Engagement

- Consultation with community members in project planning
- Getting “buy-in” from community
 - Donated facilities, people to be trained, etc.
- Meaningful consultation
 - Need for follow-up and evaluation
- Involvement in project evaluation
 - What have we learned?
 - What would you tell other communities?



Challenges to Effectiveness: Digital Literacy

- **Training for Users**
 - Use of popular software, platforms, apps
 - Searching for information
 - Evaluating content
 - Privacy, security of personal data
- **Training for Staff**
 - Infomediaries
(digital navigators)
 - Technical skills for jobs:
installation, operation,
maintenance of
community networks



Rural Challenges

- **High energy costs**
 - Use of smart renewable energy technologies
 - Computer controlled wind power
 - **Climate change**
 - Floods
 - Erosion
 - Changing vegetation, wildlife
- Need for more information**



Infrastructure Funding: Billions for Broadband!

- **Need for evaluation of these initiatives**
- **Rigorous research designs**
 - Starting now!
 - Before/after, multiple measure field research
- **Demographic data**
- **Historical data**
- **Sustainability analyses**
- **FUNDING for this research**
 - From federal funding?
 - From other sources
- **Important for:**
 - Identification of success factors
 - Identification of gaps and barriers
 - policies: federal, state, local

Conclusions:

- **Lessons from previous research are still relevant**
- **Still many unanswered questions:**
 - **Can short term outcomes contribute to long term benefits?**
 - **What do we know about diffusion and adoption; do demographics of adopters change over time?**
 - **How should externalities or indirect benefits be assessed?**
 - **Under what conditions is connectivity necessary but not sufficient to achieve socio-economic benefits?**
 - **What conditions are necessary for networks to be sustainable?**
- **We need to seize the opportunity for research on post-pandemic and broadband infrastructure initiatives!**

Thank You!

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