



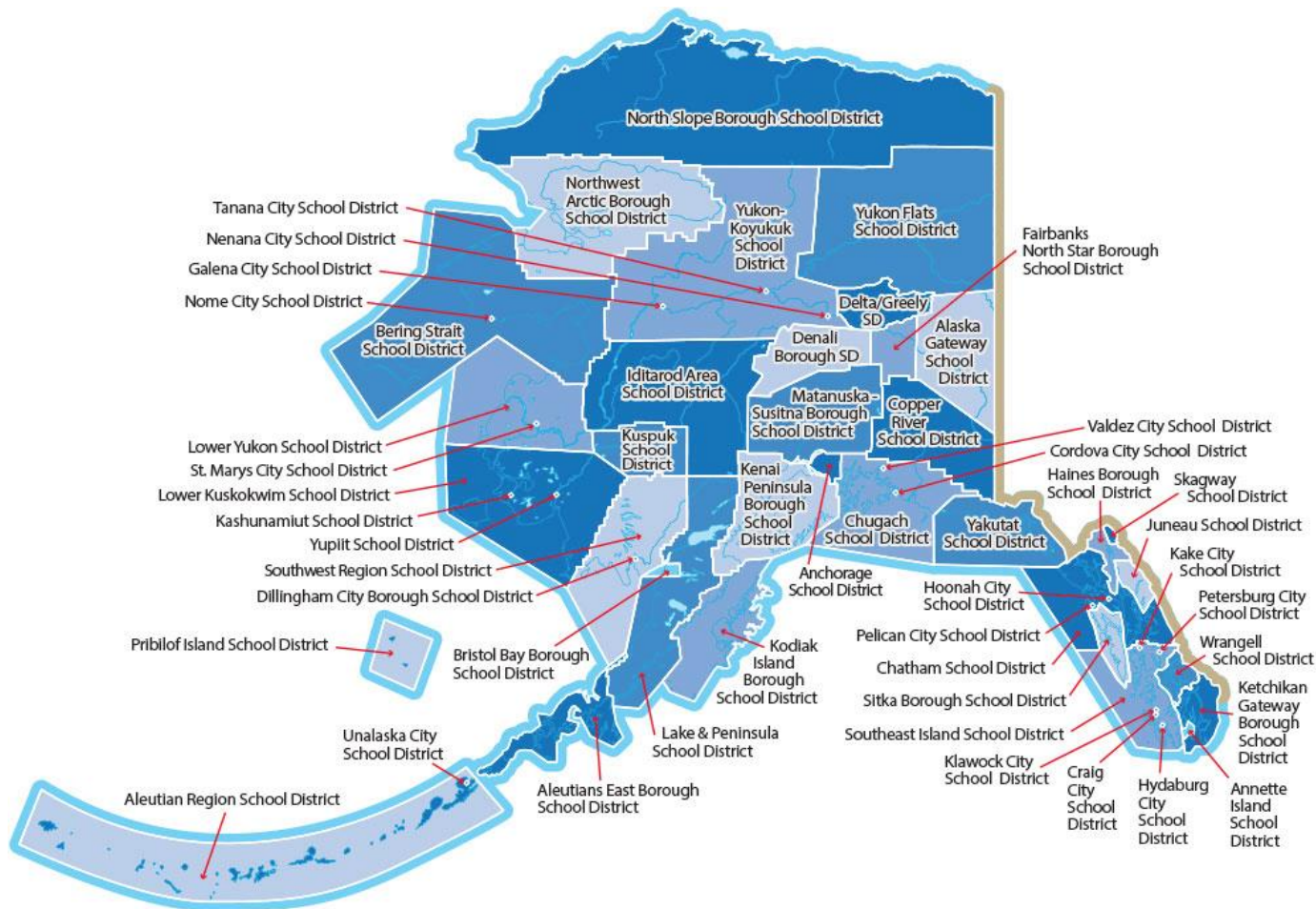
# Joint Education Committee District Broadband Presentation

Facilitated by:

Dr. Lisa Skiles Parady, Ex.Dir. ACSA

*Leadership, Unity & Advocacy for  
Public Education*

# One State – Alaska's Students!





Districts in regions with fiber broadband technology that have offered a fair amount of virtual education.

# Joint House and Senate Education Broadband Presentation



**Kenai Peninsula Borough School District**

**February 6, 2017**

- **Sean Dusek, Superintendent**
- **Amanda Adams, Educator**
- **Eric Soderquist, Director of Information Services**

# KPBSD Broadband Access

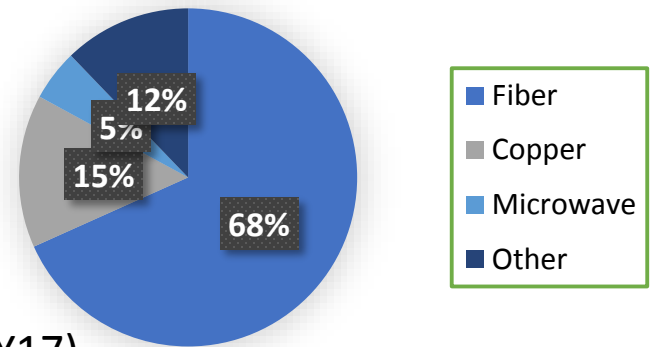
- 97.6% of schools exceed 100Mbps per1000 students, while only 14.3% exceed 1Gbps per 1000 students\*

- 44 schools – 66.67% fiber\*

- Service cost by technology

- Fiber \$7.43 per Mbps
- Microwave \$625 per Mbps
- Copper T1 \$1,242.50 per Mbps

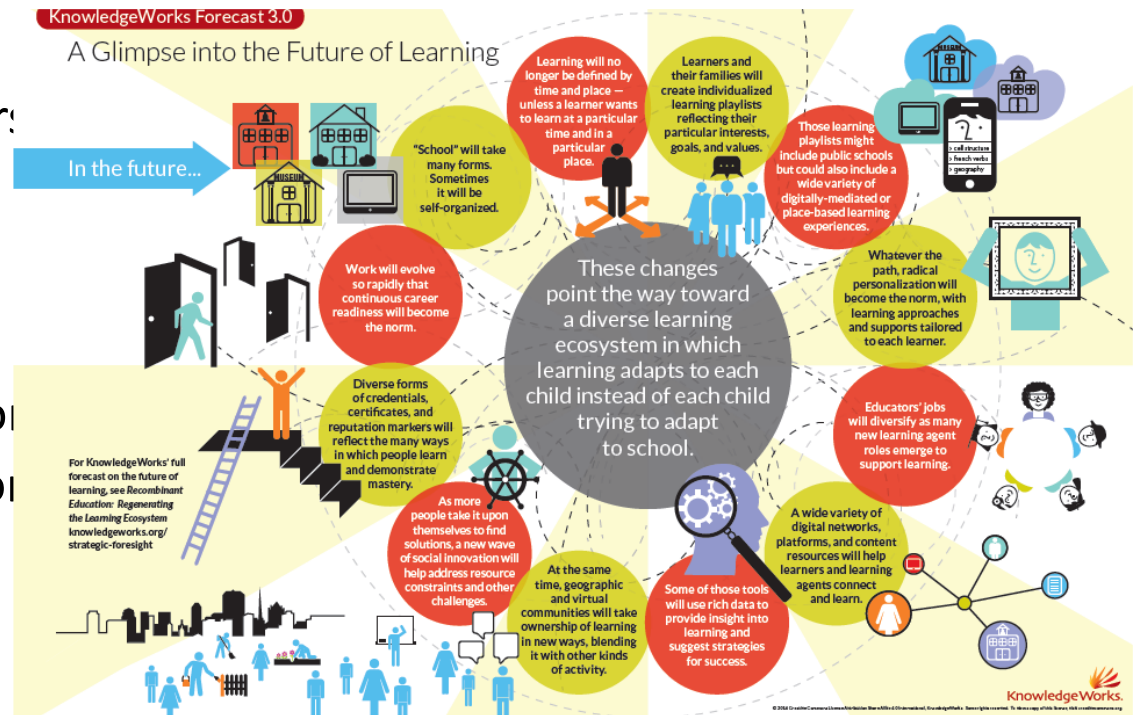
## Infrastructure @KPBSD



- Pre-Discount \$1,044,095 Telecommunications (FY17)
  - E-rate subsidy \$683,000 (FY17)
- Wireless connectivity in all district facilities
- E-Rate impact
  - Over \$10.9 Million in E-Rate support since 1998
  - Challenge: leverage E-Rate “Special Construction” provisions for non-fiber sites while navigating high cost of infrastructure buildout

# KPBSD Programs

- **Online courses**
  - Evolved over 10 years
- **Video-conferencing**
  - Polycom
  - Skype for Business
  - Student Collaboration
  - Teacher Collaboration
- **Blended learning**
  - Canvas
  - Digital Parallel



# Student Program Data

<u>Distance Education Courses</u>	2013-2014	2014-2015	2015-2016
Total Course Enrollments	2038	2398 18% ↑	2612 9% ↑
Success Rates	84%	83%	86%
Individual Students Enrolled in Distance Courses	662	914 38% ↑	1063 16% ↑

**KPBSD 9th – 12th grade: 1,063 students take an online or distant delivery course**

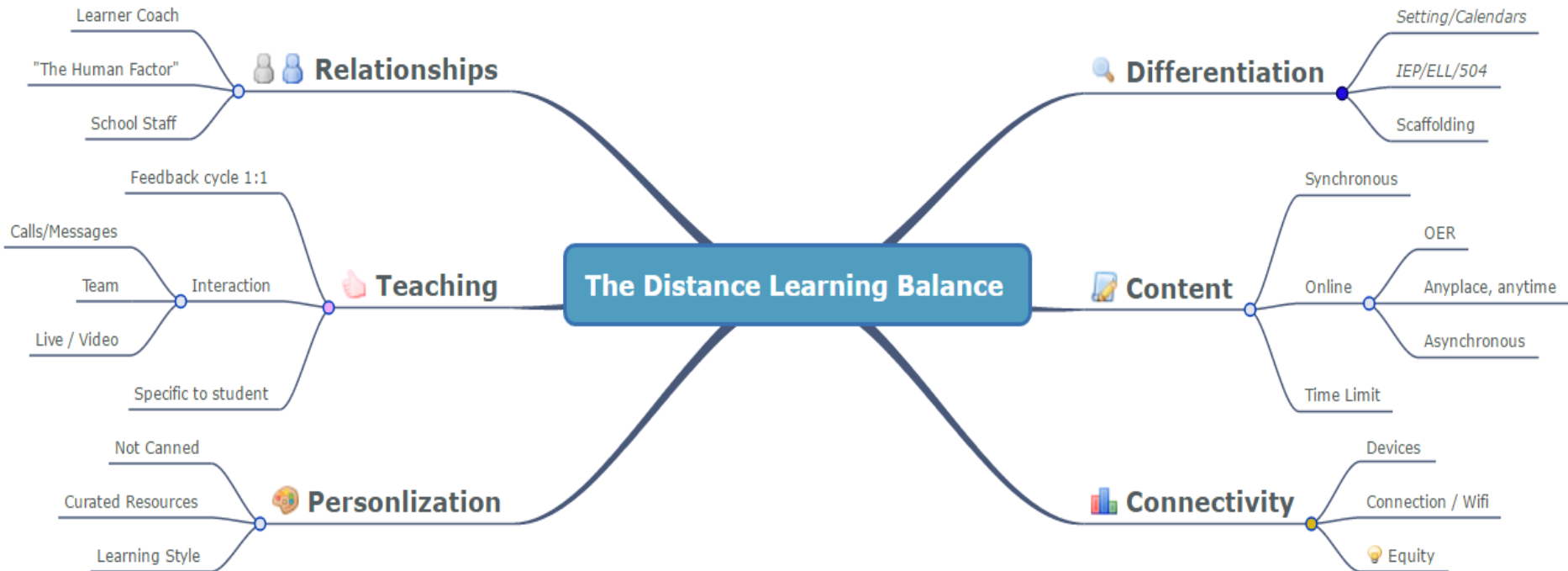
**41% KPBSD high school students take an online or distance delivery course**

# Staff Program Data

<u>Canvas Usage</u>	Fall, 2015	Spring, 2015	Fall, 2016
Teachers/Admin	29	196 575% ↑	283 44% ↑
Students	182	2500	3995
Courses	68	638 838% ↑	1246 95% ↑



# KPSBD Reality



Distance Education augments the existing system by expanding the reach of resources beyond geographic boundaries but remains limited without on the ground support.

# Conclusion

- This is just a taste of what happens in KPBSD
- More details will be shared in the next few days
- KPBSD students would be happy to share their perspectives
- Thank you for your time
- Questions?

[www.KPBSD.org](http://www.KPBSD.org)

# Virtual Education in the Anchorage School District

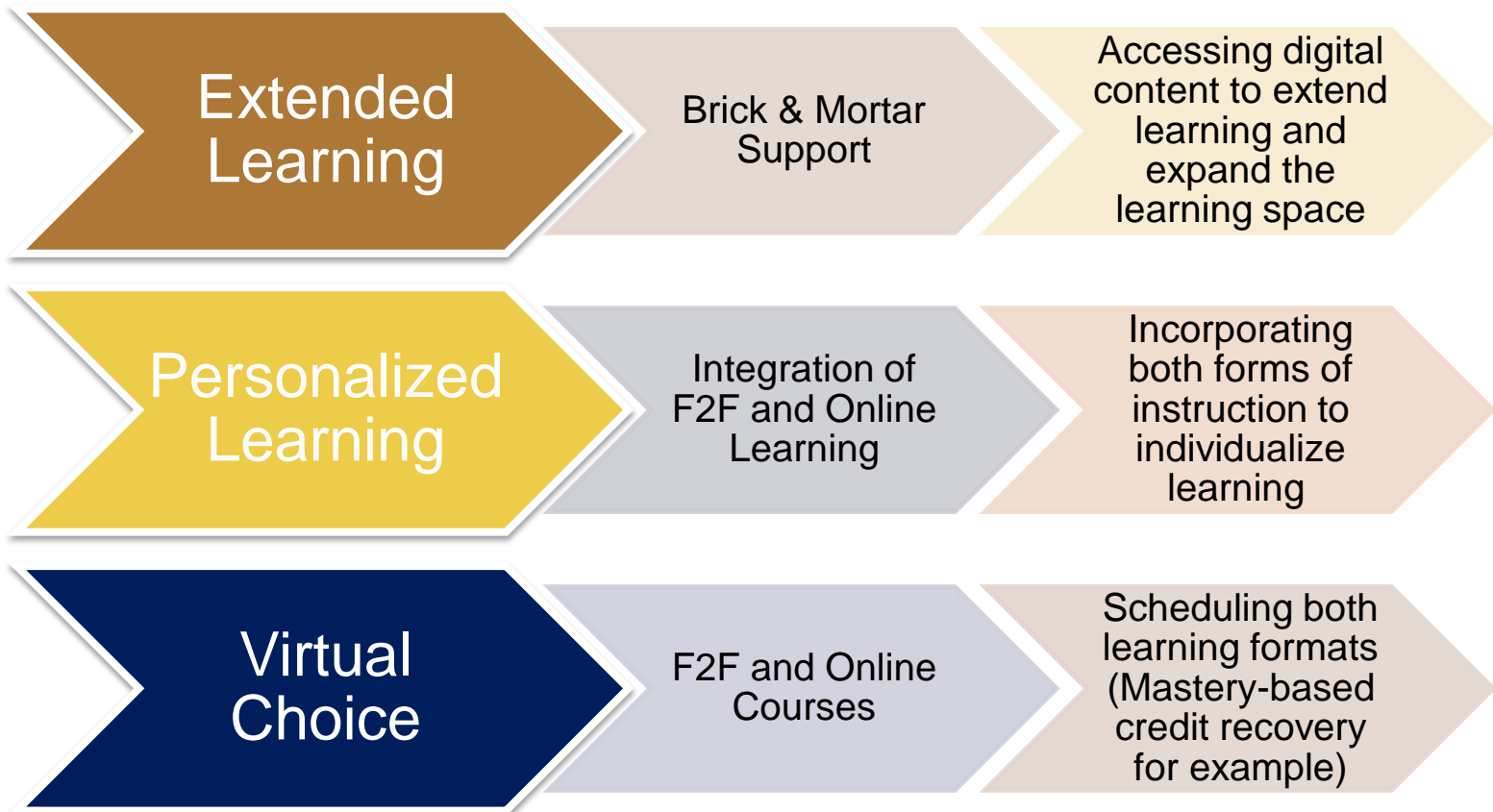
February 6, 2017

Mike Fleckenstein

Kathy Moffitt



# Continuum of Virtual Learning in ASD





- Online Assessments
- Practice and Reinforcement
- Online Writing Instruction & Feedback
- Digital Textbooks





- Multi-Tiered System of Supports
  - Acceleration
  - Intervention
- Adaptive content and assessment
- Maximize the benefits of technology and instruction



# ASD Personalized Learning - 16/17

- Elementary Students
  - Math – 6,000
  - ELA – 16,500
- Secondary Students
  - Math – 650
  - ELA – 1,150



# Virtual Choice

F2F and Online Courses

Scheduling both learning formats (Mastery-based credit recovery for example)

- Any time, anywhere, any pace
  - Access to more courses
  - Scheduling opportunities
  - Choice of content and delivery
- Fully Online Courses
  - Original Course Attempt
  - Credit Recovery Courses





# ASD Virtual Choice - 15/16

## Apex

- 5506 Enrollments
- 5326 credits earned
- 82% C or Better
- 97% Success Rate

## iSchool

- 3800 Enrollments
- 3500 credits earned
- 71% B or Better
- 96% Success Rate



## ASD Internet Bandwidth – 16/17

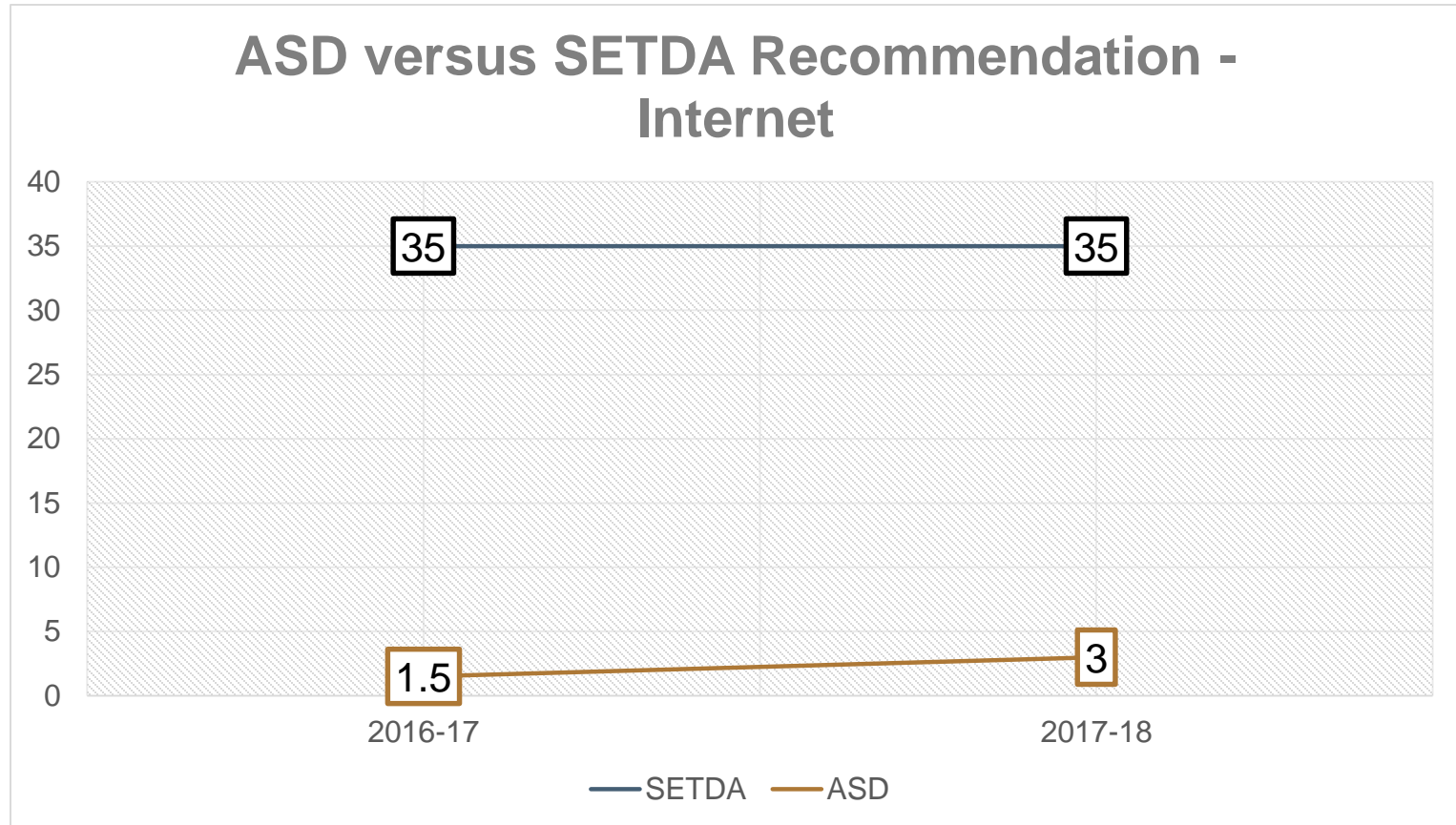
32 - 64 Kbps per student  
(1.5 Gbps, 3 Gbps Bursting)  
\$37,500 per month

## ASD Internet Bandwidth – May 2017

64 - 128 Kbps per student  
(3 Gbps, 6 Gbps Bursting)  
\$15,300 per month



# District Bandwidth – State Educational Technology Directors Association (SETDA) Recommendation



SETDA – Broadband Imperative II



# ASD Virtual Learning Investments

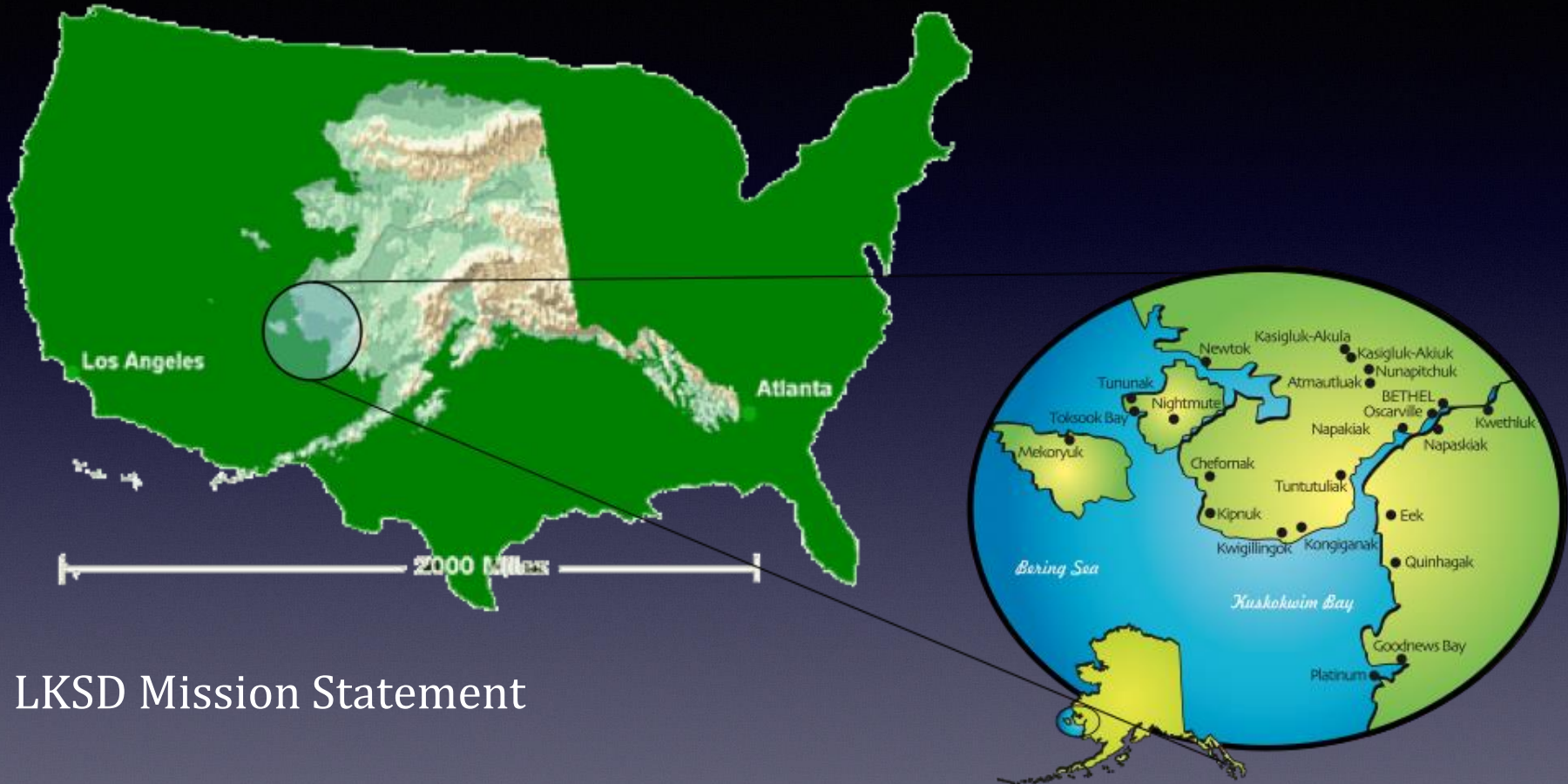
- Connectivity – WAN and Internet
- Device refresh paired with BYOD
- Curricular updates to embrace technology enabled learning
- Professional development





Districts who have very limited broadband access but still use virtual education including through caching instructional content.

# Bethel, AK – Dan Walker, Superintendent



## LKSD Mission Statement

The mission of the Lower Kuskokwim School District is to ensure bilingual, culturally appropriate and effective education for all students, thereby providing them with the opportunity to be responsible, productive citizens.



# Who Are We?

Lower Kuskokwim School District includes 27 schools in 22 villages plus the regional hub of Bethel. With Just over 4100 students K-12, 95% of which are Alaska Native

The school district is geographically the size of West Virginia.

LKSD is a recognized as a leader in distance learning:

AdvancED Accreditation – recognized KLSD's distance learning network as a powerful practice.

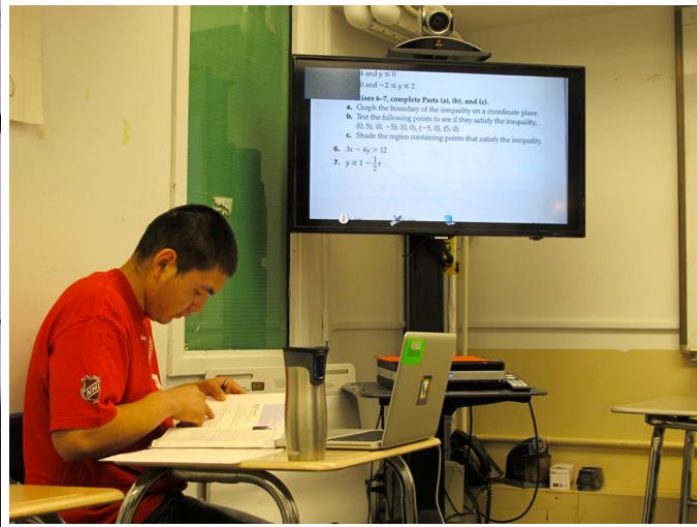
In 2014, LKSD Superintendent Daniel Walker was recognized by Education Week as one of 14 national leaders in their “Leaders to Learn From” series for work on distance and digital learning.

(<https://leaders.edweek.org/leaders/2014/>)

<https://www.ncta.com/platform/broadband-internet/how-gci-internet-is-transforming-a-rural-school-district-in-alaska/>



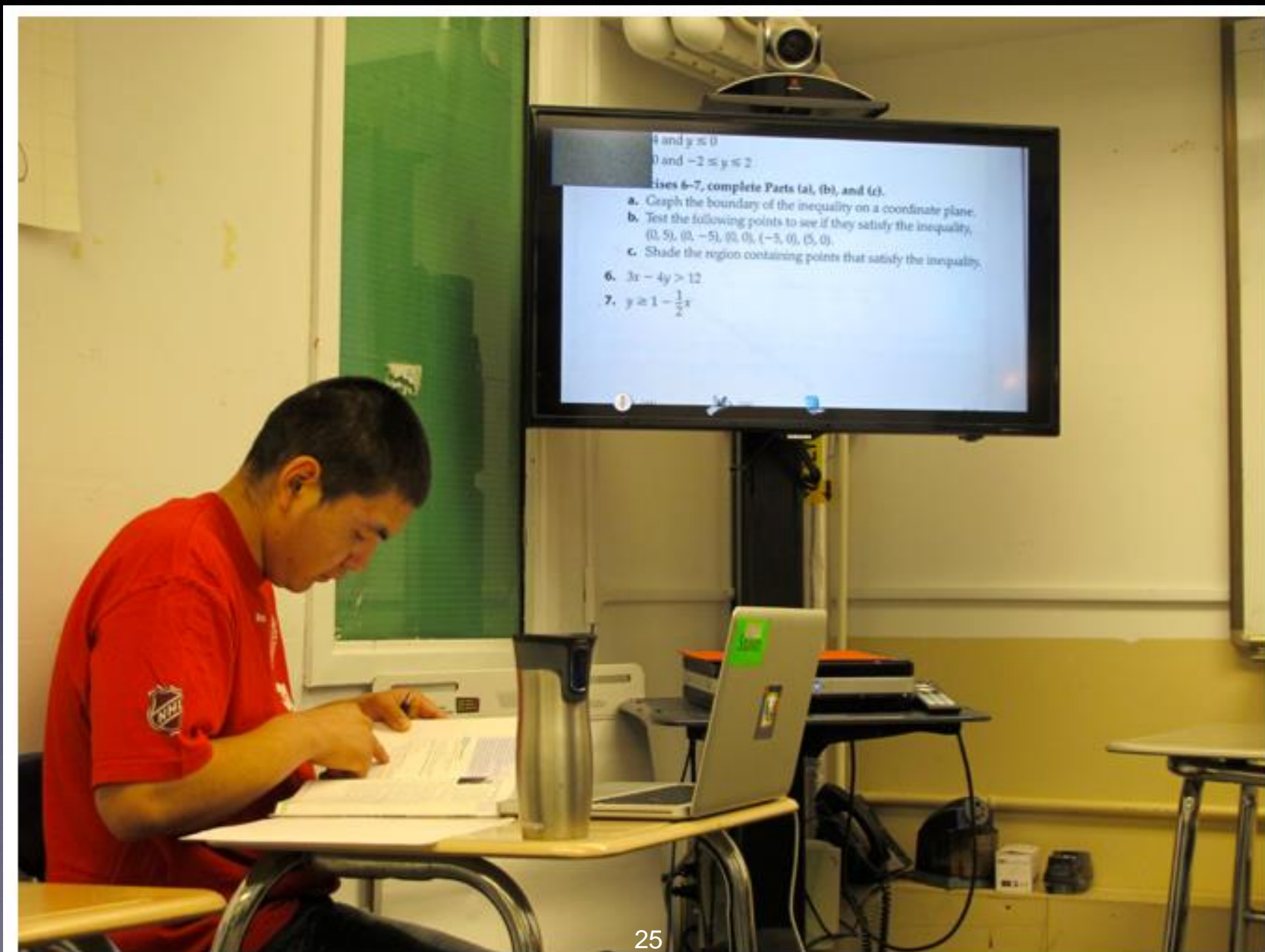
# Education over 21,000 square miles.



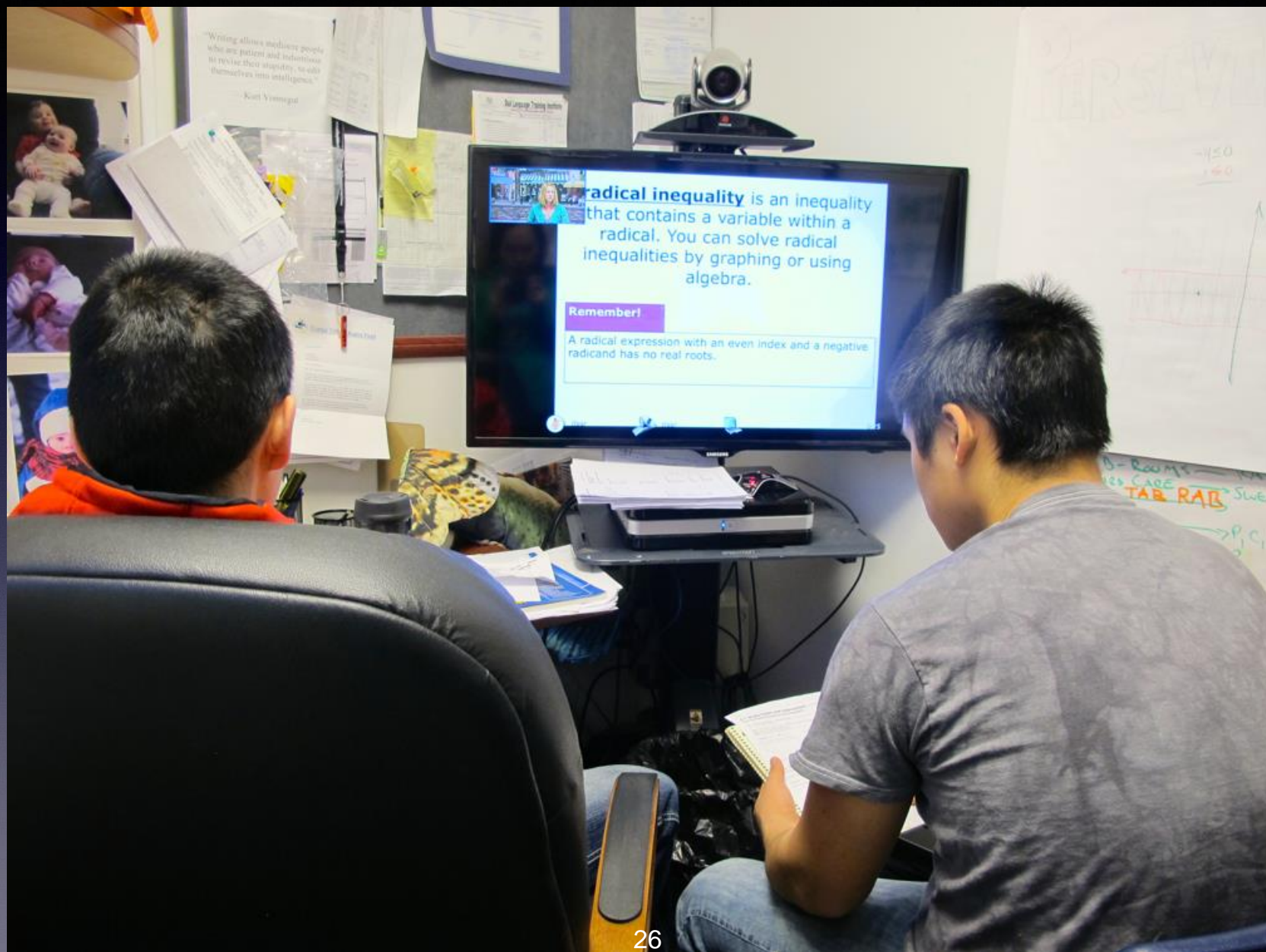
Culturally  
Grounded +  
Academically  
Strong = Post  
Secondary  
Success



# Education over 21,000 square miles.



# Education over 21,000 square miles.





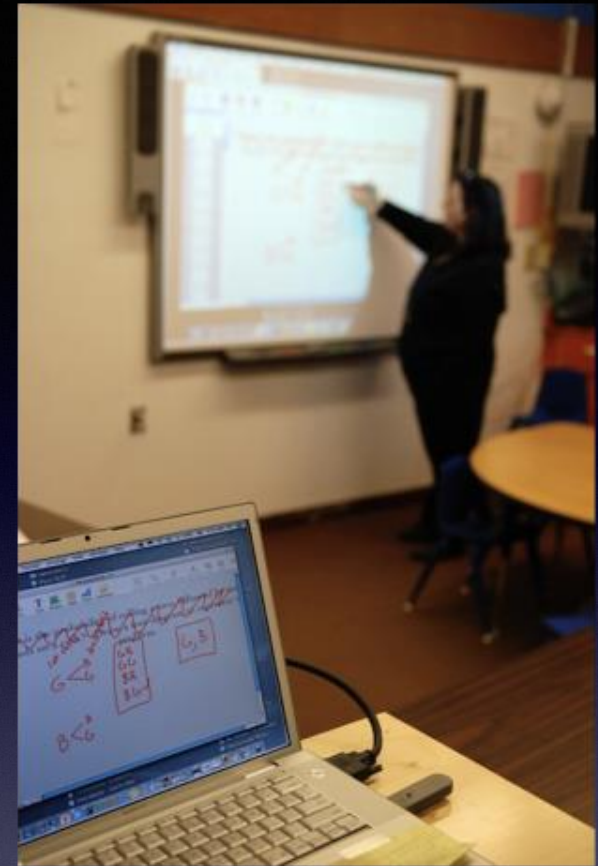
Education over 21,000 square miles.



Education over 21,000 square miles.

**Highly engaging classes that are hands-on.**

**Facilitation of classes takes place over VTC with site coaches collaborating with VTC teacher.**



Throughout 1<sup>st</sup> semester teams are enrolled in a Middle School Robotics course over the VTC where they learn the programming language and build their robots. By the end of 1<sup>st</sup> semester they have built their robots and spent time collaborating as a class as well as with other schools over the VTC.

During the first week in December all the teams fly to Bethel where there is a large First Lego League District Competition.



# Education over 21,000 square miles.

Our distance learning network is ever changing and will constantly be a work in progress and we look to innovate and provide engaging experiences for students.

Infrastructure is an important issue and LKSD has received USDA Rural Utility Services grants to help offset the cost of equipment. We have coupled this with foundation funds to stay current with technology.

High definition VTC takes significant bandwidth. When we couple this with all the other applications we use to run the school district, bandwidth is at a premium.

In order to innovate and provide students with the best possible education experience, our bandwidth needs are on the rise.

Bandwidth is needed for applications across the spectrum, from education apps to business office applications.

We understand the challenges the legislature is facing and appreciate the work you are doing to solve the fiscal crisis.

There is a limit to what we can do with technology alone, but we could do so much more if the infrastructure existed to increase bandwidth.

# Education over 21,000 square miles.

Lower Kuskokwim School District has a 300Mbps connection to the Internet.

This 300Mbps connection has to provide internet access to over 4100 students and over 500 staff members.

That averages out to roughly .07Mbps/student.

According to the SETDA Broadband Imperative Report from September 2016 a school district the size of LKSD should have 1.0Gbps of internet connectivity per 1000 students.

The 2020 standard for connectivity rises to 3Gbps

With over 4100 students LKSD should have 4.1Gbps of internet connectivity.

300Mbps of internet connectivity is approximately 7% of the national standard of 4.1Gbps.

In order to make this small amount of bandwidth accommodate our entire district, we must manage our network to an extreme level.

This limitation severely limits our ability to provide additional online resources for our students.



# Education over 21,000 square miles.

In 2020 the standard for connectivity rises to 3Gbps/1000 students for a school district the size of LKSD.

For LKSD that would mean an internet connection of 12Gbps. We are currently at ~2.5% of that standard.

We simply cannot provide more online educational services to students without a substantial increase in the bandwidth capacity.

To make this a reality it will take substantial investment in infrastructure and assurance that Rural Districts have access to that bandwidth at reasonable rates.

LKSD currently pays around 28 million/year for internet and wide area network connectivity. 90% of that is reimbursed through the Federal E-Rate program.

That means we pay 2.8 million out of our budget for the remaining 10%. And this does not include investment in our own building level infrastructure or classroom technology purchases.

The State of Alaska, Broadband Assistance Grant has helped offset a portion of the 2.8 Million and we are extremely thankful for that assistance.

This is a huge equity issue for Rural students.

The logo of the Lower Yukon School District is a circular emblem. It features a central yellow circle with a blue outline of a fish or a similar aquatic creature. The words "TRADITION", "CULTURE", and "EDUCATION" are arranged around this central circle. The outer ring of the logo contains the text "LOWER YUKON SCHOOL DISTRICT" at the top and "OUR COMMUNITIES" at the bottom.

# Joint Education Committee Testimony

Technology Access and Cost  
Lower Yukon School District  
Dr. Robert Picou, Superintendent



Ten Schools:

Number of Students:

Alakanuk	251
Emmonak	251
Hooper Bay	452
Kotlik	203
Marshall	134
Mountain Village	239
Russian Mission	174
Scammon Bay	120
Sheldon Point	61
Pilot Point	174
District Total:	2023

## What are your learning goals?

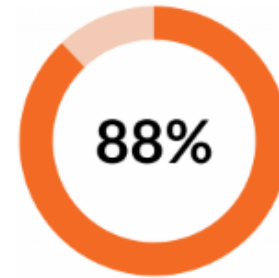
Individual Classroom Technology Use	Everyday 1:1 Campus-wide Technology Use	Media-rich Technology Use
<ul style="list-style-type: none"><li>○ Basic network infrastructure for the school is in place; additional classroom use is typically approved by staff and curriculum development.</li><li>○ Sufficient infrastructure and devices exist to facilitate basic and media-rich assessments or classroom use, but not all classrooms at the same time.</li></ul>	<ul style="list-style-type: none"><li>○ Technology is widely available; most students interact with a computing device most school days.</li><li>○ All teachers have basic digital literacy.</li><li>○ Digital curriculum, but not necessarily rich media, is a major part of one or more subject areas.</li><li>○ Teachers and students expect the Internet to be available when they need it.</li></ul>	<ul style="list-style-type: none"><li>○ Every student has a technology-enabled learning experience during the school day.</li><li>○ Video and other rich media are used as a crucial part of the everyday learning experience.</li><li>○ Instruction would not be productive if the Internet were unavailable for a day.</li></ul>
<b>Moderate Bandwidth</b> <hr/> 1 Access Point per 1.5 Classrooms 100 Kbps per student Internet bandwidth	<b>High Bandwidth</b> <hr/> 1.2 Access Points per Classroom 1 Mbps per student Internet bandwidth	<b>Very High Bandwidth</b> <hr/> 1.2 Access Points per Classroom 1+ Mbps per student Internet bandwidth

Education Superhighway: Network Essentials for Superintendents  
<https://www.educationsuperhighway.org>

## Schools Need High-Speed Connectivity



In 2013, 30% of school districts were meeting the 100 kbps/student goal



In 2016, 88% of school districts are meeting the 100 kbps/student goal

“We can think of bandwidth as the amount of data that can be delivered to each student. For example, today, students need a minimum of 100 kbps of Internet bandwidth—[by 2018, that will increase to 1 Mbps per student.](#)”

### Basic Internet

100 Kbps per student

1 Access Point /1.5 Classrooms

### 1:1 Internet

1 Mbps per student

1.2 Access Points/1 Classroom

### Media Rich

1+ Mbps per student

1.2 Access Points/1 Classroom

	Past			Present			Future		
School	Student Count	Mbps	Kbps/student	Student Count	Mbps	Kbps/student	Student Count	Mbps	Kbps/student
ALAKANAK SCHOOL	251	5	19.9	251	15	59.8	251	26	103.6
EMMONAK SCHOOL	251	5	19.9	251	15	59.8	251	26	103.6
HOOPER BAY SCHOOL	452	5	11.1	452	15	33.2	452	46	101.8
KOTLIK SCHOOL	203	5	24.6	203	15	73.9	203	21	103.4
MARSHALL SCHOOL	134	5	37.3	134	15	111.9	134	15	111.9
MOUNTAIN VILLAGE SCHOOL	239	5	20.9	239	15	62.8	239	24	100.4
PILOT STATION SCHOOL	174	5	28.7	174	15	86.2	174	18	103.4
RUSSIAN MISSION SCHOOL	120	5	41.7	120	15	125.0	120	15	125.0
SCAMMON BAY SCHOOL	138	5	36.2	138	15	108.7	138	15	108.7
SHELDON POINT SCHOOL	61	5	82.0	61	15	245.9	61	15	245.9
Total	2023	50	24.7	2023	150	74.1	2023	221	109.2
							To increase current bandwidths to levels appropriate to the 100Kbps/student level you would need to nearly 50% more than your current levels.		

LYSD Access Points: 1 Access Point per 4 Classrooms

## Cost for Inadequate Broadband Access

<u>Monthly Recurring Cost</u>	<u>E-Rate 90%/LYSD Out of Operating Fund</u>
\$395,000	\$40,000 Monthly Recurring Cost
\$2,600 per Mbps	\$260 Mbps Monthly Recurring Cost
\$195 per student	\$19 per student Monthly Recurring Cost

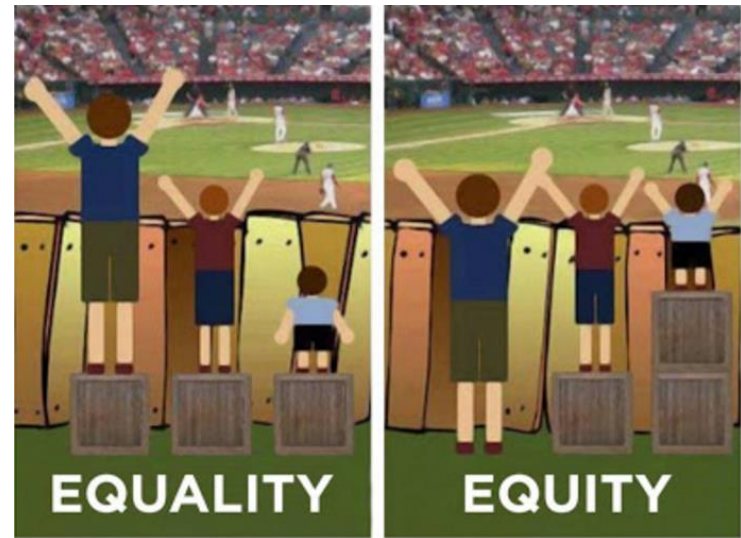
Alaska's Disconnected Schools: "On average, K-12 schools have 246 kbps of internet connectivity—a third of what most people on the mainland U.S. need to stream Netflix." *Atlantic Journal* 2015

## Observations

- Limited to basic network usage.
- Extremely limited on internet based applications.
- To accomplish a single video call, live with other schools in the District or outside of the District, requires prioritization of traffic. When providing a 2 Mbps video conferencing priority, we take those 2 Mbps from our total and restrict access to students all across the district. The Kbps for each student is reduced.
- Synchronous distance learning, such as video conferencing, and asynchronous distance learning, such as web-based credit recovery programs are very challenging without greater broadband access.
- Limited Expertise and Leadership.
- LYSD needs a significant investment in networking infrastructure, which includes access points, hardware in the hands of students, learning applications, and staff development.

The sea is choppy and the boat is full of holes. It is not about a new boat, but about how we get the only boat we have to the shore.

“Should per student funding at every school be exactly the same? *That’s a question of equality.* But should students who come from less get more in order to ensure that they can catch up? *That’s a question of equity.*” *The Education Trust*

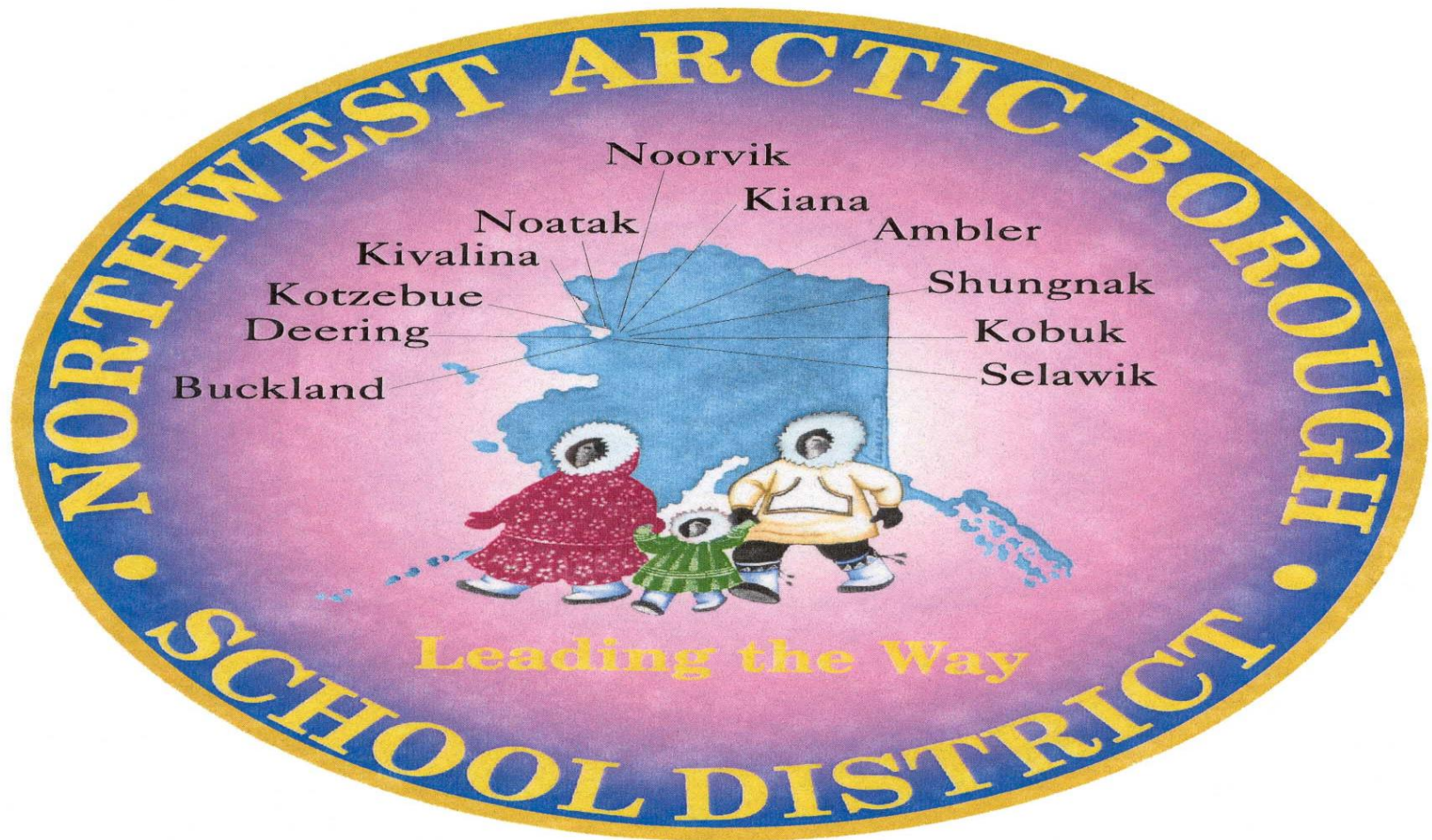




Districts that do not have fiber (microwave and satellite technology) and have used little or no virtual education.



Dr. Annmarie O'Brien, Superintendent  
and Amy Eakin  
Northwest Arctic Borough School District



# Superintendent Brett Agenbroad, ABD Pribilof School District





# THANK YOU! & Questions?



## For More Information

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