



“Beyond Campus” Learning

The Adaptive Network™ for Education

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Preparing students today for an increasingly automated work force of the future...

“Automation, machines are replacing so many jobs. Many people think that only the poor and uneducated are being displaced. I am afraid that in a few years everyone will be replaceable.”



Today

Automating repetitive, standardized or time-consuming tasks and providing assisted intelligence.

Increased demand for STEM skills to build new tech ecosystem.

Emerging

Fundamental change in the nature of work. Humans and machines collaborate to make decisions.

Unlikely human traits – emotional intelligence, creativity, persuasion, innovation – become more valuable.

Future

Adaptive continuous intelligent systems take over decision-making.

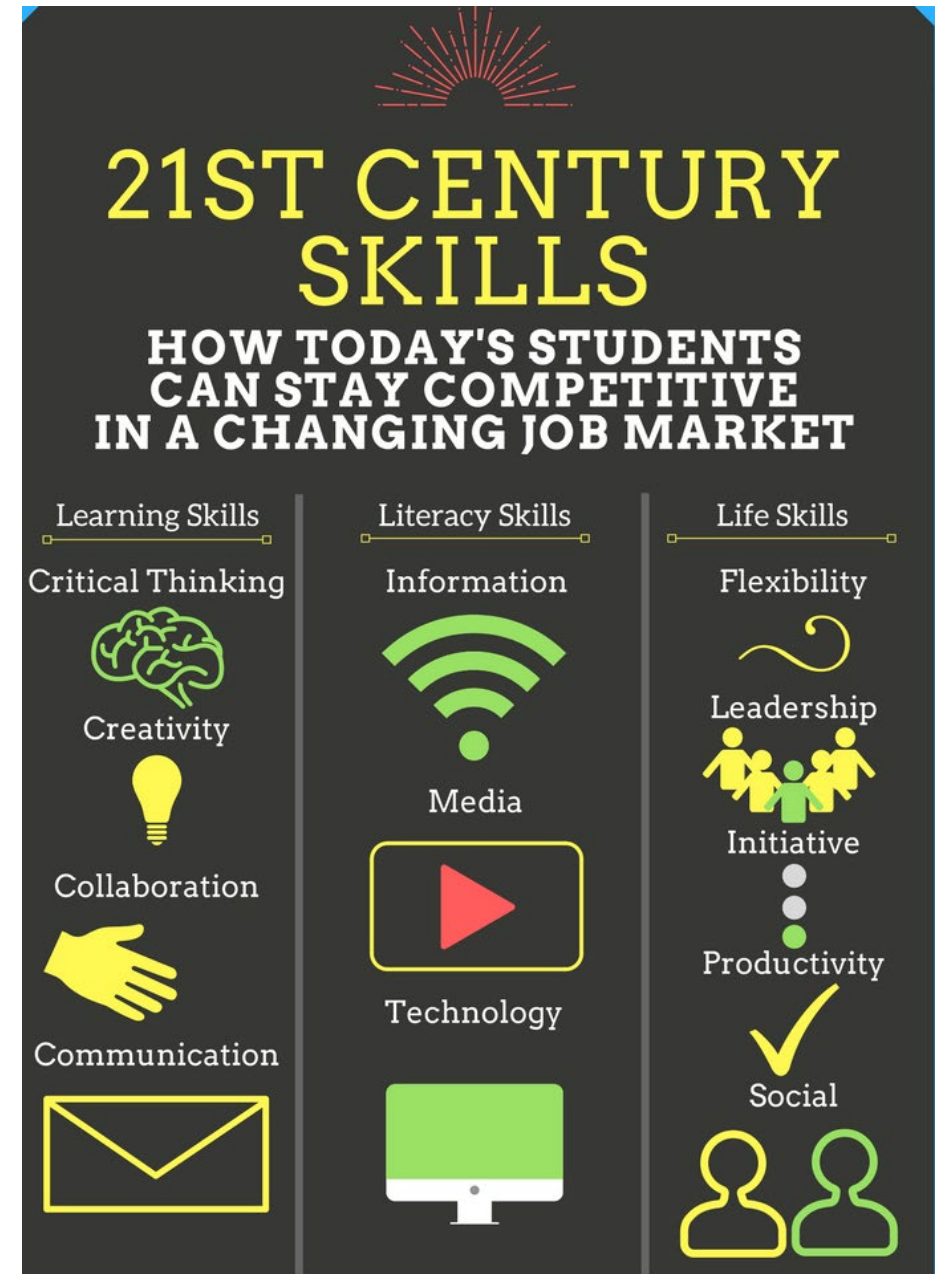
The future of humans at work is questioned.

Figure 2: Jobs at risk of automation by country⁶



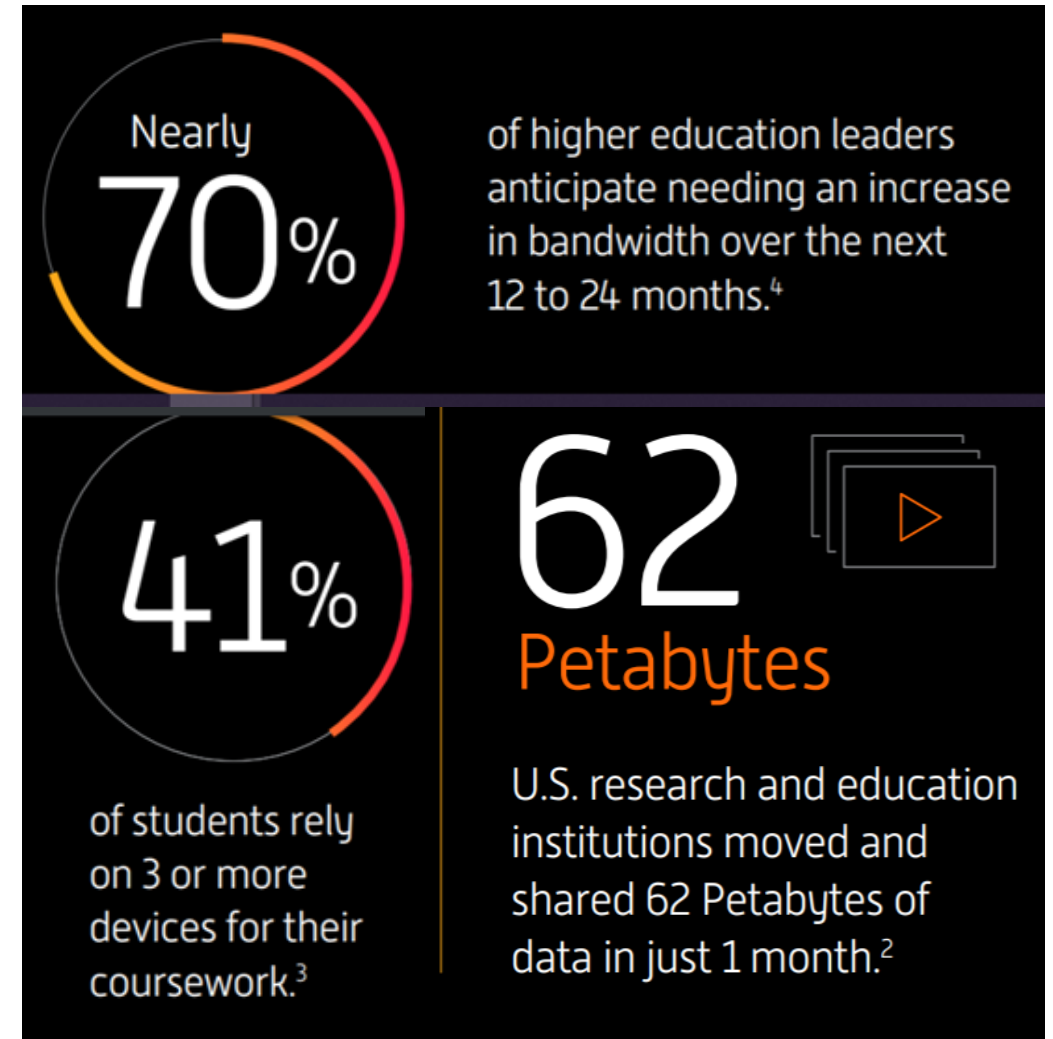
Accelerating Evolution of Education

- Nearly 1.5B students impacted by Covid-19 closures
- Many schools planning hybrid on-campus and remote learning environments upon return
- **Administrator and teacher face new challenges**
 - Improve student performance
 - Ensure everyone has equal opportunity to succeed
 - Prepare them for 21st century jobs
- **New eLearning Technologies**
 - Adaptive Learning
 - Augmented and Virtual Reality
 - AI-Enabled Digital Assistants
 - Gamification and Collaboration
 - Streaming Video Instruction
 - National and Global Research



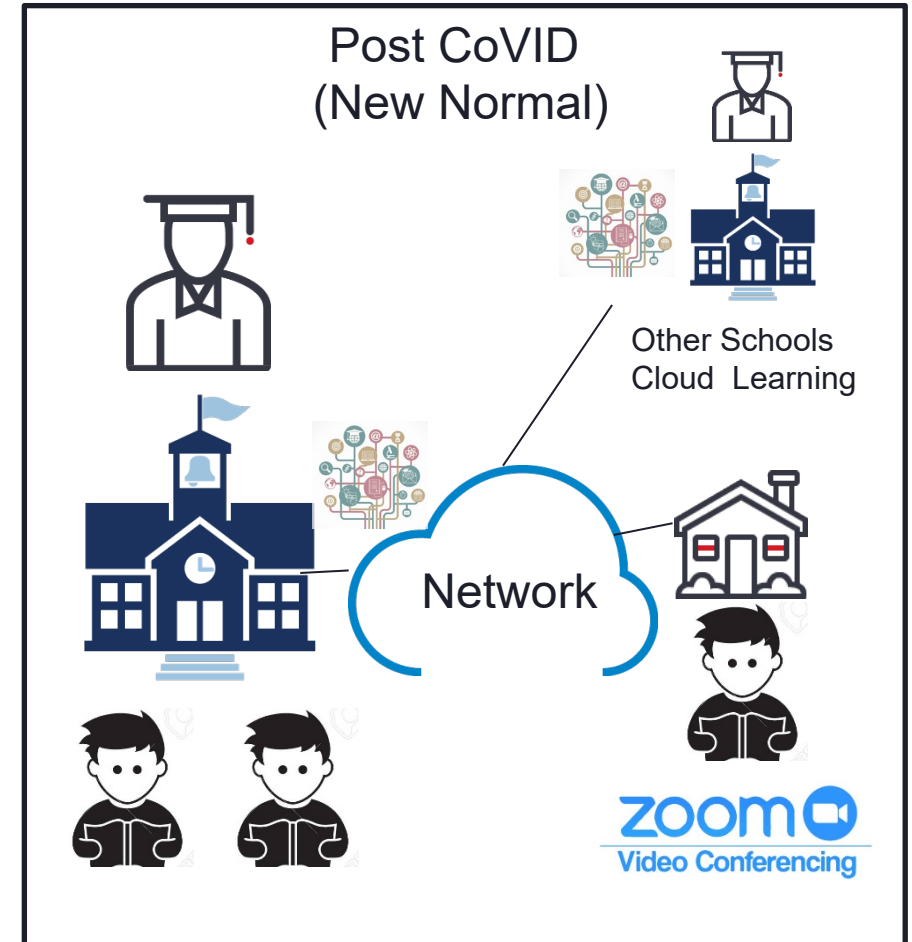
Implications for the Network

- **Bandwidth requirements likely to grow as eLearning, EdTech applications evolve, and more devices need access**
 - Simultaneous access of bandwidth-intensive applications by thousands of users and devices can strain networks
- **Many EdTech applications involve real-time, multi-user collaboration that function best over symmetric bandwidth with strict performance measures**
- **Network congestion and outages impact lesson plans and instructor willingness to adopt new technologies**
- **Securing student data and providing off-campus application access are key priorities**



Requires Expansion Beyond Campus Borders

- **Extend anytime, anywhere, any device access to campus-based applications, technologies and data**
- **Ensure same quality of “on-campus” quality of experience (QoE) regardless of location**
- **Enable online collaboration and research across the globe, including genomics, physics, weather and others**
- **Expanding the network provides real-time connectivity:**
 - Data centers,
 - Private clouds
 - Edge compute devices



Adaptive Network Accelerates Education Transformation

- **Programmable infrastructure**

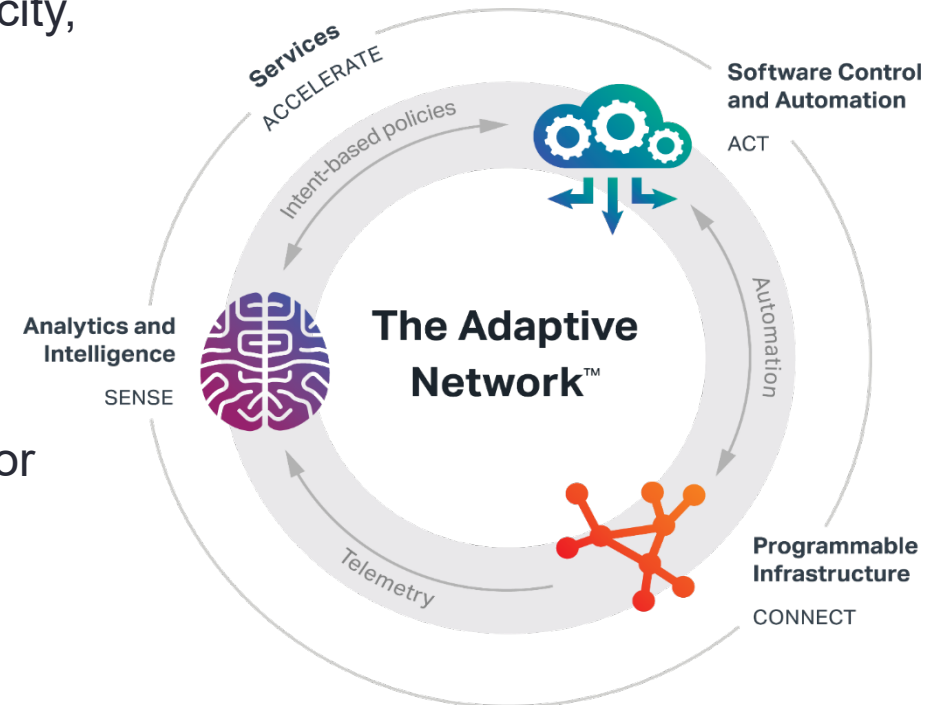
- Ciena, 3rd party and COTS devices to deliver high-capacity, secure and flexible bandwidth that provides “real-time” transmission of video, data and applications
- Virtualized Edge enables schools to achieve operational efficiencies, contain costs and reduce IT staff burden

- **Analytics and Intelligence**

- ROA and UAA to track latency and potential congestion or outages between campuses, schools and homes

- **Software Control and Automation**

- MCP, MDSO to automate adjustments to ensure bandwidth and performance parameters met



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Thank you!

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