THE ROLE OF THE MINNESOTA SCHOOL SUPERINTENDENT AS A TECHNOLOGY LEADER

A DELPHI STUDY

Dr. Curt Tryggestad

Impetus for Change in Education

- A Nation at Risk (1983)
- Initiatives
  - Outcome Based Education
  - The Standards Movement
  - NCLB of 2002
  - Common Core
  - Every Child Achieves Act (in process)
- Global Comparisons & Competition

Technology Infusion

- Commitment to the Future
- Rising Expenditures on Technology
- Unproven Track Record
- Unprecedented Opportunity

Technology in Schools

- The ratio of computers to students
  - 120:1 in 1983 to 4:1 in 2002
- Approximately 4% of the schools in the United States began 1-to-1 laptop programs in 2003-2004, with that number rising to an estimated 25% by 2006
- Florida, Maine, Michigan, North Carolina, South Dakota, and Texas have initiated and operated large-scale 1:1 technology programs
- Larry Cuban (2010) stated, “that laptop programs have failed to achieve their goals”

APRIL 3, 2010

Minnesota Early Adopters

- Steve Malone & Jeff Bertrang – Becker & GFW Schools
- Jay Haugen -- West St. Paul
- Mark Diehl – Little Falls Community Schools

Fast Forward to 2014

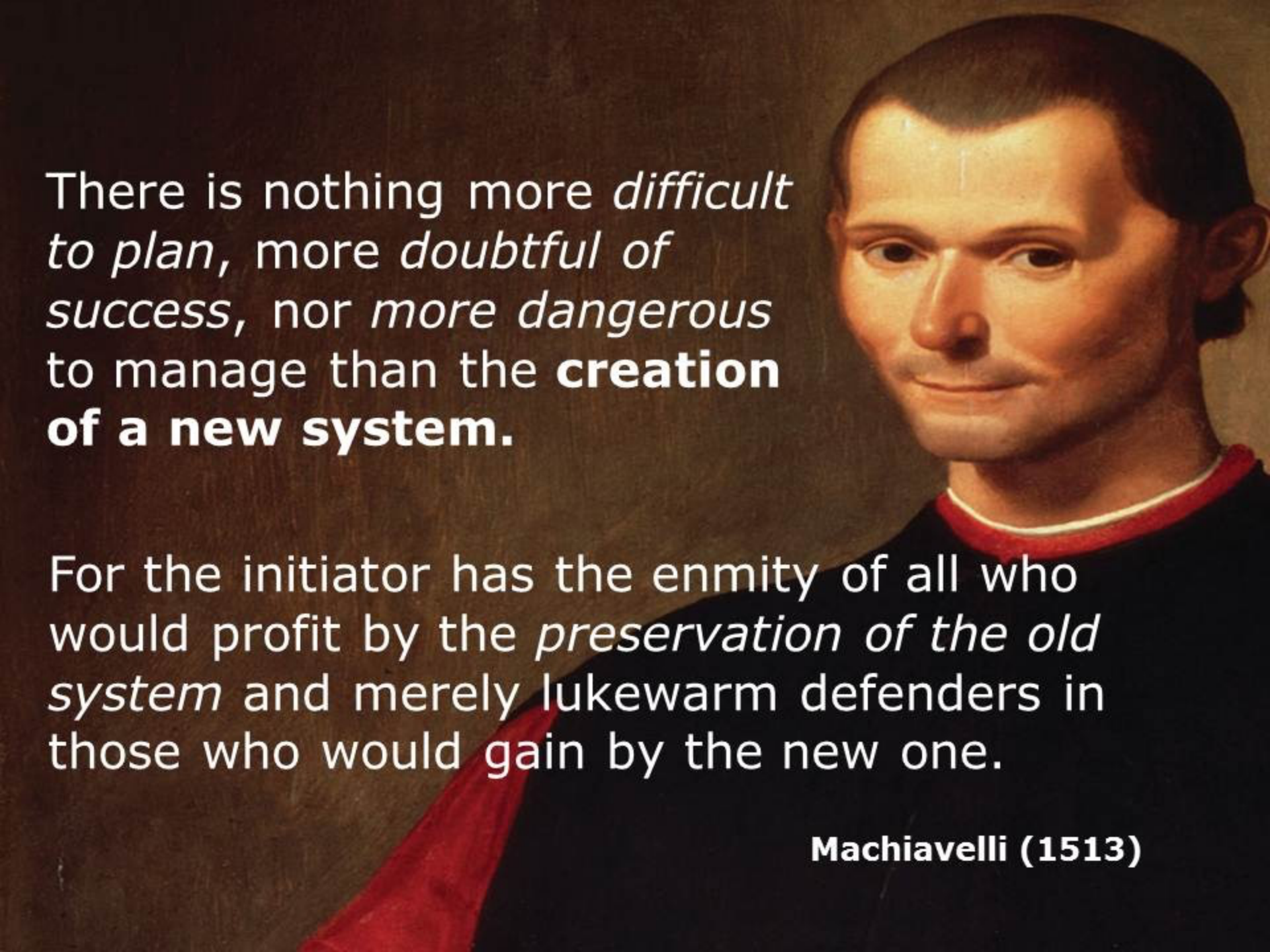
- 170 million iPads sold since its introduction in April 2010.
  - education customers purchased approx. 13 million units.
  - iPads estimated to hold 95% of the tablet market in K-12 education.
- Chromebooks are becoming more popular--over a million units to schools in the second quarter of 2014
- Lesser numbers of laptops and netbooks have also been adopted as the tool of choice for schools.

Managing the Change…

- 21st Century Technology Proliferation
  - Technology Adoption in Education
  - Superintendents must be prepared to lead in the 21st Century

’…. 'It is not change that kills it is the transitions’

anonymous


There is nothing more *difficult to plan*, more *doubtful of success*, nor *more dangerous* to manage than the **creation of a new system.**

For the initiator has the enmity of all who would profit by the *preservation of the old system* and merely lukewarm defenders in those who would gain by the new one.

Machiavelli (1513)

'You cannot carry out fundamental changes without a certain amount of madness. …. It took madmen of yesterday for us to be able to act with extreme clarity today. I want to be one of those madmen.'

Thomas Sankarra- African Congress.

“If you don’t know where you’re going you might wind up someplace else.”

Yogi Berra

INNOVATION & CHANGE

Research on Change & Innovation

- Everett Rogers
  - Diffusion of Innovations Theory
- John Kotter
  - The Heart of Change (2002)
- Michael Fullan
  - Leadership and Organizational Change
  - Stratosphere (2013)

Diffusion of Innovation

Everett Rogers

”…the process by which an innovation is communicated through certain channels over time by members of a social system."

Characteristics that determine the innovation's rate of adoption…

- Relative Advantage-*is it better than what we have?*
- Compatibility-*is it consistent and reliable?*
- Complexity-*how difficult is it to use?*
- Trialability-*can it be implemented as a pilot?*
- Observability-*does the innovation demonstrate visible or measurable change?*
- Re-Invention-*does the innovation change during adoption or over time?*

John Kotter
The Heart of Change (2002)

- Eight Steps to guide Organizational Change
  1. Establish a sense of urgency
  2. Create a guiding coalition
  3. Develop a change vision
  4. Communicate the vision for buy-in
  5. Empower broad-based action
  6. Generate short-term wins
  7. Never let up
  8. Incorporate change into the culture

Michael Fullan

Effective Change Agents

- Generate trust
- Understand and diagnose the organization
- Plan into the mid-term to see the big picture
- Work productively in groups
- Access the required technical resources and advice
- Give people the confidence to continue
- Ability to deal with complexity

Michael Fullan
The Complexity of Change (1993)

- Keys to effective change management
  1. Moral purpose
  2. Understanding the change process
  3. Relationship building
  4. Knowledge creation and sharing
  5. Coherence making
  6. Initiation

Thoughts on Implementation

....according to Fullan

- What is needed to put the innovation in practice?
- Define what early, mid-stage, and full implementation looks like
- Provide constructive and supportive feedback & opportunities for continuous professional development (PD)
- Set clear and & consistent expectations about implementation (frequently)
- Monitor the implementation, assess the innovation's accuracy and frequency, and provide necessary supports to refine implementation

Implementation
Key Activities

- Clear responsibility for coordination
- Shared control over implementation
- Mix of pressure, insistence on doing it right, and support
- Adequate and sustained PD
- Rewards for teachers early in process

Matthew Miles (1986)

Why does change fail?
(Griffith & O'Neil)

- Processes were not scaled
- The change being too big or vague,
- The terms of change were too narrow and prescriptive,
- The processes change--associated with the lacking follow-through support,
- The change was externally imposed without teacher support,
- The change was entirely school-based without adequate resources and other supports.

THE STUDY
&
THE DELPHI TECHNIQUE

The purpose of this study was to determine the superintendent knowledge, performances and dispositions that are deemed most necessary for technology leaders as identified by Minnesota superintendents

Why study Minnesota Superintendents?

- Limited research is available regarding superintendents serving as technology leaders for their districts.
- Significant due to the rapid integration of technology into Minnesota classrooms after 2010.

"The Role of the School Superintendent as a Technology Leader" *David Mirra (2004)*

- National study
- Categorized the most desirable characteristics of effective technology leaders into three leadership domains:
  - Knowledge
  - Performances
  - Disposition

Survey Questions

- What does a superintendent need to "know" about technology to be an effective technology leader?
- What actions should be "performed" by a superintendent to be an effective technology leader?
- What are indicators of a superintendent's "disposition" as an effective technology leader?

Delphi Technique

- Anonymous
- Interactive panel of experts
- Decisions are more accurate from a structured group
- Provides advantages for data collection and analysis on emerging concepts and places value on panelist beliefs and opinions
  - *Especially effective when researching educational technology subjects (Nowrie, 2011)*

The Delphi technique is considered reliable:

(1) collaborative process

(2) The relative anonymity of the panelists

(3) The process used to refine the data

(4) A diverse panel broadens the confidence in the data

(Hasson & Keeney, 2011)

Validity

- Careful review of the results is critical
- Data created are considered more valid than individual opinions
- Bridges the divide between qualitative and quantitative methods.
- Effective when used to gather information from experts immersed and imbedded in a topic of interest.

Validity

"Because the number of respondents is usually small, Delphi's do not (are not intended to) produce statistically meaningful results; in other words, the results by any panel cannot predict the response of a larger population or even a different Delphi panel. They represent the synthesis of opinion of the particular group, no more, no less." Gordon, T. (1994).

Three Step Process….

Delphi I/Stage One

- The Questions
- Coding & Refining
- Expert “Pilot” Panel Review

Delphi II/Stage Two

- The Survey
- Data Collection
- Data Analysis

Delphi III/Stage Three

- The Survey
- Data Collection
- Data Analysis

Participants

Fall 2013--Minnesota Superintendents with technology implementation experience

- Multiple methods of identification
- Fifty-two (52) Minnesota superintendents were invited to participate
- Thirty-four participants completed at least one step of the three-step Delphi process, and thirty-one participants completed the entire Delphi process.

Knowledge

- An understanding of an innovation and how it works (Rogers, 2003). *What a superintendent should know to be an effective technology leader.*
  - Professional
  - Technology Integration
  - Technology Skills
  - Financial

Knowledge: Highest Consensus

1. Have a vision for technology in the district that aligns with district goals
2. The process of systemic change
3. How technology can improve student achievement
4. How to maintain and sustain the technology initiative
5. That learning occurs between content, teacher skill and knowledge, and student engagement

Knowledge: Highest Consensus (cont.)

6. Understanding the huge staff development [needed]
7. An understanding of the role/purpose of technology
8. How to win the support of staff for technology innovation
9. How digital tools and resources impact and can personalize learning
10. Knowledge of 21st century skills

Knowledge: Lowest Consensus

- How to do basic functions with the hardware
- Technology inter-action (what things won't work well together)
- Understanding of infrastructure for networks
- Familiar with the SAMR scale

Performances

- …actions taken or conducted by a superintendent who is an effective technology leader.
  - data driven decision-making
  - human infrastructure support
  - technology related mentoring
  - technology management
  - management with technology

Performance: Highest Consensus

1. Gain support for the vision from school board
2. Objectively measure the impact of technology on student achievement
3. Communicate often that the goal is transformational thinking and learning, not devices
4. Provide sound vision for technology use for school members, staff, students, and community members
5. Have high expectations for users of technology software upgrades

Performance: Highest Consensus (cont.)

6. Ensure that the infrastructure is in place in order for the hardware and software to be useful
7. Always work with and through a talented group that understand and are willing to carry out and support the vision
8. Ensure the hiring of people with appropriate technology skills and/or the propensity to be able to learn such skills
9. Celebrate and protect technology users
10. Develop and support teacher leaders for implementation and training

Performances: Lowest Consensus

- Encouraging the use of the latest technologies in transportation, etc.
- Complete a needs inventory of the staff and students
- Speak to students at all levels to determine their perspective
- Active in staff development opportunities
- Creation of technology committee(s) at the building and district level

Disposition

"...characteristics that animate, motivate, and direct our abilities toward good and productive things and are recognized in patterns of our frequently exhibited voluntary behaviors."

- Accountability
- Resources
- Staff Knowledge
- Relationships
- Planning
- Vision
- Innovation
- Technology Visibility

Disposition: Highest Consensus

1. Understand that technology is a forever changing paradigm
2. Credit staff with all successes
3. Belief in teachers and principals to carry out a vision
4. Visionary
5. Willing to look at the institution of public education in new ways

Disposition: Highest Consensus (cont.)

6. Resilience
7. True belief in the strategic plan and new technologies
8. A willingness to see the world through the eyes of students and what their futures may look like
9. Keenly aware and supportive of the innovations taking place in the district
10. Interested in innovation and design

Disposition: Lowest Consensus

- Use technology innovation as a marker in evaluations
- Work collaboratively with neighboring districts
- Utilize tech committee in budget process
- Grounding in an equity framework
- Use pilots and small programs to gain interest and building strong relationships with constituents.

Study Participants in the room…

Thank you…..

Please stand and be acknowledged!

LEADERSHIP AND CHANGE

Leadership Style

- Transactional
  - Transactional-results in some type of reward in exchange for worker compliance
- Transformational (Bernard Bass,1985)
  - Encouragement of employees beyond their self interests
  - Generating benefits for the organization
  - Highlights the mission and goals of the organization

Transformational Leaders

- Increase the level of technology embedded in organization
- Create more networking and seek consensus
- Build strong relationships with employees to build a participatory leadership culture
- Stimulate members to think reflectively and critically

The future is now.....
....are educational leaders ready?

- New Media Consortium (NMC) Horizon Report
  - Annual look at trends and technologies that will drive educational change
    - Key Trends
    - Significant Challenges
    - Important Developments in Educational Technology

NMC Horizon Report
2015 K-12 Edition

- Policy
  - Incorporate technology into teacher training
  - Difficulty scaling innovations across schools, districts, countries
- Leadership
  - Creating authentic learning opportunities giving students experience in real-life situations while still in school
  - Rethinking the role of teachers
- Practice
  - Personalizing learning for each child
  - Teaching complex thinking

CHALLENGES

SOLVABLE
> Creating Authentic Learning Opportunities
> Integrating Technology in Teacher Education

DIFFICULT
> Personalizing Learning
> Rethinking the Roles of Teachers

WICKED
> Scaling Teaching Innovations
> Teaching Complex Thinking

TRENDS

SHORT-TERM IMPACT
> Increasing Use of Blended Learning
> Rise of STEAM Learning

MID-TERM IMPACT
> Increasing Use of Collaborative Learning Approaches
> Shift from Students as Consumers to Creators

LONG-TERM IMPACT
> Rethinking How Schools Work
> Shift to Deeper Learning Approaches

2016 2017 2018 2019 2020

NEAR-TERM
1 year or less
> Bring Your Own Device
> Makerspaces

MID-TERM
2-3 years
> 3D Printing
> Adaptive Learning Technologies

FAR-TERM
4-5 years
> Digital Badges
> Wearable Technology

Topics from the
NMC Horizon Report
2015 K-12 Edition

What does that mean for us?

- Education institutions have to evolve and grow to keep pace with the rest of society and the world.
- Educational Leaders must accept the challenge and lead their organizations in order to keep them relevant.

EdTech is here .... Now!

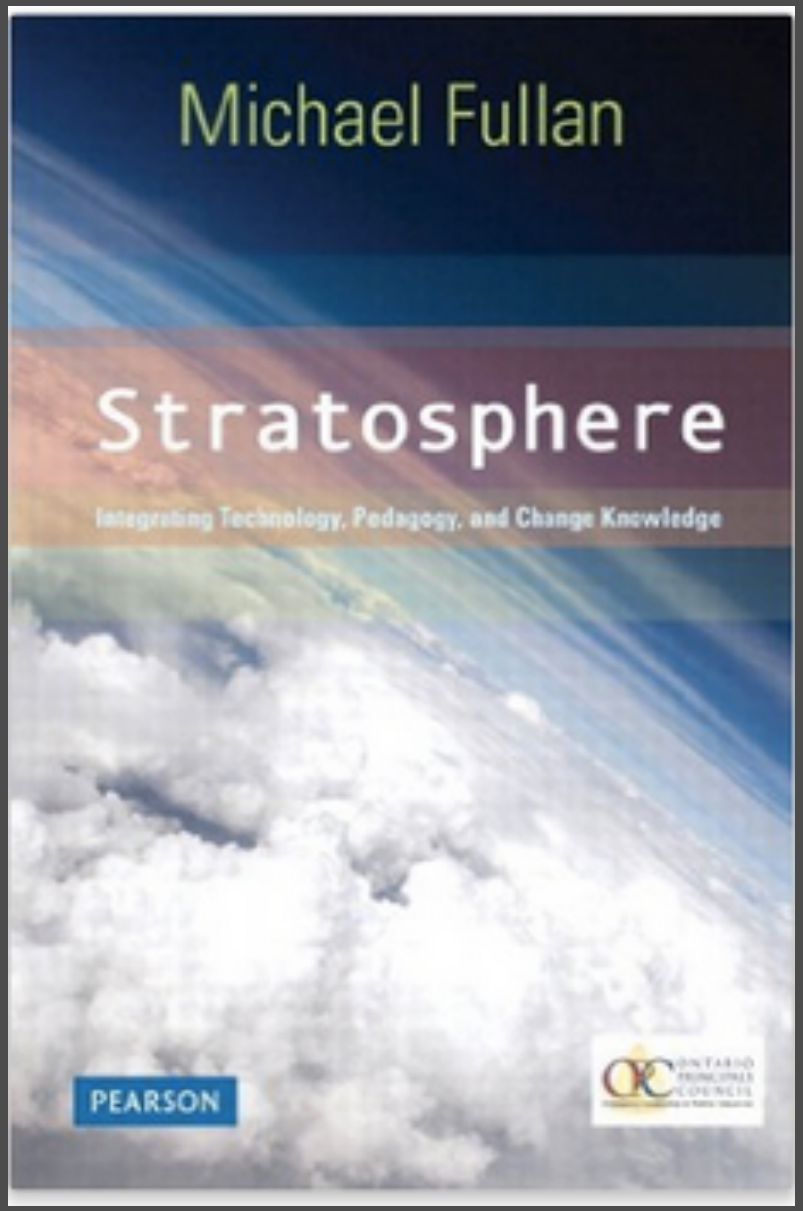
*There is an increasing concentration of mobile learning devices in classrooms

*Rapidly emerging educational technology pedagogy expectations for teachers

*Changing expectations of district leadership

District Leadership is adapting..

The results of this study show definitive movement taking transformational leadership skills to a new level by innovative Minnesota superintendents … what Fullan (2013) calls the "stratosphere" where change knowledge, pedagogy, and technology meet to create a synergy for change.



Stratosphere

Integrating Technology, Pedagogy, and Change Knowledge

Michael Fullan (2013)

Levels of Leadership
Jim Collins "*Good to Great*"

- Level Three: Competent Manager
- Level Four: Effective Leader
- Level Five: Executive

Effective district technology leaders in the superintendent role must possess and express: a vision for progress, knowledge of the tools and new pedagogy of 21st century education, and communication skills that not only inform but inspire internal and external stakeholders.

Its about the kids and their future…

It is incumbent upon educators and leaders to possess willingness to see the world through the eyes of the students and imagine the needs of their future.

In closing…..

Superintendents in the role of effective district technology leaders provide…

the vision, the inspiration, and the physical and emotional conditions necessary for change that can move an institution and its people to a high level of instructional practice and student achievement that are deemed crucial for student success in our diverse and ever-changing world.

THANK YOU