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Innovation in Schools in a Fragmented System

Ellen Goldring
Vanderbilt University
Nashville, Tennessee
USA

The Case of Tesla

Tesla and Innovation in the Market

- "It's just another step on the road for Tesla becoming a mainstream automaker and dealing with mainstream automaker problems."

- "Tesla has transformed the auto industry, but in the process, maybe it's starting to look a little more like a normal automaker."

Innovation Theories:

- Pre-1950
  - Linear models invention-innovation-diffusion
  - S curve take-up slowly, momentum, rapid diffusion, saturation
- 1950-1960 Push versus demand pull
  - Change in market demand- a pull
  - Unmet needs spurs innovation (Nemet 2007)
- 1970s—systems approaches
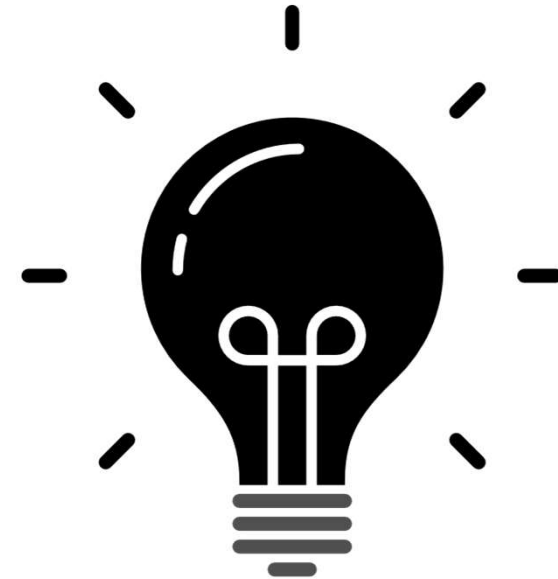
Greenacre, P., Gross, R., & Speirs, J. (2012). Innovation Theory: A review of the literature. *Imperial College Centre for Energy Policy and Technology, London.*
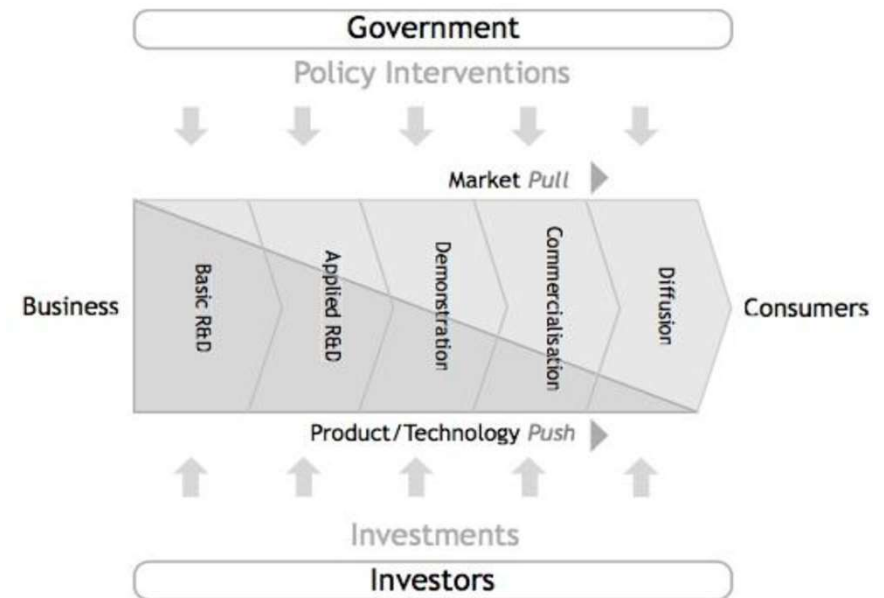ICEPT Working Paper May 2012
Ref: ICEPT/WP/2012/011

Models of Innovation: External Environments

Interactive Models: Chain Linked Model
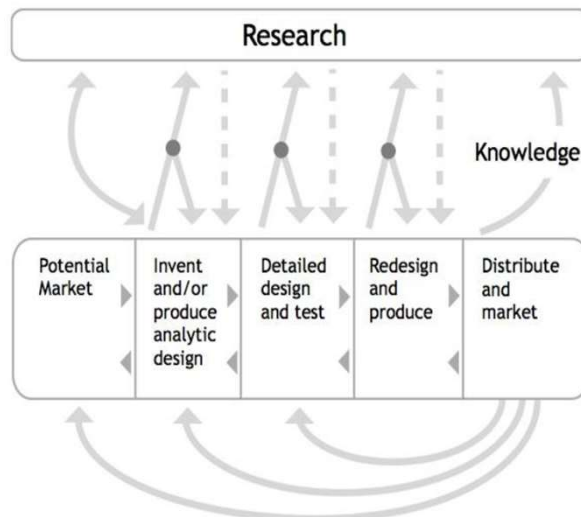
An interactive model of the innovation process: The chain-linked model (Source in Geenacre et al: (Kline, 1986)

National Innovation Systems
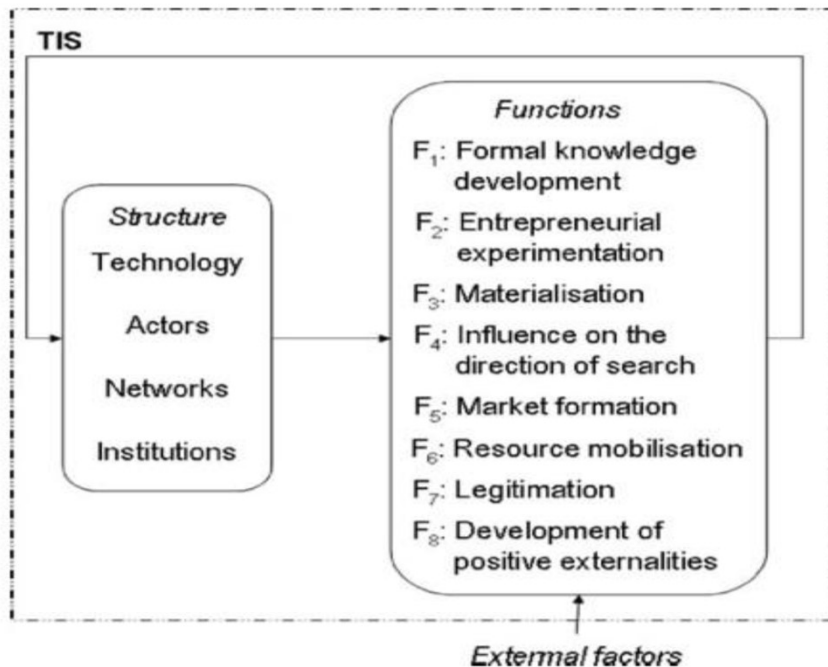

Roles of Innovation Chain Actors (In Greenacre et al Source: (Carbon Trust, 2002)

Technological Innovation Systems (TIS

Interacting Systems for Innovation

Relations between external influence, structural elements and functions. (In Greenacre et al Source: Bergek et al., 2008b)
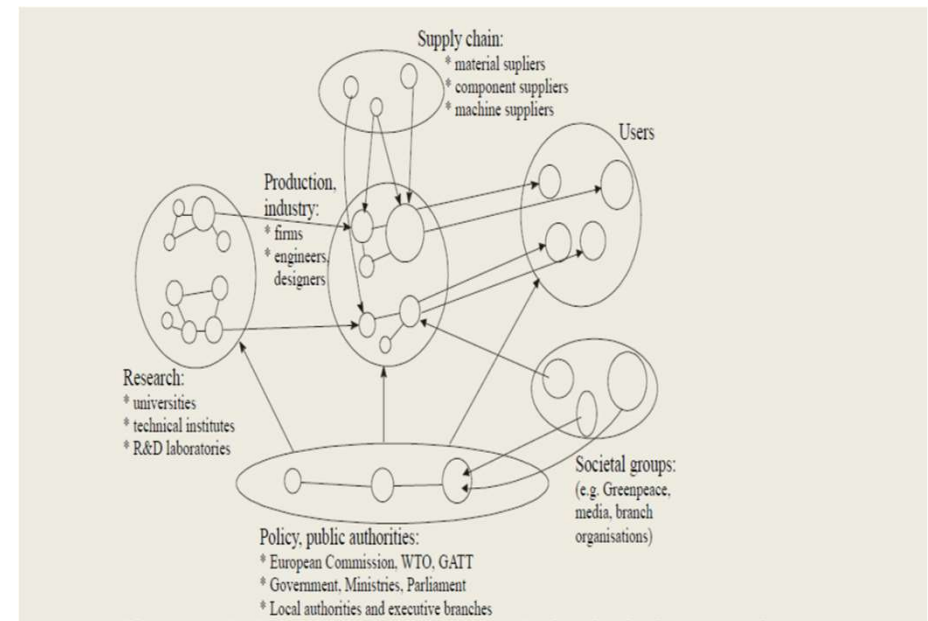
Interacting Groups in the Technological Innovative System(in Greenacre et al, Source: Geels, 2002)

Common Themes

- Systems
- Research and Development
- External environments
- New Resources
- Knowledge development
- Users, Consumers
- Markets
- ….

Agenda

- Innovation in context: compared to what?
  - Definition of innovation in a social service, non-profit
- Study 1: The case of Charter Schools in the United States
  - The current system
    - Fragmented
    - Lack of outcome research
    - Politically contested
    - No Market
- Study 2: Practitioners as innovators in the system toward improvement

Innovation in Non-Profits, Social Innovations and Monopolies

- Disruptive technologies:

  Technical innovations

  Products

- Versus Social Value Innovations:

- **Social Innovations**

  – *"The generation and implementation of new social service ideas for solving social problems manifested at either the product or process or social system level"*

– *"**Incremental innovations**" "refinement and extensions to current services, operational changes"*

– **"Radical innovations"**- "extensively effected changes to the services, operational process and systems"

– Weerawardena & Sullivan Mort, 2012) Journal of Public Policy & Marketing p.93

The Case of Charter Schools in the US

- Charter schools publicly funded schools
  - Have an independent board of overseers or directors
  - Receives a contract or 'charter' from an authorizer to operate the school.
- In exchange for a charter, the charter school receives considerable autonomy from traditional public-school regulations

- May spur innovation and differentiation among schools.
  - Recruit and enroll students without the confinement of an encatchment zone, thus providing competition through parent choice.
  - Hire and fire their personnel independent from the school district: INNOVATION
  - Develop their own instructional focus, approach and curriculum: INNOVATION

What is Innovation in Charter Schools?

- Education innovation
  - *Educational innovation*
    - Practices related to curricular content and instructional strategies with immediate impact at the classroom level
  - *Administrative innovation*
    - School structure and design level, not directly affecting classrooms
    - HR, teacher hiring

- Student experience, professional lives of teachers, leadership & management, community resources

- (Lubienski 2003; Berends & King, 1994))

Innovation in Context

- Innovativeness in terms of local structures and dynamics
- Practices cannot be deemed innovative in an absolute sense, but innovations must be considered in terms of their relative prevalence in a context.
- Context can be local, state, national, international, sector, market

- (Traill and Grunert, 1997; Mowery and Rosenberg, 2000).

Public Choice Theoretical Perspectives in Education

- Market Theory
  - Educators in charter schools are given the opportunity and motivation to experiment with and create in-schools processes for improving student achievement

- Institutional Theory
  - There are "powerful institutional rules" held by public opinion, important constituents; laws and regulations contribute to conformity and congruency between schools of choice and regular public schools

Primary mechanism: Encourage innovation through competition

Charter vs. Traditional Public

	Charter	**Traditional Public**
Enrollment	Parents choose to enroll their children	Students are assigned to a specific school
Funding	Publicly funded, Often supplemented with private funding	Completely funded by public funds
Management	Privately managed	Managed by traditional public school district
Staffing	Certification requirements vary state by state; flexible	Teachers and administrators must be certified
Firing	Teachers generally have at-will contract, so can be fired without lengthy bureaucratic process	Teachers often part of union or association; difficult to fire teachers
Curricula & Pedagogy	Determined at school level or by management organization	Prescribed by district
Learning Standards	Set by state	Set by state
Accountability	State's testing and accountability standards	State's testing and accountability standards

History of Charter Schools

- Charter schools have been in existence since 1991

- As of fall 2019, forty-five states and the District of Columbia had passed public charter school legislation

- The percentage of all public-school students who attended public charter schools increased from 3 to 7 percent from 2009-2019.

- Approximately 650 charter schools have closed due to low enrollment, mismanagement, or low academic performance

Percentage of all public-school students enrolled in public charter schools, categorized into specific ranges, by state: Fall 2019
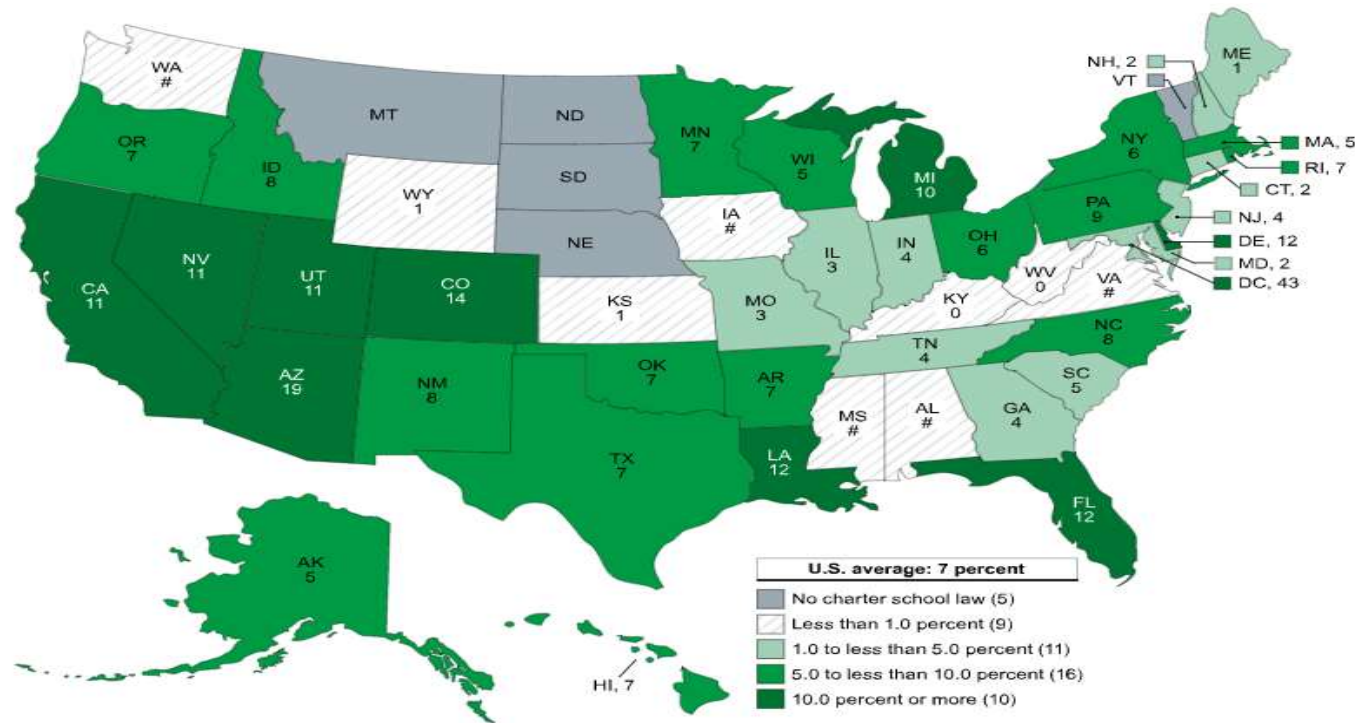
NOTE: U.S. average in this figure represents the 50 states and the District of Columbia. Categorizations are based on unrounded percentages. SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2019–20. See *Digest of Education Statistics 2021*,

Public charter school enrollment, by school level: Fall 2009 through fall 2019
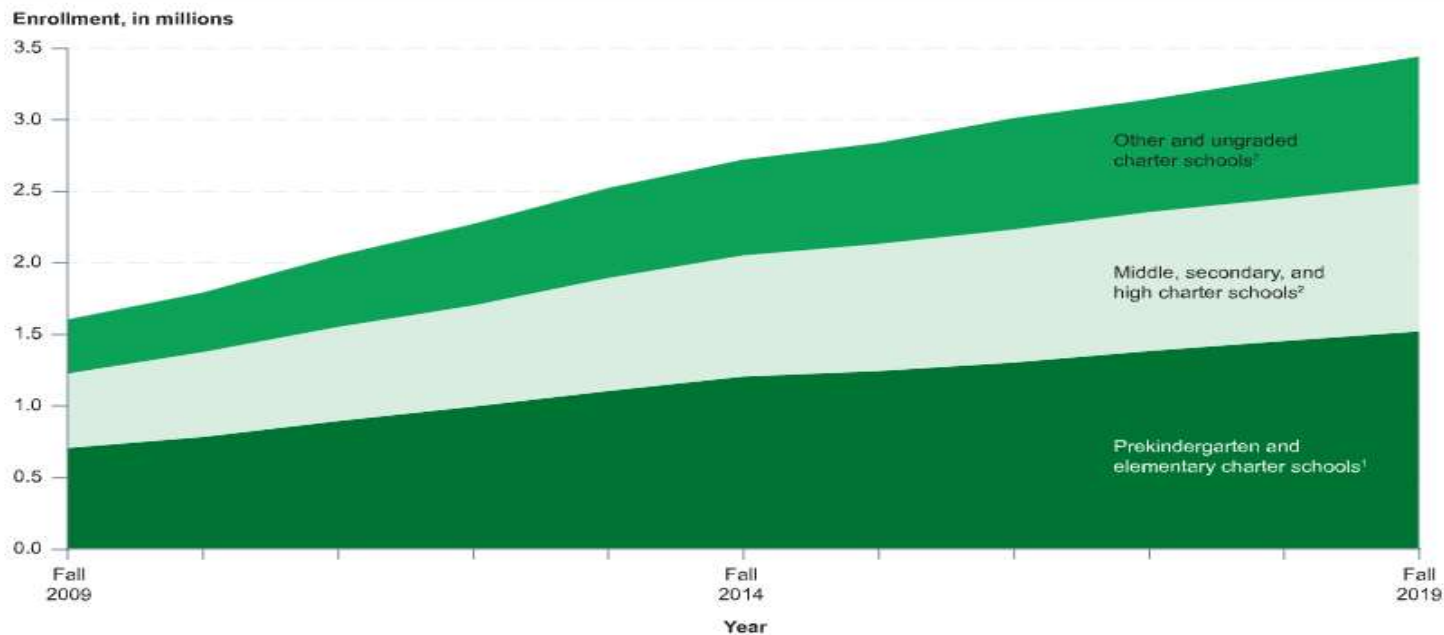
NOTE: Data in this figure represent the 50 states and the District of Columbia. Some data have been revised from previously published figures.
SOURCE: U.S. Department of Education, National Center for Education Statistics, Common Core of Data (CCD), "Public Elementary/Secondary School Universe Survey," 2009–10 through 2019–20. See *Digest of Education Statistics 2021*, table 216.20.
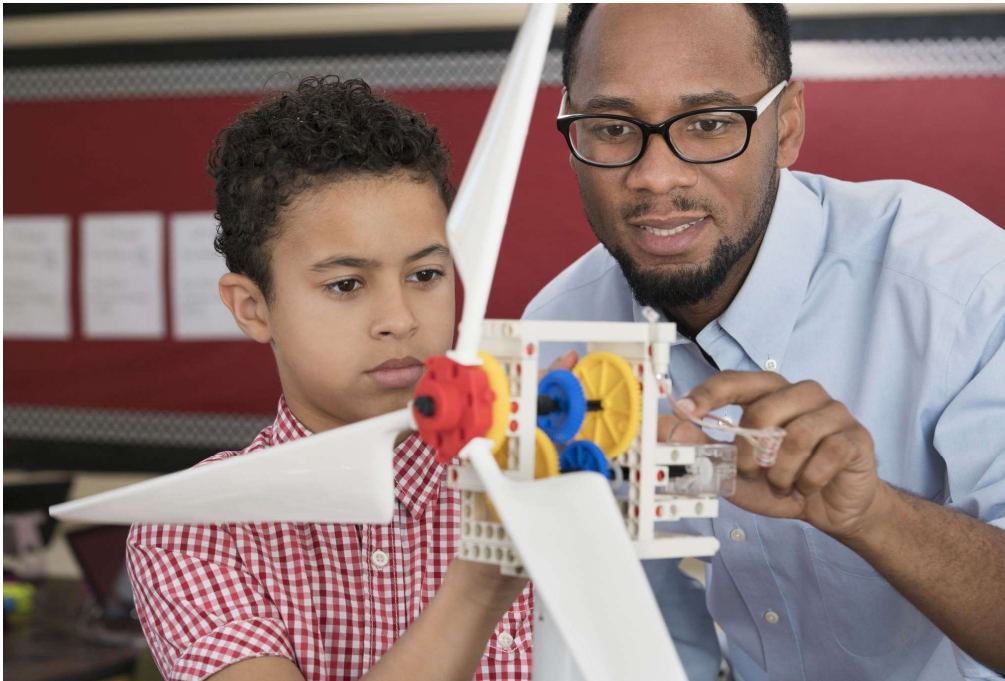
Research Questions

- Do levels and types of innovation differ between charter schools and traditional public schools?

- What practices constitute innovation in various locales and state contexts?

Matching Criteria for Choice & TPS

- School zip codes used to identify list of public schools
- Same state
- Geographic proximity
- Grade level configuration
- School-level demographic data

School Sampling Frame

- Final Sample:
  - Logistic regression to predict charter schools
  - Propensity score calculated for each school
  - For each CPS chose minimum propensity score differential between its matched TPS
- 59 matched pairs
  - 13 districts
  - 20 matched pairs
  - 72 district public schools

Measuring Innovation

- In survey development, we reviewed research on innovation, school choice & comprehensive school reforms

- Concentrated on those educational innovations aimed at changing the core technology of schools (curriculum & instruction) and administration (stakeholder involvement; administrative and HR policies)

- Survey and national data merged

Preston, C., Goldring, E., Berends, M., & Cannata, M. (2012). School innovation in district context: Comparing traditional public schools and charter schools. *Economics of Education Review*, *31*(2), 318-330.

What are Some Educational Innovations

- Extended learning time
- Alternative grouping arrangements
- Instructional organization of teachers
- Curriculum & course taking
- Innovative support for families & communities
- School policies

Innovation in Context

Scenario	Who is Innovative?
A charter school reports having the practice, matched traditional public does not report having the practice, schools in the same district do not report having the practice.	Charter School
Conversely, with some measures of innovation (e.g., comprehensive curriculum, tenure) a charter school does not report having a practice, while its matched traditional public school and schools in the same district do. In these situations, the charter school is innovative in employing the particular practice.	Charter School
A charter school, matched traditional public school, and schools in the district all report having the practice or all report not having the practice.	No one
A charter school does not report having a practice, nor do the schools in its district. However, its matched traditional public school does report having the practice. Similar to the first scenario, a matched traditional public school may report while its corresponding charter school and schools in the district do report having the practice.	Traditional public school
Both a charter school and its matched traditional public school may report having an innovative practice while the schools in the district do not report having the practice or a charter and matched traditional public report not having a practice while the schools in the district do have the practice.	Unclear

Example: Measures of Innovation:

Which of the following best describes your school's primary focus in terms of program content? We have a special curricular focus (e.g., arts, math/science, foreign language, character education) Our curriculum is based on a particular educational philosophy or set of values (e.g., Montessori, open school)	Does your school use any of the following organizational strategies during this 2008-09 school year? Our students can earn course credits from supervised internships or paid workplace assignments, virtual learning, language immersion
We use "looping": teachers progress with their students through two or more consecutive grade levels, We are a year round school	*voluntary* summer school or tutorial programs. before-school, after-school, or weekend tutorial or instructional programs.
We use block scheduling, Our school is organized into "houses" or "families" that are larger than one classroom? In core subjects, our classrooms are multi-grade or mixed age.	We pay teachers specifically for high or improved student achievement. We offer higher pay to teachers in shortage fields.

Table 2

Distribution of innovative practices in charter and traditional public schools.

Innovation practice	Charter schools reporting practice	Traditional public schools reporting practice	Innovative charter schools
Academic support services			
Voluntary tutoring	58.8%	57.6%	6.8%
Summer school	100%	100%	0%
Language immersion program	4.9%	7.3%	3.7%
Distance learning program	17.9%	12.0%	13.6%
Internships	47.4%	70.7%	7.0%
Staffing policies			
Merit pay	32.1%	18.7%	13.1%
Tenure	8%	100%	92%
Shortage fields pay	40.7%	59.6%	3.3%
Organizational structures			
Looping	35.2%	20.7%	17.3%
Block scheduling	47.8%	43.3%	15.5%
Year round schedule	19.3%	24.5%	7.5%
Houses	21.1%	23.3%	9.3%
Mixed age/multi-grade grouping	39.8%	28.1%	16.8%
Governance			
Teachers have influence on new staff hiring	71.1%	72.3%	6.0%
Parents have influence on new staff hiring	22.2%	18.1%	14.5%

Innovation in Charter Schools

Academic Support Services in Local Context

- After school tutorials
  - One charter school is innovative in its local context
- Summer school
  - No charter schools are innovative in their local context

Instructional Groupings in Local Context

- Looping
  - Two charter schools are innovative in their local context
- Houses/families
  - Two charter schools are innovative in their local context
- Mixed age/ multi-grade classes
  - No charter schools are innovative

Key Findings on Charter Schools: Limited Innovation

– Charter schools

- Coalesce around the same curricula, instructional techniques and subject areas
- Innovate in areas such as staff recruitment and hiring, school calendars and disciplinary policies, which are areas that skirt around instruction.
- Instituted formal mechanisms that encourage or even mandate parental involvement (Becker et al 1997; Hoxby et al., 2009; Lubienski, 2006).

- *"Nothing generates conformity quite so organically as the existence of a comparative metric (Moon, Youngme. 2010, p. 212).*

Why: Challenges to innovation implementation and scaling up

- Lack of teacher buy-in and participation
- Inadequate attention to the organizational context
- Local norms and cultures (institutional theory)
- Conflicts between designs and other district programs or mandates

Datnow, Hubbard, and Mehan, 2002; Glennan, Bodilly, Galegher, & Kerr, 2004; Nunnery 1998; (Bodilly et al., 1998; Elmore, 1996; Fullan, 2001; Stringfield & Datnow, 1998 Berends, Bodilly, & Kirby, 2002; Datnow, McHugh et al., 1998; Stringfield, Datnow et al., 2000).

Innovation as Improvement

Principles of Improvement

1. Focus on persistent problems of practice from multiple stakeholders
2. Commitment to iterative, collaborative design
3. Concern with developing knowledge of both effective innovations and implementation
4. Concern for developing system capacity for sustaining change
5. Build on long term relationships
6. Focus on strategies to foster partnership and trust
7. Produce original analyses and data in context

(Fishman, Penuel, Allen, Cheng, & Sabelli, 2013; Coburn Penuel, Celi, 2013)

What is unique about this approach?

- Not just about the what—it is also about the how
- District and school participation in the design work will help ensure that design innovations are aligned with the goals, strengths and initiatives already under way in each district.
- Leveraging teachers and school leader's unique expertise in the design and implementation process
- Bring legitimacy when it comes to implementation and scale up

TWO LEARNING AGENDAS

1. Build team capacity for innovation design, transfer, implementation, and scale-up	2. Deepen teams understanding of the differentiating practices of effective high schools
Content/Process	**Content/Process**
- Effective Use of Data - Innovation Design - Managing Change - Shared Leadership - Implementation & Transfer - Accountability & Evaluation	- Components of Effective High Schools - Differentiating practices - Evidence base from the literature - Evidence from the local setting - Key components of the innovation - Supporting and/or hindering contextual factors

Principle 1: Focus on persistent problems of practice from multiple stakeholders

- What programs and practices differentiate higher and lower performing schools?
- We engaged in intensive mixed-methods data collection in higher and lower performing high schools around a framework of essential components of effective schools
  - Interviews with teachers, administrators, counselors
  - Classroom observations, student shadowing
  - Focus groups with students and teachers
  - Surveys of students, teachers, and parents

Tichnor-Wagner, A., Wachen, J., Cannata, M., & Cohen-Vogel, L. (2017). Continuous improvement in the public school context: Understanding how educators respond to plan–do–study–act cycles. Journal of Educational Change, 18, 465-494

Principle 1: Focus on persistent problems of practice from multiple stakeholders

- Phase 1: What programs and practices differentiate higher and lower performing schools?

Student Ownership and Responsibility (SOAR)

- Integrating academic press and academic support
- Student engagement
- Student efficacy

Principle 1: Focus on persistent problems of practice from multiple stakeholders
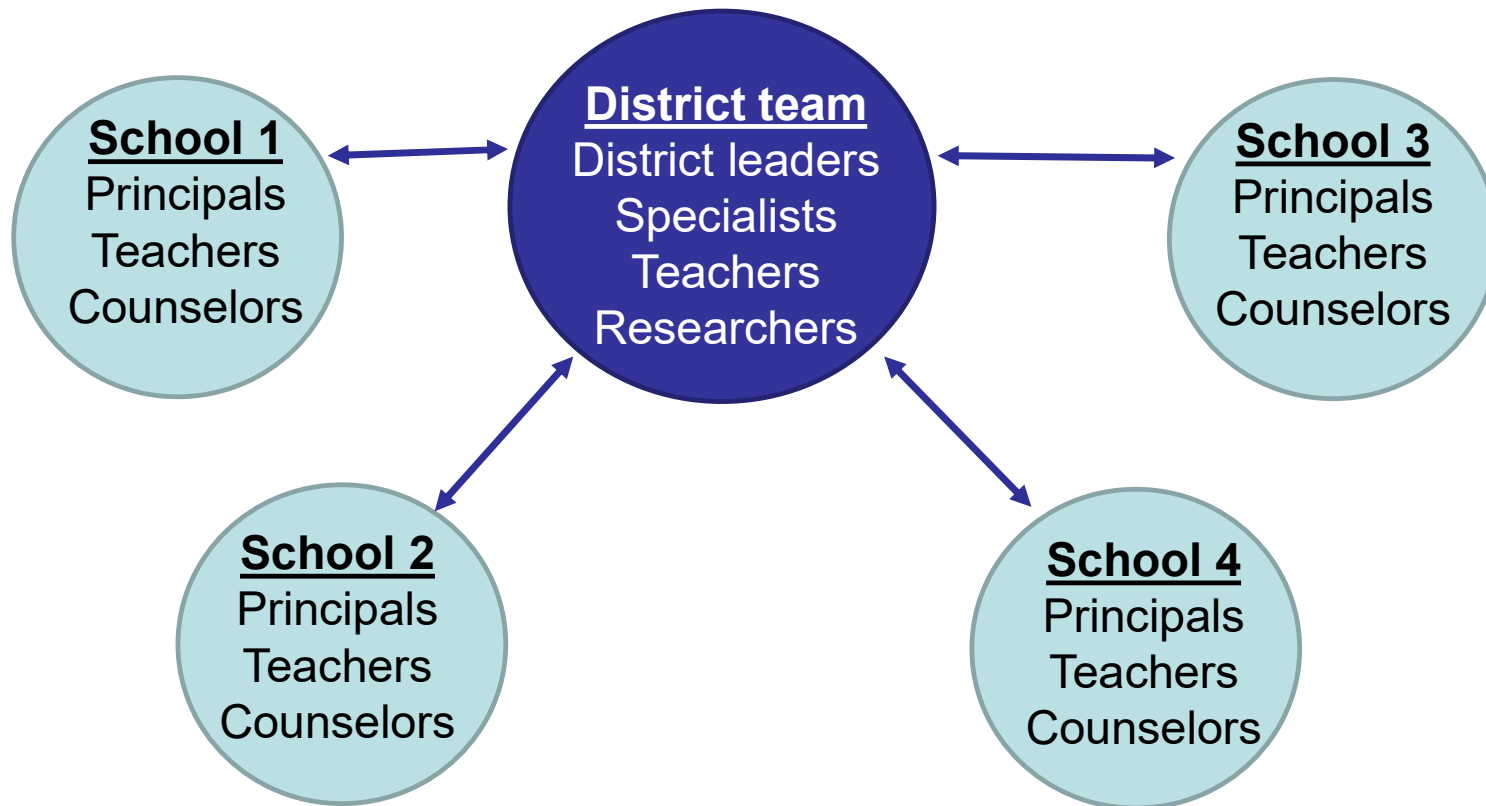
District team
District leaders
Specialists
Teachers
Researchers

Principle 1: Focus on persistent problems of practice from multiple stakeholders

District team
District leaders
Specialists
Teachers
Researchers
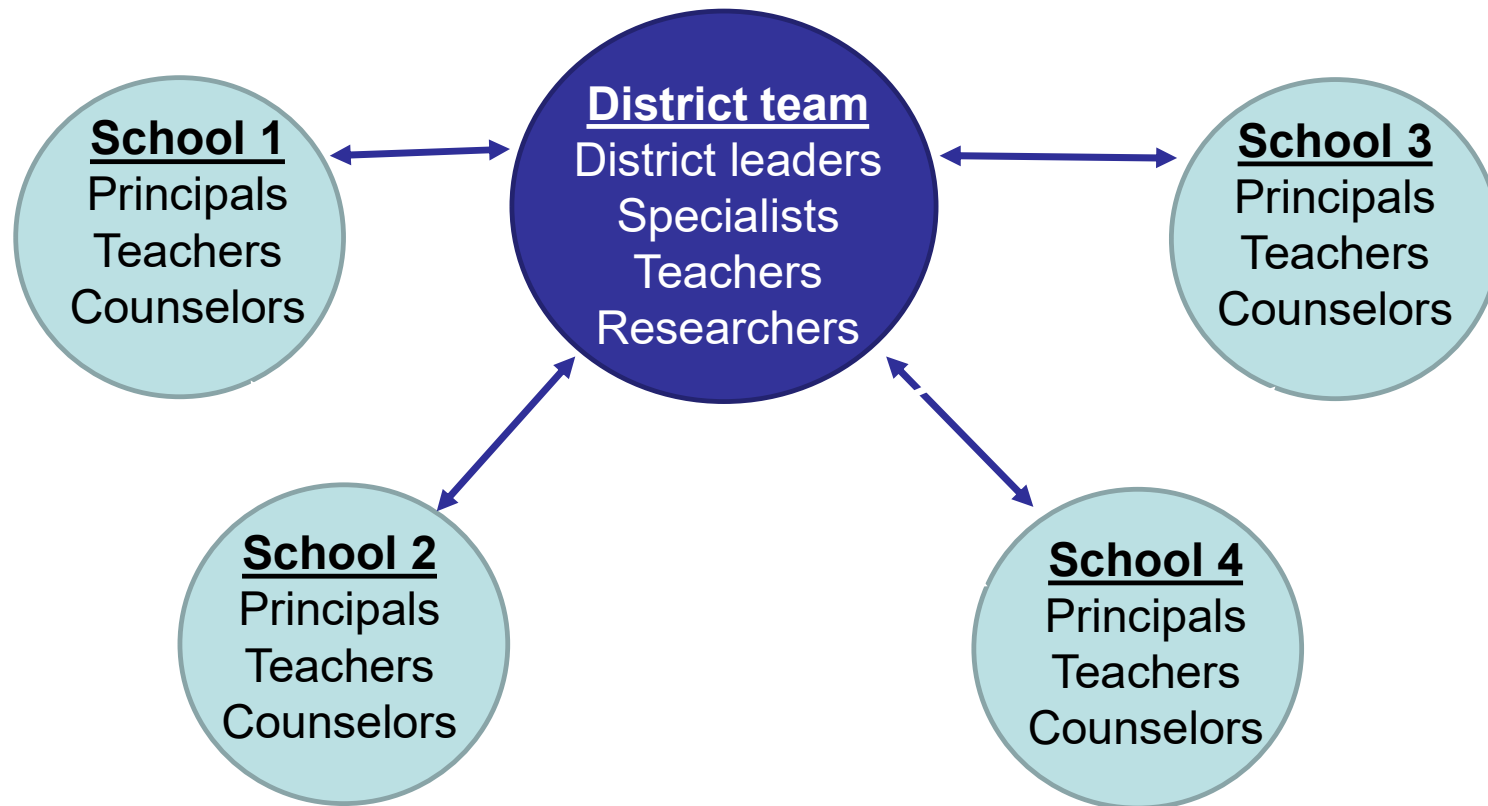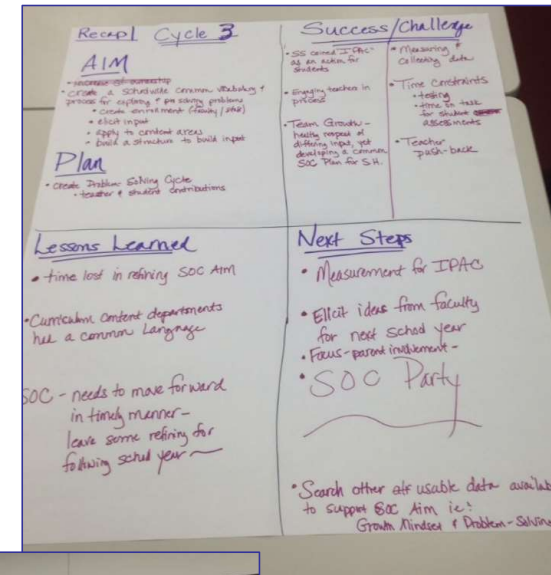
School 1
Principals
Teachers
Counselors

School 2
Principals
Teachers
Counselors

School 3
Principals
Teachers
Counselors

School 4
Principals
Teachers
Counselors

Principle 1: Focus on persistent problems of practice from multiple stakeholders

School 1
Principals
Teachers
Counselors

District team
District leaders
Specialists
Teachers
Researchers

School 3
Principals
Teachers
Counselors

School 2
Principals
Teachers
Counselors

School 4
Principals
Teachers
Counselors

Frequent meetings to examine evidence

Phase 2: Iterative, collaborative design

Design Challenge: Student Ownership and Responsibility for Academic Outcomes

Academic Press
Academic Support

Self-efficacy
Engagement

School-wide Facilitating Conditions

- Shared vision
- Aligned and coherent structures
- Trust
- Faculty and student stability
- Care and relationships between students and teachers
- Teacher accountability
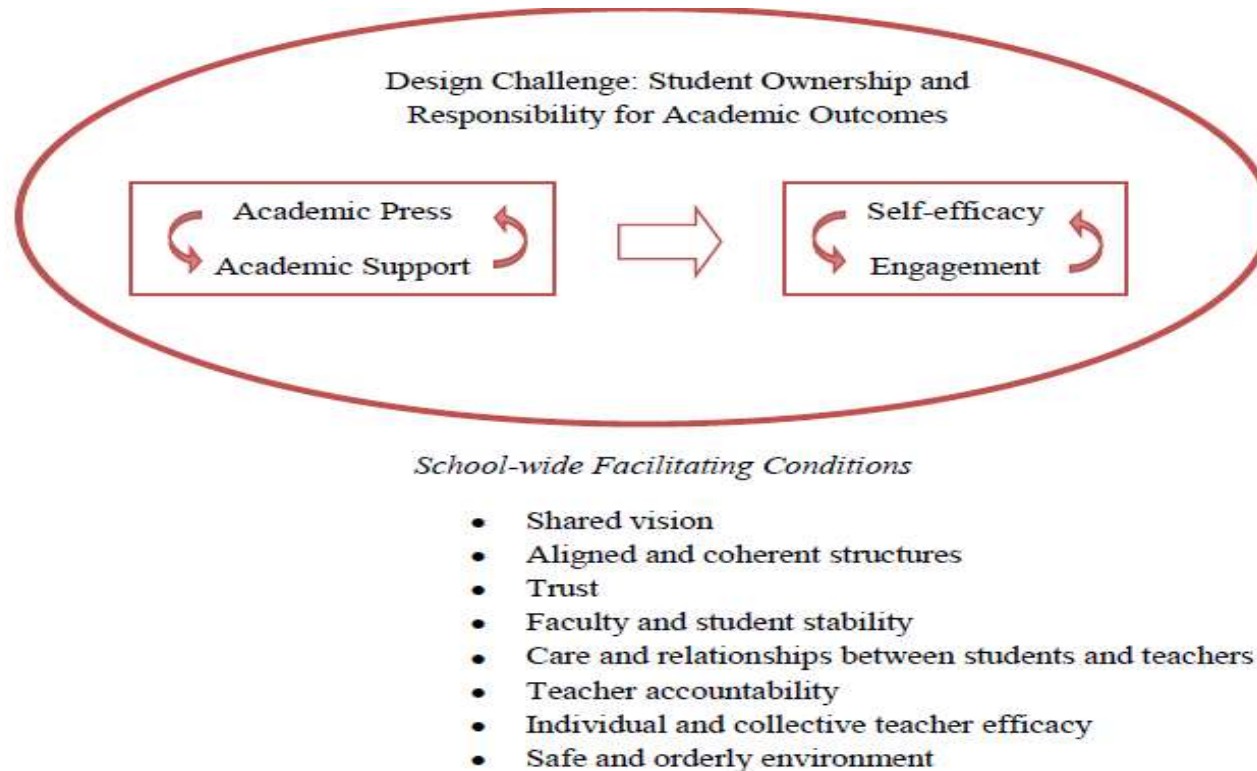- Individual and collective teacher efficacy
- Safe and orderly environment

Figure 1: Increasing Student Ownership and Responsibility for Academic Outcomes

Principle 2: Iterative, collaborative design

	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
District Level	District team engaged							
		Pilot school teams engaged						
							Scale out school teams engaged	
	Design	**Development**			**Implementation**		**Implementation and scale out**	

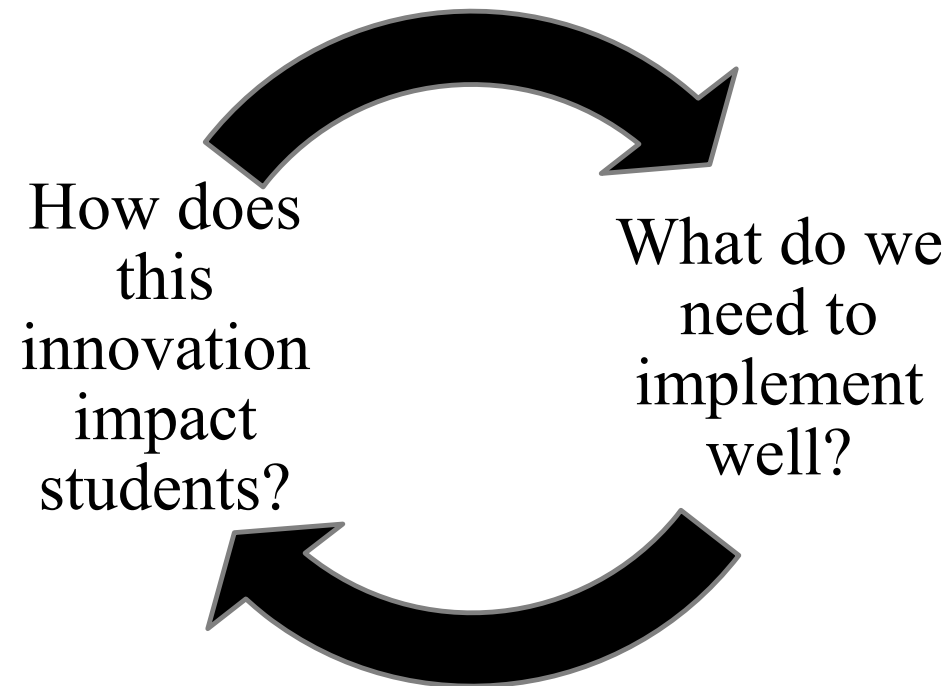# Innovation through Iterative design

"The Model for Improvement" @2009 API
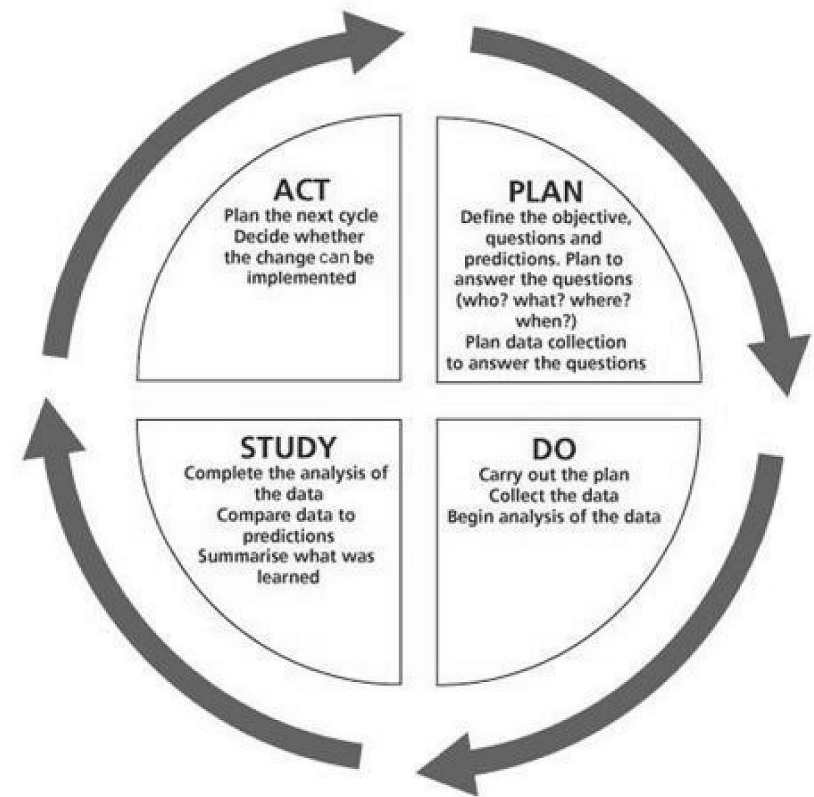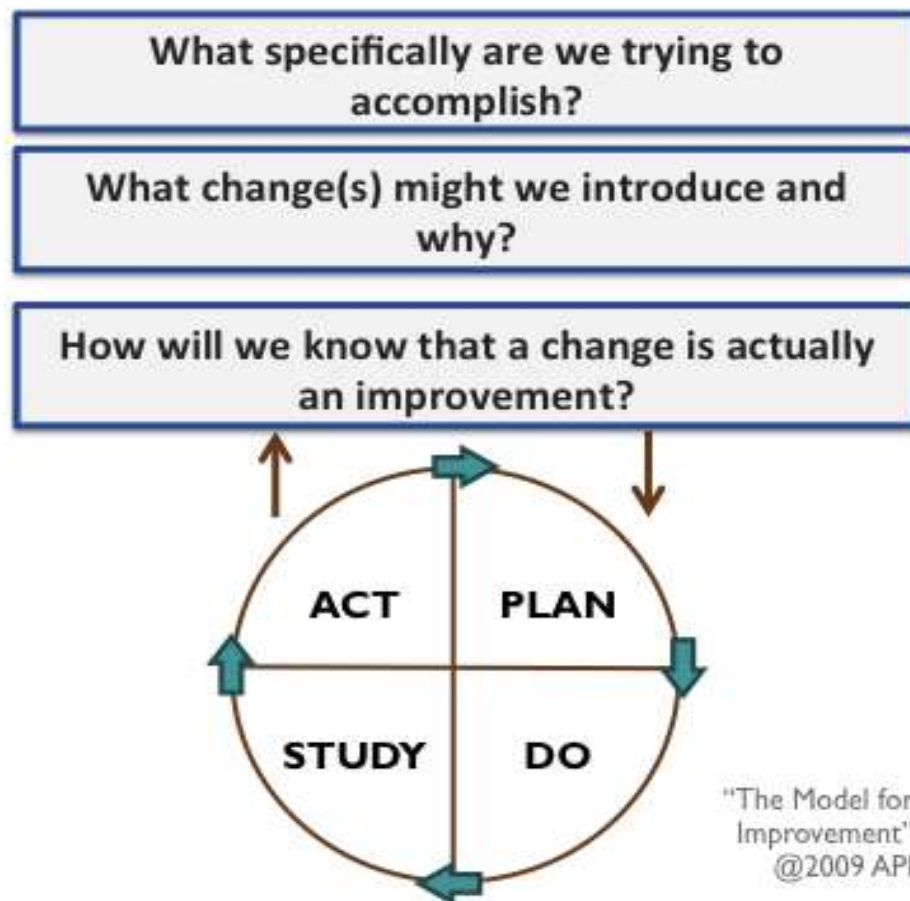
Bryk, Gomez, Grunow, and LeMahieu (2015).
Learning to Improve, Carnegie Foundation

Principle 2: Iterative, collaborative design

Changes that result in improvement

Learning from data

Hunches
Theories
Ideas

Cycle 4: Improved outcomes

Cycle 3: Try approach with all teachers, use advanced students to support teachers.
Learning: Students liked mentors, but struggled to remember what they promised on action steps.

Cycle 2: Try modified process with all teachers.
Learning: Action step prompts helped students develop a plan to improve grades. Teachers with large classes struggled to help all students.

Cycle 1: Try process with small group of students and teachers.
Learning: Students response and action steps to improve.

Tichnor-Wagner, Wachen, et al (2017)

Principle 3: Develop knowledge of both effective practice and implementation

How does this innovation impact students?

What do we need to implement well?

Principle 3: Develop knowledge of both effective practice and implementation

- How does the innovation change student outcomes?
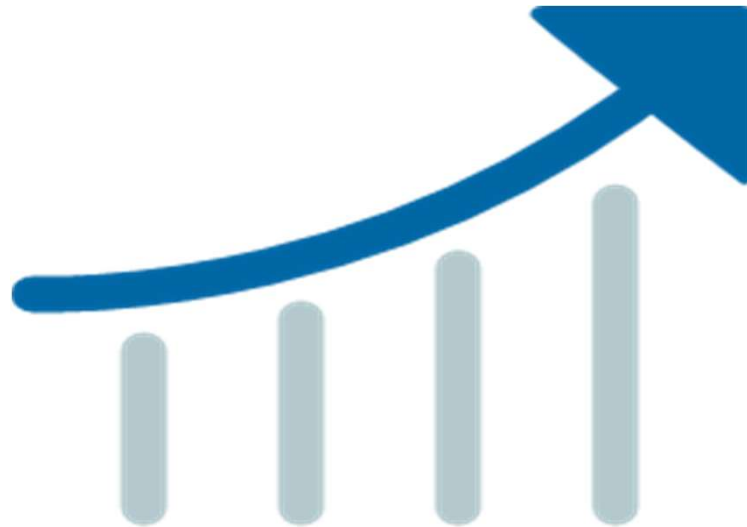
- Schools with more consistent enactment of the routines of the innovation saw better outcomes

Principle 4: Concern for developing system capacity for sustaining change

- Gradual transfer of leadership to district
- District team evolved to plan for sustainability
- Development of internal district leaders
- Strategically elevated teachers to share their knowledge and build their leadership capacity

Teacher Reactions

- Contributed to ownership
  - "I think it has been very interesting to see how this group of people from across the district comes together to try to grapple with some of these ideas … I think it's been rewarding seeing the potential for these kind of cross-role collaborations to be fruitful."
- Challenges in creating a coherent district identity
  - "We really wanted to take what we needed and go our way."
  - "We've become a district…. if you look at these teams here, they aren't [School A], [School B], we are [district], if nothing else, this is what this has done for us."
- Ownership among levels is interrelated
  - Teachers want to see support from their principals
  - Principals want to see support from the district
  - District leaders want to see support at school level

Plan for Sustainability

– "I think it's definitely a feeling that here's this program with a bunch of really committed people and what they need is the space to do all the cool things that they're doing, which is probably true to an extent, but there's also an argument to be made that if it's going to be more than just the people who are already in that room – we need to actively think about how that next stage could happen."

New Roles for Practitioners in Innovation

- Knowledge creators through PDSA process
  - Directly involved in testing innovations in their context
- Opportunity to step away from daily demands to engage in dialogue about system innovation practices
- Opportunity for teacher leadership in innovation

Conclusions

- Innovation in education :
  – Practices and processes in the schoolhouse
  – We don't have a system of R& D, markets, policies and common outcomes
  – Innovation in local context
  – Innovation as improvement
  – Role of evidence base
- ➤ How and where do educators learn to innovate and improve?

Top-down Approach   Vs   Bottom-up Approach
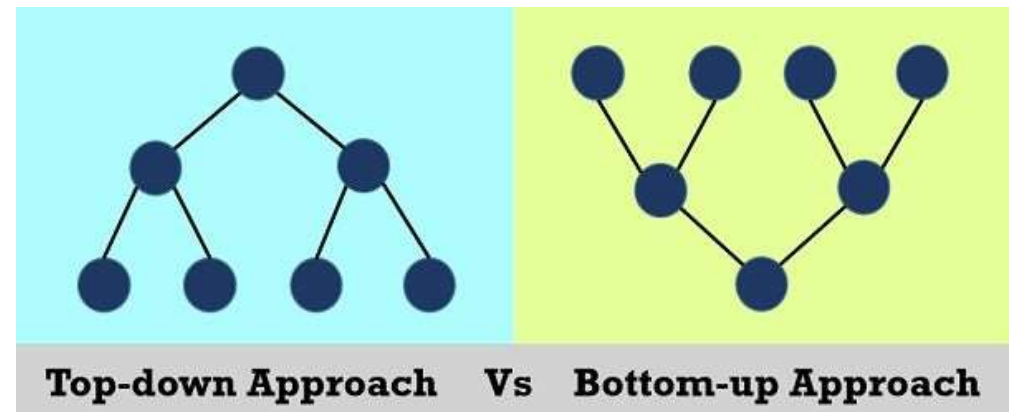
Questions and Discussion

Thank you