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Abstract Name: **EnLiST: Developing Entrepreneurial Teacher Leaders**
MSP Project: Entrepreneurial Leadership in STEM Teaching and Learning
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1. Questions(s) or issue(s) for dialogue at Learning Network Conference session

The advancement of science and engineering in the 21st century will, to a large extent, determine the economic growth, quality of life, and the health and security of our nation. The prosperity of the scientific enterprise, in turn, hinges on the preparation of highly qualified, diverse, and motivated learners at every stage of the academic pipeline.

Toward this end, science teachers need sustained and meaningful opportunities for professional growth and renewal, and the development of leadership skills and capacity as they continue to address the challenge of improving the quality of student learning. The EnLiST (Entrepreneurial Leadership in STEM Teaching and Learning) program is designed to provide such opportunities for K-12 science teachers.

EnLiST participants receive support for engagement in leadership roles at the classroom, school and district levels in implementing innovative instructional opportunities that are thought to increase student learning. As a teacher leader, participants will also be serving as a model of innovation for colleagues. (<https://www.enlist.illinois.edu/about.php>)

2. Context of the work within the STEM education literature and within your MSP project:

Developing Entrepreneurial Teacher Leaders

In a recent article entitled, “The Case for Educational Entrepreneurship: Hard Truths About Risk, Reform, and Reinvention,” Hess (2007) describes an educational entrepreneurship era:

To an unprecedented degree, this is the era of educational entrepreneurship. Unconventional thinkers have waded into the world of K-12 education, founded influential organizations, and upended conventions. They have developed new models for delivering instruction or recruiting teachers and have applied old-fashioned practices with inspired fidelity (p. 21).

Hess (2007) points out one of the key challenges for existing educators who wish to become entrepreneurial is, “Young educators work alone in their classrooms, gain little non-classroom experience and responsibility, develop networks restricted to fellow teachers, and obtain no insight into team management or the demands of launching a new enterprise” (p. 29). The EnLiST project, aware of this recognized constraint, is designed to bring K-12 science educators together not only to enhance their scientific knowledge but also to explore entrepreneurial endeavors using social networks to enhance science teaching and learning.

Entrepreneurship, rooted in business, innovation, and capitalism, has found its way beyond profit-generating roots and into the realm of social activism, academia, and now education. Teske and Williamson (2006) provide a broad definition that serves as a working definition for this project. *An educational entrepreneur is someone who changes the school system in significant and fundamental ways and may disrupt the status quo and transform the system itself* (p. 45).

Although education entrepreneurship is gaining some ground in the literature and in school change, whether or not it can gain a solid footing has been likened to an “uphill battle” (Robelen, 2005). Cuban (2006) offers the following assertions and challenges regarding the concept of educational entrepreneurship:

1. *Since the early twentieth century, educational entrepreneurs have made major changes in U.S. public school goals, governance, organization, and curriculum.*
2. *With all of these major changes in schools, educational entrepreneurs, past or present, have seldom altered substantially or permanently classroom regularities and low-income students’ academic achievement.*
3. *Current educational entrepreneurs’ efforts toward making radical changes in governance and preparation of school leaders have ended up preserving present organizational structures and school practices in urban schools.*
4. *Current educational entrepreneurs’ commitment to a narrow economic purpose for schooling has seriously neglected civic and social purposes that have historically integrated schools into community life* (p. 224).

Educational entrepreneurship, as Cuban points out, is not the be all, end all path to school and educational change, but he describes educational entrepreneurship and states, “An openness to try different ways of solving school and classroom problems remains a defining feature that should be cultivated” (p. 240). Levin (2006) explains significant change within education relies heavily on the ability to transform the institution. There are economic, political, and regulatory roadblocks that cause an innovative school, over time, to return to its former state. Even the advent of charter schools and vouchers have had little impact on the overall way students are taught, “But, the overall finding from studies of public school reform, charter schools, and the limited experience with vouchers and market reform is that educational change does not come easily under any circumstance” (Levin, 2006, p. 21). Levin believes that “spirited entrepreneurialism” is still worth pursuing; however, he recommends these institutionalized forces be acknowledged. Levin states, “These forces need to be taken seriously if there is any chance of overcoming them.”

Differentiating Educational Entrepreneurship Endeavors

In a literature review of entrepreneurship, Gaglio and Winter (2009) state, “The most interesting pattern to emerge from this literature is that at some point, at least one scholar from each ontological camp came to the conclusion that the field needs to make distinctions among types of opportunities in order for further discussions to be productive” (p. 315). Gaglio and Winter continue, “Yu (2001) recommends differentiating between what he calls ordinary opportunities and extraordinary opportunities.” (p. 315). Yu classified ordinary opportunities as those that reorganize within the current structure and are aimed at improving effectiveness. If you place

this within an educational context, one might say a teacher who pursues a new way of teaching that improves student learning and who has done so within the confines of the classroom has pursued an ordinary opportunity. The extraordinary opportunities are much more profound, such as applying new ideas and concepts in a way that facilitates a large change. Because of the novelty and its associated change to the environment, system, or structure, the entrepreneur faces difficulties influencing others. Once again, placed in an educational context, these entrepreneurs would be bringing innovative ideas that might shake or alter the current school system. A teacher who has revolutionized the science curriculum and then challenges the district or state to adopt the new curriculum would be working with an extraordinary opportunity

The work-in-progress EnLiST Entrepreneurial Leadership framework (put forth in question 5 below) is constructed with three dimensions differentiating personal, relational, and organizational endeavors. The relational dimension focuses on entrepreneurial relational dynamics, and this dynamic helps transition personal (ordinary) endeavors into endeavors that alter the organization/system (extraordinary). Success for the EnLiST project would come at any of the dimensional levels (personal, relational, and organization); however, it would be ideal to see science teachers bring successful entrepreneurial ideas to life outside their own classrooms and influence science teaching and learning in their schools, districts, and beyond. The EnLiST project is fostering teacher development around the Entrepreneurial Leadership competencies as well as providing networking opportunities, so science teachers can put their ideas into action.

3. Claim(s) or hypothesis(es) examined in the work (anticipating that veteran projects will have claims, newer projects will have hypotheses):

Through developing science teachers' science knowledge, social networks, and entrepreneurial teacher leadership competencies, EnLiST teachers will bring about innovative solutions to teaching science and will apply these innovations within classroom instruction. In addition, EnLiST teachers will build competencies that allow these innovations to impact science teaching at school and district levels. If EnLiST teachers successfully bring about change within the classroom, school, and/or district, the Entrepreneurial Teacher Leader Conceptual Framework may prove useful when looking at other MSP innovations.

4. Evaluation and/or research design, data collection and analysis:

EnLiST project staff will work closely with representatives from participating school districts and a team of evaluators to collect, organize, and synthesize data relevant to the various goals of the EnLiST program. Data collection efforts will continue throughout the duration of the 5-year project. Evaluation team members will provide both formative and summative feedback to project personnel in order to facilitate continuous efforts to learn about and improve our understanding of the process of cultivating and supporting entrepreneurial teacher leaders.

Data regarding the quality and impact of instruction delivered during summer institutes related to science content, pedagogy, and entrepreneurial leadership will be assessed using data collected through observation, mid- and post-institute surveys, pre- and post-institute content knowledge

assessments (currently under development), and interviews with teachers and relevant project staff members.

Data relevant to changes in teachers' instructional practices resulting from involvement in the EnLiST project will be gathered through multiple classroom observations (during which the Reformed Teaching Observation Protocol – *RTOP* – will be administered), and through interviews with teachers and school and/or district administrators.

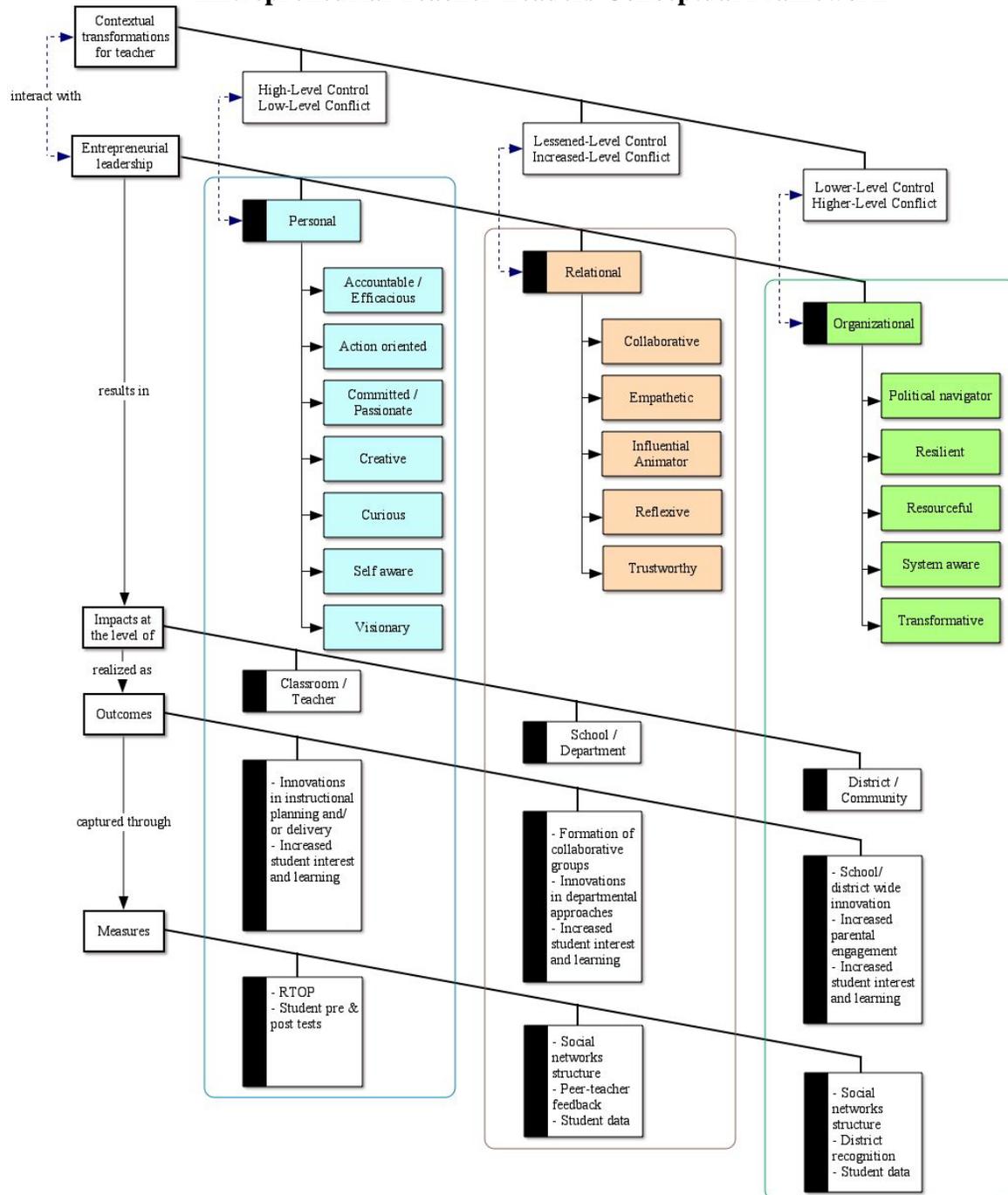
Project impact on student learning will be monitored using standardized achievement data (i.e., Illinois Standards Achievement Test - *ISAT* - or Prairie State Achievement Examination - *PSAE* - data will be collected for individual students). In addition, students' course grades and performance on specific assessments designed by teachers to measure learning outcomes on curricula highly relevant to the EnLiST project will be collected and analyzed whenever possible.

In addition, project researchers and/or project evaluators will utilize interview and survey data to describe participating teachers' professional social network structures, and to gauge the value and nature of these networks as they change overtime. Project evaluators will develop case studies that document various perspectives on the nature of local and systemic reform efforts (at the classroom, school and/or district level) that are attempted or realized as a result of teachers' involvement with EnLiST.

5. Key insights (retrospective for veteran projects, prospective for newer projects) that have value for the Learning Network:

The following conceptual framework has been developed and may prove valuable for the Learning Network and other MSP projects.

Entrepreneurial Teacher Leaders Conceptual Framework



Definition of Entrepreneurial Leadership Terms

Competency	Definition	Source(s)
Accountable/Efficacious	Efficacy is one's belief that he or she possesses the skills, abilities, and expertise to handle challenges, overcome obstacles, and achieve goals, as well as the belief that he or she is responsible for taking action.	Locke and Baum (2007, p. 98) Markman & Baron (2003)
Action Oriented	Takes initiative and is proactive when implementing an idea or goal and does so with planning (can be real-time, everyday planning). As Frese (2007) explains an active approach is critical for an entrepreneur.	Frese (2007) Schumpeter (1942)
Committed/Passionate	Identifies and engages in the idea and this includes a desire to remain with an idea during difficulty, a willingness to apply significant effort, and an emotional attachment to the idea.	Tang (2008)
Creative	“Creativity is any act, idea, or product that changes an existing domain, or that transforms an existing domain into a new one” (Csikszentmihalyi, 1996, p. 28). Applies novel ideas or approaches to practice and embraces ambiguity.	Csikszentmihalyi (1996)
Curious	Inquisitive and interested in the environment and people. Recognizes and pursues challenging opportunities. As Csikszentmihalyi (1996) states, “Without a good dose of curiosity, wonder, and interest in what things are like and in how they work, it is difficult to recognize an interesting problem” (p. 53). Kashdan, Rose, and Fincham (2004) state, “Curiosity prompts proactive, intentional behaviors in response to stimuli and activity with the following properties: novelty, complexity, uncertainty, and conflict” (p. 291).	Csikszentmihalyi (1996) Price and Vojak (2009) Kashdan, Rose, and Fincham (2004)
Self Aware	Reflective and mindful of existing mental models and willingness to adapt when confronted with surprises or challenges.	Gaglio & Winter (2009)
Visionary	Recognizes opportunities in situations in which others have seen problems. Entrepreneurs “believe in a yet-to-be-made future that can be substantially shaped by human action” (Sarasvathy, 2001, p. 9). Hougaard states, “As an entrepreneur, you can see what might be, and not just what actually is – you have the ability to glimpse the future relations between factors that may create new value and new opportunities” (p. 8). Bresler (2009) explains vision, “often crosses borders, disciplinary and others” (p. 17).	Hougaard (2005) Bresler (2009) Sarasvathy (2001)
Collaborative	“Entrepreneurs need also to use collaborative strategies (e.g., alliances) and shield their new ventures from the adversity of their hostile external environments” (Zahra, p. 62). Credit for accomplishments and ideas are shared.	Zahra (2006) Bornstein (2007)
Empathetic	“Awareness of others’ feelings, needs, and concerns” and builds this awareness through active listening and careful observation of others (Goleman, 1998, p. 27). Willingness to look carefully at differing points of view.	Goleman (1998)
Influential Animator	Build a collective passion through the “Ability to change others' attitudes and/or their behavior in desired directions” (Baron and Markman, 2000, p. 110). Able to activate others toward a shared vision. Bresler (2009) defines animation as “...working with others to inspire,	Drnovsek, Cardon, and Murnieks (2009) Baron and Markman (2000) Bresler (2009)

	negotiate, and lead in making things happen” (p. 19)	
Reflexive	Analyzes the environment, situation, and relationships in connection with vision and/or behavior. As a result of this reflection, changes the course of action as a result. Bornstein terms this “Ability to Self Correct.”	Bornstein (2007) Tsoukas & Chia (2002)
Trustworthy	Gains the confidence of others through effective problem solving, achieving results, sharing leadership and decision making, and respecting others.	Wahlstorm & Louis (2008)
Political Navigator	Aware of the political realities, organizational decision makers, formal and informal structures, and power dynamics. Is sensitive to these forces and builds connections that allow for greater influence.	Goleman (1998)
Resilient	Sticks with an idea through difficulty and builds capacity through renewing and adapting during adverse conditions. “To become resilient, individuals must learn to adjust to negative conditions with the aid of their resources, which can inform their perspectives and decision-making.” (Bobek, 2002, p. 202).	Giles (2008) Krueger (2005) Bobek (2002) Price & Vovak (2009) Markman & Baron (2003)
Resourceful	Assembles, combines, accumulates, and secures the necessary and sometimes rare resources in unique ways and builds long-term capacity through these resources.	Busenitz & Arthurs (2007)
System Aware	Understands the whole system as well as the different parts, is knowledgeable of the power structures (formal and informal), and sees connections across time. In relation to schools, this also includes awareness of school culture as Levin (2006) states, “The culture is built on tradition, habit, expectations, and images of what schools should do and be” (p. 22).	Price & Vojak (2009) Levin (2006)
Transformative	Disrupts, radically changes, or alters the way education is provided.	Teske and Williamson (2006)

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