The Power of First Moments in Entrepreneurial Storytelling

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Abstract

Our minds are built to remember stories. Recall watching and listening to an audience respond to the first moments of a story—what engages and captivates the audience?
This paper explores motivational, attitudinal, and influential aspects of storytelling with an entrepreneurial streak and specific focus on the vulnerable introductory phase of student responses during classroom design challenges. What motivates students and the way they begin their projects or start-ups are considered during the opening phases of each class, during classroom dynamics and during the introduction of an entrepreneuring story. Stories are examined and informed by previous work. Storytelling is defined and measured by four concepts: *self-motivated, ambiguity readiness level, passionate social connections, and empathy.* A series of planned prompts alongside classroom work geared towards student quests for entrepreneuring success are qualitatively analyzed using the following two questions:

> 1) How do we introduce and measure the predictive engagement aspect of vulnerability in successful entrepreneurial storytelling? And,
> 2) How do we develop a procedure for applying the storytelling results to the start-up phases of entrepreneurial work and illuminate its effectiveness for delivering innovation.

Increasingly, academic and industrial collaborations begin as entrepreneurial expectations for delivering something novel. Defining the first steps of start-ups results in discussions of a series of related concepts: innovation, empathy, and storytelling. While the media is rich with definitions for all terms, the result is diluted and often blurred with overuse, confusing multi-applications and quick fix recipes for success. Students in academic classrooms across disciplines routinely ask for help in communicating and telling their story. Meanwhile, popular culture features industry leaders' use of storytelling in their quest for innovation. Yet, the relationship between academic research and storytelling has been ambiguous. The intent of this paper is to provide descriptive examples and student participant stories for demonstrating effective development in one class episode or development in the foundation for an entire class.

This paper explores the power of the very first moments of storytelling during the evolving dynamics of an interdisciplinary graduate design methods seminar and builds method parallels from previous works. The results of student storytelling during their work in the beginning of each class and during the overall dynamics of the class as individual and group storytellers is applied to outside of classroom examination and prototyping of their research and/or their entrepreneurial start-up stories. A theoretical blend of applied psychology, entrepreneurial leadership, and design thinking provides a qualitative focus.

Key words: Storytelling, Entrepreneuring, Vulnerability, Empathy, Innovation, Design Thinking

1. Introduction and Overview for the First Moments in Storytelling

The idea to focus on the first moments in storytelling comes from experience teaching five different graduate design methods classes composed of students from diverse backgrounds in mechanical engineering, humanities and social sciences, business, law, education, along with professors ranging across departments of engineering design and communication. In frequent refrains and conversations during and after classes, students asked "Do I have a story?" and "Can you help me tell my story?" and "How do I begin my story." Despite the media's hyper-utilization of "storytelling" as a catch all fix and despite academia's skepticism, current scholarship presents the benefits. The influence of storytelling is ubiquitous in entrepreneurial leadership, design education and theory. Storytelling is an art of weaving, an art of constructing a product of intimate knowledge, and this is a delicate process. We focus on storytelling as the center-stage aspect or the performance and enactment of story, and we draw upon previous work[1] and existing literature[2, 3, 4] on the universal cues in organizational stories to explore the first moments of storytelling that predict engagement.

The most engaging first moments in stories are not always planned and practiced introductions and sometimes effectively start in the middle of the story. In our collaborative work, one student defined, "To me, the first moment is the largest window of time in which the speaker can establish a relationship with the listener. It is the biggest opportunity to do so. There goes the saying. 'There are no second impressions.' In the story exchange process, if the listener empathizes early on with the speaker, the friction to emotionally engage with the rest of the story is reduced. These connections make a lasting emotional effect on us and ultimately allow us to better remember stories. I think the easiest way to establish this emotional connection/empathy is for the storyteller to embrace the element of vulnerability. Being humans, our flaws act as the common thread to connect speakers with audiences."

During initial meetings, students report an uncomfortable blend of anxiety around not knowing the participants in the room, concern about challenges from the Instructor, and excitement and enthusiasm to get started. They intuitively know that no one formula exists for storytelling success, that they are not story magicians in the making, and they have enrolled in a class to practice, test, and prototype. Yet, when the Instructor asks, "And so, what's your story?" Some students respond, "Do you have a template for that?" Such first moment dynamics set the stage for the thrill of anticipation and the provocative wonders of what would transpire. The results of this particular class experiment and other industry driven design team research experiments have been documented[5, 6, 7]. Researchers have even discussed the importance of storytelling on design team process of students, professional engineers and designers[8]. Scholarship has contributed to our understanding of cultural factors and the regional advantages of Silicon Valley have contributed for breakthrough impact[9, 10]. Furthermore, while extensive observation of formal small group learning of design teams in large classes includes storytelling components for innovations in lectures, it is unique to consider storytelling through a limited scope and focus on the first moments of storytelling.

Picture this scene: A diverse group of twenty-something and thirty-year olds are sitting around a long seminar table in a working session where everyone tells their story and the most engaging story wins. Who starts? What is effective and what predictive engagement occurs when alternative approaches, changed inputs, or new perspectives are utilized? — everything is dependent on the group's decisions and dynamics; dynamics which are strikingly similar to that of a startup company. Our primary intent for this paper is to make explicit the implicit cues that characterize the power in successful first moments in storytelling. A secondary intent is to associate people who are entrepreneurs with people who want to be good at storytelling by looking at the vulnerability of first moments.

2. Examination of First Moments

In this paper, we consider the stories of a seminar class and share discoveries based on a compilation of student work, responses to planned exercises and organizing question prompts. We are driven by a dual goal**:** to characterize first moments in storytelling, and to associate people who are entrepreneurs with people who want to be good at storytelling by looking at the vulnerability of the first moments.

The definition of cues in the first moments of storytelling is explored and described by student co-authors. They observed an interesting paradox: If a storyteller did not show vulnerability in the first moments of what they said, people were less engaged because they believe it sounded practiced and artificial. What is it about an individually felt flaw that is indicated in the beginning of a story that engages listeners? Students were not sure how to characterize the emotions and attitudes within the context for storytelling. Yet they trusted their personal observations and intuition that there was "something" about beginning and feeling vulnerable that enhanced the group's response. The feeling of vulnerability is defined as uncertainty, risks, and emotional exposure[11] that students became knowingly aware of as they discovered a shared group or team vulnerability.

Organizing questions, prompts, practice exercises, and storytelling design challenges during each class "episode" facilitate student responses. While the course has an extensive, planned syllabus, the developments and dynamics in the group impact the curriculum. The students are encouraged to embark on a kind of mental time travel and recall the emotions and sensations and details of events that they have previously encountered within the frame of a current goal. The construct of episodic memory is informative[12]. Consider the following story example that came to us from one participating graduate student:

> "Aren't first moments really just moments? Maybe they set off a new chain of events, and in a sense they are the first in a series of events that form a chapter or short story in a collection of short stories that make-up life? Well here are two memorable moments in my story:
> Al Wathba Prison, August 2011. Almost ten years after deciding to make my career in security and terrorism, I spent a short stint in Al Wathba Prison - a notorious prison in the middle of the

desert outside of Abu Dhabi. I decided I didn't want to work in security anymore and wanted to make a change, but I had no idea what that meant.

Four Courts Irish Bar, Arlington, VA, late July 2012. I had just returned from seven months traveling through Southeast Asia and South America. I met a friend from the Middle East in an Irish Bar as he happened to be in DC at the same time. He told me about an idea he had for an art application and wanted to know if I want to help build a company, and I said, yes."

We illustrate how students are not just telling stories for story sake; rather, they are making a routine commitment to telling their stories. They tell a story attached to an idea about a project, or their research, or a start-up dream with the intent for routine attention that facilitates understanding and new developments in their work.

2.1 Concepts

Using a grounded theoretical approach, and drawing on applied psychology, design thinking, and leadership theory, we call heavily upon the prototyped four concepts used to classify the social interaction and emotional behaviors in previous groups (see Table 1)[13, 14]. Four concepts: *self-motivated; ambiguity readiness; passionate social connection;* and *empathy* are considered. Each concept can be represented by a small spectrum between two extremes, enabling better resolution. Our goal is to explore the meaning of the concepts for impact on the first moments in entrepreneurial storytelling – parallel to student responses during the beginning of each class and overall class culture – to qualitatively determine the interaction, if any, between two or more of the concepts. As a result of preliminary conversations, observations of previous classes, and brainstorming, the co-authors believed that the concept of vulnerability was particularly relevant. We observed an interesting paradox: the vulnerability of a storyteller was required to maintain the engagement of an audience, and to make the story more genuine and seem less practiced. The concept of vulnerability (see Table 2) of an individual and the idea of the audiences' perceived flaw in a story emerged. We hypothesized:

> *Using the aspect of vulnerability in the start-up moment of entrepreneurial storytelling leads to an increase in engagement.*

Table 1: Concept Definitions

Self-Motivated (MO)	Represents a range of behaviors that are characterized on a continuum with bipolar extremes: "ability to work for reasons that go beyond time, money, or status" "self-driven interactions at one extreme, and "external driven" interactions on the other. Routine commitment to their stories. [McClelland, 1964; 1987; Goleman, 2004].

Ambiguity Readiness (AR)	Represents a person's ease with ambiguity along a developmental readiness spectrum for work, team path, and the lack of details and logistics for product delivery in and outside the environment. Refers to being comfortable with an incomplete story. [Stefik & Stefik, 2006].
Passionate Social Connection (SC)	Linked to responses that express a sense of intrigue, interest, excitement, and a general reported vibe for staying in the moment of the work with real and tangible applications. Artfully but not perfectly connecting. [Taylor & Karanian, 2008].
Empathy (EMP)	Tracks the extent to which a student is capable of understanding their personal emotional comfort level and the emotional make-up of other people, capable of stepping into the shoes of another student or the user and experiencing what others feel on their team and treating them accordingly. [Goleman, 2004; Barry, 2007].

Table 2: Vulnerability Impact

VULNERABILITY (VUL)	Tracks the extent to which a student is comfortable being uncomfortable, depicting or exhibiting a flaw, feeling a degree of uncertainty, and willing to risk emotional exposure. *MO, AR, SC,* and *EMP* are related concepts. [Brown, 2012; Smith & Berg, 1987].

2.2 Analysis

Content for analysis of the overall concepts concern the emotional and motivational make-up for the individuals on the team and heavily draws from the research on effective leadership and emotional intelligence[12, 13].

Self-motivated refers to the capacity to be visionary about personal achievements[14] and the "ability to work for reasons that go beyond time, money, or status" "self-driven interactions at one extreme, and "external driven"[15, 16, 17] interactions on the other. This category seeks to answer how above and beyond an individual goes regardless of the task they are charged with.

Ambiguity Readiness represents a person's ease with ambiguity along a developmental readiness spectrum for work, team path, and the lack of details and logistics for product delivery in and

outside the environment and draws from the theories of radical innovation[18] and has formative elements of design thinking principles[19]. A process is developmental over time and there exists no manual for maneuvering and planning the outcomes of a startup.

Passionate Social Connection includes responses that express a sense of intrigue, interest, excitement, and an artful way of connecting[20, 21, 22]. Also evident is social ease and a capacity to refresh quickly, and for staying in the moment of the work with real and tangible applications for iterative work. A team relies on the cooperation of all the parts; it is essential that there is a constant feedback loop between team members.

Empathy tracks the extent to which a participant is personally capable of understanding the emotional make-up of other people, stepping into the shoes of another on the team and feeling "with" versus for another. It also refers to the foundation hallmark of design thinking in the context of understanding the user (in terms of virtual communication, team communication, interactions in user experience) and treating, building, and designing for them accordingly[23]. The empathy characteristic is critical when it comes to team function and interactions between team members; each teammate must be aware of the inputs and contributions of each person and ensure that people are felt valued and appreciated to improve team dynamics.

All four concepts: *self-motivated*, *ambiguity readiness*, *passionate social connection*, and *empathy* are related to the consideration of vulnerability as a cue to be studied to understand the power of first storytelling moments.

METHODS

Participants:

The participants in the study consisted of 16 male and female graduate students ranging in age from 20-31, from a West Coast university, enrolled in one elective, graduate design methods class, and self-selected to participate in a storytelling experience. Students were from diverse academic backgrounds in mechanical engineering, computer science, business administration, humanities, and social sciences. Non-probability sampling was used due to a very limited budget and a ten-week course time line to modify a research design and "examine" the participants.

Measures occurred in two parts. Part one included question set I and was comprised of a paper and pencil test. Additionally, part one was a projective cue prompt that measured the effectiveness of the first moments of the story. Part two measured engagement to the story from the participants as audience response point of view, that was determined and designed by a representative team of students in the class. The representative student team believed that the power of the first moment is amplified by how the audience relates to the first moment. In

addition to a previously used and validated course prompt, they created a secondary prompt (see Results section) as an after the fact interpretation of the storytelling.

Previous Methods:

One of the attempts in the iterations to capture audience response and try to collapse it into a common denominator framework consisted of sending three independent single paragraph stories by email to the individual participants of the class, and then asking them for a spontaneous but concise reaction to gauge their interest and try to delineate what were the elements that could be causing the attention spark. In particular, the experiment asked the following questions following each story,

1) Did the paragraph catch your attention?
2) Did your interest fire because of the intrinsic writing (what is happening) or/and anticipation/expectation (what happens next)?
3) The effectiveness of the story is in the overall structure or in particular words that jump out? If the latter is true, which words?

The construction of the story paragraphs and the overall reception was good, but the results did not illuminate on the causes and triggers of capturing the attention. In retrospect, the questions may have framed the reaction, and thus lost the spontaneity of the answer.

2.3   Approach

The procedure was considered an extension of preliminary experiments, and builds on the previous parallel work in the Tell/Make/Engage methodology[24]. No single prototype consideration of this particular Tell/Make/Engage class approach has been used before the current analysis on the first moments of storytelling.

Four expectations were the foundation for the approach:
1   Group engagement can be fostered through a routine commitment to storytelling.
2   Group engagement is observable in the first moments of storytelling.
3   Group engagement contributes to a shared vision and real progress for innovation.
4   Group engagement is developed as a result of empathy to the flaws in beginning.

3. Results

Student stories from the graduate design methods seminar are shared below. They were given the prompt:

We've had a lot of great moments in our class, but we most likely only remember some of them. Everyone probably remembers different moments depending on how the moment affected them or made them feel. Write about these moments you remember from class, and tell us why you remember them.

1. If I remember correctly, the Professor asked if anyone had a love story, and a student promptly acknowledged that he did. He told the class that he was engaged to be married - twice - to the same woman, but is now single. This tag line was incredibly engaging and everyone, including me, needed to know more. He then discussed how this woman came from money and how he was ashamed of marrying her. What stood out the most was Francisco saying she had a BILLION dollars. It might have been a million, but I heard a billion and quickly gasped. This statement made the moment all the more powerful and left me wanting to know more. I quickly understood why he would be ashamed.

2. Her description of the rain was incredibly memorable because of the images that she created through her perspective. Her quiet demeanor made it even more intense. She had the undivided attention of every single person in the room. I could feel myself in her shoes, especially given all my memories as a child watching the rain come down outside my house and how much I used to enjoy the sight of a storm brewing.

3. One specific student story: A thin shard of sunlight sliced through the vent of the windowless, cold, and cramped one bedroom basement apartment. I sat on the stained carpet, alone, playing with my one and only prized Hot Wheels car. My mother was working her ten-hour shift as a minimum wage waitress and my father was nowhere to be found. He abandoned our family just three years after I was born, leaving the burden of his reckless gambling debt to my mother and leaving us to fend for ourselves. At the time, my mother barely spoke any English, yet she had to find work in order to support us. She became so occupied with work that I was frequently isolated at home. The house on Wellington Avenue in Daly City evolved to represent all the suppression my mother and I endured. As a child, wherever I could go to be away from this cell, I went.

4. He told a nice story about making a candle, where he started off involuntarily participating at the request of his girlfriend, but as he began the process, he started to appreciate it and went wild with making the best candle of all times. He was holding the candle in his hands while telling the story and the audience had the opportunity to pass around the candle afterwards to indulge in the 'scent of the rain'. After the candle returned to his hands a student asked him, "Are you happy with what you made?"

5. September 11, 2001. I was a senior in high school preparing to apply to college. I decided I wanted to study terrorism. That started me down a path that led me to Georgetown, St. Andrews, Afghanistan, the Pentagon, UAE, Iraq, Syria, Yemen, etc. This was my beginning of the journey.

To increase our base of shared moments, another set of stories were collected using this class prompt:

Complete strategic storytelling. Write a strategic 5 sentence story that can be told in any order.

a) Student reflects on her Chinese past.
- It's Chinese New Year.
- Red lanterns hang all along the streets, emanating warms and happiness.

- She could not draw herself away from the stall with steaming rice cakes, the ones just like her grandma used to make for her.
- A gust of piercing wind came by, she shivered in cold, tiny hands blue and purple.
- Squeezing tight on a bill of one, all the money she had, she swallowed, tears in her eyes.

b) Student discusses how to find the best version of himself.

- Talking too much is a problem that's hard to talk about – well, actually it is easy to talk about, this is the problem.
- Somewhere in the back of my mind is this perfect version of myself, one with all the quirks I like and none of the ones I don't.
- I, and I suspect most people, want to be like characters on TV, where our strong suits are obvious and our failings endearing – so an imaginary laugh track comes on every time I bore people with my rambling, or set the kitchen on fire with a forgotten tea kettle.
- Do the characters we admire really have smaller flaws, or do they just have the confidence to ignore them?
- It's easy to tell myself I'll talk less, remember things more, etc. – but when the thing to remember is that you forget things a lot, it's hard to stay on track with any of it.

c) Student introduces his start-up ideas as, "The Old Man and the Sea."

- The small wooden boat rocks violently as the old man tenses his muscles and freezes, waiting for the impact.
- Impassible ocean stillness seems to stop the unrelenting wheel of time, with a silence so profound that he feels suddenly deaf.
- He hurriedly looks overboard, straight into the boundless water depth, and he sees a gigantic shape coming straight into the feeble boat.
- Settling into the prow, his callous hands pick the last gallon of drinkable water. His thirst attacks him mercilessly again.
- He looks, shaken, to the full moon – the only companion who hasn't changed in his myriad of years – projecting millions of flickering silvery tongues against the sea.

4. Discussion

Below we discuss the shared moments presented above and match them with the four concepts of storytelling plus *Vulnerability*.

> 1. This moment involves a student in the class recollecting a classmate's story. Most people find it difficult to talk about their love lives openly to a group, so when the classmate told his story, the student and the rest of the class was caught off-guard. A specific reflection on love and romance in a first moment always engages. The classmate's emotional exposure (*VUL)* made the people in the room listen and participate in his story. *Ambiguity readiness* applies here since the classmate had not prepared his story beforehand, and his capability to openly talk about his personal experiences displayed his *vulnerability*. The speaker and the audience connected on the feeling of shame, and this shows that the group experienced *empathy*. This strong

connection combined with the speaker's *self-motivated* and confident storytelling skills made this moment powerful for the entire class.

2. This story was, without being intentional about it, an exceptional live testament about the power of stories, and the ability of some of them to distill universal traits with which any person anywhere anytime can instantly relate. This is a very un-*self-motivated* story, and part of its strength comes from the depiction of a girl – not any girl, but the student herself – in a way that is curiously detached yet intimate; a moment that stays latent forever, for it can represent oneself or any other being, tomorrow, today or five centuries past. Its *ambiguity readiness* comes from an ultra detailed physical depiction – the audience gets involuntarily transported into the story –, but that at the same time has profound unanswered questions, not only in what comes next, but what is happening in the person's soul, which in a way permeates to the audience through the sound and sight of rain. *Passionate social connection* fills the entire story, as it captures, involves and creates absolute rapport from the audience. There is an entire deck of emotional cards that fire simultaneously, lightening and turning off at blinking speed. Her feelings, both the little girl in the story as well as the author, are transfused with no loss of fidelity to the audience, the very definition of *empathy*. The texture and content of the story transpires *vulnerability*, which wraps all other four concepts into a coherent whole.

3. While this is an actual story, and not a participant remembering a moment from class, the story paints a vivid picture and reflection of early life moments. Referring back to his three year old self, this story is an illustration of episodic memory and *empathy*. During class, the audience steps into the shoes of the little boy playing with his hot wheels car (*EMP*). They also understand the concept of mental time travel and recall the emotions and sensations of the cold cell of a room and the isolated details of events that he previously encountered within the frame of a current life goal. Most important, the class has the opportunity to learn how a reference to family provides a powerful first moment in any story. Here, a mother working ten hour shifts and barely able to speak English and a reckless gambling father sets the stage for the early life of the boy he/we will never forget. The risk of emotional exposure in the story underlines how *vulnerability* in the start-up moment of entrepreneurial storytelling leads to an increase in engagement.

4. The candle-making story has imprinted strong impressions on the audience. The storyteller has demonstrated *self-motivated* characteristics by saying that he transformed from initially making ridicules about the idea of candle making to giving his 110% in creating the best candle. His internal drive for perfection beyond obvious pursuit of money or status draws in the listeners. We also recognize the *empathy* from the audience who likely has had personal experiences of similar situations and could put themselves into his shoes. The class became *passionately socially connected* to the candle making

moment reflection. This was evident in the question about whether or not he was a happy maker of the candle, and in the discussion of the event as a story with the class.

5. This story succinctly contains a lot of strong emotions. We notice that the date is September 11th, 2001, and the student decides on that very day that he wants to study terrorism. This *self-motivated* approach at tackling life based on potentially powerful deeper feelings like patriotism, sense of duty and justice, led him to a long journey that he simply lists: "Georgetown, St. Andrews, Afghanistan, the Pentagon, UAE, Iraq, Syria, Yemen." The student was clearly affected by the tragedy of September 11th and it's easy to show *empathy* for his reasons for studying terrorism. What also makes this story engaging is how sensitive the topic is - people can become very emotional while discussing September 11th. This exposes the speaker's *vulnerability*— he was ready to face the consequences of his actions by dividing into what becomes the beginning of the War on Terrorism in 2001.

To get another perspective, we included a different set of stories addressing a class challenge with a different prompt: 5 Sentence Strategic Storytelling. They are discussed below:

a) This story is compelling in how it creates a complete scene in only 5 sentences. The student takes us back into her past through a series of short scenes—she describes the time, the place, and the strong emotions she felt recalling her grandmother's rice cakes. We know she is sad in the story, but we don't know why. This creates a sense of what's-next in the story, which draws the audience in using a unique blend of *empathy* and *vulnerability*. We can feel the storyteller and step into her shoes through the beautiful images she creates, and her obvious vulnerability makes the story meaningful and memorable. She remembers her grandmother, who she most likely loves dearly. She is crying outside a rice cake store holding a dollar in her hand, which is all the money she owns. But where is her grandmother? Is she far from home? Where could she, the storyteller, go? We are left curious and we want to find out more. This story is a great example of how *vulnerability* increases the power of first moments and engages the audience from the very beginning. The sentences work beautifully in any order. Students learned by listening for the variation in sequence of sentences and the potential to adjust their storytelling for any audience.

b) The *vulnerability* in the story is powerful and engaging. The storyteller's revelation of his personal shortcomings of talking too much, habitual babbling and forgetfulness has brought the audience closer. In general, people always try to portrait themselves in the best light and avoid acknowledging their flaws. For this exact reason, the audience received the story and the student's comedic approach, with accolade. One student in the group responded, "I was really engaged with his story when he shared it the first time. He seemed comfortable exposing some vulnerability, and I think many of us in the audience felt both humor and relief in being able to relate to the emotions and thoughts that he shared." His search for the perfect self, the best

version of himself, strongly resonated with the theme of *self-motivated*. In addition, it is evident that a sense of *empathy* has formulated between the storyteller and the audience as he made speculation of the audiences' thoughts in the story, which contributes remarkably to engagement in first moments in storytelling.

c) The *passionate social connection* is poetically expressed in the story of the little boy. The audience, the class, is quiet as they listen and want to know what's next. They don't know where he is going, but they are with him every step of the way. The secret of the boy, and the *vulnerability* of the boy in a vast universe within the symbols of ocean and moon, draws the group and the student founder together. What is the mystery? What is his dream? Engagingly abstract, the audience is in on the chase to the discovery. What is the start-up idea?

5. Vulnerability Enhances Engagement Responses to the First Moments in Storytelling

Details from the findings from the first moments in the stories highlighting the elements for each concept and details on method development suggests three specific discoveries:

> -Effective first moments in storytelling predicts engagement because they are memorable moments when a diverse group chemistry have a balancing blend of *MO, AR, SC,* and *EMP* builds on the story ideas of others.

> -The first moments of entrepreneurial storytelling include a powerful *VUL* cue that engages the individual to the group and provides an intangible but gripping active ingredient for shared vision, real progress, and actionable results.

> -The entrepreneuring successes and innovative results of the first moments in storytelling teach the participants to accept early flaws, stumbles, and emotional exposures that will predict engagement.

Exploring the "vulnerability" in first moment and interpretations for storytelling success has dramatic similarities to the design thinking process. Applications to the human centered aspects of design thinking include existing and even thriving with ambiguity and indefinite design prompts, recognizing the surprise for finding something new in the lucky accident, and more importantly, the high degree and capacity for empathy.

Commonalities also exist in our preliminary work with the scholarship on radical innovation; and the contributions for the impact of our research on design teams in academia, established industry, and start-ups. One academic example: a current ten million dollar multi-university collaboration begins to yield lasting results[25]. Most relevant is completing work that will attract excellent students, faculty, and leaders for transformative work in engineering education and set the stage for transformative industry work[26].

6. Concluding Storytelling Insights and Entrepreneuring Parallels

The most rewarding aspect of the class storytelling quest—encouraging and observing how students understand and respond to the power of the first moments of engaging - also presents a hard to ignore challenge. Much of what works is intangible. And while intangibles offer some of the most exciting possibilities for creative promise in student work and in entrepreneurial pursuits, clarifying the intangible links to entrepreneurship remain vague. Some of the deepest insights are after the fact reflections and interpretations.

One connection to entrepreneuring comes as an active reflection late in the term. A student reflected on the moment the storytelling lights turned on brightly for her, "I went to this really cool seminar tonight about women in entrepreneurship and the woman entrepreneur founder you (the Instructor) previously emailed me about was there as a panelist. It was really interesting to listen to their discussion, and one thing that immediately came up was the natural ability for women to 'read' or engage an audience. I felt like they actually echoed everything that we've been talking about for the last few weeks in our class, which was CRAZY. I don't know why it took me so long to really tie stories and storytelling to entrepreneurship, but everything really just 'clicked' tonight." Just what "clicked" for this enlightened student may be clear to the Instructor and the other students in class, yet relaying the underlying meaning to others outside of the class while generative and exciting to explore, presents problems of common language, and a shared vision for application and meaning.

Other times, organized class questions and practice exercise prompts do get at the ideas around whom and what is engaging in storytelling. We found the concepts of *MO, AR, SC, EMP,* and *VUL* to be powerful descriptors of the content of storytelling. Especially relevant was the concept of *vulnerability*. The entire group of students actively discussed and reflected on their recognition and need to feel and understand how *vulnerability* leads to an increase in engagement. Specific student responses as storytelling in class provided examples. Student memories, as after the fact interpretations, provided some salient illustrations of what was engaging and why. During the class term and post class, the storytelling dynamics suggest lasting bonds among students around their work for life long personal and entrepreneurial learning.

Limitations exist around the measures for considering storytelling moments. And since our focus was on the center-stage enactment form of storytelling, not the grammar and rules of the narrative, more time is necessary to consider the aspect of group conditions and the Instructor as facilitator of who and what is engaging. Nonetheless, a ten-week term is a good way to practice and capture a short experiment that is designed to facilitate student storytelling confidence. Making the practice of telling stories a routine commitment has value for one class and can be effectively used as a beginning exercise for multiple courses. Ask the following question, "Tell us a moment in your story that was powerful." The results will engage the

individual student, connect them to their engineering, design or start-up project and surprise the group.

Insights from student storytelling has applications for classroom and curriculum advances and has the capacity to spark change through innovation in engineering education [27, 28]. The featured approach in this paper is to make storytelling a routine commitment with practiced methods in an interdisciplinary graduate design methods class. Particular focus on the vulnerability of first moments in storytelling predicts engagement. Other possibilities include a preliminary storytelling activity to introduce a class, or closing a class with the episodic memory inspired question, "Of all the things that we discussed in today's class, what's one thing that you heard, or perhaps something someone said, or some moment that you observed that will be memorable to you, for whatever reason?"

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