The Beyonder App: Designing a Website and a Mobile Application for Teachers to Integrate the Torrance Incubation Model into Classroom Content

Jenna M. Smith
smitjm78@mail.buffalostate.edu

Advisor
Marie Mance

To learn more about the International Center for Studies in Creativity and its educational programs, research, and resources, go to http://creativity.buffalostate.edu/.

Recommended Citation
Smith, Jenna M., "The Beyonder App: Designing a Website and a Mobile Application for Teachers to Integrate the Torrance Incubation Model into Classroom Content" (2012). Creative Studies Graduate Student Master's Projects. 147.
http://digitalcommons.buffalostate.edu/creativeprojects/147

Follow this and additional works at: http://digitalcommons.buffalostate.edu/creativeprojects

Part of the Social and Behavioral Sciences Commons
The Beyonder App:
Designing a website and a mobile application for teachers to integrate the Torrance Incubation Model into classroom content

A Project in
Creative Studies

by

Jenna M. Smith

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science
May 2011
The Beyonder App: 
Designing a website and a mobile application for teachers to integrate the Torrance Incubation Model into classroom content

A Project in
Creative Studies

by

Jenna M. Smith

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science
May 2011

Dates of Approval:

________________________________________
Marie Mance  
Lecturer

________________________________________
Jenna M. Smith  
Student
Project Abstract

E. Paul Torrance “the father of creativity” was quoted as saying “tomorrow’s world will be vastly different for today’s children. They will do kinds of work that do not exist now. This will require abilities, skills, attitudes and information that we cannot imagine today” (Torrance, 1993, p.159). Today’s world is vastly different, thus requiring creative skills and abilities to achieve success. Students growing up in today’s society are digital natives. This indicates that they do not know a world without technology advances, so technology is fully ingrained in their culture. Yet, today’s educational system has still not adapted to the idea of digital natives.

Observations and research in the areas of education, creativity and technology suggest there is a need for educators to teach content areas, creativity and innovation skills as well as technology literacy to prepare students for the 21st century. The Beyonder App, a website and mobile application, focuses on the Torrance Incubation Model of Teaching and Learning and Torrance’s creativity skill set as means for creativity integration. It is one mobile space that gives teachers the ability to easily interweave creativity skills into content areas while using the latest technology to engage today’s 21st century learners.

_________________________________
Jenna M. Smith

_________________________________
Date
Dedication

To my dog Bailey: You were always here with me, through everything. For every part of this project, you sat underneath my feet or at the foot of my bed just to reassure me that you were there. For the pure joy that you brought to our family each and every day and all the quirks that made you so special, you will be missed dearly as you were such a large part of our lives. A dog like no other, you were my best friend, my light and my baby boy. Your unconditional love and the silly little things you did will be forever missed. So until we meet again Doops, I will treasure every second you gave me.

To my Parents: My entire life you taught me the true value of working hard and to NEVER quit. Thank you for always staying involved in my life, for always standing up for me, and for always loving me no matter what. You both sacrificed a lot so I could receive an education and I will be forever grateful.

Dad-You taught me what it means to fight, to have courage against all odds and most of all to pursue something you love. Your quest for knowledge has always been overwhelming and motivated me to continue my education. You never accepted less than the best and always expected that I push past my own limitations. For the countless hours you spent listening to me talk about creativity and education, for my trail of books that you gathered around the house and for that twinkle in your eye every time I spoke about my love of creativity and education…Thank you!

Mom-You are my rock, always pushing me to do well. I have such vivid memories of you encouraging my growth by sending me outside with spray bottles full of colored water, sitting me at the dining room table with a box full of Popsicle sticks and allowing me to just create, no matter what mess I developed. You also spent countless hours with Dad trying to teach me
math, which I never quite understood. Perhaps, this project was the reason that I never understood math. It was inspired by the time I spent frustrated with you and Dad about my math ability. Even after countless hours, skittles and flashcards you never gave up. This was the most important lesson you could’ve taught me. How many times did I tell you that I wanted to quit and you said “no, it’s almost over”. I hope to someday impart the same kind of wisdom, skills and work ethic you taught me. You once told me that I was destined to do something great. I hope I’ve made you proud by making sure that every child has the opportunity to learn and learn creatively, the same way you and Dad helped me.

**Bob**- Thank you loving me, being my best friend and always supporting me no matter what. You have spent countless hours helping me prepare for numerous projects, stopped me when I attempted to go head first into an idea with no plan, helped me study and even came with me on many trips to the Christmas Tree Store to purchase meaningless stuff. Sometimes I watch you while you work and think “how did I get so lucky? I got a really handsome boyfriend and he’s really creative!” Thank you for always being sensitive to my needs, knowing what makes me happy and for being my other half… I couldn’t have done this without you! I look forward to our future together with a lot of love, laughter and happiness. I love you infinity and beyond!

**Dr. Cyndi Burnett**- When I was an undergraduate creative studies minor you did a closing activity using TIM in one of my final classes. You asked us to write a letter to our creative hero on a special notecard you handed out. The notecard said “Life isn’t about finding yourself, life is about creating yourself.” I recall that I struggled with who I would address as my creative hero. I never sent that notecard to the creative hero I choose that day because it never felt right. Since then you have continued to inspire me beyond words. Every step of the way, you have been passionate, critical and nurturing at the same time. Because of you, I now understand what I am
good at and what I love to do. It is because of you that I stopped “finding myself” and began “creating myself”...you are my creative hero.

**Dr. Susan Keller-Mathers** – You make TIM look so easy when it’s not! Every class I took with you, I always wondered why I left wanting to know more. It seems only fitting that I would take such an interest in TIM. Throughout this entire process, you have shared a wealth of information and helped me understand the teacher’s point of view. Thank you for continuing your work with TIM and your dedication to Torrance’s work, it is contagious.

**ICSC Faculty** – The moment I walked into the center I knew I was home. The center exudes creativity every day and it’s not just because of the colorful paintings on the walls, it is because of all of you. The faculty and staff of the center make it a place where people want to learn, to be challenged and to create a deeper connection with themselves and education. You open your offices and your minds to what students have to offer. Thank you for continuing to inspire and ignite creativity everywhere.

**ICSC Students and Alumni** – The center has fostered a sense of “family” in the faculty, staff, students, alumni and other creativity experts. I would be remiss if I didn’t thank Meagan and Juliana for being excellent sounding board partners as well as Morgan and Rebecca for providing great feedback and encouragement as we muddled through this long process. Also, a special thank you goes out to Marta, who, even from Sarasota, Florida still manages to inspire joy in me. I look forward to a future of collaboration with my creative family.

**Mrs. B** – Thank you for making such an impact on my life. It is because of your poor teaching style, that I have continued my education in hopes that I can stop the cycle of poor teaching.
# Table of Contents

Section One: Background to the Project ................................................................. 8

Section Two: Pertinent Literature ................................................................. 19

Section Three: Process Plan ................................................................. 31

Section Four: Outcomes ................................................................. 38

Section Five: Key Learnings ................................................................. 56

Section Six: Conclusion ................................................................. 61

Section Seven: Appendices ................................................................. 67

A: Concept Paper

B: Framework for 21st Century Learning Model

C: How students envision school in the future

D: Thin Slicing Intuitive Tool

E: iCreate Leap Skills Smartphone Visual

F: Gifted Educators TIM Lesson Plan

G: QR Code for The Beyonder Mobile App and instructions for use

H: Instructions for navigating The Beyonder Mobile App
Section One: Background to the Project

This project will focus on the creation of a website and mobile application aimed at helping teachers integrate creativity skills into their content areas using current technology. The website and mobile application created will have an emphasis on the Torrance Incubation Model of Teaching and Learning (TIM) supported by the Framework for 21st Century Learning, Multiple Intelligences, Mobile Learning and the Beyonder creativity skill set developed by E. Paul Torrance, “the father of creativity.” This requires an intense look at pertinent literature involving the Torrance Incubation Model, mobile learning and mobile applications as the tool to disseminate. This project is based on observations and research in the areas of education, creativity and technology that suggest there is a need for educators to teach content areas, creativity and innovation skills, as well as technology literacy. The concept is that teachers will have one mobile space to easily interweave creativity skills into content areas while using the latest technology to engage today’s 21st century learners. Ideally, the creation of this website and mobile application will eliminate the fear associated with integrating creativity into educational content.

Torrance Incubation Model of Teaching and Learning (TIM)

The Torrance Incubation Model of Teaching and Learning, also known as the Incubation Model for Teaching, is a three stage “simple, powerful, general-purpose teaching model that integrates content knowledge with creativity skills” (Torrance, 1993, p.187). TIM can also be used for purposes other than teaching but, for the sake of this project, TIM will be utilized as a teaching model.

There are three stages in the model (1) Heightening Anticipation, (2) Deepening Expectations, and (3) Extending the Learning formerly known as “keeping it going.” In each
stage, there are specific creative behaviors and information processing patterns that have been identified by Torrance and Safter (1999) to encourage creative teaching and learning. When in the heightening anticipation stage, the teacher is warming up the students to the content by creating a desire to know, sparking excitement and developing a connection between the content and the learner. Digging deeper into the content within the deepening expectations stage, there are a number of processes the learner will engage in such as looking at information, searching for new information, making guesses and examining solutions to name a few. This stage is set up “to allow participation, exploration, and discovery when interacting with content” (Keller-Mathers & Murdock, 2008, p. 76). The extending the learning stage focuses on looking at the future, as the unique combination of these three stages has prepared the learner for incubation or learning outside the classroom. Essentially, “for creativity to occur, there must be opportunities for one thing to lead to another” (Torrance, 1970, p.81).

**E. Paul Torrance’s Creativity Skill Set**

Blending the Torrance Incubation Model with lesson delivery, E. Paul Torrance identified 18 skills that can be deliberately integrated into content to teach creativity. The 18 skills are referred to as “the creativity skill set,” “the beyonder skill set” and “leap skills.” This research-based skill set includes: finding the problem, produce and consider many alternatives, be flexible, be original, highlight the essence, elaborate-but not excessively, keep open, be aware of emotions, put your ideas in context, combine and synthesize, visualize it-richly and colorfully, enjoy and use fantasy, make it swing! make it ring, look at it another way, visualize the inside, breakthrough-expand the boundaries, let humor flow and use it and get glimpses of the future. For a definition of each skill, please refer to figure 2.
Beyonder Defined

Connecting TIM and the creativity skill set, Torrance (1990) coined the term “beyonder” in the classic book *Making the creative leap beyond*. A beyonder can be defined as “anyone who goes beyond what is expected— anyone who has gone beyond where they have ever gone before, anyone who goes beyond what anyone else has done, a record breaker, so forth and so on” (Torrance & Safter, 1999, p. 15). This definition suggested that “beyonders” are individuals that make the leap beyond what is expected and achieved as part of the norm, due to their innate or developed creativity skills. By interweaving the 18 creativity skills within the framework of TIM, there is deliberate practice of creativity skills that inspires beyonder-like thinking and behaviors.

The Framework for 21st Century Learning

In 2002, the Partnership for 21st Century Skills was created to prepare students for the 21st century by Ken Kay, President and Co-founder and Diny Golder-Dardis, Co-founder and Special Advisor. The group included representatives from some of the top global companies such as Apple, Microsoft, Dell, and Cisco to name a few. The Framework for 21st Century Learning was created by the Partnership for 21st Century Skills as a holistic view of teaching and learning. It was intended to describe the skills, knowledge and expertise a student must have in order to succeed in work and life in today’s global economy. “It is a blend of content knowledge, specific skills, expertise and literacies” (Framework for 21st, 2011). For the purpose of this project, the Learning and Innovation skills outlined in the Framework for 21st Century Learning will serve as the foundation for the website and mobile application. The full Framework for 21st Century Learning can be found in appendix B.
Howard Gardner’s Multiple Intelligences Theory

The multiple intelligences theory was developed by Howard Gardner in 1985 to explain human cognitive competence “in terms of a set of abilities, talents, or mental skills” (Gardner, 2006, p.6). Gardner’s research resulted in the identification of a number of human intelligences such as verbal-linguistic, bodily-kinesthetic, musical-rhythmic, intrapersonal, logical-mathematic, naturalistic, interpersonal and visual-spatial. The Multiple Intelligences Theory, also known as MI Theory, is widely used in education to differentiate learning styles since “each intelligence is activated or triggered by certain kinds of internal and external information” (Gardner, 2006, p.7). For the purpose of this project, the MI theory will be viewed as a learning checklist, to make sure that educators are differentiating their teaching style according to different intelligences.

Mobile Learning

There are two schools of thought on learning in the educational technology field, online learning, also known as E-learning, and Mobile learning, also known as M-learning. M-learning can be differentiated from E-learning because it is based on any educational interaction on mobile devices. E-learning refers to learning that takes place via the internet. Since M-learning is a relatively new theory with very little research and a lot of conflicting definitions, for the purpose of this project, I will use the M-learning definition presented by Educause, a nonprofit organization focused on advancing education through technology.

“Mobile learning, or M-learning, can be any educational interaction delivered through mobile technology and accessed at a student’s convenience from any location. M-learning
hardware may include mobile phones, handheld PCs, tablets, the iPad, and netbooks, as well as
devices such as the iPod touch that are able to run mobile applications” (Educause, 2010).

**Use of Technology in the Classroom**

Technology is growing at a rapid pace, thus requiring the proper integration of all of
these concepts or theories into one format. Smartphones and iPads or tablets are inevitably the
wave of the future, perhaps as to how laptop computers were perceived almost ten years ago.
Everything we own, medical records, calendars, bank statements, games, camera’s, phone books,
address books, e-mail, coupons and social networking tools are just a touch away. Students
growing up in today’s society are digital natives. This indicates that they do not know a world
without technology advances so it is fully ingrained in their culture.

Based on research conducted for this project, I believe teachers are struggling to keep
their jobs due to economic issues, thus requiring a reevaluation of their teaching style in order to
remain competitive in the job market. As technology advances, it has become critical for
teachers to integrate technology into their lesson delivery because of the digital native student
population. In my opinion, mobile technology, which is defined as technology that can be taken
with you anywhere at any time, has become the tool which gives teachers an advantage in the job
market.

**Mobile Applications**

Today, the technology buzzword is mobile application. A mobile application also known
as mobile app can be defined as pieces of software than can run over the internet or on your
computer, cell phone or other PDA-type device” (Herther, 2010, p.3 ). Mobile app creation and
utilization is on the rise because it is “revolutionizing the potential for rapid information
dissemination and access” (Herther, 2011, p.2). To put this phenomenon in perspective, in a New York Times article Pogue (2011) noted, “in 2010 90,000 iPad apps have been downloaded not including the 475,000 iPhone apps that were downloaded”. So as the world engages in mobile applications, the theory of mobile learning or M-learning has become more prominent. Education hasn’t totally embraced this trend for a variety of reasons, including budget constraints, a lack of understanding of the true value in using mobile applications and the learning curve for adopting mobile technology. Students polled in a “Project Tomorrow” survey (2010) suggest that by 2015 school will look much different than it does now, including more use of mobile devices, social media platforms and increased online learning. To learn more about how students envision school in 2015, refer to appendix D. In my opinion, every student will have a mobile device as their learning space, thus requiring teachers to use mobile applications as educational tools.

**Teachers Perspective of Creativity**

Each day teachers are challenged with new learning theories, assessment achievement levels and standard requirements. As education evolves, the teacher’s role and their perspective of their role have changed dramatically.

Beghetto and Kaufman, (2010), addressing the concepts of creativity in the classroom and teacher perspectives, found that:

In a time of heightened school accountability (largely propelled by the No Child Left Behind Act of 2001) teachers may feel that they cannot nurture student creativity within the constraints of the required curricula –particularly when they feel increased pressure to cover standardized curricula and prepare students for standardized learning
assessments. When creativity is viewed as an ‘add-on’ to the curriculum or expression of unconstrained originality, it makes sense that teachers might feel ambivalent about supporting creativity in their classroom. (p.192)

Basically, teachers believe that they do not have enough time to integrate another component such as creativity into their lesson planning. This conclusion is based upon the many standards and concepts they must achieve to be considered a successful teacher.

Now, more than ever it is important to give teachers the freedom to create while teaching students to be creative. The constant response from teachers is that they don’t have time to fit anything else in. The beauty of the Torrance Incubation Model and the creativity skill set is that it is interwoven into the lesson framework to heighten anticipation, deepen expectations and extend the learning. Combine that with the framework of the 21st century skills model and multiple intelligences you have a creative approach that can teach various learning styles, while teaching creativity and innovations skills. The mobile application technology is a bonus engagement tool to add a deeper connection with the content being taught. “Teachers can’t make students learn but they can certainly set things up so that students want to learn” (Torrance & Safter, 1999, p. 39).

**Rationale for Selection:**

“One of the most powerful wellsprings of creative energy, outstanding accomplishment, and self-fulfillment seems to be falling in love with something—your dream, your image of the future” (Torrance, 1983, p.73).

My rationale for choosing this project is based on what Torrance (1999) calls flashes of insights. The flashes of insight which inspired this project are as follows: (1) A childhood
experience, (2) A presentation worksheet development, (3) A response from a workshop with gifted educators, (4) A creative need, (5) A connection with educational technology, and (6) The continuation of E. Paul Torrance’s work. Each flash of insight as it influenced the project will be outlined.

**Insight 1: My Childhood Experience**

I have always loved education. Often, it was the only consistent talent I had in my life. From a very young age, I loved to learn and knew how to learn. My father and mother taught me that education was the key to a successful life. My mother, high school educated and my father a few classes at a community college wanted more for me. So obviously, I was excited to go to school. I felt that way until I reached the fourth grade. If you know E. Paul Torrance’s work you might be asking yourself “did I hit the ‘fourth grade slump’?” Not quite, in fourth grade I still loved to learn and was very creative but I felt the wrath of one really poor teacher who made me question that love. To give you a bit of background, my entire education I struggled with the subject of math and still do till this day. There was one experience that has forever remained etched in my mind. It was that terrible teacher’s words after I spent hours correcting a math test. After receiving a poor grade on a test, my mother requested that I make corrections hoping that the effort would give me the opportunity to correct my mistakes and maybe receive a few extra points. I walked up to my teacher wide-eyed and happy to show her that I made corrections to my test all by myself. Her response was “Jenna, did I tell you make those corrections?” I responded “No, my mother told me to.” She said “Well, go show your mommy then!” While this may not seem like a huge issue to many, to a child in fourth grade being humiliated in front of her classmates due to a desire to do well in education, it was life-altering. I will never forget that feeling and the hushed talks my parents had about the topic while they thought I was in bed.
Shortly after that experience, my parents noticed that I hated going to school and concluded that it had something to do with that experience, among others, so they had me moved to a different class where I thrived.

Today, I can look back and understand that, that experience shaped my life and made me want to never feel humiliated like that again. While this experience shaped me, some children aren’t lucky enough to get moved to a different class. It is with great pleasure that I continued my educational journey to this point where I hope to give teachers the opportunity to be a student again.

We often assume that because someone is labeled a teacher they do not need to learn anything new. The teacher is a student in education as well, they are constantly adapting, problem solving and adhering to guidelines. So why is it that a teacher isn’t given the same opportunity to change their perspective as the students they are teaching? So you might be thinking, “Why am I teacher-centered after my own poor experience with a teacher?” My theory is that if teachers are given the proper tools in a creative and engaging manner their natural human creative tendencies will take over. Perhaps another child will not have to feel the same type of humiliation that I did if we properly prepare our teachers for 21st century learners.

**Insight 2: Developing the iCreate Leap Skills SmartPhone Visual**

In September of 2010, I was invited to be a facilitator at a creative teaching and learning event in Waterloo, Ontario. My task was to design a worksheet that was engaging and taught about one of the “leap skills.” The “leap skill” I was assigned was “produce and consider many alternatives.” So I began to generate a lot of ideas on how I could engage these learners in this “leap skill.” Finally, it hit me that the iPhone, with its use of apps, is a perfect visual for
attendees to connect with regarding producing and considered many alternatives. So I created the iCreate Leap Skills SmartPhone visual which can be viewed in appendix E. This visual would become the seed for this project, since I couldn’t stop thinking about making this visual real.

**Insight 3: TIM Workshop Presentation for Gifted Educators**

In December 2010, I was invited to present a workshop to gifted educators on Torrance’s creativity skill set. Since I couldn’t stop thinking about the iCreate Leap Skills SmartPhone visual I created, I decided to warm-up the group to the leap skills by interweaving each leap skill into a question pertaining to the SmartPhone visual. A full listing of the workshop lesson plan with leap skill provoking questions can be viewed in Appendix F. I received so much positive, and some negative, feedback from over 50 workshop attendees that I began to think about developing a mobile application where these teachers could access the leap skills instantly. Initially, this was just a warm-up activity I designed, but it became the inspiration behind much of this project.

**Insight 4: A Need for Creativity**

To put it bluntly, there is obviously a need to teach creativity, there is obviously a need to differentiate learning, there is obviously a need to spend more time engaging today’s learners and there is obviously a need to address these needs. Technology affords us the ability to address needs, develop innovative products and disseminate information rapidly. The idea that everything is one touch away is fascinating to me. One touch you can get your grades, one touch can instantly get you today’s news, with one touch you can notify all of your “friends” where you are and what you are doing, one touch can get today’s latest research and in one touch you
can educate the masses. Currently, creativity skills are not being addressed in technology. Coupling the techniques presented by TIM with the “one touch away” mentality is a recipe for success in the classroom.

**Insight 5: Connection with Educational Technology**

The crux of the issue with education is that we haven’t moved and we haven’t developed in the way that we need to for tomorrow’s youth to be successful.

In 1966, the famous Coleman Report alerted the American people to the unfolding tragedy of a dysfunctional educational system. Seventeen years later, the National Commission on Excellence in Education issued its report on the declining quality of American schools in general. The report startled the nation with its warning of ‘a rising tide of mediocrity’ in our schools and its grim declaration, ‘if an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war.(Weber & Media, 2011, p.3).

In today’s world, technology development is moving at a rapid pace, waging a war on the current educational system. Every year teachers are feeling the pressure of integrating technology in the classroom, losing some of their pedagogical focus due to the rapidly changing technology. It seems that a teacher’s new role is to not only teach “literacy” but to also teach “technology literacy” preparing today’s youth for the proper utilization of the technology. Children born in 2011 will have jobs that don’t yet exist. We are still educating today’s youth on a healthy diet of structures set up during industrialization. Teachers in the United States are struggling to engage new learners, thus causing friction between the standards that need to be
achieved and how an educator teaches. The simple fact is that teachers can no longer choose not to use new technologies because students are now requiring it.

Insight 6: Continuing Torrance’s Work

The moment I read Torrance’s (1983) classic article *The importance of falling in love with something*, my vision was born. The idea of doing what you love inspired much of this project. Torrance “loved” and “created” for teachers to succeed. The problem is that many teachers still believe that they don’t have enough time to create or “fall in love” with their profession. As a result, I asked myself “wouldn’t it be great if we could harness today’s technology to assist teachers in feeling and experiencing Torrance’s work, along with other critical educational models and tools?”

My project could’ve been another workbook or workshop involving E. Paul Torrance’s work and the progression of the Torrance Incubation Model as further developed by Dr. Mary Murdock and Dr. Susan Keller-Mathers (2009). Instead, I choose to take the challenge Torrance set forth over 50 years ago by assisting teachers with student engagement and creativity.

Section Two: Pertinent Literature

There were numerous pieces of literature that informed this master’s project. Specifically, *The search for satori & creativity*, *Making the creative leap beyond*, *The incubation model for teaching: Getting beyond the aha!* and *Why fly?* by Torrance and other authors. Master’s projects *Documenting the teacher’s experience with the use of the torrance incubation model for creative teaching and learning* by Kari Nitkowski and *The torrance incubation model of teaching in a middle school social studies classroom* Michael Scott Accurso provided a solid framework for use of TIM. While *Multiple intelligences* by Howard Gardner, *Mobile learning:*
Structures, agency, practices by Norbet Pachler et. al and Nurturing creativity in the classroom by Ronald A. Beghetto and James C. Kaufman provided depth into the classroom learning environment. Figures one through six as well as the corresponding narrative, highlight the essence of the literature that was pertinent to this project. Furthermore, a listing of additional pertinent literature is attached for future learning.

Brief History of the Torrance Incubation Model

In 1949, while teaching at Kansas State, E. Paul Torrance was quoted as saying "for a long time I had been bothered that courses in psychology and education had such little impact upon what happened in classrooms. I knew that something had to be done to arouse and motivate teachers and keep them thinking about their insights" (Torrance & Safter, 1990). And so the Incubation Model of Teaching was born. The Incubation Model of Teaching which is now referred to as the Torrance Incubation Model, TIM or the Torrance Incubation Model of Teaching and Learning is a three stage model designed to “embrace the challenge of a holistic teaching and learning model to guide teachers and learners” (Nitkowski, 2004).

Description of the Torrance Incubation Model

"Torrance’s Incubation Model is not a problem solving model, although problem finding and problem solving may result. It has been characterized as a teaching model which will make teaching more effective in any subject, at any age level, with any method of instruction. It is effective for planning and organizing any kind of presentation—a speech or lecture, a discussion, a lesson, a workshop, a sermon, a selling presentation, a dental or medical instruction, a pep talk and so forth.” (Torrance & Safter, 1999, p.38). See figure 1, for Torrance’s original model.
Figure 1. Torrance’s original Incubation Model of Teaching (Torrance, 1979).

Torrance spent much of his career doing research and creating materials to assist teachers in developing their student’s creativity while engaging their own creative skills. In the 1960’s, during Torrance’s research on the use of what he called “beginning technologies,” a common question arose. Why were some teachers accepting of new technologies and others weren’t? This question is very relevant today, as this project will focus on the development of a website and mobile application integrating the creativity skill set outlined in Torrance and Safter’s (1999) book, *Making the creative leap beyond*, along with other educational theories and mobile educational tools. This acceptance issue forced me to dig deep into the context of nurturing creativity in the classroom, mobile learning, current learning frameworks that teachers are using and my own experimentation with some technologies.
Creative Skills and Abilities to Utilize with TIM

As a result of a 50-year longitudinal study using the Torrance Test for Creative Thinking, Torrance identified 18 skills that help develop creative abilities and 25 characteristics, 10 that distinguish beyonders from “a general sample of superior adults” (Torrance & Safter, 1999, p.269). Figure 2 explains in depth the 18 skills Torrance identified to develop creative abilities.
Figure 2. Torrance’s creativity skill set to integrate within TIM.

**Skills that Distinguish Beyonders**

Torrance created “The Beyonder checklist” which is a tool to observe the phenomenon of creative achievements. As a result of research conducted by Torrance looking into the beyonder checklist, he was able to conclude that beyonders had 25 specific characteristics that assisted them in creative achievements, 10 of which distinguished them beyond the norm. The characteristics are as follows: delight in deep thinking, tolerance of mistakes, love of one’s work, clear purpose, enjoyment of work, comfortable as a minority of one, being different, not well-
rounded, sense of mission in life and the courage to be creative. By identifying these characteristics in students, teachers will be better equipped to differentiate their teaching style to adapt to creative abilities.

**The Incubation Process**

Have you ever struggled to think of an idea and then as soon as you got into the car, airplane, shower or while exercising a rush of ideas came flooding into your mind? It is obvious by the name of the model that the Torrance Incubation Model has a central theme. Torrance and Safer (1999) conclude that the best ideas are developed through incubation insights or ‘ahas’ that may occur, at the most unlikely times and places. Incubation occurs as a result of the utilization of TIM as a vehicle for creativity and content integration.

**Current Torrance Incubation Model**

Bringing it full circle, the Torrance Incubation Model has continued to develop due to creativity researchers such as Dr. Mary Murdock, Dr. Susan Keller-Mathers, Dr. Cyndi Burnett, as well as creative studies alumni such as Paul Reali, Hector Ramos and Suzanna Ramos who are practicing the use of the Torrance Incubation Model in various content areas around the world. Especially, Dr. Susan Keller-Mathers and the late Dr. Mary Murdock, one of Torrance’s former students, developed an updated visual of the model and renamed it the Torrance Incubation Model of Teaching and Learning. Dr. Keller-Mathers and Dr. Murdock created two versions of the model, one with the original metaphors Torrance identified and one without the metaphors. Please see figure 3 to view the model with metaphors and figure 4 to view the model without the metaphors.
Figure 3. Torrance Incubation Model of Teaching and Learning with metaphors.
Figure 4. Torrance Incubation Model of Teaching and Learning without metaphors.

**Framework for 21st Century Learning**

As specified in the background of this project, the Partnership for 21st Century Skills was created to address the skills that students will need to succeed in the 21st century. Since creativity has been targeted as the main point of research in this project, I will focus specifically on the learning and innovation skills in the 21st Century Learning framework which is located in the figure 5.
Learning and Innovation Skills

“Learning and innovation skills are what separate students who are prepared for increasingly complex life and work environments in today’s world and those who are not.” (Framework for 21st, 2009, p.2). They include:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Figure 5. The Framework for 21st Century Learning model. (Framework for 21st, 2009).
Please see The Beyonder App website, mobile application and appendix C for further information on this section of the 21st Century Learning Framework.

**Howard Gardner’s Multiple Intelligence’s Theory**

The multiple intelligences theory also known as MI theory is a common theory that is exercised in education to make sure teaching is differentiated based on the idea that we all learn and solve problems differently. Basically, what works for one person might not work for another person. Howard Gardner concluded that all humans have a full range of intelligences but nobody has the same intellectual profile. Gardner (2006) noted that having intelligence does not mean that one acts intelligent. By utilizing these intelligences as a learning checklist, teachers are better equipped to handle the various types of learning styles.
Figure 6. Multiple Intelligences theory explained visually (Kashatus, 2011).

**Mobile Learning Explained**

Mobile learning is still relatively new in terms of the research, published journal articles and books on the topic. While some might view mobile learning as delivering content through mobile devices, that is not always the case. There is much more substance to the learning theory. It is about “the processes of coming to know and being able to operate successfully in, and across, new and ever changing contexts and learning spaces” (Pachler, Bachmair & Cook, 2010, p.6). Also critical is “the need for individuals to go beyond the acquisition of knowledge relevant to the issues encountered in the world but also shape their knowledge out of their own sense of their world” (Pachler, Bachmair & Cook, 2010, p.5). Mobile learning allows the shaping,
collaboration and communication of our knowledge across many platforms, thus making education a global concept rather than a one-classroom learning experience.

**Classic work by E. Paul Torrance**


**Current Work on the Torrance Incubation Model**


**Technology and Education**


**Section Three: Process Plan**

Shortly after I began this project the legendary Apple executive Steve Jobs passed away. I felt very saddened by this loss because he was a man of true vision and wisdom. Not long after his death, I came across a quote which I felt summed up this constantly evolving process I have been engaged in as this project has developed.
According to Jobs:

When you first start off trying to solve a problem, the first solutions you come up with are very complex, and most people stop there. But if you keep going, and live with the problem and peel more layers of the onion off, you can often times arrive at some very elegant and simple solutions. Retrieved from www.joyofquotes.com.

I’m not going to lie; this project was never elegant or simple. It was a challenge to say the least. When I first proposed my idea of creating a mobile application centered on the Torrance Incubation Model, Dr. Cyndi Burnett promptly greeted me with the comment “Jenna, you tend to go over the top.” I thought to myself “but this is a really cool idea and there is a need to develop something like this.” I just wanted to go on Google Apps Inventor and make the best mobile application where teachers could “feel and experience” the Torrance Incubation Model. I went home and signed on to Google Apps Inventor and tried to make my app. Five minutes into this process, I realized that I was in deep water. I was searching for unanswered questions, confronting the unimaginable, overwhelmed by complexity and deeply absorbed by surrounding events which is what Torrance refers to as “getting in deep water” in the deepening expectations stage of TIM. Even though everyone told me creating a mobile application with virtually no technical background was not realistic, I still wanted to secretly prove everyone wrong.

Then I thought about all the content that would need to be in the application for teachers to “feel and experience” the application. I began to panic a little bit so I looked at some intuitive tools Dr. Cyndi Burnett had taught in a previous class. I choose to practice the thin slicing tool which can be defined as “a process by which the subconscious captures details of a particular moment in time, finding patterns in people and situations which it can then generalize to the
bigger picture” (Francisco & Burnett, 2008, p.16). It is tool that is most frequently used by a facilitator to get a clear picture of what is happening in a very complex situation such as a creative problem-solving process. As a result of practicing the thin slicing tool, I realized that I couldn’t possibly create a mobile application without understanding how the application is defined and developed, what people in the field are saying, how people are using mobile applications and more importantly why teachers would want to use this application. So I continued to “peel back the layers of the onion” finding that this process was very complex until one day it became crystal clear what I was supposed to do. See appendix D for the thin slicing tool description.

I began my research by looking at E. Paul Torrance’s work including *The search for satori & creativity, Making the creative leap beyond, The incubation model for teaching: Getting beyond the aha!* and *Why fly?* As my research evolved, I started looking at other master’s projects completed by graduate students in the creative studies program involving the Torrance Incubation Model. One project in particular seemed to resonate with my project purpose. *Documenting the teacher’s experience with the use of the torrance incubation model for creative teaching and learning* by Kari Nitkowski seemed to shed some light on the acceptance phase of the creative process that I was engaging in at that time. I also found Michael Scott Accurso’s project titled *The torrance incubation model of teaching in a middle school social studies classroom* to be very informative as to how the model was tested in a real classroom. I then realized I was lacking some of the current development that was happening with the model so I scheduled a meeting with Dr. Susan Keller-Mathers to discuss some things that were happening with the model as she, along with the late Dr. Mary Murdock, spent much of their careers practicing and developing the Torrance Incubation Model, which they renamed the Torrance
Incubation Model of Teaching and Learning. At the time of our meeting, I was very unsure of how I wanted TIM information disseminated on the mobile application. That meeting with Dr. Keller-Mathers turned out to be a turning point in my research since she suggested various other publications I should look at, as well as providing me with some current work she had been developing on sabbatical. Dr. Keller-Mathers continued with a story of how the model progressed to its current form. She said, “One day Mary and I were in the conference room trying to develop the model and it hit her, we need to show the content interwoven through the model with an arrow depicting the incubation that was happening”. She also referenced their decision to eliminate the metaphor’s Torrance used in his original model. She said that the metaphors either worked really well for some and others were totally confused by them. So Dr. Susan Keller-Mathers and Dr. Mary Murdock decided to eliminate the metaphors for a “beginners” version of the model and the “advanced” version would still be available if someone wanted to dig deeper into that information. Just the conversation about the evolution of the model and its use paved the way for me to think along those same lines. My goal would be to try to give teachers the tools, make the app user-friendly, and if they wanted more information it would be available. In addition, I asked Dr. Keller-Mathers about the overlapping of various other models such as the framework for 21st Century Model. She suggested I look at the digital 21st century model as that theory was definitely on the right track. I also researched Howard Gardner’s theory of Multiple intelligences and the new framework for 21st century learning. I think the most important thing I took away from my meeting with Dr. Keller-Mathers, was the idea that however I choose to display the mobile application, the information on TIM or any other model needed to be boiled down and easy to integrate.
Shortly after my meeting with Dr. Susan Keller-Mathers, I began to look at the classroom as a means to nurture creativity as well as trends in the field. Probably one of the most valuable books I read besides Torrance’s work was titled *Nurturing creativity in the classroom* by Ronald A. Beghetto and James C. Kaufman (2010). This book was a compilation of articles on creativity in the classroom. With varying opinions, I was able to further explore the teacher acceptance of creativity in the classroom. I then dove right in and started reading a mobile learning ebook titled *Mobile learning: Structures, agency, practices* by Pachler et. al, the *Mindshift* blog and subscribed to Google alerts using keywords such as “mobile technology in education,” “teachers using mobile technology in the classroom,” “collaborative social technology platforms,” and “creativity and education” to ensure I was on the cutting edge of the research in this field.

My research didn’t stop with the numerous articles, books, blogs and other media I was peeling through on a daily basis; it required in-the-field research with the very device I was going to use for this mobile application. I started this project with a simple Android smartphone. By the time I had finished my research about Torrance’s work, I was at the Apple store buying the iPad 2 and about a month later I was at Verizon replacing my Android smartphone with an iPhone. I needed to see the other side of the application world as a user. I spent a number of hours looking at educational applications as well as productivity applications. I looked at their uses, functions, reviews and what they were missing. I looked at what higher education institutions were doing with mobile applications, I looked at how students were using devices such as the iPad 2 to aid their learning, I even looked at games that utilized various creativity skills to create an end product. After looking at hundreds of mobile applications, I stumbled upon eduTecher. EduTecher is a free mobile application for teachers or anyone interested in
teaching tools and collaboration. The most important part of the eduTecher application was the section about resources and links. This section included various websites, tools or applications that assist teachers in the integration of technology in the classroom. I researched every one of the apps in this section and found that I liked certain features in certain apps. Then it hit me. If teachers were thinking of creativity as an add-on, wouldn’t they think the same thing about using each one these apps to do specific lessons? For example, if a teacher wanted to do a video lesson on animals, they would have to sign into a video website or application such as YouTube or Vimeo. Then the teacher would have to move between YouTube or Vimeo and other programs like Word to create the lesson. This same “back and forth” process would happen for any type of technology integration in lesson planning. It just seemed silly to have teachers working with numerous websites and applications which results in them spending more time they don’t have. I thought to myself “If I were a teacher what might be all the functions I would want in one application, the Beyonder App?” This question inspired a wealth of ideas which motivated me to find a free website that would allow me to do a mock-up of my mobile application and website encompassing the Torrance Incubation Model of Teaching and Learning, the Framework for the 21st Century Learning, Multiple Intelligences, as well as other mobile application tools that could assist in teaching. After a few mobile application mock-up sites, I found that the technical knowledge I needed was far too great for these sites and they didn’t have the functionality I was looking for. So again, I kept peeling back the layers and finally I thought “what is the root of the mobile application?” The website of course! So I found a free website creator at www.wix.com. Wix.com allowed me to work within a template so I could really develop the site and it allowed me to develop a simple version of the mobile application as well.
Project Timeline:

**September 2011:**

- Set-up Google alerts with the following key words “mobile technology in education,” “social platforms for educations,” “creativity and education,” “collaborative social technology platforms” and “teachers using mobile applications in the classroom.”
- Research technology news and blogs to follow such as MindShift.
- Gather and read research involving TIM and the creativity skill set.
- Find and read master’s projects about TIM.
- Borrow library books involving creativity in the classroom, creativity and imagination, nurturing creativity and creativity in education.
- Find journal articles about mobile applications in education.
- Research current Android mobile applications.
- Research education and productivity mobile applications or websites still in the “beta” stages of testing.

Total September hours: 50 Hours

**October 2011:**

- Buy an iPad 2.
- Learn the iPad functions and use of the app store.
- Locate other education targeted apps to see what is out there.
- Meet with Dr. Susan Keller-Mathers to discuss current TIM research and development.
- Review current development of TIM received from Dr. Susan Keller-Mathers.
- Research how to develop a mobile application.
• Sketch out a visual as to how TIM, the Framework for 21st Century Learning and Multiple Intelligences works together.

• Brainstorm trends – What might be all the things people are saying in the field right now?

• Brainstorm – What might be all the things a teacher looks to develop?

Total October hours: 50 hours

November 2011:

• Look at eduTecher app links

• Diverge - What functions I like about other apps?

• Brainstorm – What might be all the functions The Beyonder App should have?

• Brainstorm – What might be all the things you need to achieve creative teaching and learning?

• Converging- Hit and highlight application sections, functions and add-ons, collaboration and sharing and creator tools for The Beyonder App.

• Research free mobile application creator websites.

• Pick out a website template on www.wix.com

• Start building a full website on www.wix.com

• Build the mobile version of the website on www.wix.com

Total November hours: 100 hours

Section Four

Outcomes:

After, numerous hours of research, planning, conceptualizing, more research, brainstorming, trial and error The Beyonder App website and mobile application was created. Encompassing 21 pages on the website and seven pages on the mobile site, both sites were built
using the main constructs of the Torrance Incubation Model as an overarching framework. The home page was supposed to heighten anticipation, while the other pages deepened expectations and extended the learning. Figures seven through 13 are screen shots of the website and mobile application pages along with page descriptions. Please visit [www.wix.com/jmsmith002/the-beyonder-app](http://www.wix.com/jmsmith002/the-beyonder-app) to view the full website.

- **Homepage**

![The Beyonder App Website Homepage](image)

Figure 7. The beyonder app website homepage was designed to heighten anticipation for the content of website. This page defines a “beyonder,” why the website was created and how it can assist teachers.
Figure 8. The beyonder app creativity 101 webpage presents the basic information about defining creativity as well as the creative process, person, product and press.
Figure 9. The beyonder app creative theory webpage showcases the Torrance Incubation Model, Framework for 21st Century Learning, Multiple Intelligences theory and how these models integrate together for creative teaching and learning.
Figure 10. The beyonder app tools and apps webpage hosts a number of tools and apps with links. These pages allow website visitors to use new technological tools focused on the areas of lesson development, photo, video, audio, visual, sharing as well as a cool tools section which showcases interesting new tools and apps.
Figure 11. The beyonder app Torrance Incubation Model webpage allows website visitors to dig deeper into what the Torrance Incubation Model is by describing each stage of the model as well as stage focused tips.
Figure 12. The beyonder app leap skills webpage visually displays the 18 leap skills E. Paul Torrance identified as skills that can facilitate creativity and creative problem-solving. Website visitors can click on the images for a full title and description of the leap skills or download a text-only version of the leap skills.
Figure 12. The beyond app resources webpage presents various resources such as Torrance’s manifestos, videos, books, articles, blogs, social media links and lesson plan examples focused on creativity, education and technology. This page is intended to allow website visitors to gain a deeper understanding of the integration of creativity, education and technology.
Figure 13. The beyonder app playground webpage was designed to be a space where website visitors can experiment on the website. This page allows visitors the ability to brainstorm, sketch and collaborate directly on the webpage.
The Beyonder App Mobile Application

The Beyonder App mobile application was created as a highlighted version of the full website. This application can be viewed by going to http://m.wix.com/jmsmith002/the-beyonder-app or by scanning the QR code below with a smart device QR code reader. Please refer to appendix H to learn how to view and navigate The Beyonder App on a mobile device. Figures 14 through 21 are screen shots of the mobile application site along with page descriptions.

Figure 13. Pictured above is a QR code that can be scanned with a mobile device to reveal the beyonder app mobile site.
Figure 14. The beyonder app mobile application homepage is pictured above. This page is a quick view of the components within the mobile application.
• **About**

Figure 15. Pictured is the about page which describes why the beyonder app was created, the current view of creativity, education; technology and how it can assist teachers.
Figure 16. Pictured above is the beyonder app page, a creative class includes. This page has nine images which illustrates what is included in a creative class. When touched each image will have a corresponding definition of what a creative class includes according to the observations and research gained in this project.
Edu Tools

Figure 17. The edu tools page of the mobile beyonder app showcases select technology tools and applications to assist teachers based on the following categories sharing, photo, video, audio, visual and tool of the day. These tools will rotate each day to ensure information is always changing on the site.
Leap Skills

Figure 18. The beyonder app mobile leap skills page employed the same visual display as the full website. By touching an image, a corresponding leap skill title and definition will display.
Lesson Blueprint

Figure 19. The lesson blueprint page of the beyonder app mobile site was designed to allow teachers to see a quick snapshot of a lesson plan format that integrates creativity skills, the Torrance Incubation Model and Multiple Intelligences.
Creative Models

Figure 20. The creative models page of the beyonder app mobile site describes each model which is used to integrate creativity as part of the app. The Framework for 21st Century Learning is viewed as a foundation while the Multiple Intelligences theory is viewed as a learning checklist and the Torrance Incubation Model is viewed as a creative content dissemination vehicle.
Figure 21. The idea lab page of the beyonder app mobile site is designed to feature new creative teaching and learning tips each day.
Section Five: Key Learnings

As I continued to “peel back the layers” of this project, I noticed that I learned far more than just how to develop a website for teachers. Throughout the process, which was sometimes daunting, I found that there were key elements that gave the project strength. Those elements included a recognition of combining and synthesizing information, having a proper research balance, looking at a topic from a new perspective, visualizing the end result, sensing gaps, dreaming, assessing the situation, taking the time to play and incubate on the topic as well as testing out new tools and using the creative problem solving process as it worked for me. More importantly, is the recognition that we are all different, we learn differently, create differently and need different things is what makes technology, education and creativity evolve.

Topic Key Learnings

While charting my path on this creative journey, I noticed that imperative to this process was the utilization of Torrance’s leap skills to understand the topic and its growth. For example, there is a lot of information about creativity, technology and education as separate topics. Weeding through that information means constant practice of one very important leap skill titled “combining and synthesizing.” Combining and synthesizing requires putting together new connections with given elements. Another leap skill that proved vital was “look at it another way.” By looking at the topic in another way, I was able to see various perspectives such as the teacher and student perspective as well as the “outsider” perspective. As a result, I further engaged myself in the learning process, thus helping me to understand how teachers can become students again too. This then brought me to the concept of how to link creativity as a valued topic with current educational models. By understanding what teachers wanted as a result of a review of various news articles and blogs, I was able to conclude that teachers would not accept creativity without some sort of link between other educational information that was already
being utilized in the field. So I determined that by using other widely accepted creativity models such as the Framework for 21st Century Learning and Multiple Intelligences, those models would be the link that was needed to integrate creativity into education and at the same time debunk creativity myths.

**Process Key Learnings**

When beginning this project, everyone tells you how important the creative problem solving process is. It isn’t until you fully engage in the process that you understand how important each stage is and what it means to the end result. In my opinion, learning is all about customization. This school of thought can be applied to the creative problem solving process.

During this project, I found that using the creative problem solving process as it works for the person can become one of the most significant elements in the development stage of the project. For me, I needed to plaster my walls with flip chart paper and post-its so I continued to incubate on the topic. At the same time, I realized that others may express themselves by sketching, writing, mind mapping etcetera. This learning became evident when I created the playground page of the website offering more than one way to “play” with information. At the same time, I also concluded that technology has some wonderful tools but sometimes when you are conceptualizing you need to go back to the basics, meaning flip chart paper, markers and post-its.

Practicing intuitive thinking skills was another piece that became critical during a period of extensive data gathering. In fact, the thin slicing tool proved to be imperative when I was drowning in all the information. It forced me to take a step back, look at the situation and assess what needed to be done. One of the top learning’s that came out of practicing that tool was the idea that incubation is important. It became very clear that I needed to set aside enough time to allow for incubation to take place as part of my plan.
Deferring judgment is noted as one of the divergent thinking guidelines. So, of course, this rule would become evident as the process progressed. I learned that sometimes when you are conceptualizing, self-talk becomes important. When practicing divergent thinking, due to the indication that we all think differently, some can’t help but judge others ideas. It sounds funny but when I was really overwhelmed, I needed a self-pep talk. By using recording tools on my phone, I talked through an idea without feeling like I was being judged by others. This led me to the conclusion that I needed to work through my ideas personally before I expressed them. At the same time, it must be noted that you should not hold back your ideas for fear of judgment.

Some other process learnings include, time balance and visualization. For my project, I learned that, time balance is the proper amount of time allotted to current application research, technology news, classic creativity research as well as classic and emerging education research. Without proper balance, you can become lost in each topic because they are huge topics in themselves that require synthesis. Setting aside even 10 minutes a day dedicated to technology news can influence the product immensely. Simultaneously, visualization of the product and what it might look like, compared to others, needs to be addressed. Today, web developers can launch a website in “beta” which means they are looking for users to try the product and provide feedback. By visualizing on paper then using a variation of new technology tools to develop the concept you are developing your own thinking skills and getting feedback at the same time.

**Technology Key Learnings**

Technology is changing rapidly but you don’t have to be technical to learn technology today. Today, web developers are taking the time to really think about how a person can navigate a website or mobile application. There is a lot of time spent condensing; looking at other websites and how they work as well as what consumers want. This means that you have to take yourself out of the web developer role and put yourself into the consumer role.
Web developing is tedious, detail oriented and requires the use of various creativity skills. By fully engaging in the utilization of the mobile tools, I took the time to play and be fully present when looking at a tool. I looked at all the possibilities and uses of the tool as well as what was missing, thus influencing how information was presented on my website and my mobile application.

I also learned that you shouldn’t underestimate the need to have a working prototype. A working prototype of the product allowed me to practice trial and error, which was how I taught myself to use the website design tools. Also, testing out new tools helped my learning with regard to the technology. Testing new tools means finding and signing up to use new tools or applications in beta stages. Give your feedback, explore someone’s grand idea related to technology, and then apply the same feedback principles to your own creation. I exercised this feedback technique various times throughout the website creation process.

**Personal Key Learning’s**

Probably the most important part of this process is what you learn about yourself and others. Everyone is different; everyone learns differently, creates differently and needs different things so the process and the product have to reflect that as a core concept.

Tolerance for ambiguity is not one of my strong points, but I had to practice this over and over again because the future is full of uncertainty. Right now the use of mobile learning is cutting edge but my increasing tolerance of future ambiguity is based on the ideal that education will always be evolving because technology and people are always evolving. If the world around me was evolving, I needed to evolve too, therefore, strengthening my confidence in who I am and what this project stands for.
What Worked Well

Technology integration in education is inevitable. I realize that since I am not a teacher I am missing a whole piece of data in terms of experience on the job with these tools. This worked to my advantage because I had experiences as a student who wasn’t being engaged creatively. In the past, I was also given the opportunities to work with gifted educators, higher education professors and student teachers. These experiences and this “outsider” approach gave me a pure view of the education system without being jaded by the stigma of being a teacher in today’s education system.

I can’t say enough about wix.com as a platform for a beginning website developer to practice their skills. Even though I had some prior website developing skills, user-friendliness of the sites tools, design elements, photo uploading system as well as incorporation of other website tools was noted. This site took the technicality out of website design and allowed a focus on the content in the site.

Things to Change or Do Differently

This project always was and still is an evolving project. While I wanted the website and mobile application to look and feel very engaging, I knew that I had to draw the line and work with what I had. Wix.com was a great place for me to begin the project but I really need a web developer or someone with expertise to build what I have conceptualized. I think the navigation on the site works well but I also think it looks like other sites. In the future, I would like The Beyonder App sites to reflect an innovative way of viewing a webpage. For example, if a person were to visit The Beyonder App website or mobile app in the future, it would not have navigation tabs that expand for more information. Instead, the “tabs” would turn into virtual rooms or spaces which showcase the information using interactive tools rather than just reading a description. I did my best to present information with a creative flair, but due to time limitations
and software limitations, I was forced to commit to a very “normal” format. If I could do this project all over again, I would spend less time on the research by setting up my project timeline to focus very specifically on certain research elements. I would work out all the data gathering issues before I jumped into the research so I knew what I was looking for. Then I would have more time to build the site and mobile application as I imagined it. I also did not have time for feedback from teachers since a workshop I had scheduled was cancelled. If I had spent less time looking for “research gems” to include in the project, then I would have more time to get some feedback from those that would be using the site.

**Section Six: Conclusions**

When I began this project, I thought that creating a tool for teachers that motivated their skills and abilities to incorporate creativity into education was needed. After countless hours of research, deep thinking, making connections and synthesizing information into a website and mobile application, I found that this project wasn’t just about motivation, skills and abilities. It is about leading a movement, evolving the human race and inspiring a new beginning with creative teaching and learning as a core concept. Teaching is itself a creative act, and requires an immense amount of gumption. I do believe that there are two kinds of teachers in this world, good teachers that teach with passion and creativity and poor teachers that disappoint students every day. As a citizen and a student myself, I am not okay with poor teachers in the world. I believe that there is hope for poor teachers out there, as they attempt to adapt to a new century of learning. They desperately need the tools and training to begin to redevelop their teaching style.

Since this project is such as huge piece of who I am and the skills I can offer the world, I will continue to pursue this website and mobile application as a tool to bring creativity integration to the forefront in education. As many say, “I drank the creativity kool-aid” and there is no going back. The Beyonder App is just the beginning of what I can offer the world. I
believe that this site has much value for the teaching profession. As a result, I will continue to spread the word about creativity integration in education by presenting various workshops on the topic. I will also continue to develop the site and mobile application by finding a graduate student at Buffalo State College or the University at Buffalo to further develop the functionality I hope these sites can have. I will also develop these sites by adding content such as creative lesson plans, activities and more tools. I will start a social media conversation by continuing this important discussion on blogs, Twitter, Facebook and any emerging social media platforms. My learning on this topic will never subside as the ever-changing technological landscape is looming. I will continue to stay abreast of research in the field of creativity, technology and education as the future of the world depends on these constructs. I will continue to, in the words of Steve Jobs “live by my vision.”

The formulation of this project is just the beginning of what technology can do for creativity integration in education. Since I was limited in my time to create this project, I expect that others will come across this website and mobile application with suggestions for development. The field of creativity is about the exchange of ideas, insights and innovations. It is the nature of creativity to inspire and motivate. I do hope that teachers use this site, make comments, suggestions and collaborate with me. I hope that it inspires and motivates change in education. But most importantly, I hope these sites begin the educational revolution that is so desperately needed. I hope that others join the revolution by sharing how they are using the site, creating tools for integration and doing what they love. It is after all, our job, teacher or not, to prepare the youth for the 21st century.

No student should feel like an outsider due to the educational system. Teachers have the ability to make sure that there are no outsiders; they have the ability to be a leader. Creative
leadership is about much more than putting words on paper, it is about inspiring a movement that changes the course of history. By arming our educational leaders with the proper tools, we are igniting creativity everywhere.

In the words of E. Paul Torrance (1983) “don’t be afraid to fall in love with something and pursue it with intensity.” I have fallen in love with creative teaching and learning. I have fallen in love with Torrance’s work. I have fallen in love with a passion to change the course of education, and I have fallen in love with the technology tools to achieve this education revolution. This project is my passion, and I intend to keep pursing it with intensity.
References

Classic work by E. Paul Torrance


Torrance, E.P., (1983)”The Importance of Falling in Love with Something,” *The Creative Child and Adult Quarterly*, vol. 8, no. ( pp. 72-78)


Current Work on the Torrance Incubation Model


management second community meeting conference proceedings Book Two (pp. 70-96).

Keller-Mathers, S. & Murdock, M. (2002, Fall). Teaching the content of creativity using the
Torrance Incubation Model: Eyes wide open to the possibilities of learning. National
Association of Gifted Children Celebrate Creativity Newsletter, 13 (2), 7-9.

Model: Identifying and using a creativity skill set. National Association of Gifted Children
Celebrate Creativity Newsletter, 13 (2), 5-6, 13.

Murdock, M. & Keller-Mathers, S. (2002, Fall). Teaching for creativity: Where there’s a will,
there’s a way. National Association of Gifted Children Celebrate Creativity Newsletter,
13 (2), 3, 4, 10-12.

Content’s 21st century partner in education. Pennsylvania Educational Leadership, 29(1),
24-32.

Technology and Education

New York, NY: Cambridge University Press


Section Seven

Appendices:

A: Concept Paper
B: A creativity skill set for going beyond
C: Framework for 21st Century Learning Model
D: How students envision school in the future
E: Thin Slicing Intuitive Tool
F: iCreate Creativity Skill SmartPhone Visual
G: Gifted Educators TIM Lesson Plan
H: QR Code for The Beyonder Mobile App and instructions for use
I: Instructions for navigating The Beyonder Mobile App
Appendix A: Concept Paper

The Beyonder App: Designing a mobile application for teachers that facilitates the use of the Torrance Incubation Model

Name: Jenna Smith  Date Submitted: 9/29/11
Project Type: Integration of E. Paul Torrance’s creativity skill set into mobile technology directed at teachers.

Section One

Purpose and Description of Project:

This project will explore the new concept of bringing the TIM model with a specific focus on the creativity “beyonder” skill set to teachers instantly via a mobile application. Teachers will be able to utilize activities created with each of Torrance’s creativity skills in mind, allowing them to integrate their own information. The result is that teachers should feel energized about teaching creatively using technology and students should feel engaged because they are not only learning through their preferred vehicle but they are also learning creatively.

The Torrance Incubation Model for Creative Teaching and Learning has continued to develop due to creativity researchers such as Dr. Mary Murdock, Dr. Susan Keller-Mathers, Dr. Cyndi Burnett and numerous other “TIMers” around the world. Technology is growing at a rapid pace that we can’t control, thus forcing society to get glimpses of the future much earlier than in the past twenty-five years. Smartphones are inevitably the wave of the future, perhaps what laptop computers were perceived as almost ten years ago. Everything we own, medical records, calendars, bank statements, games, camera’s, phone books, address books, electronic mail, coupons and social networking tools are just a touch away. Students growing up in today’s society are digital natives. This indicates that they do not know a world without technology advances so it is fully ingrained in their culture. As teachers struggle to keep their jobs due to economic issues, technology has become the key to a successful learning environment. Especially, mobile technology also known as
technology that can be taken with you anywhere at any time is becoming increasingly valuable as teachers try to engage digital native students.

The simple fact is that teachers believe that they do not have enough time to integrate another component such as creativity into their lesson planning due to the many standards and concepts they must achieve. On the other hand, in a study released in 2010 IBM stated that creativity was one of the top skills employers are looking for. So what does this all mean? It means that we need to find a way to connect creativity concepts with teachers who need to connect with students via technology.

**Rationale for Selection:**

“Life’s most energizing and exciting moments occur in those split seconds when our struggling’s and searching’s are suddenly transformed into the dazzling aura of the profoundly new, an image of the future” (Torrance, 1983). From his classic article titled *The importance of falling in love with something*, my vision was born. I have always loved education. Often, it was the only consistent talent I had in my life. From a very young age, I loved to learn and knew how to learn. My father and mother taught me that education was the key to a successful life. My mother, high school educated and my father a few classes at a community college wanted more for me. So obviously, I was excited to go to school. I felt that way until I reached the fourth grade. If you know E. Paul Torrance’s work you might be asking yourself “did I hit the ‘fourth grade slump’?”

Not quite, in fourth grade I still loved to learn and was very creative but I felt the wrath of one really poor teacher who made me question that love. It is our life experiences that shape who we are and for me, in the fourth grade there happened to be a lot of shaping happening. To give you a bit of background, my entire education I struggled with the subject of math and still do till this day. There was one experience that has forever remained etched in my mind and it was that terrible teacher’s words after I spent hours correcting a math test. After receiving a poor grade on a test, I walked up to her wide-eyed and happy to show her that I made corrections to my math test all by myself as my
mother requested. Her response was “Jenna, did I tell you make those corrections?” I responded “No, my mother told me to.” She said “Well, go show your mommy then!” While this may not seem like a huge issue to many, to a child in fourth grade being humiliated in front of her classmates due to a desire to do well in education, it was life altering. I will never forget that feeling and the hushed talks my parents had about the topic while they thought I was in bed. Shortly after that experience, my parents noticed that I hated going to school and concluded that it had something to do with that experience so they had me moved to a different class where I thrived. Today, I can look back and understand that, that experience shaped me and made me want to never feel humiliated like that again. As a result, I have over prepared myself for every experience in my life. The prolific words mentioned above by E. Paul Torrance involving struggling’s and searching’s being transforming are forever imprinted in my mind, thus the pure motivation behind this project along with my experience as a fourth grader with a quest for knowledge.

My project will focus on the development of a mobile application integrating the creativity skill set outlined in Torrance and Safter’s book *Making the creative leap beyond*. While I will not be physically building the mobile application myself, I will develop the general framework and all the activities that will be loaded or created in the application.

My rationale for choosing this project is based on some of my own personal experiences with education, the need to bring creativity to the forefront in education, a way to connect teachers with creativity information instantly and the use of new technology to engage and develop 21st century teachers and learners. In today’s world, technology development is moving at a rapid pace. Children born in 2011 will have jobs that don’t yet exist. Yet we are still educating today’s youth on a healthy diet of structures set-up during industrialization. Teachers in the United States are struggling to engage these new learners, thus causing friction between the standards that need to be
achieved and how a teacher teaches. Now, more than ever it is important to give teachers the freedom to create while teaching student’s to be creative. The constant response from teachers is that they don’t have time to fit anything else in. The beauty of the Torrance Incubation Model and the creativity skill set is that it is interwoven into the lesson framework to heighten anticipation, deepen expectations and extending the learning. Even with this rationale we would still hear the same response “I don’t have enough time.” So I asked myself wouldn’t it be great if we would harness today’s technology to assist teachers in feeling and experiencing Torrance’s work?

In 2002, Howard Rheingold, the author of Smart mobs stated “A new kind of digital divide ten years from now will separate those who know how to use new media to band together from those who don't.” Every year teachers are feeling the pressure of integrating technology in the classroom losing some of their pedogical focus due to the rapidly changing technology. It seems that teachers new role is to not only to teach “literacy” but to also teach “technology literacy” preparing today’s youth for the proper utilization of the technology. “Mobile learning, or m-learning, can be any educational interaction delivered through mobile technology and accessed at a student’s convenience from any location. M-learning hardware may include mobile phones, handheld PCs, tablets, the iPad, and netbooks, as well as devices such as the iPod touch that are able to run mobile applications. Because m-learning utilizes a variety of devices, many of which are ubiquitous in the lives of students, it can foster student engagement and offer opportunities to make learning integral to daily life” (Educause, 2010). The emergence of technology in teaching has become evident by the number of technology teaching conferences springing up all over the world. Teachers are talking about how they can arm themselves with the proper tools to teach in this ever changing world. Specifically, mobile application or m-learning replacing e-learning is becoming a buzz word in education.
Section Two

Identify Pertinent Literature or Resources:

While Torrance has published thousands articles and books, I will narrow my focus by looking a specific work with regard to the creativity skill set and Torrance Incubation Model which is outlined in the book Making the creative leap beyond. In addition, I will utilize Dr. Cyndi Burnett and Dr. Susan Keller-Mathers’s work from the edited collection called the Voices of the Torrance Incubation Model. In addition, Dr. Mary Murdock and Dr. Susan Keller-Mathers have spent much time on revamping the Torrance Incubation Model which is almost ready for publication. Outside of the International Center for Studies in Creativity I will also seek out some information from the Torrance Center at the University at Georgia. Looking at the technology component, I will be using the research social platform Mendeley which is a database for scholarly work that allows communication and collaboration between people over a network. This platform will allow me to create a conversation with others doing similar research. Located below is a listing of foundational work I will be looking at with regard to my content topic of Torrance’s creativity skill set.

Classic work by E. Paul Torrance


Current Work on the Torrance Incubation Model


Technology and Education


Section Three

How Do You Plan to Achieve Your Goals and Outcomes?

One of the biggest things I have learned in the Creative Studies program is to be fully present during a process. Instead of spending hours looking at the research which I will of course do, I need to add an element of intuition while balancing the thinking skills model of creative problem-solving as the framework for the development of my project. For each stage of the process, I will employ both my intuitive and affective skills as I utilize CPS tools such as brainstorming, morphological matrix, ladder of abstraction, forced connections, storyboarding, thin slicing and head, heart, gut. In addition, because this process is so important to me and my need to be fully present during it, I will often be experiencing the activities I create, getting inspiration from playing, taking walks in the woods, coin tossing and collaging. While some might think this is a lot to achieve in three months, I
believe that successful achievement of my goals and outcomes is rooted in this thinking. Located below are some specific ideas for how I plan to achieve my goals and outcomes.

- Use Forced Connections to develop connections between creativity skills and potential activities.
- Use Morphological Matrix to develop activity combinations.
- Use the intuitive Head, Heart, Gut tool to develop the framework for the app.
- Develop a storyboard draft to gain a visual concept to work toward.
- Use the ladder of abstraction to explore my reluctance to develop the app myself (this is just to explore my personal issues with what I think I can do to develop deeper thinking around the project).
- Work with the thin slicing tool to look deeper into my plan for action making sure I am covering the main details through ally.
- Play outside like a child to recapture a youthful perspective.
- Practice environmental sensitivity by putting on a blindfold and listening to the sounds around me. Digging deeper, I will think about how might those sounds allow people to fully experience the creativity skills on the app?
- Make a big risk list developing ways that the app development would seem less risky.
- Set up a plan for action and work it!
- Utilize all my resources such as books, articles, blogs, people’s experience, my smartphone, the app marketplace, the Apple store clerks, Google alerts, magazines, Buff State’s service learning program, IT staff, technology news sources and my experience.
### Prepare Project Timeline:

<table>
<thead>
<tr>
<th>Task</th>
<th>Time</th>
<th>Completed by</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set-up Google alerts and find technology news blogs to follow</td>
<td>4 hours prep time and 1 hour per week = 16 hours</td>
<td>Ongoing</td>
<td>Need to located the proper blogs, test their reputation and begin following their latest posts.</td>
</tr>
<tr>
<td>Locate other education targeted apps to see what is out there</td>
<td>1 hour per week = 12 hours</td>
<td>Ongoing</td>
<td>Focus on one app per week that technology education blogs are recommending.</td>
</tr>
<tr>
<td>Find journal articles about mobile applications in education</td>
<td>5 hours</td>
<td>September 29</td>
<td>Get a scholarly mobile application foundation.</td>
</tr>
<tr>
<td>Research how to develop a mobile application</td>
<td>5 hours</td>
<td>October 6</td>
<td>Need to know how a mobile app works even if it is the basics.</td>
</tr>
<tr>
<td>Gather and read research involving the TIM model and the creativity skill set</td>
<td>25 hours</td>
<td>October 6</td>
<td>There is a ton of reading that needs to be done due to the magnitude of Torrance’s research.</td>
</tr>
<tr>
<td>Ask Dr. Susan Keller-Mathers and Dr. Cyndi Burnett for some information or articles to read that have yet to be published</td>
<td>7 hours</td>
<td>October 6</td>
<td>Need to communicate then be directed on where to find these articles, read them and reflect on them in the OneNote book.</td>
</tr>
<tr>
<td>Develop a three hour workshop testing the acceptance and concepts around this topic with teachers</td>
<td>5 hours</td>
<td>October 25</td>
<td>This workshop has already been scheduled for October 25, 2011 at BOCES</td>
</tr>
<tr>
<td>Brainstorm activities &amp; utilize intuitive tools to communicate the creativity skill set</td>
<td>2 hours per week = 24 hours</td>
<td>Ongoing but most completed by November 1</td>
<td>Practice tools, boil down information and find inspiration to create activities.</td>
</tr>
<tr>
<td>Develop TIM lesson plans for 5 creativity skills</td>
<td>25 hours</td>
<td>November 10</td>
<td>Each skill should have an activity attached.</td>
</tr>
<tr>
<td>Storyboard what the mobile application would look like</td>
<td>10 hours</td>
<td>November 10</td>
<td>Find digital software to utilize, learn the software and develop a</td>
</tr>
</tbody>
</table>
Section Four

What Will be the Tangible Product(s) or Outcomes?

Since I do not feel that I have the knowledge or technical skills to develop a mobile application due to the numerous types of web coding systems used, I feel that I would be much better suited as the designer of the application. Meaning, I will develop all the activities, test the activities on myself and create a visual that represents the application via storyboarding techniques and other electronic tools. As of right now, there are no TIM focused apps in existence. This paper will also serve as a way to protect any copyright issues I might have in the future as I continue to develop this product to be launched in the app marketplace.

Section Five

Personal Learning Goals:

- Be fully present throughout this learning process, utilizing all of my education.
- Cultivate technology skills with relation to the creation of a mobile application.
- Become a leader in the field of integration of creativity in technology.
- Learn how to connect creativity to all parts of education.
- Develop ways for people to feel and experience the creativity skill set.
- Create an unpolished version of my future mobile application.
- Become an expert in the TIM model.
- Learn how to apply TIM in many ways.
- Learn how to utilize TIM along with CPS and intuitive tools.
• Connect TIM with teachers, thus spreading the work of E. Paul Torrance.

Are there any goals around the TIM model? Since this is an application of your learning you don’t need to have them, just wondering…

**What Criteria Will You Use To Measure The Effectiveness Of Your Achievement?**

I will know that I have been successful if teachers are energized about using this tool in the classroom. In addition, if my classmates and other creative studies faculty and staff are energized I will believe the project is a success. I will also measure its effectiveness by using Bessemer’s measure because I am producing a creative product. If the product scores high on usefulness I will consider it a success.

It will be user-friendly

It will disseminate the content in an effective way.

It will be attractive.

It will be accepted by teachers as a useful tool.

It will allow end users to “feel” the Torrance Incubation Model.

It will require little time to learn.

It will be flexible according to different teaching and learning styles.
Evaluation:

During the evaluation process, I plan to show my preliminary plans and TIM activities to my sounding board partners. I also plan on having a friend who is a teacher review my plans, offering feedback. I will request for both formal and informal feedback depending on the stage of the process.

During the beginning stages of the process, I will ask both my sounding board partners and my friend who is a teacher to provide some informal feedback about the potential functionality of the application and proper utilization. Informal feedback will be defined as a discussion between all parties without a formal feedback sheet completion but rather observations and suggestions compiled as a person takes notes during the conversation. Formal feedback will be administered using a PPCo sheet I’ve developed looking at the pluses, potentials, concerns and opportunities of the product. In addition, prior to each feedback session I will perform a self-evaluation so my evaluation is not influenced by the others feedback. Following their feedback, I will reflect on both my evaluation and their evaluation. This will be documented in a digital notebook that I will compile and will be connected with a digital bulletin board created on a Stixy site.

In terms of evaluation of my results toward my learning goals, I will continue to use some intuitive tools looking at what my gut is telling me with regard to this process. By working through the intuitive tools that fit such an evaluation, I am giving merit to my personal learning style, problem solving style and feelings toward this project. As specified earlier, if I set my foundation and continue to use my intuition by being fully present throughout this process, I will be able to effectively evaluate my results.
Appendix B: Framework for 21st Century Learning

The Partnership for 21st Century Skills has developed a vision for student success in the new global economy.

21st Century Student Outcomes and Support Systems

21ST CENTURY STUDENT OUTCOMES

To help practitioners integrate skills into the teaching of core academic subjects, the Partnership has developed a unified, collective vision for learning known as the Framework for 21st Century Learning. This Framework describes the skills, knowledge and expertise students must master to succeed in work and life: it is a blend of content knowledge, specific skills, expertise and literacies.

Every 21st century skills implementation requires the development of core academic subject knowledge and understanding among all students. Those who can think critically and communicate effectively must build on a base of core academic subject knowledge.

Within the context of core knowledge instruction, students must also learn the essential skills for success in today’s world, such as critical thinking, problem solving, communication and collaboration.

When a school or district builds on this foundation, combining the entire Framework with the necessary support systems—standards, assessments, curriculum and instruction, professional development and learning environments—students are more engaged in the learning process and graduate better prepared to thrive in today’s global economy.
Core Subjects and 21st Century Themes

Mastery of core subjects and 21st century themes is essential to student success. Core subjects include English, reading or language arts, world languages, arts, mathematics, economics, science, geography, history, government and civics.

In addition, schools must promote an understanding of academic content at much higher levels by weaving 21st century interdisciplinary themes into core subjects:

- Global Awareness
- Financial, Economic, Business and Entrepreneurial Literacy
- Civic Literacy
- Health Literacy
- Environmental Literacy

Learning and Innovation Skills

Learning and innovation skills are what separate students who are prepared for increasingly complex life and work environments in today’s world and those who are not. They include:

- Creativity and Innovation
- Critical Thinking and Problem Solving
- Communication and Collaboration

Information, Media and Technology Skills

Today, we live in a technology and media-driven environment, marked by access to an abundance of information, rapid changes in technology tools and the ability to collaborate and make individual contributions on an unprecedented scale. Effective citizens and workers must be able to exhibit a range of functional and critical thinking skills, such as:

- Information Literacy
- Media Literacy
- ICT (Information, Communications and Technology) Literacy

Life and Career Skills

Today’s life and work environments require far more than thinking skills and content knowledge. The ability to navigate the complex life and work environments in the globally competitive information age requires students to pay rigorous attention to developing adequate life and career skills, such as:

- Flexibility and Adaptability
- Initiative and Self-Direction
- Social and Cross-Cultural Skills
- Productivity and Accountability
- Leadership and Responsibility

21ST CENTURY SUPPORT SYSTEMS

Developing a comprehensive framework for 21st century learning requires more than identifying specific skills, content knowledge, expertise and literacies. An innovative support system must be created to help students master the multi-dimensional abilities that will be required of them. The Partnership has identified five critical support systems to ensure student mastery of 21st century skills:

- 21st Century Standards
- Assessments of 21st Century Skills
- 21st Century Curriculum and Instruction
- 21st Century Professional Development
- 21st Century Learning Environments

For more information, visit the Partnership’s website at www.P21.org.
Appendix C: How students envision the future

**Going to School in 2015:** how students envision the future!

Across the nation, students are adapting emerging technologies in new and innovative ways for learning. As part of Speak Up 2010, Project Tomorrow, the national education nonprofit organization, asked students to predict what school would be like in 2015. What would “going to school” be like? Would learning be different? What would be the role of the teacher? Here is a sampling of some of those responses:

I think “going to school” will be someone using a mobile device to learn through online school chatrooms.”
8th grade boy, Amherst Central School District - New York

“I think that in 2015 everything would be digital. Textbooks and notebooks would be archived through a computer. Hand outs would be sent to the student’s email accounts so they could open them up in class. And all lectures could be recorded by students.”
10th grade boy, City of Chicago Public Schools - Illinois

“I think that school will be much different. Many of the books will be online, and students may even use such devices as Kindles, iPads, or laptops to access the online books for class. Many of the notes and lectures might become digitalized and if a student is absent, he or she may be able to watch a video of the material covered in class that day. In 2015, I think that the “going to school” part will be much the same as it is today, but technology will simply have a more prevalent role. Learning will be different in that more of it will be technological, and every student will have to learn how to use basic programs like Word or create PowerPoints. Also, classes might be more interactive and use devices in which a student can click a button to answer a question that the teacher poses. In that way, students will be more involved in the class and discussions without the fear of answering incorrectly. The teacher will be able to help the students by directing them to interactive websites, or by having a site in which the students can pose questions to the teacher, which the teacher can then answer from anywhere.”
12th grade girl, Xavier College Preparatory School - Arizona

“...in 2015 people will actually play video games or other types of simulations to learn. We will become advanced enough to put arithmetic, math, science and any other subject into an interesting game.”
11th grade boy, New Hanover County Schools - North Carolina

“If technology takes a step forward by the year 2015, schools would have student dropout rates decrease if computers and other sorts of technology were to be used. Going to school would mean “go have fun” learning. Teachers would only have to teach how to use computers and how to access certain school sites. The way these students learn will be different in ways that are not impossible. Four years from now, I believe that things will be much better, school-wise, than they are now.”
10th grade girl, Vallejo City Unified School District - California

“The school should allow the students to use their mobile devices in class for their school work and students will be more involved in what they are learning.”
8th grade boy, Baltimore City School District - Maryland

“I think in 2015 most classes will be online and the teachers will be able to chat online with the students to help them learn.”
10th grade girl, New Hanover County Schools - North Carolina

“In five years, I do think that going to school will be different from what it is now. We might be able to use our phones and all have our own laptops. Our teacher will have a new role that may be showing how it relates to our world.”
9th grade girl, Calloway County Schools - Kentucky

Preparing today’s students to be tomorrow’s innovators, leaders and engaged citizens.
“School will be different in the future because there will be more technology in school and therefore the students as well as the teachers will be able to communicate and teach/learn more. More students might be able to bring their own computers and therefore will have faster internet and will be able to get more things done on time instead of using slow computers. Also all the students would be able to use a computer instead of waiting for a free one to open up.”

9th grade boy, City of Chicago Public School District - Illinois

“In five years, I believe our whole school system will be more interactive. As human evolution leads to technological advances many new products come to the availability of school districts. In five years, I foresee the desks being able to project images and we’ll be able to connect to the internet so no time is wasted going to get a computer or laptop. This will also be able to connect to the smart board which will allow for ease of sight for students in a far off seat. School will be so much different in 2015. Messages and information will be running through the school, so everything will be connected. Since information will be more rapidly available the way we as students will learn will be vastly different, almost science fiction like. We will be able to chat and communicate or work on projects via webcam. As a teacher, their jobs will be altered. More plans will be incorporated with technology therefore it will be easier to connect to the students.”

10th grade boy, Salisbury Township School District - Pennsylvania

“Students in the future will take all classes online from home at their own pace.”

12th grade boy, Weslaco Independent School District - Texas

“School will be more technology based. It might be completely technology based. All classes might be online. Classes might be through video chat. All work and homework is online. Texts are all taken online. Everything would be done online. You might be able to stay at home and take all classes at home while teachers and other school staff go to school building and have several monitors monitoring each student, checking their work, grading exams, teaching classes through video chat or a handheld smart board.”

9th grade girl, Orange City School District - Ohio

“I think there should be more simulations (like dissecting, driving a car etc.), more access of cell phones and personal technology that you own, provide more technology (like iPad, iPod, iPhone etc.), and more access of interaction with other students like Facebook, Twitter, MySpace etc.”

6th grade boy, Mentor Community School District - Wisconsin

“Going to school, 5 years from now in 2015, will be more technologically inclusive. In 2015, classes will have online simulations, videos, games, and websites provided to the students. Each student will be provided with a standard issue tablet computer to save and create documents on. Follow a teacher in class, go online to school provided resources, and keep up with the class. Memory drive will be more common in class, and students will be specifically modified for the use of a tablet computer. Classes will come to include the use of major websites, and students will be encouraged to check online resources for academic use. Homework in the form of printed assignments will no longer be necessary, as our homework can simply be typed on and submitted without ever worrying if an assignment has been left at home. Computer labs may even be unnecessary as each student will have a tablet computer for use in and out of school during the school year. Even PE, a non-academic class, may come to use computer technology for the use of exercise statistics tools, physical simulators, and exercise regimens. School will then be more inclusive of technology than ever before.”

6th grade boy, Poway Unified School District - California

“In the year 2015 I still would like to go back to a paper and learning from a teacher but I would like for every student to be able to bring a wireless device with internet and a place for notes so we can store data from our classes. This would also let us be able to video tape classes for later reference.”

11th grade girl, Plano Independent School District - Texas

“I think the role of the teacher will remain the same but there will be much more interactivity between teachers and students. For instance, more teachers will use technology in class such as smart boards and have more interactive material such as videos and animations that help explain the content of the subjects being taught in school.”

12th grade boy, Virtual High School Global Consortium - Massachusetts

“In 2015 I think school will unlock all websites and let you get on your own resources like Facebook, MySpace, Twitter, Skype etc. Also I think that they will let you use your cell phone or any kind of phone to get answers and stuff like that.”

6th grade girl, Chambersburg Area School District - Pennsylvania

“As the students who grew up during the introduction of technology become educators and administrators, the rules and restrictions on technology use (i.e. using cell phones, accessing certain web sites, and using one’s own devices) will change to be more technology friendly. Since it is the students of today who wish to be able to use cell phones in school and use their own devices, they will become the educators of tomorrow who allow it.”

11th grade boy, Salisbury Township School District - Pennsylvania
Appendix D: Thin Slicing Intuitive Tool

**Thin Slicing**

<table>
<thead>
<tr>
<th>Name of tool</th>
<th>Thin-Slicing Intuitive Tool</th>
</tr>
</thead>
</table>
| Sources      | Developed by Janice Francisco (Francisco & Burnett, 2008)  
               Based on work of Gladwell (2005), *Blink*, & Robinson (2006) *Trust your gut* |
| Purpose      | Human beings are able of making sense of situations based on the 'thinnest slice of experience' (Gladwell, 2005). Thin-slicing is a process by which the subconscious captures the details of a particular moment in time, finding patterns in people and situations which it can then generalize to the bigger picture. It is used to 'center' a facilitator and to quickly gather impressions and insights during a session. (Francisco & Burnett, p. 16, 2008)  
               Use when you need to do a quick check-in on process or how you are managing as a facilitator. |
| Directions for use | 1. Silently work through the questions listed below, searching for gut level responses, and applying divergent guidelines. Take action based on your insights.  
               Questions:  
               a) What’s my first impression?  
               b) What do I need to know?  
               c) What’s right about this situation?  
               d) What’s wrong about this situation?  
               e) What do I need to pay attention to now?  
               f) What’s my best course of action? |
Appendix E: iCreate Leap Skills SmartPhone Visual

[Image of a smartphone interface with various apps and icons, illustrating the concept of generating many varied ideas through creativity.]
Appendix F: Gifted Educators TIM Lesson Plan

**Topic:** Application of the Torrance Incubation Model with a leap skill focus

**Creativity Skill:** Put ideas into context

**Workshop Time:** 60 minutes

**Time Schedule:**
- Introductions (2 minutes)
- Warm-up Activity/Heighten Anticipation (5 minutes) 12:35 p.m.
- Transition (1 minute) 12:36 p.m.
- Brainstorm about Beyonder (15 minutes) 12:46 p.m.
- Transition (1 minute) 12:47 p.m.
- Time Capsule Activity (20 minutes)
- Capsule Gallery (10 minutes) 1:14 p.m.
- Extending the Learning Notes (5 minutes) 1:19 p.m.

**Topic/Content Goal:**

To facilitate the learning of the application of the Torrance Incubation Model for integrating creativity into course content. By focusing on Torrance’s creativity skill set (leap skills) TIM will be modeled for participants.

**Creativity Skill/Goal:**

(Overarching skill) Put your ideas into context – putting parts of an experience into a bigger framework. This group has already acknowledged that not enough creativity has been incorporated into their educational system. They know creativity needs to be present and are seeking ways to deliberately incorporate creativity. By looking at small parts of creativity such as how to deliver creativity and how to integrate it into a structure that is already present workshop participants will be able to take their workshop experience and practice deliberate creativity at Monroe Orleans Boces.

Other creativity utilized:
- Visualize it—Richly and Colorfully
- Be Flexible
- Keep Open
- Enjoy and Use Fantasy
- Get Glimpses of the Future

**Heightening Anticipation:**

Attendees will arrive with a iCreate Leap Skills Smartphone visual placed on top of a large envelope. Each envelope will have a different question posted on the outside of the envelope as well. Attendees will be asked to write or draw their answer on the front of the envelope. After each person answers their question on the envelope they will get into groups 7 groups of 5 and share their questions and answers. Then one person from each group will give a synopsis of what the group discussed to the whole group.

Can you guess what this is for?
What do you notice about this image?
What standouts to you about what’s on this envelope?
Where could the iCreate Smartphone be used?
Could this be combined with anything?
Can you name this image like a newspaper headline? Try it below.
What would you add to this image?
If you had a million dollars, what would you do with this object?
If you could create your own smartphone application what would it look like?
How could you incorporate teaching and learning into this phone image?
If this “phone” was physically in your hand what would it sound like?
If this “phone” was physically in your hand what would it feel like?
What is another name for this object?
How could you break beyond the boundaries of what a smartphone is?
Imagine that you are looking at the inside of this object what would it look like?
If you were a giraffe, what would this look like?
Imagine you are Albert Einstein. You’ve traveled through time and landed right in a iCreate smartphone store. What would you think about these “phones”?
What would change the composition of this “phone”?
What would happen if a snowball was thrown at this “phone”?
If you could sum up the functions of this “phone” in one word what would it be?

• Deepening Expectations:

To deepen their understanding of the basic of the leap skills I will ask the group to brainstorm what they think a beyonder is. I would typically use brainstorming with post-its but since I’m lacking a resource buddy I will use classic brainstorming by recording answers. I will transition into the time capsule activity by giving Torrance’s definition of a beyonder also adding what he found about beyonders and leap skills. To get the group to start thinking beyond I will ask them to think about the concept of a time capsule. Schools buy them, they were very popular in the 1950’s and in fact a student at Buffalo State owns a time capsule company and does very well. What is it about time capsules that intrique us? Is it the idea that we are locking up pieces of time period to be opened by another generation? Is it the idea that we don’t know what the future will look like and take delight in thinking about the future? Just some questions to ponder. Moving into the activity, we are going to create a time capsule today. Not in the sense of waiting 50 years to open it but it is a TIM time capsule. Instead of opening the time capsule together I will open the capsule sooner than 50 years later. If you had one object to put in this TIM time capsule to be opened no later than one year from now what would it be? I am going to out a prototype of my iCreate Leap Skills Smartphone to remind me that I want to continue to develop my Smartphone application based on the creativity leap skills that students and teachers can download to assist with teaching and learning creativity. Remind participants that this is an original idea by me Jennaration Creative. Please do not distribute or copy until it has been released. Let’s maintain the integrity of our ideas by being respectful.

Materials:
- Divergent and convergent guideline table tents
- 20 packs of post-its
- 40 permanent markers
- 40 iCreate Smartphone visuals
- 40 large envelopes
- 40 Are you a beyonder? Note cards and envelopes
- TIM time capsule model
- Toys
- Markers

• Extending the Learning:

Present the “Are you a beyonder?” note cards and envelopes. Ask attendees to take 5 minutes to write or draw something that they want to do creatively on the note card. What they now see themselves doing. Ask that they add details and color and truly visualize it...set a creative goal. Think of it as if you were putting something in a time capsule, what would you want it to say, how would you want it to look? Also, ask them to add their campus address on the outside of the envelope. Insert their notes and seal the envelope. I will collect the envelopes and let them know that these notes will be stored in our TIM time capsule until they will arrive in the mail at just the moment they are needed.
Appendix G: QR Code for The Beyonder Mobile App and instructions for use

1. A QR code is a bar code that can hold a lot of information. QR stands for Quick Response. A typical QR code looks like this.

2. A QR Code is read by an application on a cellphone. The application scans the code, decodes it, and then presents the material on your smart device such as a Droid, iPhone and iPad. You need to have a device with a camera and availability to the internet to use QR Codes.

3. To scan a QR code go to the App Store or Android Marketplace on your smart device and search for free qr code reader such as QReader, Barcode Generator, ScanLife, or QRScanner. Download one of these FREE applications on your smart device.

4. Once the qr code reader is downloaded click on the application on your smart device. Then hold your smart device camera lens in front of the code and press scan (or it will begin to scan the code for you).

5. The scan should then take you to a different screen such as a website, message, picture etc.
Appendix H: Instructions for navigating The Beyonder Mobile App

1. After downloading the QR code reader, scan the QR code located on the bottom of the poster titled "LINK 1 or LINK 2".

2. Once the code is scanned and connects with The Beyonder App mobile site, touch "ABOUT" and read the text.

3. Continue to stay on The Beyonder App mobile page and touch "A CREATIVE CLASS INCLUDES:".

4. Then touch "EDU TOOLS" and skim through the content.

5. Continue to view the app by clicking "LEAP SKILLS." To view the descriptions of the leap skills, touch each image to enlarge it, then touch the image again to view the description.

6. Touch "LESSON BLUEPRINT" which describes a lesson plan format for integrating creativity into content.

7. Touch "CREATIVE MODELS" which depicts each educational model or theory that has been incorporated into The Beyonder App.

8. The final part of the mobile app with content is the "IDEA LAB." Touch "IDEA LAB" icon to view the "Idea of the Day" which will be updated each day to reflect a new idea regarding interweaving creativity into the classroom.

9. Those using The Beyonder App also have the ability to tweet about the app, email me or view the full Beyonder App website on their mobile devices if they are NOT using an Apple device. The full Beyonder App website is flash driven which is software that Apple products do not support.