**Generating Creative Universal Solutions: The Why and How?**

This unique quick-fire game styled creativity exercise helps students understand the value and benefit of universal design in the creative design process as well as foster sensitivity. This exercise can be easily scaled from small classes to engage even a large-class population (of 100 students) or shorten to 20-minute conference setting. The exercise is designed to allow the individual to retain anonymity through electronic voting, while fostering intergroup cooperation in a fast-paced competitive environment with students presenting elevator pitches of their new product or service concepts. The concepts are judged by the class on their creativity.

Key Words: Experiential, Game-Exercise, Universal design, Creativity, Quick-fire

**Generating Creative Universal Solutions: The Why and How?**

**Introduction**

The concept of Universal Design is centered on the design of products that are useable and functional for as wide a population as possible (McGuire, Scott and Shaw, 2006). Universal Design is commonly misperceived as benefiting only a small segment of older and disabled individuals (National Disability Authority, 2017). Instead, the aim of Universal Design is to emphasize a design approach for creating products and services that can be “aesthetically pleasing and functional for the greatest number of users” (Welch, 1995, p. iii). Further, the process of Universal Design implicitly recognizes that almost all individuals may encounter physical, emotional or behavioral disabilities at some point in their life (National Disability Authority, 2017).

The appreciation for disability and renewed debate for inclusion has generated opportunities in a market driven economy. There are an estimated 1.3 billion people with disabilities worldwide generating over $1 trillion in annual disposable income (<http://returnondisability.com/disability-market/>). Furthermore, Products that are inspired by a disability-related need are often quite popular with people that do not have disabilities (e.g., Good Grips utensils). Given the potential size of this consumer market, there is a surprising lack of emphasis on inclusive features or elements in the design of new products, business models or pitch competitions in business schools and beyond.

To help students understand the value and benefit of universal design in the creative design process, and to foster sensitivity, The College of Charleston launched in Fall 2015 an initiative called Disability and Entrepreneurship: Models of Success (DEMOS). A central feature of DEMOS is a series of experiential exercises leading to the creation of new product or service concepts that incorporate inclusive Universal Design principles. While the product concepts are designed to be applicable and useable to as many people as possible, our DEMOS program has a special emphasis on the inclusion of individuals with intellectual and developmental disabilities. A core element of the training program is the emphasis on educating student entrepreneurs about the genuine value that individuals with disabilities bring to the workplace and their value as customers. The activity was designed around a unique quick-fire game styled creativity exercise that can be scaled from small classes to engage even a large-class population (of 100 students). This exercise keeps the teams engaged by competing in a fast-paced environment with students presenting elevator pitches of their new product or service concepts. The concepts are judged on their creativity.

**Background**

The need for creativity and innovation to solve a myriad of problems has never been greater (Brown, 2008). Creativity often focuses on the individual’s contribution to solving a problem; this is the myth of the “lone genius.” (Paulus and Nijstad, 2003). Although individual contributions to solving problems or discovery should not be dismissed, the same authors also advance the need to promote “big C” creativity by better understanding how “groups may inhibit intellectual activity or optimal performance” (p.4). “big C” creativity as defined by Garner (1999) is something that would have a profound impact on society as compared to everyday or “little C” creativity. “big C” is especially salient to innovations that reflect an understanding of the problems confronting people with disabilities in our community.

The literature appears to support the importance of group creativity and decision-making processes in developing “big C” solutions for people with disability. Stasser and Birchmeirer (2003) emphasize that the generation of decision options and the choice among these options are very distinct processes. Nevertheless, they observe, “divergent and convergent processes in collective choice are undoubtedly entwined…” (p. 86), indicating the complexity of the creativity process. Context plays a key role in a group decision-making in creative settings. Different elements may spur creativity according to the context. Positive stimulants to creativity and/or group performance may include the sharing of unique information or ideas in face-to-face discussion, anonymity (in other cases), and intergroup competition.

In laboratory settings, Sosik, Kahai, & Avolio (1999) tried to evaluate the effects of leadership style and more importantly anonymity level on flow and creativity of participants working in groups performing a particular creativity task. Their findings suggest that anonymity had a moderating role on group performance. They advance that by providing anonymity to participants***,*** facilitators may be able to create a context in which individual behaviors positively influence creativity via flow in a group setting (p. 246). Lending support that in the context of disability, group activities should foster anonymity not only to fight the stigma associated with disability (Bagenstos, 2000), but also to counter the negative social reaction triggered by disability (Corrigan, 2014).

Concerning intergroup cooperation, Bornstein& Erev (1994) sought to examine the effect of intergroup competition on intragroup cooperation by conducting various experiments in laboratory settings. They establish that intergroup competition can effectively increase intragroup cooperation. A follow up experiment showed that this constructive effect of intergroup competition is generalizable to a real‐life setting of how one makes continuous decisions in an ongoing interaction. Intergroup cooperation compounded by the integration of gaming as an instructional strategy should further benefit learners. The gaming “mode” has been well documented in the literature benefits on learning outcomes (Dempsey, 1994, Kapp, 2012)

Therefore, we propose a game based exercise that emphasizes the “big C” type of creativity: creating new product or service concepts that incorporate universal design principles, while appealing to as a wide an audience as possible. The exercise is designed to allow the individual to retain anonymity through electronic voting, while fostering intergroup cooperation and promoting intragroup competition.

**Target Audience**

This approach to teaching creativity by integrating universal designs principles targets faculty members teaching introduction to entrepreneurship and/or creativity and innovation courses. The exercise is designed for undergraduate students, but could be applied to individuals in other settings. DEMOS is designed to be a fun and innovative way to introduce universal design to students who would usually not consider creating solutions to the problems confronting people with disabilities as a potential market.

**Learning Goals for participants**

This exercise allows students to:

* explore universal design principles
* apply universal design principles to the group creativity process
* learn to generate ideas using quick-fire technique using a game format
* learn to develop product and services that universally accessible

**The Exercise**

*Pre-exercise Preparation*

* Students should be introduced to universal designs principals
	+ Print and distribute Appendix A prior to class
		- More resources are available on the web at [http://sb.cofc.edu/centers/centerforentrepreneurship/demos](http://sb.cofc.edu/centers/centerforentrepreneurship/demos/index.php)
	+ Encourage students to read the handout prior to class
* Print Appendix B summary (optional) for day of exercise as a quick reference on the back of the team challenges
* Faculty should consider preparing a digital presentation. Sections or elements to be included:
	+ Introduction to universal design using visuals/pictures
	+ Instructions on what to expect/do as a team
	+ The sample challenge (Appendix C)
	+ The five main challenges (Appendix D)
		- Incorporate class anonymous voting (instructions to follow)
	+ The final challenge (Appendix E)
		- Incorporate class anonymous voting (instructions to follow)
* Identify the optimal number of teams and members per team for your session.
	+ Select number of participants, team size and corresponding number of challenges

 Table 1: Recommended Team Size and Number of Challenges

|  |  |  |
| --- | --- | --- |
| Number of Participants | Team Size | # of Challenges to be used |
| 35 | 3 | 4 |
| 60 | 3 | 5 |
| 80 | 4 | 5 |
| 100 | 5 | 5 |

* Print the main challenges (Appendix D) and final challenge (Appendix E) according to the number of teams
	+ We recommend one handout per team (to save paper) – follow Table 1 for number of handouts needed
	+ If you choose to print one handout per team member follow Table 2 below.

 Table 2: Handouts Needed

|  |  |
| --- | --- |
|  | # of handouts by Challenges |
| Number of Participants | Team Size | 1 | 2 | 3 | 4 | 5 |
| 35 | 3 | 9 | 9 | 9 | 9 |  |
| 60 | 3 | 12 | 12 | 12 | 12 | 12 |
| 80 | 4 | 16 | 16 | 16 | 16 | 16 |
| 100 | 5 | 20 | 20 | 20 | 20 | 20 |

* Polling software is a great way to secure anonymity while promoting both a gaming environment and providing immediate feedback or voting.
	+ Some software recommendations: Poll Everywhere, TurningPoint
	+ List on each slide or poll the challenge number, the challenge description and number of teams (Appendix D without the team representative instructions)
* Find small prize(s) (school mugs, t-shirts, goodie bags of sort for one winning team – candy bag would do)
* Facilitator requires a phone or other device to keep time

*Exercise Activity: 40-50 Minutes*

* Start class by telling the students that we will be playing a game and that there will be prizes for the best team
* Split the class into teams of three or four (depending on the class size – see table 1 above for recommendations)
	+ Random assignment of teams allows students to interact especially in large classroom settings
* Ask each team to send a representative to the front of the room to collect their challenge and instruction sheets
* Give each team a challenge
	+ Caution: handout challenges equally by team according to Tables 1 and 2
	+ To maintain an equal number of teams by challenge we recommend you give out challenge 1 to the 1st team, followed by challenge 2 to 2nd team, all the way to the challenge 5 to the 5th team, and back to handing out challenge 1 to the 6th team until every team sends a representative.
* Review the team instructions with the class
	+ Each team selects a spokesperson (spokesperson will have to come to the front of the room to make their team idea pitch)
	+ Team must write on challenge sheet answers to the following:
		- Name of product or service that you would create. Examples include:
			* + An app that tracks inattention (sending vibration/signal)
				+ Sensor linked to app that signals action by user
		- How will it address the challenge you were given?
		- How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app.
* Remind the teams that there will be a “best” team prize as voted by the class
* Share the sample challenge (Appendix C) with the class (digital presentation)
* Optional: Let team quick share ideas before sharing with the class
* Randomly select students who are willing to share their solutions to the sample challenge and emphasize what will be asked of each team
	+ Name of product or service that you would create.
	+ How will it address the challenge you were given?
	+ How and why will it be of appeal to a universal audience, beyond disability?
* Ask students if they have any questions before starting the challenge activity
* Show the team instructions on the board
* Start the exercise
* Each team reviews their assigned challenge (10 minutes) and create a universally-designed solution that can be conveyed in 30 seconds or less
* Facilitator keeps track of team time
* Call up team spokesperson for each challenge to the front of the room
	+ Ask representative to bring their challenge handout with their notes/answers
	+ Assign team numbers based who shows up in the front of the room and write the team number on their handout
	+ As you hand them back their handout, we recommend that you remind each spokesperson of their assigned team number and ask them to restate their team number to the entire class at the start of their pitch (helps with voting)
* Show each challenge to the entire class (remember that teams have different challenges)
* Team representative present their ideas in 30 second or less
	+ Keep time and stop any pitch that goes over 30 seconds
	+ You collect their challenge sheet after they complete their pitch
* After each representative has pitched his/her idea for challenge 1 call a class vote for the best idea for challenge 1
	+ Note the winning pitch (for the final challenge phase)
	+ Allow all representatives to go back to their seat to vote
* Move to challenges 2 to 5 pitches
* Remind the class that a wild card will be drawn from the previous challenges non-winning teams to enter the final challenge
* Handout the final challenge to everyone in the class and encourage everyone to develop the best idea and pitches for the final challenge
* Repeat the process above by offering 5 minutes to develop an idea for the final challenge
* Call up team spokesperson for each challenge to the front of the room
* Select a wild card from the non-winning teams and call the spokesperson to the front of the room
* Teams present their ideas in 30 second or less (same as above)
* Everyone in the class votes on their favorite idea to solving the final challenge

**Debriefing (5-10 minutes depending on the time available)**

As part of the debriefing, ask students:

* *What they enjoyed most?* The majority of our students report enjoying the fast pace, competitive and gaming nature of the activity.
* *What did they learn?* Students report how it easy it is to incorporate the universal principles into the design phase versus trying to adapt later.
* *How will they apply this in the future?* Students report not having thought how easy it was to consider applying universal design principles. They are initially hesitant about applying Universal Design Principles as part of an entrepreneurship course, but reflect afterwards that creativity is about opening the mind to possibilities.

**Facilitator Feedback**

We have found that students migrate heavily on the development of application when presenting ideas to the challenges but that their ideas are fairly unique and creative. We have found that the use of polling software helps save valuable time and helps create the game atmosphere that makes the learning environment more engaging with a millennium population. Lastly, we have found that some groups can sometimes lose focus. Therefore when voting on the best idea by challenge, we recommend that you emphasize the importance of mentioning the universal principle(s) being used (shows mastery) reminding them that the purpose is to find creative, but relevant solutions to problems.

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**Appendix A**

**Universal Design Principles Explained**

**PRINCIPLE ONE: Equitable Use -** The design is useful and marketable to people with diverse abilities.

**Guidelines:**

* Provide the same means of use for all users: identical whenever possible; equivalent when not.
* Avoid segregating or stigmatizing any users.
* Provisions for privacy, security, and safety should be equally available to all users.
* Make the design appealing to all users.

**PRINCIPLE TWO: Flexibility in Use** - The design accommodates a wide range of individual preferences and abilities.

**Guidelines:**

* Provide choice in methods of use.
* Accommodate right- or left-handed access and use.
* Facilitate the user's accuracy and precision.
* Provide adaptability to the user's pace.

**PRINCIPLE THREE: Simple and Intuitive** - Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

**Guidelines:**

* Eliminate unnecessary complexity.
* Be consistent with user expectations and intuition.
* Accommodate a wide range of literacy and language skills.
* Arrange information consistent with its importance.
* Provide effective prompting and feedback during and after task completion.

**PRINCIPLE FOUR: Perceptible Information -** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

**Guidelines:**

* Use different modes (pictorial, verbal, tactile) for redundant presentation of essential information.
* Provide adequate contrast between essential information and its surroundings.
* Maximize "legibility" of essential information.
* Differentiate elements in ways that can be described (i.e., make it easy to give instructions or directions).
* Provide compatibility with a variety of techniques or devices used by people with sensory limitations.

**PRINCIPLE FIVE: Tolerance for Error-** The design minimizes hazards and the adverse consequences of accidental or unintended actions.

**Guidelines:**

* Arrange elements to minimize hazards and errors: most used elements, most accessible; hazardous elements eliminated, isolated, or shielded.
* Provide warnings of hazards and errors.
* Provide fail safe features.
* Discourage unconscious action in tasks that require vigilance.

**PRINCIPLE SIX: Low Physical Effort -** The design can be used efficiently and comfortably and with a minimum of fatigue.

**Guidelines:**

* Allow user to maintain a neutral body position.
* Use reasonable operating forces.
* Minimize repetitive actions.
* Minimize sustained physical effort.

**PRINCIPLE SEVEN: Size and Space for Approach and Use -** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

**Guidelines:**

* Provide a clear line of sight to important elements for any seated or standing user.
* Make reach to all components comfortable for any seated or standing user.
* Accommodate variations in hand and grip size.
* Provide adequate space for the use of assistive devices or personal assistance.

**Appendix B**

**Universal Design Principles Summary**

**PRINCIPLE ONE: Equitable Use -** The design is useful and marketable to people with diverse abilities.

**PRINCIPLE TWO: Flexibility in Use -** The design accommodates a wide range of individual preferences and abilities.

**PRINCIPLE THREE: Simple and Intuitive -** Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

**PRINCIPLE FOUR: Perceptible Information -** The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

**PRINCIPLE FIVE: Tolerance for Error-** The design minimizes hazards and the adverse consequences of accidental or unintended actions.

**PRINCIPLE SIX: Low Physical Effort -** The design can be used efficiently and comfortably and with a minimum of fatigue.

**PRINCIPLE SEVEN: Size and Space for Approach and Use -** Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

**Appendix C**

**Sample Challenge**

Allie is a single mother of two children and an architect. A recent illness caused her to lose her peripheral vision on her right side, creating challenges for her when driving. Allie needs to maintain her driving ability so that she can get to work, get her kids to school and activities, and run the errands necessary for her household.

**Appendix D**

**Challenge 1**

Kyra loves to bake but has limited reading skills. She likes to use recipes from cookbooks and from products (e.g, brownie boxes, cans of soup), but currently has to have someone read her the recipes. She wants to bake on her own. Her computer has a text-to-speech tool, but she can only use it for digital material; she has no way of reading brownie boxes, her mom’s handwritten recipes, or printed cookbooks.

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).

**Challenge 2**

Peter is a young adult with autism. He has a job, lives on his own, and drives. He is lonely though, as he has challenges in social situations. When interacting with others, he often dominates the conversation and doesn’t give others a chance to talk. He does not have a good sense of time nor does he read social cues well. As a result, he often does not realize that he has been talking for a long time.

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).

**Challenge 3**

Julisa is a young adult with an intellectual disability who wants to live on her own. She is capable of taking care of herself when she remembers to take her medication on time. Unfortunately she often forgets, and has lied about it. This poses serious health and safety risks. Her family is looking for a solution that will not only help her take her medication, but will also give them confidence that she has done so effectively.

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).

**Challenge 4**

Casey is a young adult with an intellectual disability who wants more independence from her family. She is comfortable by herself in many places, including local parks, shopping centers, the library, and work. However, she does not drive and has limited access to public transportation, so must rely on others. She has trouble calling for rides because the many icons on her phone are confusing (and small).

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).

**Challenge 5**

Jamel is a sophomore with an intellectual disability who has significant challenges navigating campus. He does not read maps well, and his current gps only works with locations that have a street address. His challenge is in finding places like his dorm room within his dorm, his classroom in Robert Scott Small, and the mail center. He hates having a mentor accompany him for directions.

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).

**Appendix E**

**Final Challenge**

Jason is a young adult with autism who lives on his own, has a job, and can drive. In most ways he is independent. However, he has difficulty with complex decisions, like what cell phone plan to use or which car insurance to buy. Especially difficult are decisions that involve multiple options that cannot be compared directly (e.g., unlimited data use for $100 versus a free new phone every year).

**Team Representative Instructions**

Your Group# (3 seconds – as assigned by instructor):

Name of product or service that you would create (3 seconds):

How will it address the challenge you were given (10 seconds):

How and why will it be of appeal to a universal audience, beyond disability? Be sure to explain how this product/service goes beyond options already available on the market, and is more than a simple app (14 seconds).