




Heroes and Differences

Two Active Learning Experiences for Student Success



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Thanks!

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 - Bruce Hesse

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Stan State's STEM Success grant

- Aims to increase the number of STEM degrees received by Hispanic and other historically underrepresented students
- Focuses in part on **psychosocial factors** ("non-cognitive skills") that impact academic success

Not "traditionally"



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Psychosocial factors for students in transition

- Academic capital
- Sense of belonging
- Self-efficacy
- Resilience
- Future vision
- etc.

Especially if first generation

Especially if underrepresented

Especially if needing remediation



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Example: Cruz's Dream (from Cars 3)




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Psychosocial factors for students in transition

- Academic capital ✓ Mentor
- Sense of belonging ✓ Community (others are like me!)
- Self-efficacy ✓ Growth mindset
- Resilience ✓ Increase sense of belonging
- Future vision ✓ Connect academics to career plans
- etc.



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Two activities

- Hero's Journey
 - Helps students realize they are in a transition that will challenge them
 - Helps students recognize and connect with campus resources such as mentors, tutoring center, etc.
 - Builds academic capital and future vision
- Similarities/Differences Game
 - Helps students recognize they are part of a community
 - Increases sense of belonging



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General features

- Can be implemented in 1-2 hours in a classroom
- “Safe zone” climate is essential!
 - Students must feel comfortable sharing highly personal information
 - Respect privacy/confidentiality
- May trigger strong emotions
 - Have contingency plans in place
- May be as transformative for faculty/staff as for students

Students don't do optional



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The Hero's Journey

- Used as a pedagogical tool for incoming STEM students by Elizabeth Imhof at Santa Barbara City College, helping to improve academic performance
- Frequently cited in the literature to **explain** educational transitions, but not to **facilitate** them
- Draws on Joseph Campbell's (1949) concept of the monomyth as ubiquitous across eras and cultures



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The Hero's Journey

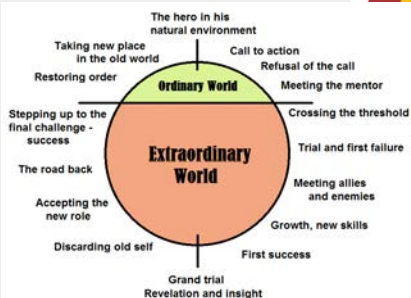
- The hero traverses a common sequence of events



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The Hero's Journey

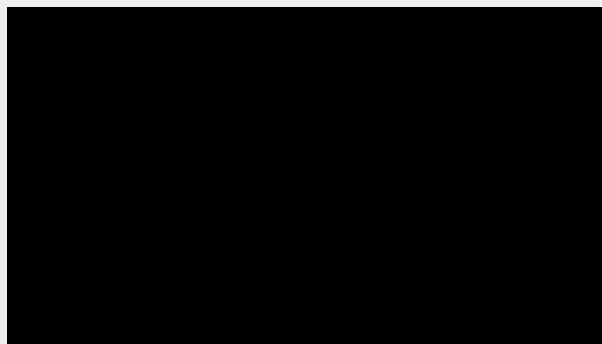
- Propose to students that college is a hero's journey
- Discuss the stages with students, to start them thinking about where they are in their journeys
- Provide fun examples, or ask students to find examples, to improve engagement



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Call to action (from Moana)



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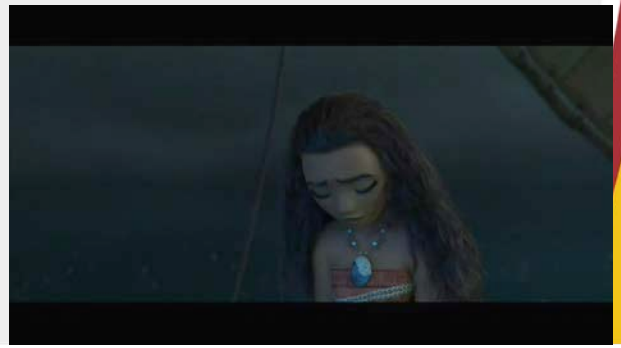
Crossing the threshold (from *Big Hero 6*)



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Accepting the new role (from *Moana*)



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The Hero's Journey

- The journey also involves archetypal characters



Glove and Boots

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The Hero's Journey

- Propose to students that archetypal characters are campus resources
- Provide fun examples, or ask students to find examples



Cars

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The Hero's Journey

- Ask students to engage in small-group discussions about their current or previous journeys
- Report out to the entire class
- Use additional activities to internalize the lessons and help them "stick"
 - Write an essay or present a skit describing a friend's journey
 - Create an artifact representing a journey (e.g., Laura Rendón's cajita projects)
 - Assemble a playlist, or create a video or photo montage

Match the activity to the class



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The Hero's Journey

- Our turn!
 - Form groups of 4-6 people and introduce yourselves to each other
 - If you have a compelling journey narrative, share it with your group
 - Afterwards, briefly report out to the entire room anything impactful



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The Hero's Journey

• Ground rules

- Give thoughtful feedback
- Respect others and their thoughts
- Offer support and ideas
- Use kind words
- Participate
- Stay focused

What happens in Grand 2 stays in Grand 2



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The Hero's Journey

- What did you learn?
- How might you adapt this for your institution?



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The Similarities/Differences (SimDiff) Game

- Based on a study by Stephens, Hamedani, and Destin (2014)

Research Article

Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition

Nicole M. Stephens¹, MarYam G. Hamedani², and Mesmin Destin^{3,4}

¹Kellogg School of Management, Northwestern University; ²Center for Comparative Studies in Race and Ethnicity, Stanford University; and ³Department of Psychology, Northwestern University; and ⁴School of Education & Social Policy, Northwestern University

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The SimDiff Game

- Students in transition heard a demographically diverse panel of juniors and seniors answer questions illustrating that their varied backgrounds served as assets, rather than deficits, in meeting challenges
- To make the activity “stick,” the students in transition created a short video testimonial for future students
- Among first-generation students especially ...
 - Better use was made of college resources
 - GPA was higher 1 year later



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The SimDiff Game

- Gamifying Stephens et al. (2014) makes it easier to implement as a classroom activity while still helping the lesson “stick”
- Could be more fun
- Most questions are modified from Stephens et al. (2014)
 - Students can have a wide variety of experiences when they have major transitions in their lives, such as moving, attending a new school, beginning a new job, or starting a family. Describe one of your transitions and how you experienced it.

CAUTION
AREA UNDER CONSTRUCTION



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The SimDiff Game

- College students come from many different backgrounds. How might your background help you complete your undergraduate studies?
- What experiences that you had earlier in your life prepared you to excel later in ways that you wouldn't have anticipated at the time?
- People go to college for many different reasons. What does going to college mean to you?
- Provide an example of an obstacle that you faced in your academic career, and describe how you overcame that obstacle.



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The SimDiff Game

- What are the important relationships in your life, and how will you maintain these relationships as you complete your academic career?
- How have your personal values impacted your academic and career choices?*
- How have your personal values helped you overcome challenges?*

* Based on values affirmation research by Miyake et al. (2010)



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Values affirmation research

DETOUR



Reducing the Gender Achievement Gap in College Science: A Classroom Study of Values Affirmation

Akira Miyake,^{1*} Lauren E. Kost-Smith,² Noah D. Finkelstein,² Steven J. Pollock,² Geoffrey L. Cohen,³ Tiffany A. Ito¹

In many science, technology, engineering, and mathematics disciplines, women are outperformed by men in test scores, jeopardizing their success in science-oriented courses and careers. The current study tested the effectiveness of a psychological intervention, called values affirmation, in reducing the gender achievement gap in a college-level introductory physics class. In this randomized double-blind study, 399 students either wrote about their most important values or not, twice at the beginning of the 15-week course. Values affirmation reduced the male-female performance and learning difference substantially and elevated women's modal grades from the C to B range. Benefits were strongest for women who tended to endorse the stereotype that men do better than women in physics. A brief psychological intervention may be a promising way to address the gender gap in science performance and learning.

The substantial underrepresentation of women in science, technology, engineering, and mathematics (STEM) disciplines has long concerned policy-makers and the educational community (1, 2). In 2006, women earned only 28% of Ph.D.s in physical sciences, 25% in mathematics

and computer science, and 20% in engineering in the United States (3). Although women made up 47% of the North American workforce in 2009, the percentage of women in lucrative technical professions, such as "computer and mathematical occupations" and "architecture and engineering occupations," reached only 25% and 14%, respectively (4). Similar underrepresentation of women in STEM-related professions is also evident in other parts of the world (5).

The gender gap in STEM disciplines goes beyond the limited representation of women. In college physics—the field studied in the present investigation—women earn lower exam grades and lower scores on standardized tests of conceptual mastery (6, 7). Students' prior background and preparation in mathematics and physics, iden-

¹Department of Psychology and Neuroscience, University of Colorado at Boulder, Boulder, CO, USA. ²Department of Physics, University of Colorado at Boulder, Boulder, CO, USA. ³School of Education, Department of Psychology, and Graduate School of Business, Stanford University, Palo Alto, CA, USA.

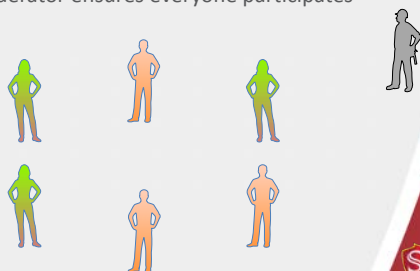
*To whom correspondence should be addressed. E-mail: akira.miyake@colorado.edu

26 NOVEMBER 2010 VOL 330 SCIENCE www.sciencemag.org

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The SimDiff Game

- Ideal for small groups (6-8 students), but larger groups work if a moderator ensures everyone participates

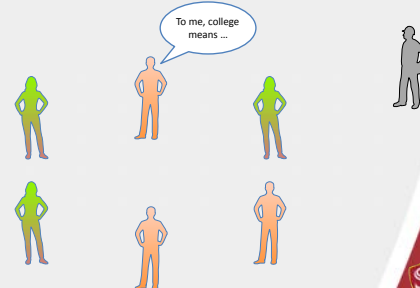


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The SimDiff Game

- One student answers a SimDiff question

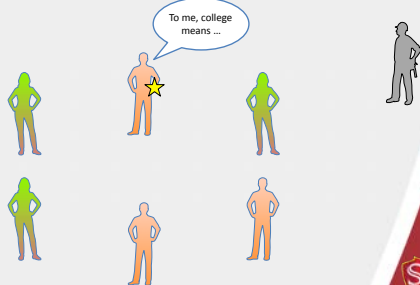


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The SimDiff Game

- One student answers a SimDiff question, and earns a token

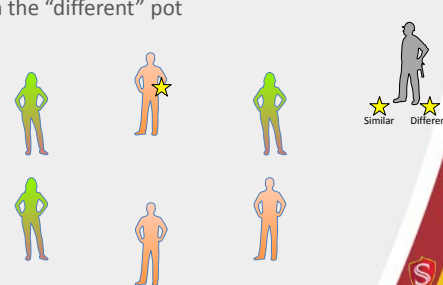


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The SimDiff Game

- The moderator puts one token in the "similar" pot and one token in the "different" pot

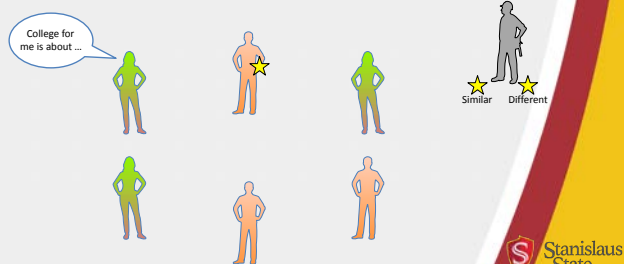


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The SimDiff Game

- A second student answers the same question



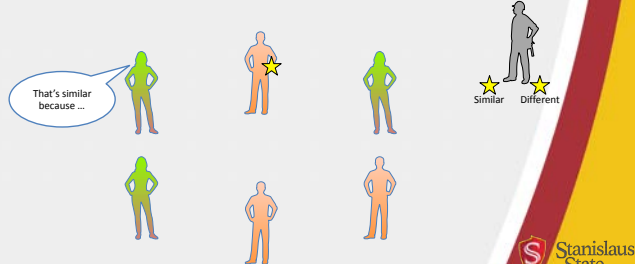
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The SimDiff Game

- A second student answers the same question, and explains how the answer is similar (or different)



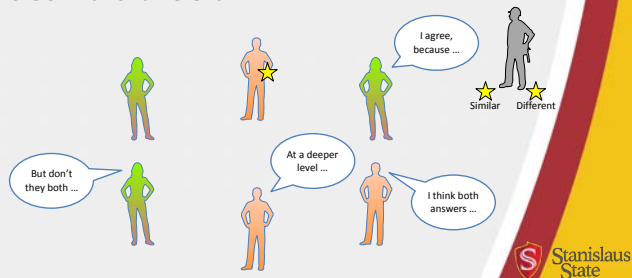
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The SimDiff Game

- All the students debate whether the two answers are more similar or different



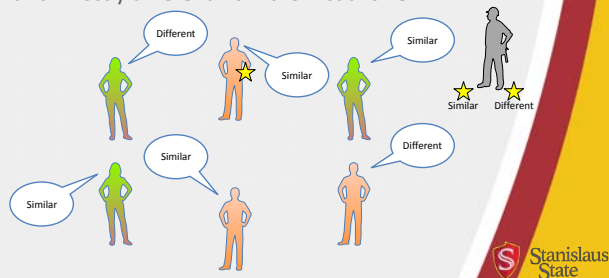
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The SimDiff Game

- The students vote whether the second answer is mostly similar or mostly different from the first answer



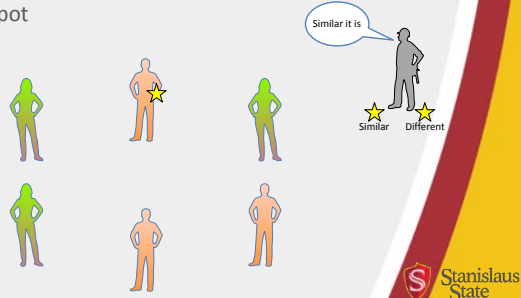
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The SimDiff Game

- The moderator awards the tokens from the appropriate pot



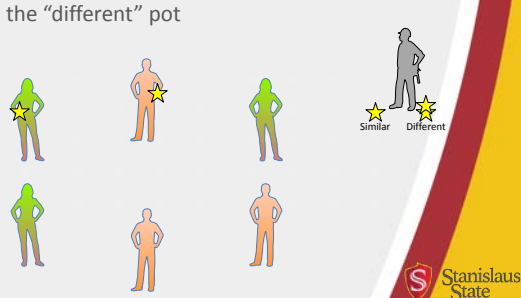
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The SimDiff Game

- The moderator adds one token to the "similar" pot and one token to the "different" pot



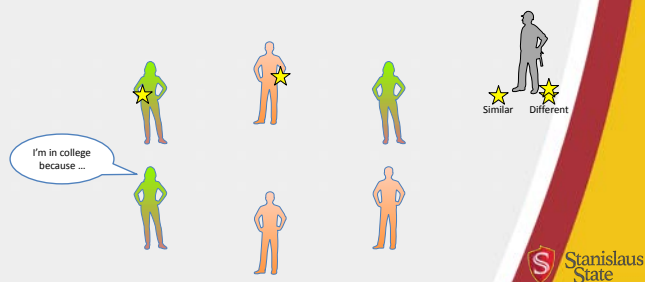
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The SimDiff Game

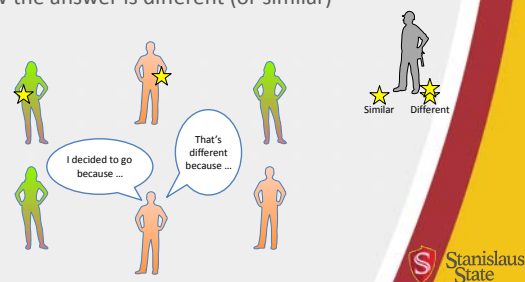
- Another student answers the question



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The SimDiff Game

- The next student answers the same question, and explains how the answer is different (or similar)



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The SimDiff Game

- The students debate, then vote if the answer is mostly similar or mostly different from the previous answer
- The moderator awards the token(s) from the appropriate pot and adds one token to each pot
- Repeat the cycle, changing questions when students appear ready to move on to a new question
 - Sometimes students really want to answer a question
- Superficial similarities and differences don't count



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The SimDiff Game

- When the game ends, allow all students to choose prizes
 - Choose in order of number of tokens earned
- Impactful features
 - Encourages students to consider how people differ but are nevertheless similar
 - Analyses quickly become "deep" (higher level in Bloom's taxonomy)



Goal of difference education

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The SimDiff Game

- Our turn!
 - Remember the **GROUPS** ground rules
 - There are no right or wrong answers

Grand 2 is a no judgment zone!

How have your personal values impacted your academic and career choices?

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The SimDiff Game

- What did you learn?
- How might you adapt this for your institution?



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Quantitative evidence

- Hero's Journey (with students creating a skit) was combined with SimDiff game in a summer residential academy for incoming STEM majors
- One year later, retention of freshmen in STEM was 100%, compared to 67% of freshmen in a comparison group

Small *n*

Possible selection biases

Many other activities during those 4 weeks

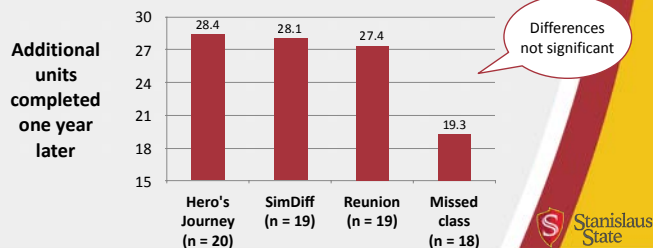


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Quantitative evidence

- Students in a psychology careers class were randomly assigned (after matching) to the Hero's Journey, SimDiff, or a control condition (a 10-year reunion)



Differences not significant

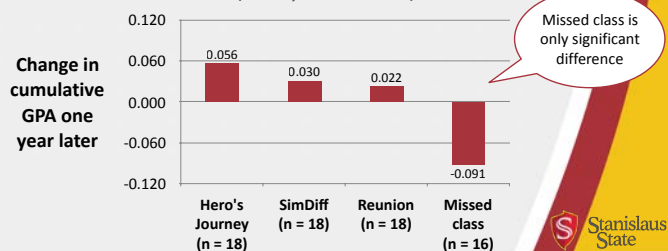


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Quantitative evidence

- Students in a psychology careers class were randomly assigned (after matching) to the Hero's Journey, SimDiff, or a control condition (a 10-year reunion)



Missed class is only significant difference



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Qualitative evidence: Hero's Journey

- "I really enjoyed this activity ... as well as learning about other people's journeys"
- "I liked getting to know my peers and learning about the struggles they had/have. In some cases, I learned that we had similar obstacles in life."
- "I learned what a true mentor is"
- "I ... learned that a mentor doesn't necessarily have to be someone who is of higher intelligence than you, but instead someone who gives support"

Classrooms rarely facilitate this



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Qualitative evidence: Hero's Journey

- "We all go through different things but we are not alone"
- "There are many things that I have in common with other people. ... Some of the ways I feel or have been struggling with, they had the same experiences."
- "My peers and I share the same struggle"
- "Everyone is the hero of their own story"



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Qualitative evidence: SimDiff Game

- "A lot of the responses were personal & gave us a chance to learn about our peers"
- "We all have our differences but we also have similarities, things that bring us together"
- "[The game] helped me reflect on why I chose psychology"
- "Sharing personal information made me feel a connection with other students"



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Qualitative evidence: SimDiff Game

- “Everyone goes through different obstacles in life & they are just opportunities to learn from them”
- “We are more similar than we are different”



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