

*"I find my work being both theoretically fascinating,  
practically stimulating and personally engaging...  
... today I will speak about my work done at UC Berkeley  
regarding Innovation and Entrepreneurship."*

*/Charlotta*

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## Collaborators



Ikhtlaq Sidhu  
SCET, UC Berkeley  
Engineering



Ken Singer  
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Social Science



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JYU, Finland  
Business Admin.



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Engineering

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# Innovation and Entrepreneurship

## CREATIVITY

“Ability to come up with novel ideas”

## INVENTION

“Discovery of a novel idea, concept or tool”

## INNOVATION

“Successful implementation and use of a novel idea”

## ENTREPRENEURSHIP

“Ability to commercialize the innovation”

## ENTREPRENEURIAL MINDSET

“The set of skills, abilities and behaviors needed for innovation and entrepreneurship”

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# Innovation and Entrepreneurship – why?



Become more successful  
as an entrepreneur



Develop professional skills  
for an intrapreneurial  
career

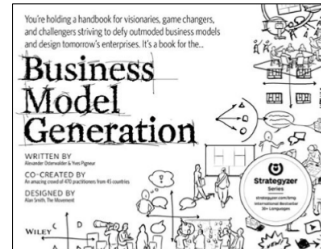
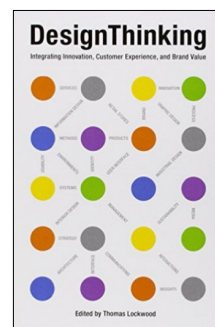
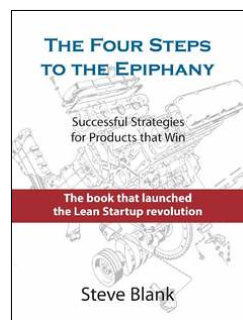
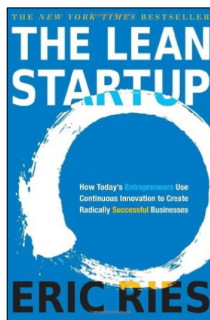


Help mentor and coach  
other people

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## Entrepreneurship training – what?

Lean Startup, NABC, Design Thinking,  
Business Model Canvas, Berkeley  
Method of Entrepreneurship, etc.....



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## Innovation and Entrepreneurship – what?

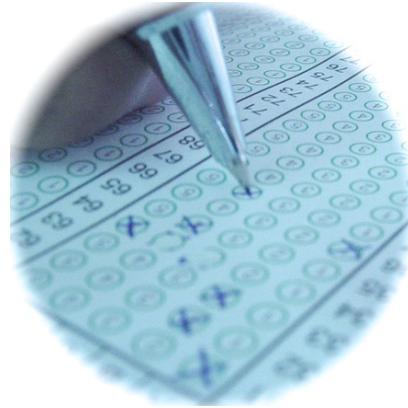


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## Applied discipline or Natural science?



Can it be taught prescriptively, like many other science subjects?



Can the test simply test for retention?

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## Innovation and Entrepreneurship – what?



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## Similar or Different?



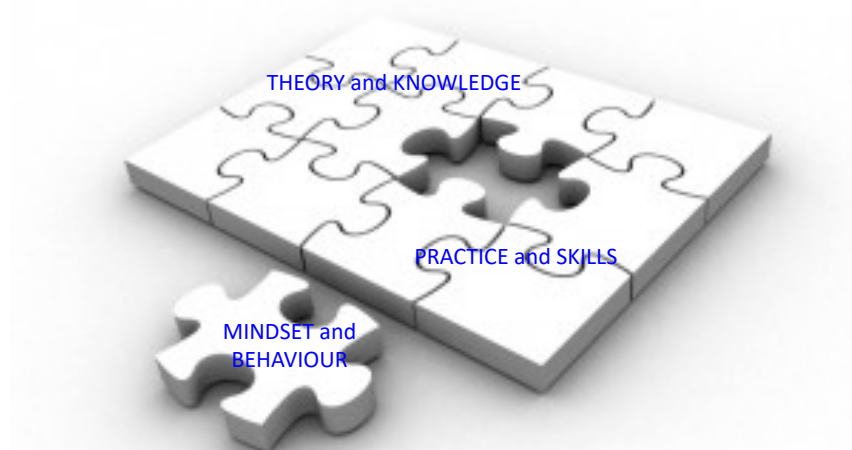
Behaviors

Mindsets

Culture

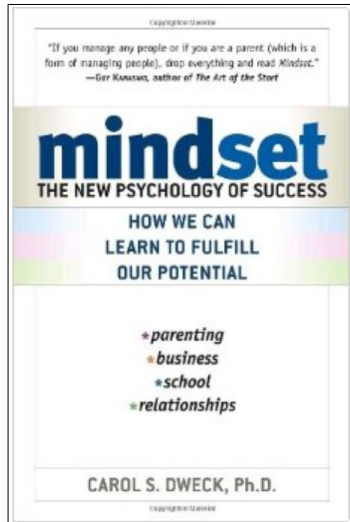
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## Innovation and Entrepreneurship – what?



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## Mindset and Behaviors



In one world, effort is a bad thing.

It, like failure, means you **are** not smart or talented. If you were, you wouldn't need effort.

In the other world, effort is good.

It is what **makes** you smart or talented.

- Carol Dweck

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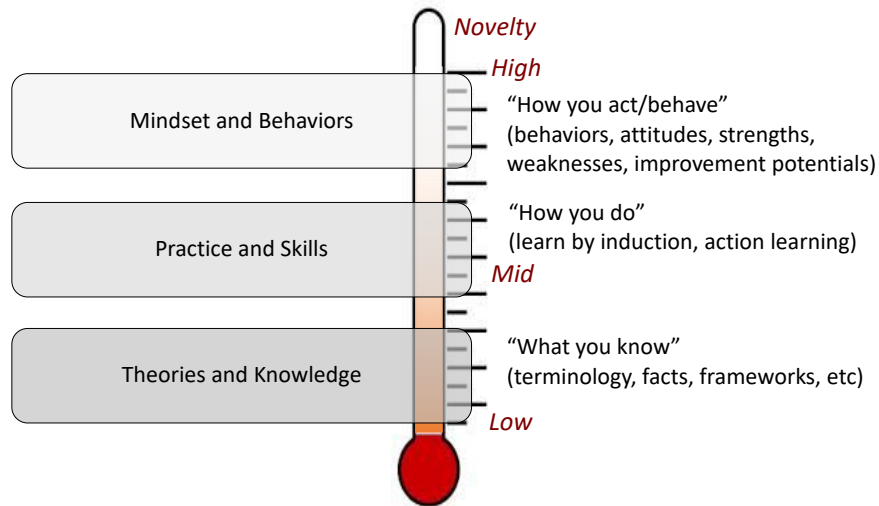
## Mindset and Behavior

I think intelligence is something you have to work for ... it isn't just given to you.... Most kids, if they're not sure of an answer, will not raise their hand to answer the question. But what I usually do is raise my hand, because if I'm wrong, then my mistake will be corrected. Or I will raise my hand and say, 'How would this be solved?' or 'I don't get this. Can you help me?' Just by doing that I'm increasing my intelligence.

- a 7 year old, captured by Carol Dweck

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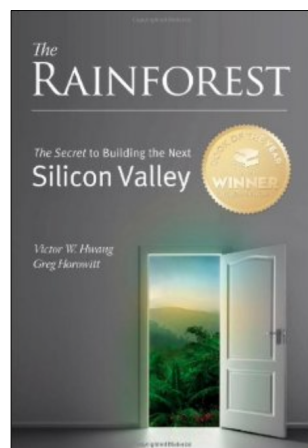
## Entrepreneurial mindset



Johnsson et al (2016): “A student-centered and mindset-focused pedagogical approach for entrepreneurship and leadership”, *Applied Innovation Review*, Issue 2, 2016.

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## Behaviors of successful entrepreneurs



The rules in the Rainforest are simple, informal, and practiced by the species in the Rainforest. If everyone has these behaviors, a culture is formed which generates extraordinary creativity and output.

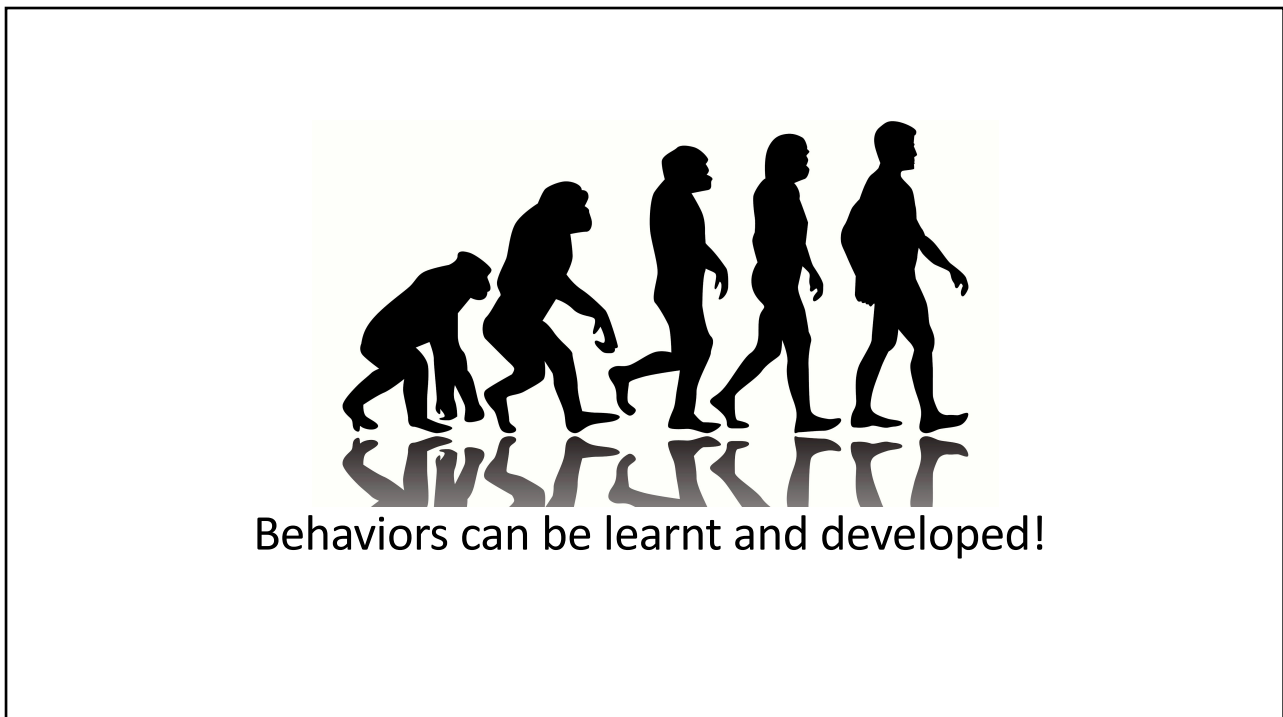
- The Rainforest by V. Hwang and G. Horowitz

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<b>Berkeley Method of Entrepreneurship</b>		Pay it Forward	<i>Story Telling</i>
<i>Cultural behaviors for Entrepreneurs</i>	Believe	<b>Friend Or Foe</b>	Seek Fairness
<b>Plan2fail</b>	DivEsiFY	<i>Role Model</i>	
 Pantas and Ting <b>Sutardja Center</b> for Entrepreneurship & Technology Berkeley Engineering		Good Enough	<b>Collaboration</b>

everyone in a community acts like this, there will be a vibrant entrepreneurial culture

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## Action - Reflection



Action-learning through  
BMoE Games





Debriefing discussions and  
individual self-reflection

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Which of the BMoE behaviors  
can be measured in psychology?

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<b>Berkeley Method of Entrepreneurship</b>		<b>Pay it Forward</b>	<i>Story Telling</i>
Cultural behaviors for Entrepreneurs	<b>Believe</b> (confidence, Mental strength)	<b>Friend Or Foe</b> (trust)	Seek Fairness
<b>Plan2fail</b> (resilience)	DivEsiFY	<b>Role Model</b>	
		<b>Good Enough</b> (Resources)	<b>Collaboration</b>

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<http://berkeleyinnovationindex.org/>


BII

BERKELEY INNOVATION INDEX

Know your innovative self.

Project Code: U-LUND

If you want the result sent to you, also include your email (end of questionnaire)



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## Does it work?

- Berkeley Innovation Index
  - A set of questions, related to the identified behaviors, can be answered
  - An innovation-score is calculated
  - Pre and post course scores for a cohort can be compared
- Preliminary positive results

Sidhu et al (2016): "Berkeley Innovation Index: An Approach for Measuring and Diagnosing Innovation", Trondheim, Norway, June 2016.

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Berkeley Method Multi-Facet Algorithm, Alpha Release 1.4



### INNOVATION MINDSET:

Your personal Innovation Mindset Level is currently 7.60 out of 10

This is not a fixed level, anyone can grow their innovation mindset. Your level has been estimated using an analysis based on the Berkeley Method for Entrepreneurship & Innovation, the Comfort Zone Scale, and fundamental testing methods in social psychology.

The following factors are components of your innovation mindset:

TRUST level: 9.14 out of 10. This is your ability to trust others.

RESILIENCE level: 3.23 out of 10. This is your ability to overcome failure.

DIVERSITY level: 5.66 of 10. This is your ability to overcome social barriers.

MENTAL STRENGTH level: 7.61 of 10. This is a measure of your confidence and belief that you can succeed.

COLLABORATION level: 8.91 of 10. This is your ability to work with everyone including competitors when needed.

RESOURCE AWARENESS level: 7.52 of 10. This is your ability to balance your resources across multiple objectives.

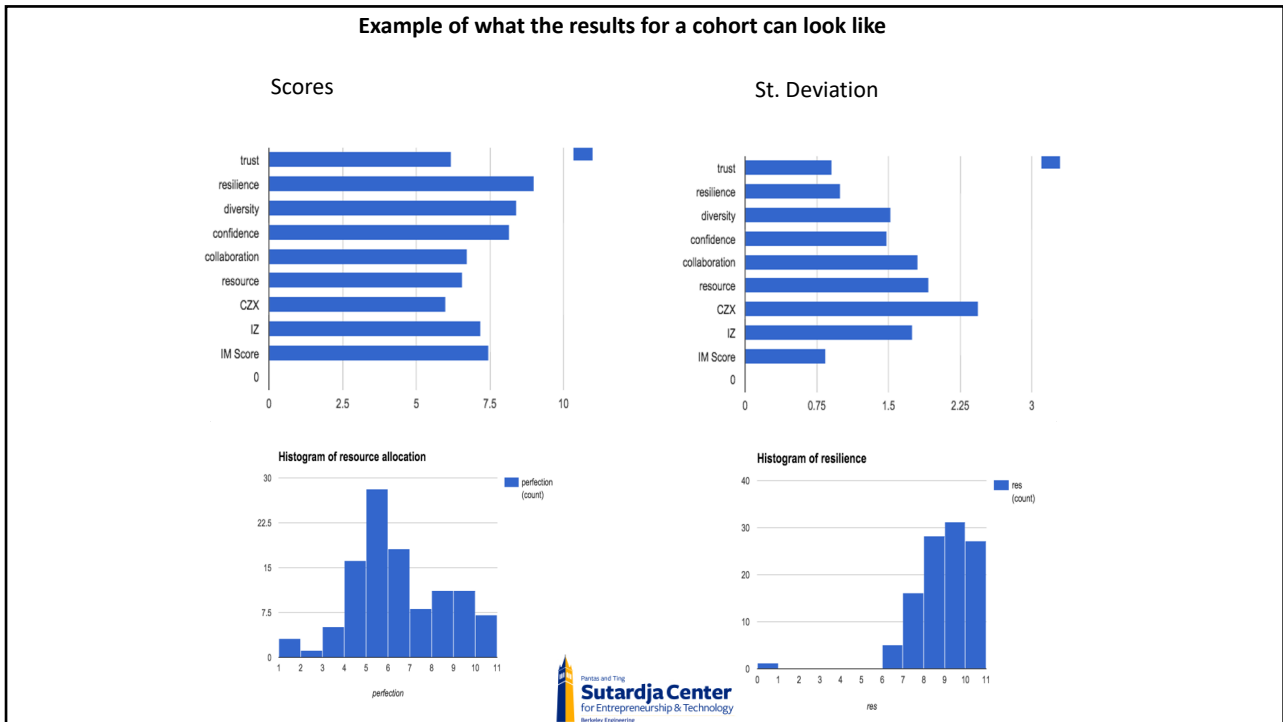
INNOVATION ZONE level: 7.50 of 10. This is a measure of your ability to work in areas of uncertainty.

These scores are normalized. The average score of the general population is 5.5 of 10.0 in each component above.

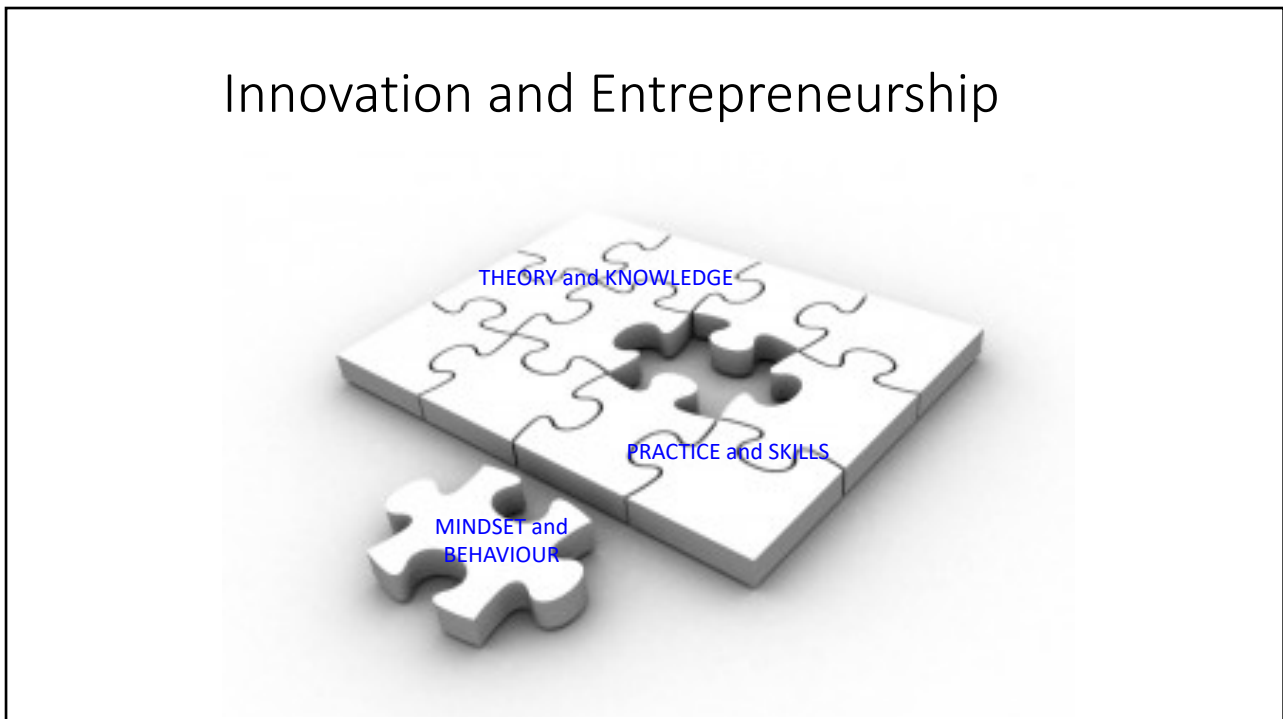
### MINDSET ANALYSIS:

Based on your comfort with ambiguity, your MINDSET covers both operations and innovation, but LEANS towards INNOVATION. If you have interest in operational innovation and precision, you should pre-analyze situations and focus more on risk mitigation.

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Entrepreneurial Mindset  
Swe: Entreprenörsanda

<b>Berkeley Method of Entrepreneurship</b>		<b>Pay it Forward</b>	<i>Story Telling</i>
<i>Cultural behaviors for Entrepreneurs</i>	<b>Believe</b>	<b>Friend Or Foe</b>	<b>Seek Fairness</b>
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 <b>Sutardja Center</b> for Entrepreneurship & Technology Berkeley Engineering		<b>Good Enough</b>	<b>Collaboration</b>

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THANK YOU!

## Innovation and Entrepreneurship

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**LUND UNIVERSITY**



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## Outcome – bookchapters, journals

Fred-Ojala, A., Sidhu I., Johnsson C., Suoranta M. (2018): "Berkeley Innovation Index: A quantitative Approach to Measuring, Tracking and Forecasting Innovation Capability for individuals and organisations", *Published in Springer Series: Lecture notes in Electrical Engineering Volume 513, Book Title: Mobile and Wireless Technology 2018, p. 311-320, ISBN: 978-981-13-1058-4, doi: 10.1007/978-981-13-1059-1\_29*

Johnsson C., Sidhu I., Suoranta M., Singer K. (2017): "Guiding students towards an entrepreneurial mindset", *Published in Learning in Higher Education: Teaching and Learning Entrepreneurship in Higher Education, July 2017. Libri Publishing.*

Johnsson C., Loeffler R., Sidhu I., Nilsson C.-H. (2016): "A Student-Centered Approach and Mindset-Focused Pedagogical Approach for Entrepreneurship and Leadership", *Applied Innovation Review, Issue 2, pp. 57-63, June 2016.*

Sidhu I., Johnsson C., Singer K., Suoranta M. (2015): "A Game-based Method for Teaching Entrepreneurship", *Applied Innovation Review, Issue 1 pp. 51-65, June 2015.*

Lu S., SU H., Johnsson C., Wang Y., Xie L. (2015): "Modelling and Optimization Methods of Integrated Production Planning for Steel Plate Mill with Flexible Customization", *Chinese Journal of Chemical Engineering*. doi:10.1016/j.cjche.2015.10.003

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## Outcome - conferences

Fred-Ojala, A., Sidhu I., Johnsson C., Suoranta M. (2018): "Berkeley Innovation Index: A quantitative Approach to Measuring, Tracking and Forecasting Innovation Capability for individuals and organisations", *ICIMSA'18, Hong Kong, June 23-27, 2018.*

Sidhu I., Fred-Ojala A., Iqbal S., Johnsson C. (2018): "Applying entrepreneurial teaching methods to advanced technical STEM courses. Data-X as a model for Introducing Innovation Behavior into applied technical courses", *accepted for ICE-2018, Germany, June, 2018.* DOI: [10.1109/ICE.2018.8436264](https://doi.org/10.1109/ICE.2018.8436264)

Johnsson C., Sidhu I., Suoranta M., Singer K. (2016): "Guiding students to an entrepreneurial mindset using Berkeley Method of Entrepreneurship", *Workshop on Teaching and Learning Entrepreneurship in Higher Education (LiHE-Summit), Riga, Latvia, October 9-13, 2016.*

Johnsson C., Suoranta M., Sidhu M., Singer K. (2016): "On using games for practicing entrepreneurial mindset", *European Conference on Innovation and Entrepreneurship (ECIE), Jyväskylä, Finland, September 14-16, 2016.*

Sidhu I., Goubet J-E, Weber H., Fredh-Ojala A., Johnsson C., Pries J-C (2016): "Berkeley Innovation Index: An approach for measuring and diagnosing individual's and organizations' innovation capabilities", *Berkeley Concept Paper, February 2016.*

Sidhu I., Singer S., Johnsson C., Suoranta M. (2015): "Introducing the Berkeley Method of Entrepreneurship – a Game-Based Teaching Approach", *American Society for Engineering Education (ASEE) Annual Conference 2015, Seattle, WA, USA, June 14-17, 2015*

Sidhu I., Singer K., Suoranta M., Johnsson C. (2014). "Introducing the Berkeley Method of Entrepreneurship – a game-based teaching approach", *7th Annual Meeting of the Academy of Management Workshop 2014", Philadelphia PA, USA, August 1, 2014.*

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