



Training to Understand Creativity: Can Training Facilitate Recognition of Creative Ideas

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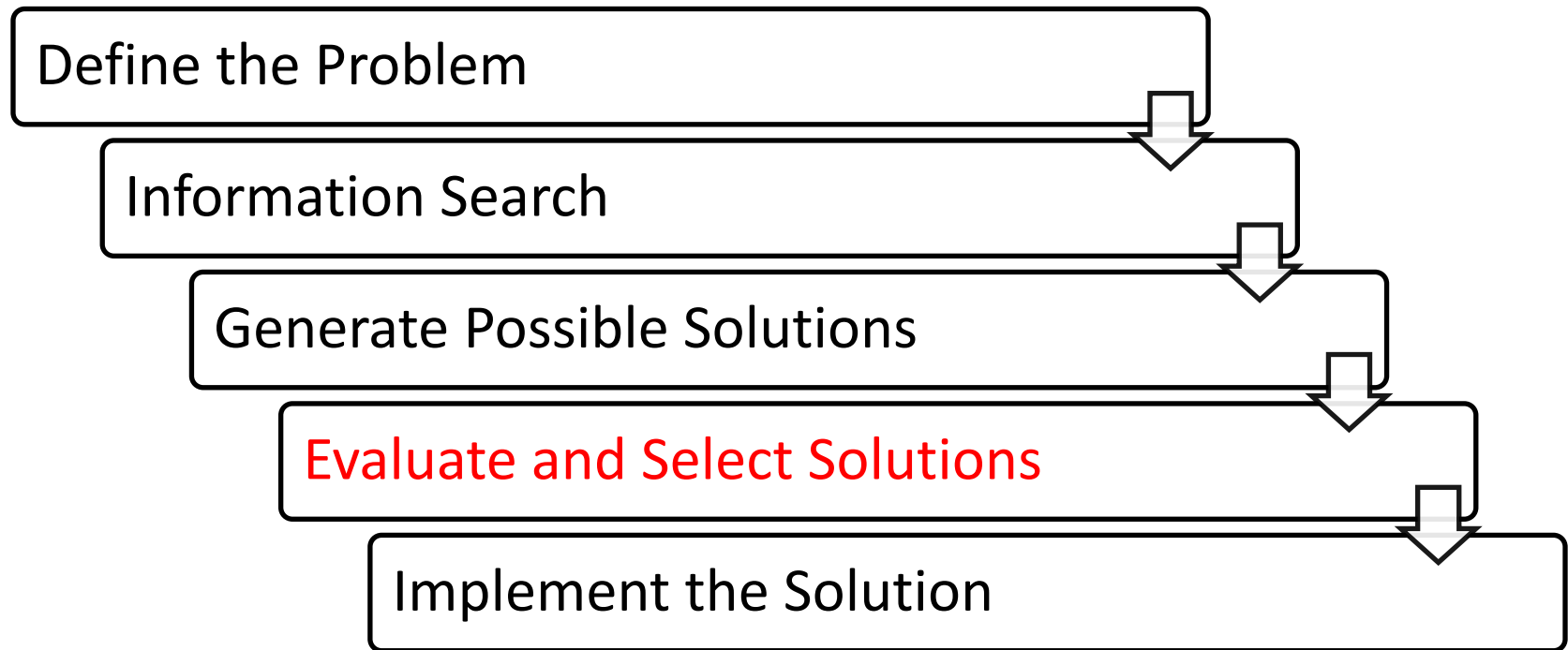


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Creativity

- Defined as an idea, product, or solution that is novel and useful
 - Must be both high quality and high originality
- How do people come up with creative ideas or solutions?
- Thought processes associated with creativity





Idea Evaluation

- How do people determine if a solution or idea is creative?
- Is this a good (high quality) solution?
- Should we keep this idea? Revise? Ignore?



Idea Evaluation

- Understanding of idea evaluation is limited
- Creative individuals recognize creativity

(Basadur, Runco, & Vega, 2000; Berg, 2016; Runco & Chand, 1995)



Idea Evaluation

- **Instructions to choose creative ideas facilitate idea selection**
(Lonegran, Scott, & Mumford, 2004)
- **Active analysis of ideas for originality reduces evaluation error**
(Licucanan, Dailey, & Mumford, 2007)



Idea Evaluation

- Individuals and teams choose less than optimal ideas (Reiter-Palmon et al. 2017)
- This is a result of inaccurate idea evaluation



Why Does it Matter?

- Individuals prefer routine and less risky ideas
(Mumford & Gibson, 2013)
- Managers are not good at identifying creative ideas
(Basadur, Runco & Vega, 2000)



Why Does it Matter?

- Teams are not very good at identifying creative ideas
(Kennel & Reiter-Palmon, 2017)
- Rejection of creative ideas can result in reduced willingness to attempt future creativity
(Beghetto, 2014)



Why Does It Matter?

- Creative ideas that are not identified or recognized as such, will not be selected for implementation
- Missed opportunities



Educational Context

- Students may self censor
- Teachers will fail to recognize and encourage creativity



Training for Creativity

- Individuals instructed to select creative ideas were more likely to do so
(Lonegran, Scott, & Mumford, 2004)
- Training for cognitive processes of creativity facilitates creative problem solving
(Scott, Leritz, & Mumford, 2004)



Research Questions

- Can we train individuals to recognize and assess accurately the creativity of ideas?
- Does the design of the training influence the accuracy of creativity evaluations?



Methods - Participants

- 204 undergraduate business students from a mid-sized, Midwestern university
 - 112 Men (54.9%)
 - 92 Women (45.1%)
- 30 Sophomores (14.7%) 69 Juniors (33.8%), 67 Seniors (32.8%), 38 Graduate Students (18.6%),



Method - Procedure

- Computer based training
- Focus on evaluation of Quality and Originality
- Based on the Consensual Assessment Technique (CAT)

(Amabile, 1983, 1988)



Method – Procedure

- Solutions from a previous study were used
- Solutions previously rated for quality and originality



Design

- 2 (training with practice vs. no practice) x 3 (quality of rating materials) between-subjects design

Level of Training Conditions: Extended Training and Short Training					
Extended Training on Creativity Rating Process with Practice and Calibration			Short Training on Creativity Rating Process Only		
Quality of Rating Materials: Simple, Descriptions, Examples					
Simple Rating Materials with Scale Benchmarks Only	Rating Materials with Scale Benchmarks and Descriptions	Rating Materials with Scale Benchmarks, Descriptions, and Examples	Simple Rating Materials with Scale Benchmarks Only	Rating Materials with Scale Benchmarks and Descriptions	Rating Materials with Scale Benchmarks, Descriptions, and Examples
Condition 1	Condition 2	Condition 3	Condition 4	Condition 5	Condition 6



Design

- Quality of training materials
 - Simple vs. complex materials
 - Simple - simplistic rating scale with only Likert-type anchors for quality and originality
 - Moderate - a rating scale with the Likert-type anchors and description benchmarks at every level of quality and originality



Design

- Quality of training materials contd.
 - Complex - a rating scale with Likert-type anchors, description benchmarks, and example solutions at every level of quality and originality
- Practice
 - Practice – practice problems were given, and feedback about the ratings of the practice problems was provided



Design

- Practice contd.
 - No practice – Review of training materials only
- After training, participants read a real-world problem and 25 solutions
 - Solutions were randomized
- Evaluated solutions for
 - Quality
 - Originality



Measures

- Rating Accuracy
 - Rating accuracy was calculated as the absolute different between participants' and experts' solution Quality/Originality rating for each of the 25 solutions
 - Final scores was the average across all 25 problems



Measures

- Higher scores mean LESS accuracy
- Creativity was calculated as the product: $\text{Quality} * \text{Originality}$



Results

- Participant ratings showed similar differences to those of the experts overall
 - Average absolute difference between expert and participant ratings was less than one for overall creativity ($M = .95$, $SE = .04$), quality ($M = .95$, $SE = .02$), and originality ($M = .97$, $SE = .02$)



Results – Covariates

- Condition means were significantly different in self-reported ACT score across practice conditions
- Used ACT scores as a covariate

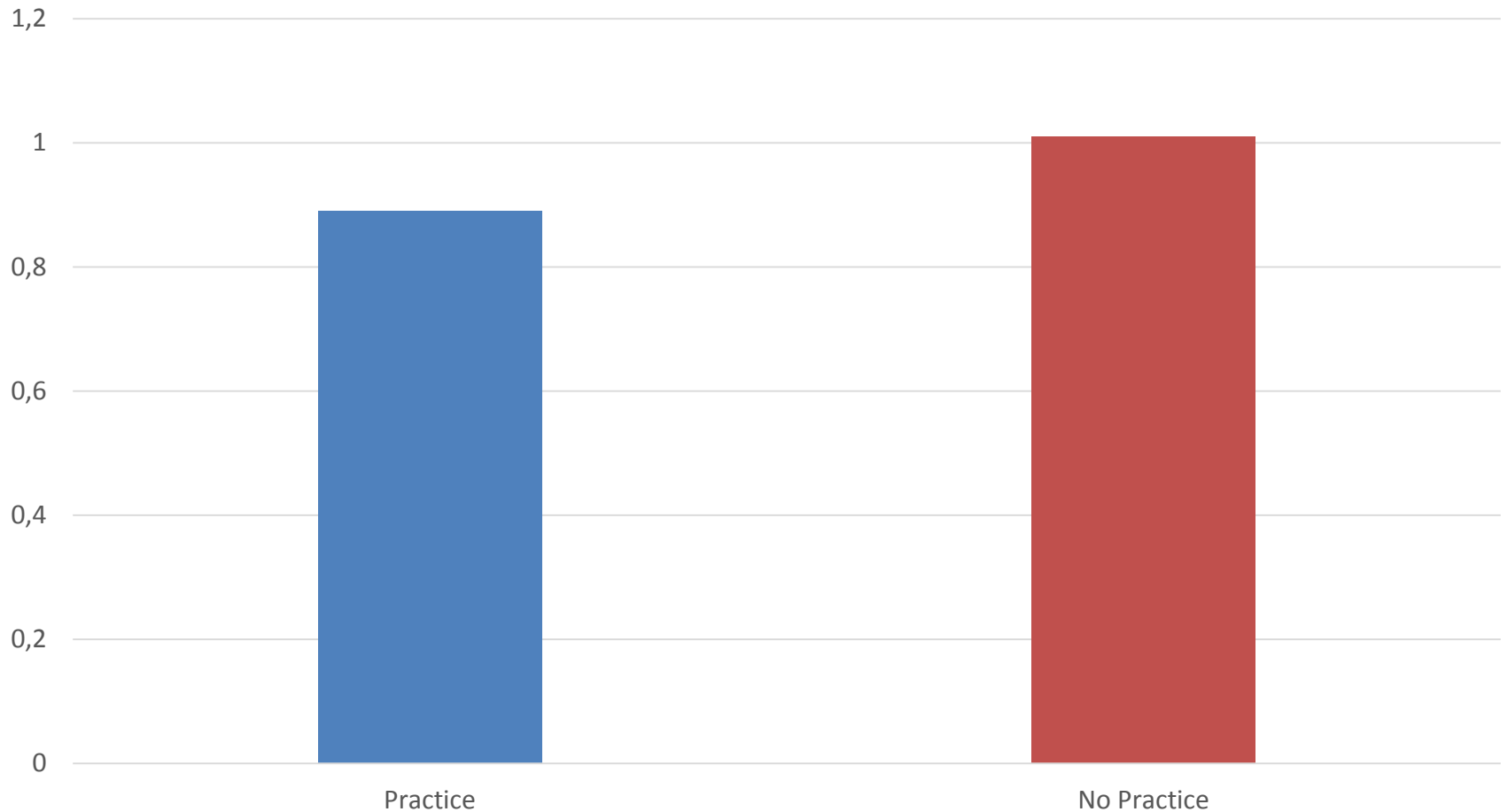


Results - Creativity

- Two way ANCOVA
- Significant main effect for practice
 $F(1, 198) = 4.71, p = .03$
 - Participants who had the opportunity to practice and receive feedback via the training module were more accurate ($M = .89, SD = .54$) in their creativity ratings than participants ($M = 1.01, SD = .47$) who did not practice rating, $F(1, 198) = 4.71, p = .03$



Creativity





Results – Creativity Contd.

- No effect for quality of rating materials
- No significant interaction between practice and quality conditions



Results - Quality

- Main effect for practice, $F(1, 198) = 7.28, p = .01$
 - Participants who completed the training with practice ($M = .93, SD = .24$) were more accurate in their quality ratings than those ($M = 1.01, SD = .25$) who did not have practice rating

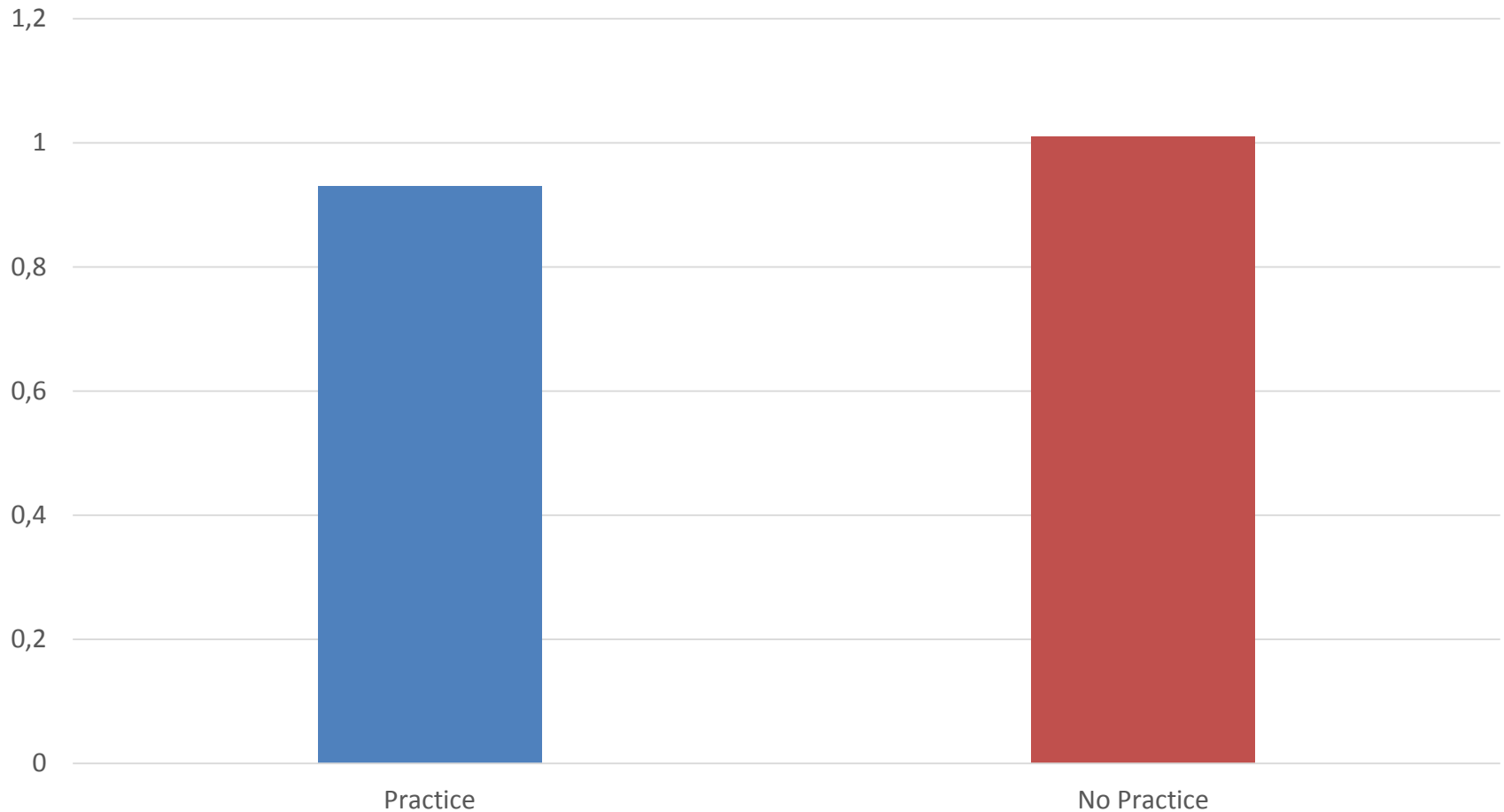


Results - Quality

- Main effect for quality of materials, $F(2,198) = 13.48, p < .001$
 - Participants who were given either a descriptive rubric ($M = .88, SD = .24$) or a rubric with descriptions and examples ($M = .94, SD = .25$) were more accurate than participants given a simple rubric ($M = 1.10, SD = .24$) ($F(2,198) = 13.48, p < .001$)

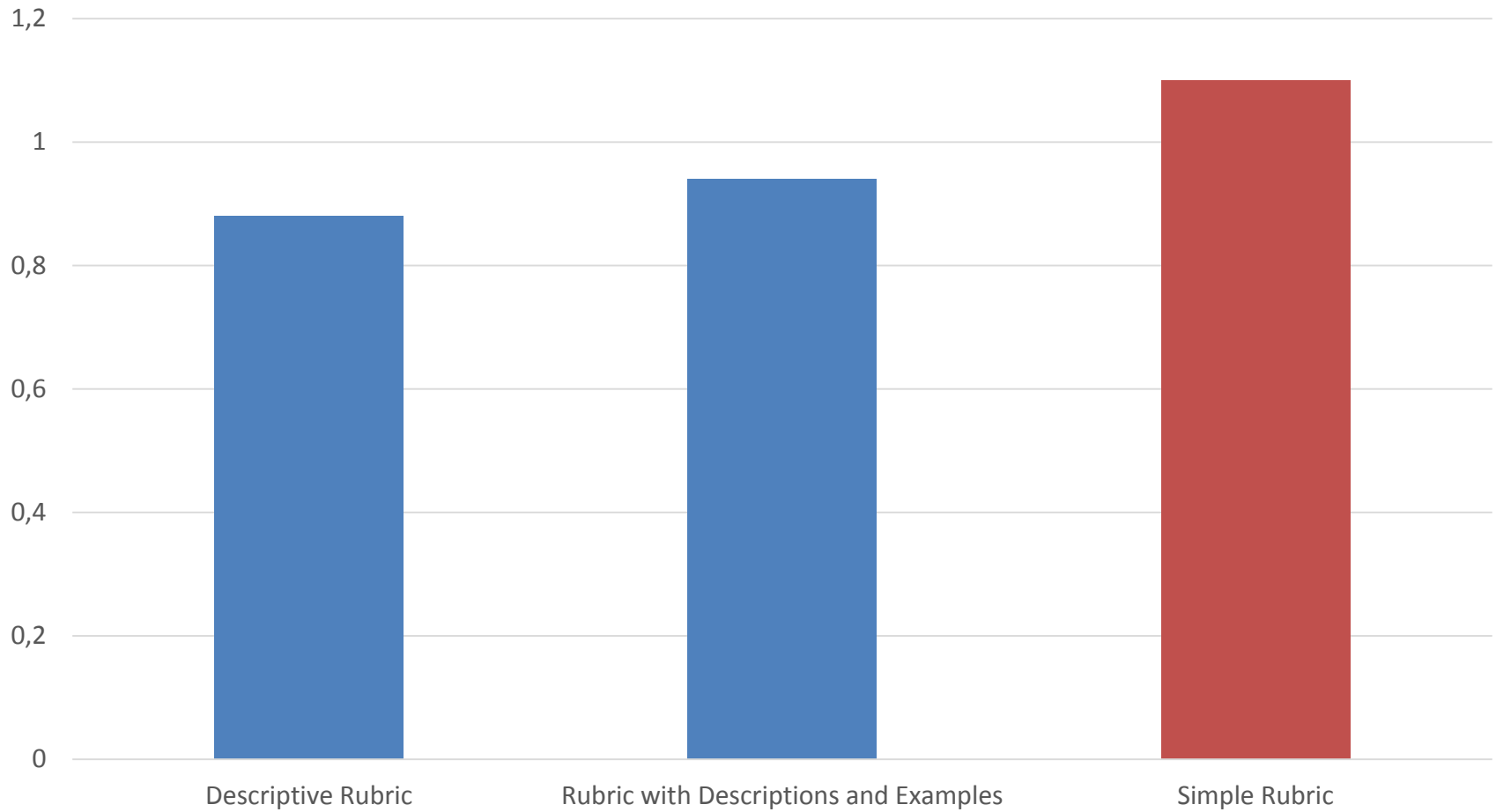


Quality - Practice





Quality - Quality of Training





Results – Quality

- There was not a significant interaction



Results - Originality

- There were no significant differences in originality rating accuracy across practice or quality conditions



Discussion

- Even after training, raters are less accurate
 - About 1 point on a 5 point scale
- Training, especially practice, influences accuracy of creativity ratings
- Results driven by effect of improved quality ratings, not originality



Discussion - Implications

- Adds to our understanding of training of creativity
 - Past focus on generation of ideas
- Importance of evaluation and recognizing creative ideas
- Training improves quality ratings, but not originality



Discussion - Limitations

- We have not evaluated solution choice
 - Only solution evaluation
- Other training designs
 - More information about creativity
 - More information about creative processes



Discussion – Limitations

- Allowing participants to solve the problem themselves
- Evaluation of other people's solutions is different than evaluation of your own solutions

Thank You!

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