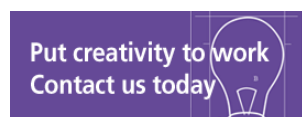


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Can Creativity be Taught? Results from Research Studies



Creativity at Work provides an integrative, whole-brain approach to developing creativity, leadership and innovation in organizations:



Can Creativity be Taught? Results from Research Studies

Updated June 6, 2014

George Land's Creativity Test

In 1968, George Land conducted a research study to test the creativity of 1,600 children ranging in



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ages from three-to-five years old who were enrolled in a Head Start program. This was the same creativity test he devised for NASA to help select innovative engineers and scientists. The assessment worked so well he decided to try it on children. He re-tested the same children at 10 years of age, and again at 15 years of age. The results were astounding.

Test results amongst 5 year olds: 98%

Test results amongst 10 year olds: 30%

Test results amongst 15 year olds: 12%

Same test given to 280,000 adults: 2%

“What we have concluded,” wrote Land, “is that non-creative behavior is learned.”

(Source: George Land and Beth Jarman, *Breaking Point and Beyond*. San Francisco: HarperBusiness, 1993)

Watch George Land discuss his Creativity study at this Tedx talk:

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Why aren't adults as creative as children?

For most, creativity has been buried by rules and

regulations. Our educational system was designed during the Industrial Revolution over 200 years ago, to train us to be good workers and follow instructions.

Can Creativity Skills be Taught?

Yes, creativity skills can be learned. Not from sitting in a lecture, but by learning and applying creative thinking processes. Here is an abstract from a study on **The Effectiveness of Creativity Training**

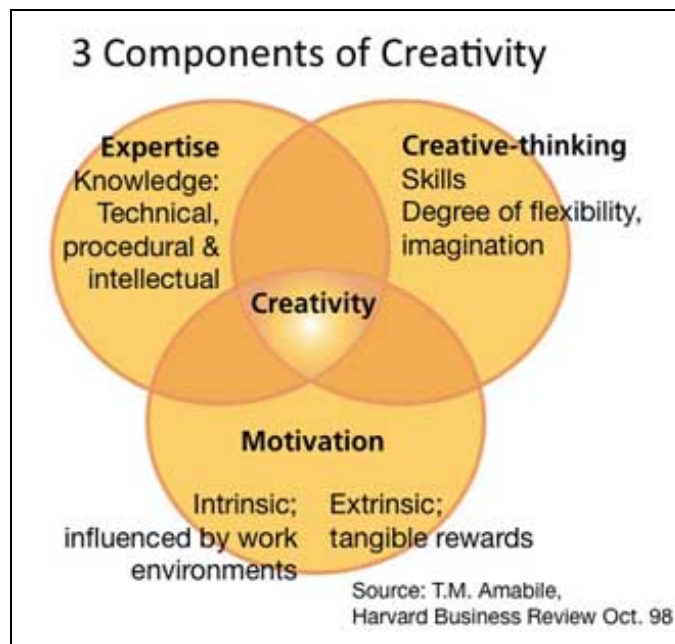
Over the course of the last half century, numerous training programs intended to develop creativity capacities have been proposed. In this study, a quantitative meta-analysis of program evaluation efforts was conducted.

*Based on 70 prior studies, **it was found that well-designed creativity training programs typically induce gains in performance** with these effects generalizing across criteria, settings, and target populations. Moreover, these effects held when internal validity considerations were taken into account.*

An examination of the factors contributing to the relative effectiveness of these training programs indicated that more successful programs were likely to focus on development of cognitive skills and the heuristics involved in skill application, using realistic exercises appropriate to the domain at hand.

The implications of these observations for the development of creativity through educational and training interventions are discussed along with directions for future research.

(Source: Ginamarie Scott, Lyle E. Leritz, and Michael D. Mumford, Creativity Research Journal, 2004, Vol. 16, No. 4, 361–388)



Creativity is a skill that can be developed and a process that can be managed.

Creativity begins with a foundation of knowledge, learning a discipline, and mastering a way of thinking.

We learn to be creative by experimenting, exploring, questioning assumptions, using imagination and synthesizing information.

Teaching Creativity at IBM

From a post by August Turak on [Forbes.com](https://www.forbes.com)

Every great leader is a creative leader. If creativity can be taught how is it done?

In 1956 Louis R. Mobley, realized that IBM's success depended on teaching executives to think creatively rather than teaching them how to read financial reports. As a result the **IBM Executive School was built around these six insights.**

First, traditional teaching methodologies like reading, lecturing, testing, and memorization are worse than useless. They are actually the counter-productive way in which boxes get built. Most education focuses on providing *answers* in a linear step by step way. Mobley realized that asking radically different *questions* in a non-linear way is the key to creativity.

Mobley's second discovery is that becoming creative is an *unlearning* rather than a *learning* process. [Did he know about George Land's study above?] The goal of the IBM Executive School was not to add more assumptions but to upend existing assumptions. Designed as a "mind blowing experience," IBM executives were pummeled out of their comfort zone often in embarrassing, frustrating, even infuriating ways. Providing a *humbling* experience for hot shot executives with egos to match had its risks, but Mobley ran those risks to get that "Wow, I never thought of it that way before!" reaction that is the birth pang of creativity.

Third, Mobley realized that we don't *learn* to be creative. We must *become* creative people. A Marine recruit doesn't learn to be a Marine by reading a manual. He becomes a Marine by undergoing the rigors of boot camp. Like a caterpillar becoming a butterfly, he is *transformed* into a Marine. Mobley's Executive School was a twelve week experiential boot camp. Classes, lectures, and books, were exchanged for riddles, simulations, and games. Like psychologists, Mobley

and his staff were always dreaming up experiments where the “obvious” answer was never adequate.

Mobley’s fourth insight is that the fastest way to become creative is to hang around with creative people –regardless of how stupid they make us feel. An early experiment in controlled chaos, The IBM Executive School was an unsystematic, unstructured environment where most of the benefits accrued through peer to peer interaction much of it informal and off line.

Fifth, Mobley discovered that creativity is highly correlated with self-knowledge. It is impossible to overcome biases if we don’t know they are there, and Mobley’s school was designed to be one big mirror.

Finally and perhaps most importantly, Mobley gave his students permission to be wrong. Every great idea grows from the potting soil of hundreds of bad ones, and the single biggest reason why most of us never live up to our creative potential is from fear of making a fool out of ourselves. For Mobley there were no bad ideas or wrong ideas only building blocks for even better ideas.

—Read the full article by August Turak at [Forbes.com](https://www.forbes.com)

Mobley’s insights ring true for me, although I’d avoid his jarring approaches to unlearning creativity. There are ways to unlearn creativity that don’t involve putting subjects through a psychological boot camp. Learning to be creative is akin to learning a sport. It requires practice to develop the right muscles, and a supportive environment in which to flourish.

Generative Research on Creativity

Generative research shows that everyone has

creative abilities. The more training you have and the more diverse the training, the greater potential for creative output. Research has shown that in creativity quantity equals quality. The longer the list of ideas, the higher the quality the final solution. Quite often, the highest quality ideas appear at the end of the list.

Behavior is generative; like the surface of a fast flowing river, it is inherently and continuously novel... behavior flows and it never stops changing. Novel behavior is generated continuously, but it is labeled creative only when it has some special value to the community... Generativity is the basic process that drives all the behavior we come to label creative.”
– Robert Epstein PhD, Psychology
Today July/Aug 1996

[See also The Future of the Training Department](#)

[ROI on Creativity Training](#)



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About the Author: [Linda Naiman](#)



Linda Naiman is founder of Creativity at Work, and recognized internationally for pioneering arts-based learning as a catalyst for developing creativity, innovation, and collaborative leadership in organizations.

24 Comments



Mark Runco December 15, 2014 at 1:48 pm

Very nice article, Linda, and interesting comments. This one concerns me, however: "Most of the world creative leaps, have come from mature educated people, not from the ignorant or unschooled." True, socially-recognized creative achievements tend to be from educated individuals, but that says nothing about creative potentials, which are shared by everyone, including those without formal education. The human brain creates. Often education gets in the

way. Some of the most creative individuals are children. They are not biased by assumption, routine, habit, or even convention. They do not produce socially recognized world-changing works, but if they did, it would be creativity-plus-social recognition. There is a big difference between creative potential, which is unrelated to education, and creative achievement, which is what you see listed in, say, history books or encyclopedias.

And I would add one thing to Keith's comment (in addition to just "Hi Keith!"): creativity may not always decline with age, but it is more difficult to be creative when you are older. I suppose I should point to my book on creativity for details (2014, Elsevier), but there is plenty of evidence for "age and the rigidities," which is just a loss of flexibility as we age. And that makes it tough for creative insights. Not impossible, but tough. Many creators are able to maintain flexibility and/or work around the pressures towards rigidity. In fact, we all probably can minimize rigidity, if we know how to go about it and put some effort into flexibility of thought.

Again, the comments are quite interesting. -Mark Runco



Linda Naiman October 29, 2014 at 10:14 am

Hi Moz, Sorry I don't have details on what exactly George Land measured.



moz October 27, 2014 at 11:10 pm

Dear Linda, can you please clarify what is

in George Land's book that demonstrates a method he used to come up with his theory on creativity? Most of the world creative leaps, have come from mature educated people, not from the ignorant or unschooled. Land's tests on creativity what exactly did he measure? Land doesn't articulate his methods on the YouTube video you have mentioned. Perhaps you can elaborate please?



Linda Naiman October 24, 2014 at 12:48 pm

Hi Keith, thanks for your comment. If you watch the video, at the 5:30 mark, George Land discusses the creativity tests he conducted at NASA and with kids. I agree with you that creativity does not decline with age, BUT our educational system and societal restrictions do kill creativity.

PS I am a fan of your work and like to have my clients watch your video on where ideas come from, as prep work for my workshops.



keithsawyer October 24, 2014 at 11:46 am

It's not true that creativity declines with age (I review the many studies about this in my 2012 book EXPLAINING CREATIVITY, pages 73-74), so when I first heard about this George Land study, years ago, I actually purchased an old, used copy of the book BREAKPOINT AND BEYOND (it's long out of print) to learn more about their study. It turns out that this "study" is mentioned only on page 153, in only one paragraph, and no methodology is described, no assessment details are provided, no

research findings are elaborated. The results were never published in any peer-reviewed scientific forum. As a result, I have concluded that this study is basically an urban myth.

Learning To Code Develops Creativity in Kids October 23, 2014 at 1:24 pm

[...] George Land concludes from his longitudinal study on creativity and divergent thinking, we have unlearned it. Today, research is showing that creativity is a skill that can be developed and learned at home [...]



<https://startrek.zendesk.com/entries/76147653-South-Florida-s-Finest-Ice-Cream-Shoppes> July 31, 2014 at 12:12 am

Asking questions are in fact good thing if you are not understanding something completely, except this article provides fastidious understanding yet.



knlistman June 20, 2014 at 7:37 pm

The information in this article is good for people who want to sell courses teaching creativity, but if all children are so creative, it would seem to be popular to continue that way. There is far more research that so creativity to be innate, so people desire to be creative and others do not. There is much to lose by being original – you are not seen as a good leader, a team player or a person that is easy to get along with by most of society. Often creative people are seen as difficult and aloof because producing innovative things are more important to them than all the social niceties required

to get along with other people.



Linda Naiman June 6, 2014 at 6:28 pm

You can listen to George Land speak about the creativity study in his TEDx talk which I added to this post

<http://www.creativityatwork.com/2012/03/23/can-creativity-be-taught/> and you can also read his book "Breaking Point and Beyond." San Francisco: HarperBusiness, 1993



knlistman June 6, 2014 at 3:29 pm

I would like to know more about the "test" that George Land used, and his sample population. Details of his study are important, because they basically counter the long term studies of school children by t Torrance. He found higher scores in TTCT (Torrance test of creative thinking) which includes divergent thinking as one area was a reliable predictor of creative accomplishment as adults. Children's score in creative thinking differed as soon as they entered school, and those that were higher then remained higher as the students matured.



Claire Farnell September 5, 2013 at 8:00 am

Thank you Linda for taking time to answer my questions. Yes, now you have cleared my mind with your sound insights about creativity. I couldn't agree more with your opinion. :-)

Linda Naiman September 4, 2013 at 12:23 pm



Thanks for your comments Claire, and for your questions. When it comes to creativity, context is very important. If you use creativity to challenge norms, it should be for the purpose of improving the way things are done, and adding value to the customer. Creativity in this context is not more costly, it is a way to become more profitable.

You should also carefully consider the impact of your idea on people and systems, by getting feedback from those who would be impacted by the change, to reduce the risk factor.

Creativity can create chaos, so there is a time and a place for it. If you are a surgeon, the time to be creative is way before you ever operate, not during a procedure.

On the other hand, if you have a messy problem, creativity can help you connect the dots and find new insights that lead to a solution. Hope that helps.



Claire Farnell September 3, 2013 at 8:16 pm

Hi Linda. This article is very enlightening and encouraging. It has been quite a common notion that creativity in leadership is more of an inherent quality. However, like you, I personally believe otherwise. Given the right environment and exposures to challenging situations that require people to think out of the box, I believe that creativity can be honed and developed. However, in most organizations, promoting creativity in the workplace becomes a challenging task because it challenges the norms we have gotten used to. To illustrate, let us take

your example how IBM Executive School promotes creativity by allowing people to commit mistakes. Traditional approach to management says that minimizing mistakes is the only way to be efficient. Would that mean there is a trade off to being creative and being efficient? So with this in mind, organizations have to weigh which will benefit them more. Having said this, a question I often ask myself is this – “Will encouraging creativity entails greater cost to organization?” I would like to hear your thoughts about this and validate if my idea has some basis. :-)



sasi August 6, 2012 at 9:28 am

Hi Linda,
just discovered your website. it is informative and moreover lead to view the certain thing to different perspectives. would like to have updates notification to my mail.



Linda Naiman July 23, 2012 at 11:08 am

Pat, have a look at this blog post:
<http://www.creativityatwork.com/2012/04/12/how-do-you-sell-creativity-at-work-and-get-people-onboard/>
If these approaches don't work with your supervisor, then remember this: You can lead a horse to water, but you can't make him think. ;-)



Pat Borlagdan July 20, 2012 at 4:57 pm

Hi Linda,

Very interesting insights on creativity and

innovations.

Just one question: how could we convince our supervisor to be creative and innovative especially “old school” supervisors who apply only 2 rules in the workplace; rule #1. the boss is always right, rule #2. if the boss is wrong, see rule #1?

Hope to hear from you soon.

Best regards,
Pat



Linda Naiman July 16, 2012 at 5:42 pm

Hi Matt, Thanks for your comments. Glad you like my website. You are welcome to cite/quote articles. Please include proper attribution, and if possible a live link back to the originating page. Hope your conference goes well!



matthew byrne July 14, 2012 at 11:44 pm

Hi Linda,

(First of all thank you for the fantastic website)

1. Do you mind if I use some materials from your website?
2. I'm planning to co-author a paper for an upcoming conference at the Australian National University in September on creativity, innovation and access to knowledge in the Pacific and might want to refer to some of the studies and materials from your webpage.

I look forward to hearing from you.

Regards,
Matt Byrne.



Linda Naiman June 1, 2012 at 6:29 pm

Peter,

you make an excellent point. Adults by virtue of the fact they have accumulated knowledge through education, have the potential to be more creative than children. Knowledge and technical skills, combined with curiosity and imagination, are contributing factors to producing creativity.



Peter Han May 31, 2012 at 6:56 am

Dear Linda,

Your work is such a delight to behold. The idea of integrating art-based creativity into the business world makes so much sense intellectually, emotionally and spiritually. Having worked in many “left-brained” industrial firms over 20 years, I have witnessed first-hand the deficiencies wrought by the imbalance between analytical and generative thinking.

I am interested in your comment that adults are less creative than children. This is a widely held belief that seems corroborated by our experiences. Yet, in my personal experience in the workplace and beyond, I have seen the opposite time and time again. The times when adults have proven to be more creative seem to occur when they are in an environment conducive to being creative. Then, they draw upon the wider collection of experiences and skills to

recombine and create new ideas. So it is their larger repertoire that enables them to be more creative than youth.

However, they do need to first let go of their many learned constrictions which they accumulated over years in the adult world. I recall reading a research article that reaches a similar conclusion. Have you seen such research?

I am guessing that you are more creative today than when you were a young child because you have learned to combine the very best intuitive generative qualities of children with the vast treasure trove of experiences and knowledge you have accumulated over your lifetime. So adults have huge potential to demonstrate incredible creativity if they can achieve this balance. Easier said than done of course.

Let me know what you think.

Best regards,

Peter Han
PlayFullyCreative.com
936-647-3070



Linda Naiman May 16, 2012 at 11:42 am

Hi Hugo, you are welcome to use the resources on this site for your class. Don't forget to give proper attribution to your sources. Thanks!



Hugo Fernandes May 16, 2012 at 6:45 am

Hi Linda,

Just discovered your website. I'm going to give a talk about creativity on a High

School in Portugal for 50 students.
Although I have my preso ready, I hope
you don't mind if I borrow some of your
research :) Thank you!

All the best,
Hugo



Linda Naiman April 9, 2012 at 2:02 pm

Lisa, stay tuned for an answer in my next
newsletter.



Lisa March 30, 2012 at 12:56 pm

Hi Linda,

What a great post! The Mobley concepts
and your reflections on creativity got me
thinking about how I can promote
creativity in my own training designs in
the field. As I read your post, I found
myself wondering about the applications
of this idea to an organizational culture
that is (for lack of a better term) "anti-
creativity". What do you think would be
the best way to introduce creativity
training into an organization with this
type of environment?

Thanks,

Lisa
Graduate Student, Roosevelt University
M.A. Training & Development Program

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