



It's Not 'Hippies Running Barefoot Through a Field of Daisies' and Other Contemplations on Creativity with Dr. Jonathan Plucker

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Thank goodness I was never sent to school; it would have rubbed off some of the originality. —Beatrix Potter Turning in something and getting a grade. That is not how engineers work, it's not how designers work. —Jonathan Plucker

Introduction

This article is the most recent in an ongoing series that highlights the work of respected scholars in the field of creativity. We have navigated many facets of the field through these articles—from the neuroscience of creativity, to design perspectives or cultural dynamics, to the social and educational contexts that support creativity. Our goal in these articles is to delve into the many pathways that the field offers, exploring the way that creativity impacts our lives in this increasingly complex and connected world. In this article, we continue this ongoing series by sharing the expertise of Dr. Jonathan Plucker.

Dr. Plucker is an educational psychologist at Johns Hopkins University where he is the Julian C. Stanley Professor of Talent Development in the School of Education. He received his Ph.D. in Educational Psychology from the University of Virginia. With over 300 publications, Dr. Plucker's work has been supported by over \$40 million in grants and contracts. Dr. Plucker

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partners with colleagues around the world to teach and conduct research and has received numerous recognitions, including the 2007 E. Paul Torrance Award for his research on creativity.

Dr. Plucker first became interested in the field of creativity as an undergraduate chemistry major at the University of Connecticut. "Quite frankly," he shared, "I was getting a little bit bored with it. A bunch of my friends were coming back from internships and talking about what they were doing every day and I thought...I don't want to do that. Ever." Dr. Plucker decided to change his major, and found an interdisciplinary field where his interests in STEM and research could be satisfied: education. The program at the University of Connecticut emphasized gifted education, creativity, and educational psychology, thus opening his eyes to the field of creativity. Dr. Plucker shared how at the time, he honestly thought that, "creativity was silly. Like hippies running barefoot through a field of daisies—just frivolous and unserious." He believed that the field of intelligence was much more interesting and was taken more seriously. However, Dr. Plucker was surrounded by fellow students who were fascinated with the study of creativity. Their interest rubbed off on him, and the topic slowly became more and more intriguing. His decision to pursue the field in graduate school was a result of reflecting on where he himself had questions that aligned with the future of scholarly inquiries in these fields. As he noted, "I couldn't see what the next big questions in intelligence were. I could see all the questions we needed to tackle with creativity." Dr. Plucker has spent the last 25 years answering many of those questions.

Defining Creativity from a Socio-Cultural Perspective

In describing his perspective of creativity, Dr. Plucker voiced his annoyance with the fact that there are creativity scholars

who do not feel there is a need to have a common definition of creativity, or who take the construct in different directions without a clear defined stance on what they mean by ‘creativity.’ He shared an experience that was a bit of a wake-up call:

I had a colleague who had me guest lecture in one of her seminars. I finished my talk on creativity and as we walked out of her classroom, she paused and said, “This is really interesting, but I can’t believe you people can’t get your act together and come up with a common definition. It’s so clearly holding you back.”

He returned home and had a discussion with some colleagues and doctoral students about this problem within the field. Several of them addressed the issue of a lack of definition by publishing an article (Plucker et al. 2004) that analyzed the ways in which most scholarly articles dealing with creativity defined it, or in most cases, failed to define it. This work took into account the elements that are common in many definitions of creativity, such as usefulness and originality (Runco and Jaeger 2012), but also grounded their definition in a third aspect that was and has continued to be especially important for the field of education. Dr. Plucker and colleagues felt that many previous definitions of creativity “didn’t hold up well in light of the sociocultural perspectives that were blossoming at that time.” The third component of their definition articulated the importance of the social context of the creator, and they defined creativity as “the interaction among *aptitude, process, and environment* by which an individual or group produces a *perceptible product* that is both *novel and useful* as defined within a *social context*” (Plucker et al. 2004, p. 90). This definition aligns with the Deep Play Research Group’s NEW definition of creativity that also emphasizes the importance of context (Mishra et al. 2013). A definition that includes context is especially relevant for educators, given the fact that learning and classrooms are highly contextualized places that differ dramatically across variables and situations. As Dr. Plucker explained:

If you’re a third-grade teacher, it matters that student work is original and useful for the student who is doing it in the context of your classroom. It doesn’t matter if a second grader can do it or has done it before. It doesn’t matter if the teacher can do it, it doesn’t matter if the student’s parents can or can’t do it. That’s not the social context that’s important for that child’s creative and cognitive development.

This speaks to the fact that creativity is a function of learning, and learning is a highly differentiated, and again, contextual act. Therefore, in adding this third element of creativity, Dr. Plucker and his colleagues provided an essential construct to define creativity within the fabric of teaching, learning, and

classroom engagement. And for educators that are seeking definitions of creativity, it is important they use one that grounds the creative work within the unique social context of the particular learning setting. If that is not the case, creative work runs the risk of being disregarded or brushed aside, which may lead to a diminishing or constraining of student creativity, which could have long term repercussions. Childhood and adolescence is a period of enhanced flexibility and adaptivity for learning that can impact the development of creative potential. This stage provides a favorable time for progression in creative thinking, as it is closely related to cognitive skills. The growth of the prefrontal cortex, important in generating novel and complex thinking, is developmentally significant at this time (Stevenson et al. 2014).

Small Changes and Minor Adjustments for Creative Teaching

Dr. Plucker provided insight into the practical implications of studying creativity, as he has the opportunity to teach on the subject at Johns Hopkins University, and in educational institutions around the world. He uses his own teaching context as a way of making visible some of the concepts and practices that are often discussed in theory. Dr. Plucker describes a number ways in which teachers can support creativity—not through dramatic shifts, but by making small changes or adjustments to their practice. He stresses that supporting creativity doesn’t mean that you have to completely change your teaching methods. He shared:

Most of these changes can just be tinkering on the edges. You don’t have to change the activity in major ways, often you just need to change the instructions; or, change the grading criteria so that more than one right answer is acceptable.

These types of minor adjustments are seen as realistic for educators, and can result in a change in the learning environment so that the tasks students are engaged in are more open-ended, and thus more supportive of creativity. This also addresses one common block to creativity, in which many people misperceive creativity to often stem from grand actions or big acts of invention—whereas much creativity comes from what Hofstadter (2008, p. 251) describes as “twisting the knobs,” or creating “variations on a theme,” i.e. finding places to adjust what already exists rather than reinventing the wheel (Henriksen et al. 2014).

Educators can also “twist the knobs” on learning activities or tweak them to provide opportunities for students to communicate about their work. According to Dr. Plucker, creative people that are consistently successful are excellent communicators about the value of their own work. But, this is something that educators don’t often ask students to do. One change that educators can make is to have students share

and critique work. He suggests, “Students should spend time describing and defending their work, as well as providing constructive criticism to others.” Dr. Plucker has tried to embed this in his own teaching practice with college students. “Every undergraduate that takes a course with me has to invent something, build the invention, and share it with the class. We model and practice giving good constructive criticism.” Dr. Plucker assesses the students, and if his assessment of their invention doesn’t align with their own notions, they have all semester to make their case to him, to communicate the value and creativity of their invention:

No grade is final in any of my classes until the day that I have to turn my grades in. Students have until that last day to convince me that their work is more creative than I thought it was. One semester two students designed a new makeup brush. It made no sense to me and I thought at best it was an incremental improvement. But, almost every [feedback] slip I got from the other students had them as most creative or the invention to buy tomorrow. I thought, ‘hmm...I am clearly wrong!’ They sat down with me and they convinced me by the end that I didn’t get it. There’s no reason we can’t be doing that for all our students. That is how creativity works in the world. It is not turning in something and getting a grade. And yet we do it to students every single day. That models something that they will never experience in the real world. So, as educators we need to ask ourselves how do we model this better for them?

In this, the goal for Dr. Plucker is to support student communication and interaction around creative work. He said, “it is a simple thing to add to already existent curricula. The other thing that teachers can do is to simply model creativity.” As Dr. Plucker described, “If a teacher runs into a problem, instead of calling someone from the central office to solve it, or to throw their hands up, they can say - No, wait. I’m creative, how can I solve this?” This reflects research in education that suggests teachers who inspire creativity in their students tend to model creative and divergent thinking themselves (Lilly and Bramwell-Rejskind 2004).

Dr. Plucker also discussed some of the barriers that are present in education. The most significant barrier is students’ self-beliefs about their creativity, or lack thereof. In his own teaching, Dr. Plucker begins with surveying student beliefs about creativity. He often finds that a majority of his students believe they are not creative and that creativity is something only certain people possess. Students often associate creativity with the arts rather than understand it as a transdisciplinary skill essential for progress and growth in all fields (Root-Bernstein and Root-Bernstein 1999). To overcome this, Dr. Plucker engages his students in problem based learning

activities where students have no choice but to be creative. He shared the impact that this has on his students:

Students are forced to confront these mental barriers they have put into place. We survey students about their creativity-related beliefs the first day of class. As the end of the course, we survey them again with the exact same questions. The change in depth of complexity of how they think about creativity and how they have agency over it - you can’t even compare from beginning to end. It moves from very simplistic, stereotypical, [and] very naïve, to much more nuanced and complex. For them to be successful there was no way they could claim, ‘I’m not creative.’

The students confront their own myths by engaging in acts that require creativity. Dr. Plucker is fortunate to have the academic freedom to design and implement these types of experiences. He knows that this flexibility is often not provided in educational systems, especially in K-12 classrooms. He explained the negative impact this has had, by stifling creativity:

The No Child Left Behind era did not do us any favors. It narrowed the curriculum so much. Once we narrowed the curriculum it really became about finding the one right answer. For most of our world problems there isn’t one right answer. K-12 teachers and even college teachers can’t really experiment that much. You can’t say “This year, I’m going to do something completely different to see if I can do this better.” I know very few teachers who are going to walk out on that shaky limb.

Dr. Plucker also identifies the practice of linking pay to student test scores as damaging to the profession. With a livelihood at risk, it is unsurprising that teachers are unwilling to take risks. Dr. Plucker made an analogy to the business world, “Everyone talks about applying business models to schools and that is the exact opposite of what we have done. We haven’t made it corporate. We have made it bureaucratic. That’s what kills creativity. That’s what kills innovation and entrepreneurship.” The current atmosphere in K-12 education is creating an environment where teachers will not take risks. This is why many of the suggestions that Dr. Plucker has offered can be implemented with minimal change, and thus minimal risk.

Technology as a Support and Inhibitor of Creativity

Dr. Plucker’s view of creativity reflects its social and contextual nature, and when it comes to societal change

and contemporary contexts, technology is clearly a major factor. In fact, Dr. Plucker notes that technology has “changed everything.” In the past 10 years alone, technology has revolutionized how we work and socialize. He shared his reliance on technology, “I cannot imagine going through the day without having technology to help me do what I do. It makes me more creative, primarily by making me more productive.” This is significant in that research has shown that people that are the most productive are the most creative (Sawyer 2017). Dr. Plucker compares it to winning the lottery:

It’s called chance configuration theory...it is really the creative lottery. To win the lottery you need to get as many tickets as you can. You see this with scholars; the ones who produce the ideas that get cited the most, also tend to have the most papers that don’t have many citations. They are producing a lot of ideas. Some hit and some don’t. But if you are only producing one idea a year, you’re only buying one lottery ticket. And then you just have to be lucky. No one wins the lottery buying one ticket every year.

He identified a common misconception in the notion that once you create something you just “sit back and let your work speak for itself.” Dr. Plucker shared, “That’s a crazy stereotypical phrase that does not reflect reality at all. Your work does not speak for itself, it never speaks for itself. You have to speak for your work and you have to find allies to speak for your work.” Technology can support this by providing avenues to share work and get feedback. Dr. Plucker described an example:

I’m on a plane and am trying to think of this connection I’m trying to make. I connect to the internet at 35,000 feet. I go to Google Scholar and start looking for articles to see if someone has said something similar, or has a different take on it to move my thinking in a different direction. I find it, download it, read it. Then I write and revise and send it to three friends to read. By the time I get to my hotel I’ve got feedback on it. I mean 15 years ago for that to happen it would have taken weeks. And now it can literally happen in hours.

Dr. Plucker also recognizes the power of technology in leveling the playing field for those individuals that are introverted, or have conditions that make it hard or impossible for them to speak publicly about their work. The internet provides distribution channels that allow them to speak about their ideas to anyone, thus allowing them to live a life they could not have lived

without technology to support their communication and sharing.

Dr. Plucker also believes that technology has areas that need to be approached with caution. For example, the attempts he has seen at personalization have created a space that is also isolating. Dr. Plucker explained his opinion:

Personalization often feels very sterile to me. I think from an educational technology background we have to do much better with setting the context. Tech brings so many great things to creativity. But there is a sterile downside to it. Whenever it leads to more isolation, it just really worries me.

Dr. Plucker also believes that the “echo chamber effect” of most social media channels diminishes creativity. He notes that one of the things that can fuel creativity is disagreement caused by different perspectives. Being able to “rotate an idea 180 degrees” and realize you haven’t seen it from that angle is important to creativity. Dr. Plucker worries that, “in social media...what we are gaining is being outweighed by what we are losing when these echo chambers and bubbles happen.” It becomes harder to incorporate or even access different perspectives because of the tendency for people to stay within their sphere and hear the ideas they believe, rather than applying differing viewpoints and perspectives that could broaden their thinking.

Looking Ahead: Challenging Creativity Myths and Connecting to Practice

In the current state of the field of creativity, Dr. Plucker believes that while many of the creativity myths that surrounded the field in the past 50 years are having less of an impact, these myths still exist and must be vocally disproved by creativity researchers. When people say that creativity cannot be defined, argue that creativity is frivolous, or assert that only certain people have the potential for creativity—these are instances when the field must use research to argue against. Dr. Plucker considers it a responsibility to address people’s myths and stereotypes about creativity, stating, “One of the most persistent myths and stereotypes we found with students is about 75% tell us that they don’t believe people can learn to be creative, and that they themselves are not creative.” In the past few decades one of the great successes has been the democratization of creativity. But, there is still much work to do in fighting against these stereotypes. Dr. Plucker described a personal experience:

I was at a meeting in Washington D.C. once, and all the federal research agency heads were there and were talking about 21st century skills. [One of the heads]

stands and says, “We believe that creativity is the most important 21st century skill.” And I was in the back going, “Yes! Finally!” Then he says, “Unfortunately we don’t know how to define it, we can’t teach it, and we can’t assess it.” The second person gets up and says the exact same thing. And a third person stands up and says, “This is going to sound familiar but...we believe that creativity is one of the most important skills. But we can’t define it, we can’t teach it, and we can’t assess it.” I was sitting next to a famous psychologist who turned to me at one point and said, “This must be killing you.” And I said, “Yes! They’re wrong! They’re 100% demonstrably wrong.”

But, what is the key to responding to these situations? Dr. Plucker believes that the field needs to be better at designing interventional and practical research studies. The field tends to be full of theoretical work, which is certainly important. But the more intervention studies that are done, “the less people will be able to say that we don’t have evidence for the assertions or suggestions we are making. The lack of evidence can really hold the field back, especially when it comes to impacting policy.”

Dr. Plucker also believes that researchers in the field should be replicating studies more often, noting:

Creativity is a field that has lots of small scale studies that are intriguing and find cool things but never get replicated. They are accepted or get ignored - yet some of these studies are really interesting. They are small scale, experimental, and easy to replicate.

Along these lines, he has plans to choose 3–4 studies to replicate with colleagues in the near future.

Finally, a third problem that Dr. Plucker identified for the creativity field is the lack of scalable assessments. There are some reliable assessments that have been developed, but they are not scalable because they are too labor intensive to administer and score. The challenge, as Dr. Plucker described it, is:

Creativity isn’t just cognitive. It’s cognitive and it’s social. It’s intrapersonal and interpersonal. It’s about thinking but it’s also about attitude and motivation. It can be a positive force, it can be a negative force. So, it’s this complex construct. Creativity is much more complex than most things we try to assess in schools.

Developing scalable assessments is a critical next step in the field because there are school systems and businesses around the world looking for these types of assessments; and as creativity becomes more of a focus in business and in education, this need for assessments that reliably measure various components of creativity will only heighten.

Conclusion

Our conversation with Dr. Plucker revealed important insights about creativity based on his work in the field, that directly connects with either or both education and technology. His work reflects the socially situated and context-driven nature of creativity, which emerges in classrooms and suggests that teachers can identify existing points of practice where small tweaks and changes can lead to creative gains. Moreover, the dynamics of technology also connect to this social interplay of creativity, and Dr. Plucker referred to ways that technology may constrain and expand creative potential. For example, digital and networked technologies may allow us to connect more instantaneously and responsively to others—supporting exchanges of feedback and ideas and opportunities to communicate about our work. On the other hand, he points to the ways in which technology, such as with social media personalization, can actually isolate people and inhibit the communication and free-flow of ideas that are necessary for creative connection. These are issues that scholars, practitioners, and scholarly-practitioners alike will continue to navigate going forward.

Looking ahead, Dr. Plucker discussed a variety of challenges facing the field, and he also recognized that these provide opportunities for future creativity researchers. As a collective, the field needs to continue laying out a stance that describes and defines creativity, with an emphasis on the role of context. Creativity can be taught and it can be measured, and through more research the field can continue to debunk the myths that work against it.

Dr. Plucker spoke about the importance of the role of educational psychologists in connecting to practice in order to impact students and learning. He feels that, especially for educational psychologists, there is a responsibility to conduct and replicate studies that have a direct impact. He says, “research needs to find its way to helping students in some way, shape, or form. That’s why we do what we do.” As an active scholar who strives to put research into practice, Dr. Plucker aims to do just that.

The Deep-Play Research group is a loose collective of faculty and graduate students at Arizona State University and Michigan State University. Participants include: Danah Henriksen, Sarah Keenan-Lechel, Rohit Mehta, Punya Mishra, & Carmen Richardson.

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