

## Think Piece: New Perspectives for the Role of Creativity in Education

**Christian Byrge**

Department of Business and Management,  
Aalborg University, Denmark

**Patricia Núñez Gómez**

Department of Applied Communication Sciences,  
Complutense University, Madrid

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### Abstract

This think piece is based on the combined insights from several decades of research and practice in the field of creativity, communication of new ideas and educational design. It suggests that the continuous introduction of robots and artificial intelligences will take over lots of the tasks that are based on logic and causal thinking. That it will even be able to produce ideas based on simple relative creativity, thus potentially making simple creative processes and creative techniques obsolete for the future workforce and entrepreneurs. It also suggests that this “take-over of tasks” opens up for the opportunity to direct general human capacity into solving increasingly complex problems created and faced by the human race, where creativity will be desperately needed. As a result, we may enter a new and more inclusive golden era in the history of mankind. In order for this to succeed the educational system will need to go beyond simply teaching creative process methods and creative techniques. It needs to systematically integrate holistic creativity curriculum as a fundamental component throughout all levels of education. It needs to define, explore, invent, experiment and disseminate approaches for holistic and systematic development of creative competences and creative confidence so that graduates will gain creativity as a second nature.

**Keywords:** teaching creativity, civic engagement, creative thinking skills, creative competence, creative confidence.

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### The Potential for a new Inclusive Golden Era

Creative people have always been among the most powerful and influential people. They come up with fresh new ideas and persuade others to follow their ideas, thus creating new standards for scientific, technological and societal developments. Their creative ideas push the human race forward in a dynamic process constantly replacing declining ideas with better ones. There are signs that we may be entering an age of complex problems for humanity where creativity will be desperately needed. At the same time robots and artificial intelligences are increasingly replacing jobs that are based on causal and logical thinking eventually making millions of good workers and entrepreneurs “obsolete” and losing identity. This combination opens up for a historic opportunity to direct massive amounts of human capacity to the

creation of creative ideas solving coming complex problems, effectively including the vast majority of people as creators in a new golden era.

In an inclusive golden era, we could see a radical increase in speed of advancement in all kinds of domains and industries. We may also see people finding new meaningful identities being part of pushing forward the human race and humanity. Equally important, a “diffusion of the power of creativity” to the majority of people may help upholding democratic institutions and provide a fair distribution of resources.

### **What Human Creativity will we Need in the Future?**

When you are writing upside down using a standard pen you may experience that gravity pulls back the ink and eventually the pen stops working. Now imagine a company that wants to invent an affordable pen that is usable upside down. Today, this company may assign a cross-disciplinary team of specialists to come up with a series of ideas that can solve this problem. They may use some effective creative process methods and creative techniques. Still, most ideas produced by this team will be characterised by imitation of historical ideas from the “pen-domain” as well as simple translations of ideas from related domains. To better understand human creativity, it may help to distinguish between historical creativity and relative creativity. Historical creativity results in ideas that are new to the world. Relative creativity results in ideas that are new to the context (individual, team or organisation). Artificial intelligence will shortly be able to outperform humans in relative creativity. Therefore, the cross-disciplinary specialist team using creative processes and creative techniques will eventually be replaced by artificial intelligence, thus joining the list of future “obsolete” workers and entrepreneurs.

When Bach contributed with his ideas for how to systematically compose music with ear sensory appeal, he also laid out the foundation for letting artificial intelligence mass produce variants of pieces of classical music. It is now possible to “teach” artificial intelligence the “rules of composing” Bach music. From our insight into the music production we estimate that within the next 10-15 years more than 80% of all music will be produced by artificial intelligence. Artificial intelligence makes it possible to reproduce historical ideas and variants hereof in quantities in which humans will never be able to compete. The same is possible for example for love lyrics: make a database with 100.000 historical love sentences and teach the artificial intelligence the rules of relating concepts between the sentences. Now the artificial intelligence can mass produce love lyrics. Of course, it will need continuous human feedback to perfect its production. If artificial intelligence can take over the production of ideas in the arts - where else will artificial intelligence be able to take over the production of ideas? It is hard to imagine a worker or

an entrepreneur that will not be radically affected by the introduction of artificial intelligence into their domain or industry during the coming decades.

It seems plausible to expect that in the near future workers and entrepreneurs will have the “luxury” to direct focus towards historical creativity as lots of their tasks are taken over by robots and artificial intelligences. But, will they have the competences and the confidence to produce and disseminate novel and valuable ideas? How can the educational system play a role in making building these competences and confidence? Let’s rephrase this question: If the general educational system does not take a leading role in making this happen how will its graduates find their role in a future where creativity seems to become the only human commodity against robots and artificial intelligence? And how will the world resources be distributed if the majority of people have no skills that go beyond that of a robot and an artificial intelligence? We will need to develop competences beyond the skills of relative creativity - we may need to develop the competences and confidence to produce historical creativity.

### **An Educational System for Creativity**

Throughout history creative people have brought about ideas that have become generally accepted across all subject’s curriculum. Their ideas may be implemented in curriculums as ways of doing, formulas, approaches, methods, models, theories, philosophies, etc. Good students are able to identify, understand and follow curriculum ideas that are relevant to a specific problem. In language, good students are able to identify, understand and follow relevant curriculum methods for analysing a specific type of text. In physical education, good soccer players are able to identify, understand and follow relevant curriculum approaches for passing an opponent player. An educational system that teaches its students to conform to the curriculum ideas have shown to be valuable in times where logic has been a key competitive advantage at all levels of society. However, now that creativity becomes a key competitive advantage, we may need to rethink education. We may no longer need an educational system that primarily develop students to follow the ideas of others. Instead we may need education that also teaches students to challenge fundamental notions, imagine new ideas and inspire others with their ideas.

We know that heredity and early childhood plays a role for creative potential. We also know that creativity can be taught. Contemporary curriculum for developing creativity may be characterised mostly by “what corporates want”. Teachers, often with little knowledge about creativity, search for popular practitioner-oriented approaches such as team creative processes, creative techniques, etc. Most of these approaches are designed for corporate short-term needs and are far too weak for develop creativity as a

second nature for students. Creativity in education should not merely be about how to get lots of ideas, how to design and perform a team creative workshop or how to present ideas using pitching. Such approaches may be highly useful for relative creativity, but their role in historical creativity are limited. We need a new type of creativity curriculum that develops student's creative confidence, fundamental creative skills as well as the insights for how to produce and disseminate novel and valuable ideas in all aspects of life, domains, industries and general society. We need an educational system that makes it possible for students to pursue creative potential in a healthy and ethical way for the interests of both oneself, an organisation, a region, a country, a domain as well as for mankind and humanity.

### **Integrating Creativity in Education: Guidelines for Applying Research to Practice**

How can the educational system design a more holistic and systematic approach for developing student's creativity? As the importance of language, scientific and mathematical skills increased educators have defined, explored, invented, experimented and disseminated approaches for holistic and systematic development of competences related to these subjects. This process made it possible to integrate them as obligatory and integrated parts of education. As creativity now becomes more important, we may need a similar process defining, exploring, inventing, experimenting and disseminating new holistic and systematic approaches for teaching creativity at all levels of the educational system. The process should have the intention that every student can become creative as a second nature regardless of heredity and early childhood.

Holistic and systematic curricular approaches are often based on pillar systems, where every block of learning becomes the foundation for the next level of learning. At each level of the pillar system we will need to develop learning objectives, teaching materials, study activities, assessment approaches as well as methods for supporting creative learning environments. Hereby, every year from pre-school to vocational, higher education and lifelong learning will have a unique curriculum and build on top of previous years curriculum. That way we will be able to reach new heights in nurturing the creative potential of our students. Educational leaders, policy makers, researchers and practitioners need to set ambitious visions and establish hands-on plans for prioritising the development and implementation of pillar-based creativity curriculum at all levels of education. In doing so, they should carefully consider how ethics and persuasion may need to be naturally connected with creativity. Since creative people are powerful and influential, we need to make sure that they take serious ethical considerations before disseminating their ideas. Also, creative people are only powerful and influential if they are able to persuade others on their ideas. Persuasion may

be what makes the difference between being a weirdo and being a creative genius.

### **Where to put all this new Creativity Curriculum?**

Some may argue that creativity naturally integrates with subjects like art and science. However, creativity seems to go across all domains and professions. In law, creative ideas are continuously needed for better presenting a case to a jury. In accounting, creative ideas are continuously needed to better translate human accounts into meaningful numbers. In management, creative ideas are continuously needed to better motivate employees to work towards a vision. So, the question may rather be: do we want students to be creative within a specific subject? And what subject should this be? Should all students be creative in the same subject? Or do we want students who are creative in whatever they pursue in life? Should creativity be taught as a general human second nature that they can use across all aspects of their life, work and entrepreneurial ventures? We may need to think holistically about the development of creativity in education. We may need creativity in all subjects, and we may need a subject on creativity where all the other subjects and everything else can be explored creatively.

### **Conclusion**

We stand before a period of complex problems for humanity and the human race. However, we also stand before the potential of a new inclusive golden era where the majority of people can come to play a much larger role in the advancement of the human race and humanity. We will need to rethink our educational system in order to take advantage of this potential and solve the coming complex problems. We will need a system that systematically integrates holistic creativity curriculum as a fundamental component throughout all levels and across all subjects in education. We need everyone to help being creative across all domains and all industries.

### **Corresponding author:**

Author can be contacted at: [post@christianbyrge.com](mailto:post@christianbyrge.com).