

# Technology and Creativity in Higher Education

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# Introduction



Exponential growth of technology



4Cs of the 21st Century Skills



The Need for Change in Higher Ed

Innovate  
Sac

Key Term:  
Educational  
Technology

21st  
Century  
Skills

The Need  
for Change





# Innovate Sac: Transforming Sacramento into an Urban Technology Lab - 11/15/2017

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Mayor of Sacramento

**Dr. Robert S. Nelsen**

President of  
Sacramento State  
University

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Principal Faculty of  
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*“We won't experience  
100 years of progress in  
the 21st century –  
it will be more like 20,000  
years of progress.”*

Raymond Kurzweil,  
an American writer and scientist

(2017)



# Key Term: Educational Technology

|                                      |                              |
|--------------------------------------|------------------------------|
| Tablets                              | Smartphones                  |
| Digital Textbooks                    | E-Books designed by learners |
| Socially-designed learning resources | Simulations & Games          |
| Video Conferencing                   | Virtual Mentoring            |
| Online Education                     | Online Assessment            |

(Bonk, 2011)

# 4Cs of the 21st Century Skills



- Creative Thinking
- Critical Thinking
- Communication
- Collaboration

## Key Term: Creative Thinking

- "Thinking outside of the box"
- Innovation
- Risk-taking
- Positive attitude towards mistakes

(National Education Association, 2012)

# The Need for Change

"teaching for creativity cannot be achieved without creative teaching"

(Ayob, Hussian, & Majid, 2013)



# Statement of the Problem



Need to teach with technology



Need to teach for creativity



Lack of research to connect the 2

Teach With  
Technology

Teach For  
Creativity

Need for  
Research



# Teach with Technology



Educators don't have a clear vision on how technology might be useful for their students & adhere outdated methods of teaching (Kirkwood, 2014).



Educators use technologies more "to make their own jobs easier" than to bring their teaching styles to another level (Herold, 2015).



With technology invasion into the classrooms, educators need to change their teaching styles (Schols, 2012).



# Teach For Creativity



Traditional education based on lecturing "stifles creativity of students"; educators need to give students opportunities to do creative things, to encourage creativity, and to be creative themselves (Runco, 2014).



To teach creatively, educators need to change the ways they used to teach (Ayob et al., 2013). Using technology in the classrooms can help educators to transform their teaching styles and to take a position of a coach with serving attitude (Coochson Jr., 2017).



Educators feel sceptical about changing their roles from "the sage on the stage" to the "guide on the side" (Nguyen, Barton, & Nguyen, 2015).



# Need for Research



The book about research on creativity, *Creativity: Theories and Themes: Research, Development, and Practice*, mentions the word "technology" only a few times, and in the chapter on educational perspectives, it is not mentioned at all (Runco, 2014).



Only one article was found so far that connects teaching with technology and teaching for creativity; it is about an educational program for K-12 pre-service teachers (Urbani et al., 2017).



There is a need for research about higher education faculty perspectives on how their teaching with technology influences their teaching for creativity.



# Literature Review



Teaching with Technology



Teaching for Creativity



Need for Research

Teach With  
Technology

Teach For  
Creativity

Need For  
Research



# Teach With Technology



Experts suggest that today's education system needs to be proactive in young people's preparation for tomorrow's uncertain job market that will need more highly educated workers who would be able to think abstractly and creatively, as well as have excellent problem-solving skills (Herold, 2017b).



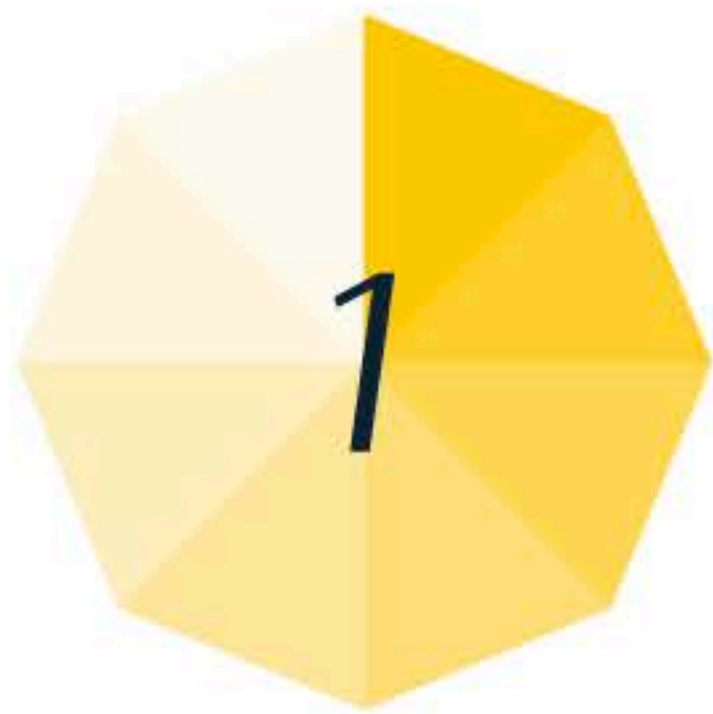
The use of new technologies can be helpful in this process (Coochson Jr., 2017).



Technology itself doesn't make learning better, but the possibilities that it brings, do make a difference in student's achievements and an overall understanding of the subject (Schwartz, 2017).



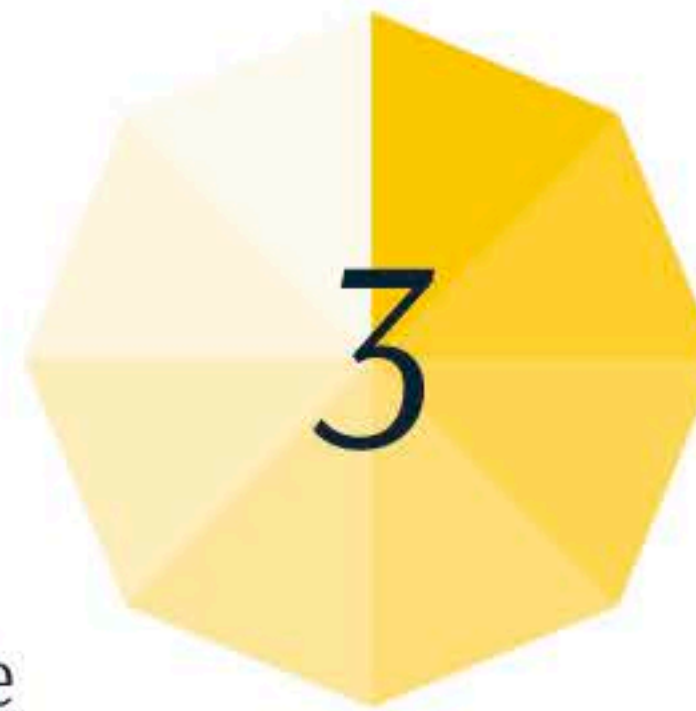
# Teach For Creativity



Some K-12 educators are successful in creative ways of using educational technology in their classrooms. For example, they use social-media like educational technology to creatively teach classic literature (Herold, 2017a).



K-12 teachers also started to use smartphones as learning tools through the “Bring Your Own Tech” program initiative (Higgins, 2013).



Researchers found a strong relationship between teachers’ creativity and their effectiveness and suggested that colleges invest in workshops on creativity for their faculty if they want to bring the quality of instructions to another level (Davidovitch, & Milgram, 2006).



# Need For Research



Research indicates little interest in involving academics into a discussion about their opinion regarding how to improve their teaching styles, aligning them with technology demands (Nguyen et al., 2015).



Many educators feel isolated and need to be involved “in dialogue ... not to be fixed or saved, but rather to be seen and heard” (Schols, 2012).



Professional development programs are more effective when focused on real needs of teaching faculty and gives faculty opportunities to practice using technology in their learning processes and to reflect on their experience (Jaipal-Jamani et al., 2015).



# Research Methodology



Qualitative Research



Participants: Higher Education Faculty



Data Sources: Semi-Structured Interviews and Observations

Research Questions



## Main Research Question:

How faculty's choices of educational technologies can influence the aspects of their students' creative thinking:

- Innovation
- Risk-taking
- Positive attitude towards mistakes

## Research Sub-Questions:

- Kinds of educational technologies that are most often used in classrooms and the benefits of these technologies for students.
- Preferences by teaching faculty to test some original ideas regarding educational technologies in classrooms or to use proven methods and the reasoning behind those preferences.
- Difficulties that educators face during the process of designing their curriculum with educational technology in mind and coping with unpredictable situations that educational technologies can cause in their classrooms.
- The kinds of professional development programs concerning the use of educational technology in classrooms that could be beneficial for educators.
- Educators' understanding of the term "creative thinking," and how they help their students to develop creative thinking skills in their classrooms.



# Conclusion

**Marc Tucker**, The author of an article ***Why Ed Tech Made So Little Difference?***, studied the potential of technologies in education more than **30 years ago**, and **nothing has changed much ever since**. Tucker states: **“Great technology will get nowhere without great teachers,”** and that those **teachers would be helpless without technology**. He also concludes that there is a great need for the new **“conception of the professional role of the classroom teacher in the whole process of innovation”** (Tucker, 2016).



(Steinberg et al., 2017)



# References

- Ayob, A., Hussain, A., & Majid, R. A. (2013). A Review of Research on Creative Teachers in Higher Education. *International Education Studies*, 6(6), 8-14.
- Bonk, C. J. (2011). *The World is Open: How Web technology is Revolutionizing education*. San Francisco, CA: Jossey-Bass.
- Cookson Jr., P. W. (2017, October 16). 10 Disruptions That Will Revolutionize Education. Retrieved from <https://www.edweek.org/ew/articles/2017/10/11/10-disruptions-that-will-revolutionize-education.html?cmp=eml-enl-eu-news1&M=58236160&U=2644973&print=1>
- Davidovitch, N., & Milgram, R. M. (2006). Creative Thinking as a Predictor of Teacher Effectiveness in Higher Education. *Creativity Research Journal*, 18(3), 385-390. doi:10.1207/s15326934crj1803\_12
- Herold, B., (2015, June 10). Why Ed Tech Is Not Transforming How Teachers Teach; Student-centered, technology-driven instruction remains elusive for most. *Education Week*, 34(35), 8,10, 12, 14. Retrieved from <http://www.edweek.org/ew/articles/2015/06/11/why-ed-tech-is-not-transforminghow.html?qs=%22Why+Ed+Tech+Is+Not+Transforming+How+Teachers+Teach;+Student-centered,+technology-driven+instruction>
- Herold, B. (2017, February 08). Teaching Shakespeare With 21st-Century Technology. Retrieved from <https://www.edweek.org/ew/articles/2016/11/09/teaching-shakespeare-with-21st-century-technology.html>
- Herold, B. (2017, October 06). Schools and the Future of Work: 10 Research Reports You Need to See. Retrieved from [http://blogs.edweek.org/edweek/DigitalEducation/2017/10/schools\\_future\\_of\\_work\\_research\\_roundup.html?cmp=eml-enl-dd-news2&M=58240740&U=2644973](http://blogs.edweek.org/edweek/DigitalEducation/2017/10/schools_future_of_work_research_roundup.html?cmp=eml-enl-dd-news2&M=58240740&U=2644973)
- Higgins, J. (2013, August 07). More schools use cellphones as learning tools. Retrieved from <https://www.usatoday.com/story/tech/personal/2013/08/07/views-shift-on-cell-phones-in-schools/2607381/>
- Jaipal-Jamani, K., Figg, C., Gallagher, T., Scott, R. M., & Ciampa, K. (2015). Collaborative Professional Development in Higher Education: Developing Knowledge of Technology Enhanced Teaching. *Journal Of Effective Teaching*, 15(2), 30-44.
- Kirkwood, A. (2014). Teaching and Learning with Technology in Higher Education: Blended and Distance Education Needs "Joined-up Thinking" Rather than Technological Determinism. *Open Learning*, 29(3), 206-221.
- National Education Association. (2012). Preparing 21st century students for a global society: An educator's guide to the four "Cs." (D. Van Roekel, Ed.). Retrieved from <http://www.nea.org/assets/docs/A-Guide-to-Four-Cs.pdf>
- Nguyen, L., Barton, S. M., & Nguyen, L. T. (2015). iPads in higher education-Hype and hope. *British Journal Of Educational Technology*, (1), 190. doi:10.1111/bjet.12137
- Runco, M.A. *Creativity: Theories and Themes: Research, Development, and Practice*. Elsevier, Academic Press, 2014.
- Schols, M. (2012). Examining and Understanding Transformative Learning to Foster Technology Professional Development in Higher Education. *International Journal Of Emerging Technologies In Learning*, 7(1), 42.
- Schwartz, K. (2017, September 4). How the Google Suite Can Enhance Open-Ended Math Exploration. Retrieved from <https://ww2.kqed.org/mindshift/2017/09/04/how-the-google-suite-can-enhance-open-ended-math-exploration/>
- Steinberg, D., Nelsen, R. S., & Frank, A. (2017, November 15). Transforming Sacramento into an Urban Technology Lab. Speech presented at Innovate Sac in Sacramento State University, Sacramento.
- Tucker, M. (2016, October 13). Why Has Ed Tech Made So Little Difference? Retrieved from [http://blogs.edweek.org/edweek/top\\_performers/2016/10/why\\_has\\_ed\\_tech\\_made\\_so\\_little\\_difference.html?qs=why%2Bhas%2Bed%2Btech%2Bmade%2Bso%2Blittle%2Bdifference%2BTucker](http://blogs.edweek.org/edweek/top_performers/2016/10/why_has_ed_tech_made_so_little_difference.html?qs=why%2Bhas%2Bed%2Btech%2Bmade%2Bso%2Blittle%2Bdifference%2BTucker)
- Urbani, J. M., Roshandel, S., Michaels, R., & Truesdell, E. (2017). Developing and Modeling 21st-Century Skills with Preservice Teachers. *Teacher Education Quarterly*, 44(4), 27-50.