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Can success visualization help students manage their concerns about learning technical concepts?

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Abstract

When business students realize they must conduct hands on technical work many approach the challenge with trepidation. This case study answers the question: when presented with new technical challenges will students support engaging in success visualization techniques to help them meet those challenges? The findings of this pedagogical study will help faculty teach courses that include technical content more effectively.

Keywords: information technology, analytics, pedagogy, success visualization, imagery

Introduction

This case study explores whether the application of success visualization can help graduate students gain the confidence required to master technical concepts. It addresses the problem that many students need help conquering their fears when faced with new technical challenges and answers this research question, “When presented with new technical challenges will students support engaging in visualization to achieve success?”

Review of Literature

Articles about visualization in the popular press tend to focus on famous people who employed it to achieve their success. Visualization in this context does not refer to data visualization, instead it refers to success visualization, often referred to as “imagery.” In this context, success visualization is the act of creating a picture in the mind’s eye of each step toward the achievement of a goal. Actor Jim Carrey famously wrote himself a check years before landing his first movie role. Bodybuilder, actor and politician Arnold Schwarzenegger visualized success at each step of his career. Multimedia personality Oprah Winfrey visualized lifting herself from poverty and achieving her goals. Olympic gold medalist Michael Phelps followed a rigorous regimen of success visualization, thinking as much about what might go wrong as what he hoped would go right at his swim meets (Axe, 2023, Daytona State College, 2022, Johnson, n.d., ProSwimwear, 2018, Straw, 2023).

Most articles about success visualization and imagery provide steps to follow and caution that visualization alone will not ensure success, it also requires hard work, practice and breaking tasks down to their component parts (Quinn, 2021, Rasmus, 2020, Shulz, 2016). For instance, Michael Phelps’ visualization routine was part of his daily practice program from a young age and he was not capable of effective visualization at first, it took practice for him to master it. An intense work ethic, practice and success visualization helped him to reach the pinnacle of swimming (ProSwimwear).

A large body of peer reviewed literature supports the claim that success visualization combined with practice leads to better results than practice alone. Blankert and Hamstra (2016) emphasized the concept of “PETTLEP imagery” in their study about using success visualization to improve tennis effectiveness. PETTLEP visualizes these dimensions to help a practitioner envision success: **p**hysical, **e**nvironmental, **t**ask, **t**iming, **l**earning, **e**motion and **p**erspective. This generates a visceral image in the mind’s eye that the psyche does not distinguish from real experience, conditioning the performer to succeed when they conduct the activity for real. Blankert and Hamstra tested whether applying PETTLEP imagery improves the accuracy of tennis serves in a controlled experiment and concluded participants were on target more often than with practice alone.

Other studies produced similar results. Brouziyne and Molinaro (2005) found golfers who combine success visualization with physical practice improved their golf shots while Munro-Chandler and Guerrero (2017) compared success visualization with imagery. They asserted while success visualization focuses on sight, imagery includes the sensations of taste, sound, smell, touch and other relevant aspects.

Rothlin, et. al, (2017) affirmed people access images from their memory or generate vivid new images that help them visualize succeeding on the field of play and explained how visualization opens cognitive pathways in the brain that render the visualized experience indistinguishable from the real thing. In an oft cited study,

Ranganathan et. al. (2004) tested whether participants engaging in mental training alone using visualization would experience strength gains. They asked participants to perform “mental contractions” of their little fingers using rarely used muscles and found participants who engaged in visualization reported more strength gains than participants who engaged in physical training. While much of the research about success visualization and imagery focuses on athletics, if the human brain perceives imagined experience the same way it perceives real experience the benefits should also be applicable in the classroom. This study explored whether students are comfortable with this.

Methodology

This case study was approved by the University of Bridgeport’s Institutional Review Board, protocol number 2023_4_3. As Creswell (2007) affirms, a case study is qualitative research that explores a “bounded system,” or case, through in-depth research into a situation to achieve an understanding of a phenomenon. This case study explored students’ readiness to engage in success visualization and imagery to improve their mastery of technical concepts. Student feedback was analyzed to generate further understanding of whether a group of graduate students would adopt these techniques to master technical concepts (Creswell, 2007). The Principal Investigator showed a convenience sample of 41 graduate students a video about Michael Phelps’ success visualization approach and asked them to respond to a Survey Monkey survey that consisted of these questions:

- Select your school and concentration.
- When asked to engage in a technical challenge in class, from using a new software application, to having to analyze data, to computer programming, do you tend to feel overwhelmed or confident? Why?
- What is the biggest obstacle for you when asked to master a new technical challenge?

- When confronted with a new technical challenge, how do you tend to gain the confidence to master that challenge?
- The Principal Investigator presented the concept of visualization in class. Do you think including visualization with technical exercises will help you gain the confidence you need to master the technical concepts? Why or why not?
- How would you recommend instructors assigning technical work in their courses use visualization to help students overcome hesitation with using the tool?

The participant sample included graduate students from the School of Business enrolled in these programs. Roughly 80% of the participants were students in the university's MS in Analytics program.

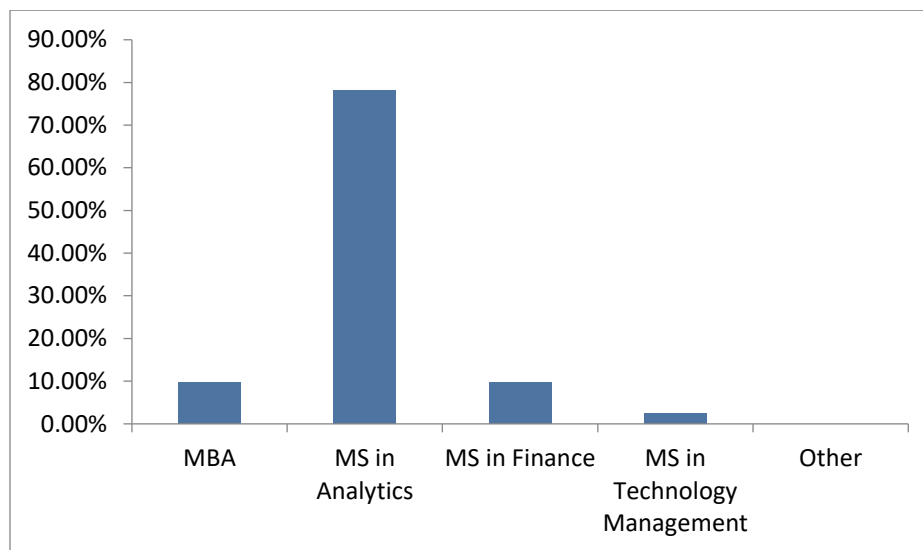


Figure 1: Participants by Graduate Business Program

The University of Bridgeport has a diverse student body and more than half of the graduate students in the Schools of Business and Engineering are international. Some students have previous work experience or are current professionals, while others are full time students with no previous work experience. The business programs are offered both online and on campus, the engineering programs are not. The master's programs in both analytics and technology management tend to focus on managerial, business facing content than on deep technical content.

Many students enroll because they realize analytics is a growing field and a large percentage become concerned upon realizing they will need to conduct hands-on technical tasks. Most of the graduates from the University of Bridgeport's graduate analytics programs secure jobs in business analysis, followed by data analysis and junior project management roles.

Results

This chart displays the number of students who confirmed they were confident, overwhelmed and neither confident nor overwhelmed when confronted with a technical challenge in class.

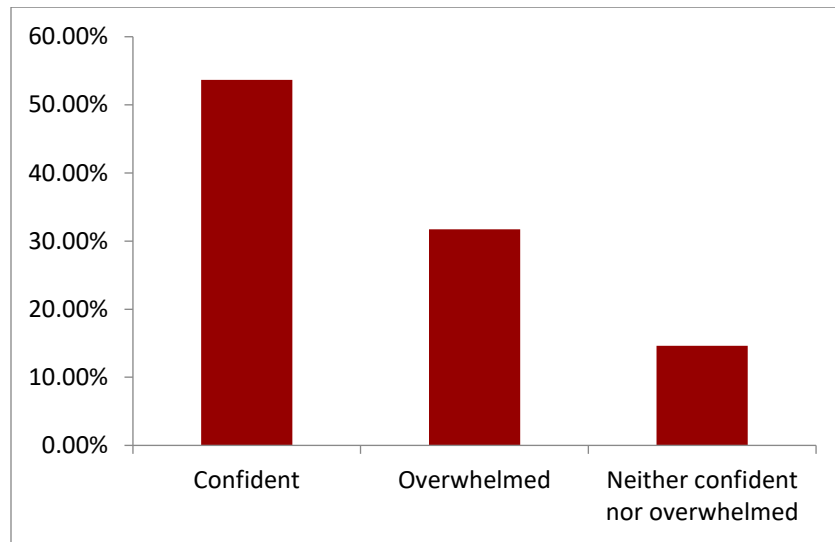


Figure 2: Participants' Reactions to Technical Challenges in Class

These comments describe several of the overwhelmed students' feelings.

"To cope with new technical challenges in class, I feel overwhelmed... So, I think it's important to take a step back, ask for help and support, and break the challenge down into smaller, manageable tasks. With a positive mindset and the right support, I can overcome my fears and successfully complete the technical challenge."

"I am new to the analytical field. I only started studying analytics a year ago for my master's degree. I would feel overwhelmed since I am not too confident with computer programming."

Several students confirmed the root causes of their concerns were insufficient available time and a lack of previous experience with technology.

"For me, the biggest obstacle when asked to master a new technical challenge is the fear of not being able to grasp the concept or skill. I often feel overwhelmed when presented with something new and unknown, and this can lead to self-doubt and a lack of confidence. Additionally, I may struggle with finding the time and motivation to dedicate to learning the new skill, particularly if it is something that does not come naturally to me."

Students' strategies for gaining confidence echoed recurring themes from the literature including employing calming techniques, breaking tasks down into their component parts, practicing and conducting pre-work to prepare beforehand.

"Practice over and over."

"Practice it."

“When confronted with a new technical challenge, I tend to gain the confidence to master that challenge by taking a structured approach to learning. First, I try to break down the challenge into smaller, more manageable tasks or concepts. This helps me to focus on one thing at a time and prevents me from feeling overwhelmed.”

“Firstly, I always keep my mind calm and positive...This is how I tend to gain confidence.”

“...[I] try to be as relaxed as possible when I address this new challenge, and when I have to deal with it whatever the situation, I want to be ready in advance.”

Most participants were open to using success visualization techniques in class.

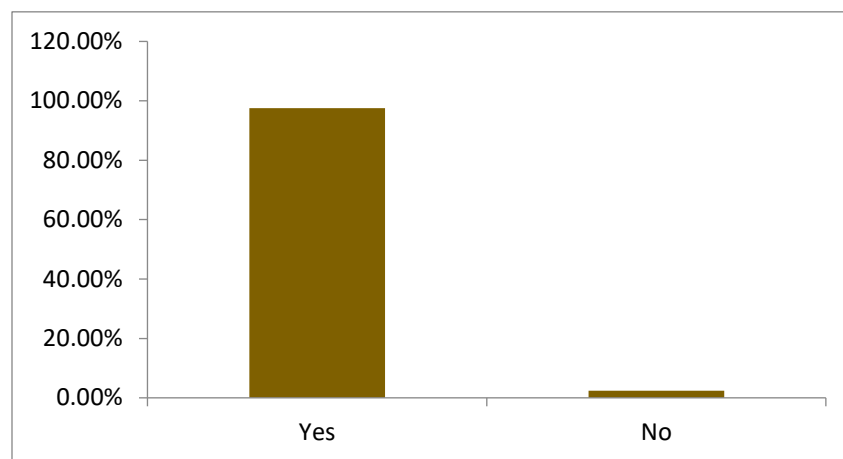


Figure 3: Participants Who Support the Use of Success Visualization in Class

“I think that [success] visualization allows you to be prepared for your challenges in advance, permitting you to be confident and not nervous with that.”

“Gives more clarity and we will be prepared for the circumstances.”

“I think the concept of [success]visualization gives you more...understanding and more confidence on the new technology challenges rather than just starting [them].”

“After watching the video, I think the mind is everything. What you think, you become. It is a great concept of [success] visualization. When it comes to mastering any technical concept, it is important to look at any problems from different perspectives.”

“By incorporating [success] visualization techniques into their courses, instructors can help students overcome hesitation with using technical tools and build their confidence in these areas.”

Discussion

Since most of this case study’s participants hailed from technically oriented graduate programs, the reality that half of them are confident with technology in the classroom is positive. The pertinent question becomes

whether success visualization techniques can move the participants who reported feeling overwhelmed to a similar level of confidence and, by extension, success. This study is not about students who arrive ready to engage with technology, it's true focus is on preparing those who are not yet ready.

Though this case study focused on a convenience sample its findings are intriguing. Participants' strategies for working through technical challenges like breaking the work down into its component parts, practicing, applying calming techniques to maintain relaxation and understanding situation and context before execution mirror the steps used to prepare for engaging in success visualization and imagery. Their openness to using these techniques stages their potential use in the classroom. Before Hall of Fame golfer Jack Nicklaus takes a shot, he visualizes every aspect of it, from his stance, to his swing, to the arc of the ball sailing across the fairway, to where it will land on the green. Nicklaus credits much of his success to success visualization (Canfield, 2005). Can students achieve the same success he experienced in the classroom using similar success visualization techniques? This study confirms they are open to it.

Future Research

The literature presents many survey instruments that can be applied in subsequent research. In addition, understanding how teachers can effectively employ success visualization and imagery in the classroom will be helpful. Questions abound. Should the instructor start class with a success visualization or would students find that disconcerting? Would it be better to engage in success visualization exercises early or late in the semester? Should teachers assign success visualization exercises for homework instead of conducting them in class? Since this study focused on graduate students, would undergraduates be as open to success visualization and imagery? Can success visualization work both on campus and online? The opportunities for further research are endless.

References

- Axe, J. (2023). *8 visualization strategies that make your goals a reality*. Leaders.
<https://leaders.com/articles/personal-growth/visualization/>
- Blankert, T. & Hamstra, M. R.W. (2017). Imagining success: Multiple achievement goals and the effectiveness of imagery, *Basic and Applied Social Psychology*, 39:1, 60-67, DOI: 10.1080/01973533.2016.1255947
- Brouziyne, M. & Molinaro, C. (2005). Mental imagery combined with physical practice of approach shots for golf beginners. *Perceptual and Motor Skills*. 101:1, 203-211. DOI: <https://doi.org/10.2466/pms.101.1.203-211>
- Canfield, J. (2005). *How to get from where you are to where you want to be*. London: Harper Element.
- Chandler, K.J. & Munroe, M. D. (2017). Psychological imagery in sport and performance. *Psychology*. DOI: h10.1093/acrefore/9780190236557.013.228
- Creswell, J.W. (2007). *Qualitative inquiry and research design*, 2nd edition, Thousand Oaks, CA: Sage Publications.

- Daytona State College. (2022). *Visualizing Your Success*.
<https://library.daytonastate.edu/success/visualize>
- Globokar, L. (2020). The power of visualization and how to use it. Forbes. Retrieved From:
<https://www.forbes.com/sites/lidijaglobokar/2020/03/05/the-power-of-visualization-and-how-to-use-it/?sh=5d3f57e56497>
- Johnson, G. (n.d.). *How to visualize success and achieve your goals: An A – Z guide*. Complete Guide to Archery. <https://www.completeguidetoarchery.com/how-to-visualize-success/>
- Lohle, M. (2023). *Is technology scary? Student perceptions of analytics content in graduate core courses*. [Online poster]. [Accessed May 26, 2023] Available from:
<https://rise.bridgeport.edu/2023/presentations/is-technology-scary-student-perceptions-of-analytics-content-in-graduate-core-courses/>
- Lohle, M. (2022). Is technology scary? Student perceptions of analytics content in graduate core courses. *Issues in Information Systems*. 23:2, 132 – 137. DOI: https://doi.org/10.48009/2_iis_2022_111
- ProSwimwear. (2018, August 20). *Michael Phelps – The Journey – Ep 5 – Visualization* [Video]. YouTube. https://youtu.be/p-mZhvxek_k
- Ranganathan, V. K., et. al. (2004). From mental power to muscle power – Gaining strength by using the mind. *Neuropsychologia*. 42:7, 944 – 956. DOI: 10.1016/j.neuropsychologia.2003.11.018
- Rasmus, A. (2020). *Building a strong mental game: The power of visualization for athletes*. Competitive Edge Physical Therapy. <https://compedgept.com/blog/visualization-and-athletic-performance/>
- Röthlin, P., et al. Psychological skills training and a mindfulness-based intervention to enhance functional athletic performance: design of a randomized controlled trial using ambulatory assessment. *BMC Psychology* 4:39 (2016). <https://doi.org/10.1186/s40359-016-0147-y>
- Schulz, J. (2016). *Use visualization for success*. Michigan State University Extension. https://www.canr.msu.edu/news/use_visualization_for_success
- Straw, E. (2023). *Visualization: A 3 step technique*. Success Starts Within. <https://www.successstartswithin.com/blog/visualization-a-3-step-technique>
- Quinn, E. (2021). *How imagery and visualization can improve athletic performance*. verywellfit. <https://www.verywellfit.com/visualization-techniques-for-athletes-3119438>
- The Neuroscience School (n.d.). *Why visualization doesn't work to make your dreams a reality*. <https://neuroscienceschool.com/2019/06/20/why-visualization-doesnt-work-to-make-your-dreams-a-reality/>