Literature Review: Identifying Recommended Instructional Design Techniques for veterans with Traumatic Brain Injury and/or Post-Traumatic Stress Disorder

Stacy Springer
Foundations of Research (EDUC-6125-1)

Introduction

There is a problem in post-secondary education in the United States. Many veterans with Traumatic Brain Injuries (TBI) and/or Post-Traumatic Stress Disorder (PTSD) have unique learning requirements that we need to be cognizant of as instructional designers. Veterans with TBI and/or PTSD are continuing their post-secondary education after military service. Unless accommodations are made to the educational strategies it may affect the learning outcomes of TBI/PTSD students. This study will identify what learning strategies can be utilized to improve learning outcomes in students with TBI and/or PTSD, and define multimedia strategies to enhance the learning process for students with TBI and/or PTSD.

Background

In today's "War on Terror" soldiers are surviving catastrophic injuries which in the past would have been fatal due to improvements in protective gear. "Head and neck injuries, including severe brain trauma, have been reported in one quarter of service members who have been evacuated from Iraq and Afghanistan." (Hoge et al., 2008) The risk of traumatic brain injury for soldiers serving in Iraq and Afghanistan has been calculated to be as high as 40%. (Kato, 2010) "The New England Journal of Medicine performed a survey that identified a link between traumatic brain injury or TBI and post-traumatic stress disorder or PTSD. The evidence showed that military members who experienced a traumatic brain injury were more than twice as likely to suffer from PTSD later on than service members who did not suffer a TBI." (Lash,

2015) The research study conducted by Hoge et al., showed that "…a history of mild traumatic brain injury in the combat environment. Particularly when associated with loss of consciousness, reflects exposure to a very intense traumatic event that threatens loss of life and significantly increases the risk of PTSD." (Hoge et al., 2008) Many veterans affected by TBI and/or PTSD are transitioning into civilian life and continuing post-secondary education with ongoing neuro-cognitive issues.

Neuro-Cognitive Issues

TBI causes neuro pathways to restructure due to injuries to the brain. Individuals who suffer a brain injury may not process information the way they have prior to the injury. "…verbal learning and memory were associated with executive functions over and above processing speed, PTSD severity, and depression in the PTSD group. IQ also demonstrated a significant relationship with verbal learning and memory in the PTSD group though executive functions accounted for significant variance after controlling for IQ." (Stricker et al., 2015) Individuals with TBI and/or PTSD experience cognitive issues with concentration, processing, abstract reasoning, problem solving, sequencing and memory retention. Additionally, students are less likely to be self-motivated and are more likely to adopt detrimental learning habits. "Greater levels of PTSD symptoms contributed to maladaptive academic motivations, especially lower self-efficacy for learning and higher performance-avoid tendencies." (Ness, Middleton and Hildebrandt, 2015) Identified emotional issues are lack of confidence and social interaction issues. Individuals continue to try to process information the way they have previously without success which affects self-confidence. The lack of self-confidence leads to the assumption that they cannot learn and therefore leads to the adoption of poor learning strategies as they continue to fall back on past strategies which are no longer effective. This lack of confidence in their

ability to learn discourages the individual from exploring new learning strategies. This resistance to incorporating new learning strategies can cause teachers and other students to view the student as mentally challenged rather than in need of an alternative learning methods. This misunderstanding can cause the student to become even more discouraged in their ability to learn.

Problem Resolution

According to a study by Bouldin, there are specific actions that can assist a student with TBI to succeed; avoid schedule changes, provide lecture notes, avoid making assumptions about prior knowledge, and provide normalcy as much as possible. (Bouldin, 2005) Due to brain injuries, prior knowledge may exist in the brain but may not be readily accessible. The student may not know exactly what knowledge they have learned and how to trigger its retrieval. TBI students may struggle with sudden change which can cause anxiety. Overall, the willingness to make accommodations and show compassion is key to the success of the student with TBI. PTSD symptoms include stress, anxiety, low self-confidence, and sleep issues. Successful PTSD students in post-secondary education were shown to have the confidence to pursue new learning strategies according to Ness et al., 2015. "…the presence of neurobehavioral symptoms was not a singular contributor to poor academic performance. Instead, the participants indicated factors such as motivation, discipline, and maturity were more significant in explaining their college success." (Ness et al., 2014) Both TBI and/or PTSD affected students need to develop self-confidence as a key to post-secondary education success.

Conclusion

In post-secondary classroom situations, it is not only important to provide services to assist TBI and/or PTSD students to learn, but it is also critical to help those students to develop self-confidence in their own abilities. Students require this self-confidence in their own learning abilities in order to successfully learn and implement new learning strategies. By incorporating instructional techniques that reinforce student self-confidence, it will help to promote and reinforce the adoption of effective learning strategies and the practice of self-motivation. In order to improve upon a student's self-confidence, it is important to ascertain what knowledge the student possesses prior to developing an effective learning strategies. It is also important not to make any assumptions regarding the neuro-cognitive condition of a student with TBI and/or PTSD.

Limitations

Although this literature review provided information on post-secondary educational strategies for TBI and/or PTSD students there is a lack of credible information on multimedia strategies in current available research studies. Additional studies need to be conducted to determine multimedia strategies and their effect on students with TBI and/or PTSD.

References

Bouldin, K. (2005). TBI: Our Teachers Are Not Prepared. *The English Journal*, *94*(4), 52-58. doi:1. Retrieved from http://www.jstor.org/stable/30046460 doi:1

Hoge, C. W., McGurk, D., Thomas, J. L., Cox, A. L., Engel, C. C., & Castro, C. A. (2008). Mild traumatic brain injury in US soldiers returning from Iraq. *New England Journal of Medicine*, *358*(5), 453-463.

Kato, L. (2010). The psychological adjustments of veterans returning from Afghanistan and Iraq. (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses database. UMI (3426110).

Lash, M. (2015) *TBI and PTSD: Navigating the perfect storm*. Available at: http://www.brainlinemilitary.org/content/2013/03/tbi-and-ptsd-navigating-the-perfect-storm_pageall.html (Accessed: 11 May 2016).

Ness, B. M., Middleton, M. J., & Hildebrandt, M. J. (2015). Examining the effects of self-reported posttraumatic stress disorder symptoms and positive relations with others on self-regulated learning for student service members/veterans. *Journal of American College Health*, *63*(7), 448-458.

Ness, B. M., Rocke, M. R., Harrist, C. J., & Vroman, K. G. (2014). College and combat trauma: An insider's perspective of the post-secondary education experience shared by service members managing neurobehavioral symptoms. *NeuroRehabilitation*, *35*(1), 147-158.

Stricker, N. H., Keller, J. E., Castillo, D. T., & Haaland, K. Y. (2015). The neurocognitive performance of female veterans with posttraumatic stress disorder. *Journal of traumatic stress*, *28*(2), 102-109.

Summerall, L.E. (2016) *Traumatic brain injury and PTSD*. Available at: http://www.ptsd.va.gov/professional/co-occurring/traumatic-brain-injury-ptsd.asp (Accessed: 5 June 2016).