A Neuroscience Education “Free for All”

**Background:** On many important issues, the general public’s views differ from those of researchers connected to the American Association for the Advancement of Science (AAAS) (<http://www.pewinternet.org/interactives/public-scientists-opinion-gap/>). Neuroscience is not immune to this gap. Several factors play a role. First, neuroscientists are less likely than other researchers to communicate their findings through mass media (Peters, 2013, <http://www.pnas.org/content/110/Supplement_3/14102.full>). Second, jargon renders intriguing neuroscience articles inaccessible to lay audiences. Third, major neuroscience findings are often published behind the “pay walls” of subscription-based journals. The present project addressed these issues by inspiring and equipping undergraduates to become neuroscience public educators.

**Project Description:** Junior and senior undergraduates in Denison’s Advanced Neuroscience seminar worked in pairs or trios to generate neuroscience lessons in TED-Ed. Like the popular “TED-Talks”, TED-ED is an educational resource free to everyone, everywhere, all the time. The students’ TED-ED neuroscience lessons spanned the five topical areas covered by the Society for Neuroscience’s flagship publication, The Journal of Neuroscience: Cellular / Molecular; Development/Plasticity/Repair; Systems/Circuits; Behavioral/Cognitive; Neurobiology of Disease. Within these topical areas, students began building their TED-Ed lessons by using PubMed to identify open access articles published in accordance with Creative Commons License 4.0 (CC BY 4.0) (https://creativecommons.org/licenses/by/4.0/). This ensured that the TED-Ed Lesson viewers would have access to the primary source for each lesson. Students next built three components for each TED-Ed lesson: “WATCH”; “THINK”; “DIG DEEPER”. The “WATCH” components comprised student-generated 10-15 minute YouTube videos that summarized each research article appropriately for a “PBS Audience” i.e., intellectually curious adults with no neuroscience training. The “THINK” components comprised 15 student-generated questions. These included short-answer items about the article’s PubMED abstract, multiple choice items with embedded video “hints”, and other items requiring hand-drawn online graphs (<http://draw.to>), higher-order cognition from Bloom’s taxonomy

(<https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>), and metacognitive reflection. The “DIG DEEPER” components comprised links to the PubMed abstract, the full text, and wiki-based explanations of jargon essential to the article. The following list summarizes the student-generated TED-Ed lessons.

**[Neural Networks of Superior Memorizers](http://ed.ted.com/on/SNIR5n81" \t "_blank)**

http://ed.ted.com/on/SNIR5n81

[**Alzheimer's Disease and Dissociation between Somatosensory Cortex and Hippocampus**](http://ed.ted.com/on/aY7RNDYU) http://ed.ted.com/on/aY7RNDYU

[**Protective Effect of Dietary Supplementation in Alzheimer's Disease**](http://ed.ted.com/on/40yyaX6G) http://ed.ted.com/on/40yyaX6G

[**Hippocampal Neurogenesis after TBI**](http://ed.ted.com/on/3eWbeH3B)

http://ed.ted.com/on/3eWbeH3B

[**Prion proteins as a biomarker for mTBIs**](http://ed.ted.com/on/dkqGiTya)

http://ed.ted.com/on/dkqGiTya

[**Neuroscience:** **Alexander Disease Biomarker**](http://ed.ted.com/on/pXpA9srq)

http://ed.ted.com/on/pXpA9srq

[**WINNING PAIN RELIEF**](http://ed.ted.com/on/w81FQruZ)

http://ed.ted.com/on/w81FQruZ

**Conclusion:** Regarding “product”, students deepened their own knowledge of neuroscience and created an ensemble of neuroscience lessons, free for all. Regarding process, students developed skill in using a new technology, refined their own metacognition, and helped lay audiences to think about and “think about thinking about” neuroscience.