A Case Study of Using IMPULSE in an Undergraduate Course

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Introduction

IMPULSE is an online, international journal for research reports and reviews from undergraduate neuroscientists. Started in 2003 (Neu. Neu. Rev. 22: 253-33), it has now six archived issues (Neu. Neu. Rev. 22: 253-33, 2005, 22: 253-33, 2006, 22: 253-33, 2007, 22: 253-33, 2008, 22: 253-33, 2009). The IMPULSE peer reviewers are from around the world, with some universities hosting trained review teams with Faculty Advisors to oversee the process. It had been previously reported that neuroscience faculty might find the journal an authentic publishing experience for their students; this current report presents an example of this use.

In Spring 2009, one of us (R.K.) taught an undergraduate Molecular Neurobiology course at Ursinus College with submission of a manuscript to the journal, IMPULSE, incorporated into the syllabus. In the laboratory section of the course, students were asked to develop an experiment examining the effect of commonly used stimulants and/or depressants, alone and in combination, on the crustacean, Daphnia magna (West Structural Ecology, Richmond, VA, USA). The five groups of students chose the following combinations of chemicals for their studies: 1) ethanol and guarana, 2) ethanol and melatonin, 3) antidepressant and curcumin, 4) ethanol and acetaminophen, and 5) ethanol and aspirin.

Experimental timetable:

Week 1: The first laboratory group of the course met, students worked in groups of four and discussed which chemicals to test. They designed their experiments and started working with D. magna, collecting control data monitoring heart rate in water. There was a class discussion about the format of IMPULSE articles and the process of online submission. Students also began searching for scientific literature on PubMed.

Week 2: Students began collecting data measuring the effect of stimulants and depressants on the heart rate of D. magna. The class reviewed the format of introductions and Methods and Materials sections in scientific papers.

Week 3: Students continued collecting data and discussed the format of Abstract, Results, and Discussion sections.

Week 4: Each student group brought in a complete version of a paper that they worked on together, including their most current data. There was a peer review workshop where students read and commented on each other’s papers. Students continued collecting data.

Week 5: Group papers turned in revised papers and collected additional data.

Week 6: Papers were returned with comments and final data collections were completed.

Week 7: Each student group submitted their revised paper to the journal, IMPULSE.

The papers were worth 10% of the students’ final grade for the course. Of the 100 points designated for the assignment, up to 75 points were assigned based on the paper that was originally submitted to IMPULSE and 25 points were assigned for the quality of students’ response to reviewers’ comments. Students indicated that they spent much more time writing the paper and researching background information on the neuronal pathways affected by the chemicals they were testing when they knew there was the possibility of publication. They were also more focused on completing the assays well and included a larger data set than they would have if the paper was not being submitted for review. Their professor found that she was more thorough in critiquing students’ papers and rather than setting expectations for how an undergraduate should write, she considered how a published author should write. When students responded to reviewers’ comments, they spent more time rewriting sections of the paper and were more thorough in their revisions than in previous courses. Incorporating journal submission into the course stimulated an in-depth writing experience for the students and allowed for a deeper understanding of neuronal pathways involved in response to stimulants and depressants than students would have experienced otherwise. The exercise of submitting articles to the undergraduate Neuroscience journal, IMPULSE, was a successful learning experience.

After several weeks, all of the student groups received IMPULSE reviewers’ comments. While the editor of the journal indicated that they could take one month to revise the papers, for the purpose of the course, the students were given one week for revisions so that papers could be resubmitted before the end of the semester. Ordinarily, a single paper resubmitted with all reviewer concerns addressed would have been posted shortly thereafter. However, receiving five resubmissions at the end of the IMPULSE reviewers’ submission deadlines may have swayed the system, and the first article was not posted until August; the journal had modified its review process as a result of this happy problem, and encourages other neuroscience faculty to consider incorporating manuscript submission to IMPULSE as part of their course.

History of IMPULSE


Redesign of IMPULSE for rolling publication: IMPULSE presented at 2nd SYNAPSE meeting; Publicity Editors created; ISSN # requested completed. 2006 issue presented at SfN (Neu. Neu. Rev. 22: 253-33, 2007)

IMPROLE presented at 3rd SYNAPSE meeting; second editorial transition completed. K. Goodlett 3rd Ed. IMPULSE presented at 7th IBRO World Congress of Neuroscience in Melbourne, Australia. 2007 issue presented at SfN (Neu. Neu. Rev. 22: 253-33, 2008)


Website moved to www.impulse.appstate.edu presented at 6th SYNAPSE meeting and SfN (Neu. Neu. Rev. 32: 253-33, 2009). Dr. S. Switzer (U. Carolina) steps in as 3rd FA; Dr. S. Symington joins as 4th FA (Salve Regina). Fifth class of graduates leaves; new reviewers and editors step in.

Sixth annual issue archived.

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