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Writing Science

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Source: *Bulletin of the Ecological Society of America*, Vol. 100, No. 4 (OCTOBER 2019), pp. 1-5

Published by: Wiley on behalf of the Ecological Society of America

Stable URL: <https://www.jstor.org/stable/10.2307/26775546>

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# COMMUNICATING SCIENCE

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## Writing Science: Improving Understanding and Communication Skills with the “Unessay”

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Professionals in natural resources are increasingly engaging with the public (Novacek 2008), and students are often expected to complete their undergraduate degree with the skills required to communicate with broad, diverse audiences (Henke and Krausman 2017). These skills, however, are often overlooked in classrooms in favor of a curriculum more focused on technical concepts. In a sophomore-level wildlife course at the University of Wyoming, two of the authors (RJ and KM) employed a relatively unconventional teaching approach (the option of an unessay) to allow students to engage with course materials in a way that would allow them to practice communication skills for their respective careers. The unessay submissions far exceeded expectations and demonstrated a high level of engagement with course material. Although one semester with one course limits the conclusions we can draw, the students’ work suggests that the unessay can be a powerful exercise for developing both understanding and communication skills in a wildlife biology class.

The unessay is an assignment that gives students freedom to decide what elements of a prompt they want to focus on and the specific ways they want to accomplish these goals (Sullivan 2015, O’Donnell 2018). For example, students can write a poem, draw a comic, or compose a song about some aspect of the material. Any sort of submission can work, so long as the message is communicated effectively and is in line with the content and ideas presented in the course. Although the unessay was originally used in the humanities, the exercise can be readily adapted for science classrooms (Aycock et al. 2019).

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Jakopak, R. P., K. L. Monteith, and B. G. Merkle. 2019. Writing Science: Improving Understanding and Communication Skills with the “Unessay”. *Bull Ecol Soc Am* 100(4):e01610. <https://doi.org/10.1002/bes2.1610>

The unessay can provide wildlife students with the opportunity to engage with course material in ways that are often overlooked by traditional classroom exercises. By choosing the medium through which they respond, students can use their respective learning preferences, which will not be uniform across the class, to meet the assignment objectives (Othman and Amiruddin 2010). This makes space for diverse learning strategies that may not always be well-suited for writing essays (Tanner and Allen 2004). Additionally, exercises that present problems and allow students to respond in multiple formats, such as the unessay, encourage students to think about issues and approaches to problem-solving in new ways (Bean 2011). Science curricula primarily focus on developing technical skills, though approaches that use more creative skills can promote innovation and a deeper connection to course materials (Turner and Freedman 2004). Finally, because creative problem-solving and science communication are increasingly valued in the wildlife profession (Henke and Krausman 2017), student-centered learning approaches such as the unessay could allow students to practice skills that will be useful throughout their career (Ryan and Campa 2000).

The course instructors (KM and RJ) asked students to reflect on the salient points from Dr. Aldo Leopold's *A Sand County Almanac*, a required reading for the class. Dr. Leopold is a foundational figure in wildlife biology, and students in wildlife programs across the country are often required to read and reflect upon the lessons in his seminal writings. In *A Sand County Almanac*, one of his most widely read books, Dr. Leopold documents patterns in the natural world with a curious eye. Through his observations, he requires that readers ponder their position in the world and calls them to think of the importance of protecting our natural resources. A required reading for the class. Students submitted their reflections as a traditional essay or in an unessay. Students were to imagine themselves talking with a stranger who is completely unfamiliar with natural resources or their value. Regardless of the format they chose for their response, each student used *A Sand County Almanac* as a backdrop to convince this stranger of the importance of natural resources and why our society should work to manage them carefully. Students choosing to respond in a traditional essay format were to respond within the space of two pages. Students choosing to respond in an unessay format could respond to the prompt using whatever format or medium they desired. Both approaches required students to think carefully about the messages Dr. Leopold was communicating to his reader and why these messages would be relevant to those outside the natural resource field. Especially for the unessay assignment, students would also need to choose the most appropriate medium to convey why these concepts are broadly relevant.

Despite being intrigued by the idea of an unessay, both the students and the instructors (KM and RJ) were initially wary. Many students expressed concern that their art would not be "good enough." The course was not an art course, and we assured students that we did not expect students to master art techniques. Instead, students needed to think carefully about how and what they communicated. Drawings of stick figures could be the method of communication, so long as the messages were clear and grounded in an accurate interpretation of *A Sand County Almanac*. Alternatively, since students were not being graded on artistic ability directly, we were worried that we would have to give a student who submitted anything, regardless of the quality, full credit. To account for these potential pitfalls, we provided a rubric that evaluated whether students effectively presented the information in terms of accurately representing the content in *A Sand County Almanac* and in presentation format. Specifically, our rubric read:

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*Your response will be graded based on whether your argument is convincing, compelling and effective, as well as whether it accurately synthesizes the concepts relayed in A Sand County Almanac. If you pursue Option 1, your essay will be based on a grading rubric that assigns points in the following manner: general formatting of paper (4 points); grammar, spelling (8 points); general message, conciseness, clarity (8 points); organization and flow (4 points); the extent to which your argument is convincing (10 points); the extent to which your argument is effective (10 points); and conclusions (8 points). Should you pursue Option 2 (the unessay), your response will be based on a grading rubric that assigns points in the following manner: clarity of concept (8 points); general message (8 points); quality of presentation (8 points); appropriateness of medium for presentation (8 points); the extent to which your argument is convincing (10 points); the extent to which your argument is effective (10 points).*

By providing the students with a breakdown of which elements the instructors were using for grading, grading the unessay was as objective as grading the traditional essay.

Students submitted high-caliber, innovative responses that made the instructor who graded the assignments (RJ) laugh out loud, feel like she had been socked in the stomach, and ponder Dr. Leopold's messages in new ways. RJ stayed up all night grading the responses, not because she had to, but because she could not wait to see what the next student submitted. For example, one student cooked and ate game she had hunted, which she said was in line with Dr. Leopold's call to remain connected to the landscape we depend on for our food. A second student depicted scenes from "Escudilla," a story in which Dr. Leopold mourns the sense of wildness that was lost after the last grizzly bear on a mountain was shot, on an elk hide he tanned himself. The story is widely read in wildlife biology and conservation circles, and is a common assignment for students.) on an elk hide he tanned himself. Another drew a comic featuring a fairy-like creature that observes humans from afar and questions why we treat the land the way we do. Other students wrote poems, made newsletters, embroidered scenes from the book, painted intricate pictures, illustrated a children's book, and more.

Most students connected concepts from *A Sand County Almanac* to their response in ways that stood alone, but some submissions required explanation. We encouraged students to submit a short accompanying paragraph explaining their response if they felt that we would not understand their submissions independently. Some students lost a few points if the connection was not clear and they did not include an explanation. For future renditions of this exercise, we will consider requiring that all students who submit an unessay also include a short explanation of their response.

Creative endeavors can require a substantial time investment, for both the students and instructors, but the unessay did not appear to be a time burden on the students or instructors. When students approached the instructors about their potential ideas, we reminded them that this was just one assignment of many they had on their plate, and it should not take up all of their time. Even with encouraging students to set boundaries for this assignment, the unessay responses indicated that students clearly invested time and thought into their projects. From an instructor standpoint, the unessay responses required no more effort to grade than the traditional essays. Of the 45 students in our class, almost half submitted an unessay. Grading any writing assignments in a class of this size requires a substantial amount of time, but the unessays took roughly the same time to grade as the traditional essays.

In each of the submissions, the students grappled with Dr. Leopold's sobering lessons about the responsibility humans have to protect the natural world in ways that could engage those unfamiliar with the topics. Students identified the elements of protecting natural resource management that were most important to them and conveyed these concepts in creative, effective ways. Further, students expressed how much they enjoyed having the opportunity to creatively engage with scientific concepts, both in person and in anonymous course evaluations.

In a field that is maintained by passionate professionals, assignments that give students the opportunity to reflect on what fuels their passion, in addition to cultivating their communication skills, will serve the students and the profession well. Throughout our course, we try to foster an appreciation of the passion and thoughtfulness required of wildlife professionals, as well as some of the skills necessary to communicate with audiences ranging from scientific peers to members of the public. The unessay appears to be a powerful exercise that gives students an opportunity to practice communicating and allows them the freedom to focus on the topics that are most important to them. Given how participating students clearly were engaged with the unessay exercise, we look forward to incorporating this assignment into future classes, and we encourage other instructors to consider doing the same.

### Acknowledgments

We are grateful to the students of the Principles of Fish and Wildlife Management class in spring 2019 at the University of Wyoming for enthusiastically rising to the challenge of trying a new teaching technique. We also thank those who shared their insight on Twitter regarding the unessay, as discussions from these instructors ultimately prompted us to implement this technique in our classroom.

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