Implementation of Online Poster Sessions in Online and Face-to-Face Classrooms as a Unique Assessment Tool

Jessica L. Menke*

Department of Chemistry, University of Wisconsin—Whitewater, Whitewater, Wisconsin 53190, United States

S *Supporting Information*

ABSTRACT: Online poster sessions provide the benefits of typical face-to-face poster sessions while eliminating some of the obstacles such a nontraditional assessment presents. It allows students to do in-depth research on a specific topic and then present the material in a more artistic way that could be more appealing to certain students. It also allows an instructor to assess the students' understanding of the topic and their ability to communicate the topic to others, while eliminating the use of multiple class periods for student presentations. The online poster session eliminates the need for a large room and the difficulty of one instructor needing to visit a large number of posters in a short period of time. This assessment method can be implemented in any course. The content, as well as the format of the course (face-to-face, large, small, online), help guide how the online poster session is used.

KEYWORDS: *General/Public, Communication/Writing, Testing/Assessment, First-Year Undergraduate/General*

As the use of technology expands, so do the possibilities for the expansion of pedagogy and assessment tools used in courses. Student presentations have long been used as final projects in the classroom to assess a student's knowledge on a topic while having them engage in research and develop presentation skills. Presentations have advanced from chalk-talks, to the use of overhead transparencies, to the use of PowerPoint, and, especially in the sciences, to the more social poster presentation format. Poster presentations are a common way for those in various fields to share their research at conferences. Over the last 20 years, they have also found their way into the classroom[1−4] and laboratory[5,6] as alternative forms of assessment, especially at the undergraduate level. Poster presentations can provide the opportunity for student presentations to be implemented in large classes, for which in-class presentations would be time-prohibitive. They can also relieve some of the stress students experience when giving presentations to a large class. While the benefits have been described in previous papers,[1−7] some of the following problems pertain:

1. A room large enough must be accessible.
2. Poster boards must be available for students to hang their posters.
3. The success of the poster session rides heavily on having students and faculty from around campus attend the session.
4. For a large group, it is difficult for an instructor to visit and assess all posters during a session that would likely last no more than 2 h.

These factors have led to the implementation of an online poster session in three different introductory chemistry courses at the University of Wisconsin—Whitewater.

1. Chemistry for the Consumer, a general education, lab science course. This course is a large (∼100 students) lecture that meets face-to-face during a typical semester.
2. Science and Technology in Society (STS), a general education science course. This is a small (∼10−15 students), fully online course offered either as a three-week summer course or as a winter interim course.
3. Chemistry for Occupational and Environmental Applications, a course designed specifically for the environmental science and occupational safety and health majors on our campus. This is a face-to-face course (∼40 students) offered once a year.

The flexibility of the online poster project allows it to be altered to fit any of these widely different courses as well as any other course.

◼ GENERAL COMPONENTS AND IMPLEMENTATION

Having multiple ways to assess student learning is an important aspect in course design. The online poster project was designed to allow students to research a topic of interest to them and, in turn, share their new expertise with their peers.

The online poster project has the following general learning objectives, which can be modified to align with specific course objectives. Students will be able to:

- Conduct research through reliable online sources to gain significant knowledge on a specific scientific discovery that has had a significant impact on society or scientific topic of interest to the general public.
- Compose an abstract to concisely describe the content of the poster presentation.

- Create a well-organized and effective poster presentation to clearly communicate this research with their peers.
- Discuss knowledge on the topics chosen by peers by asking questions about their peers' posters and then answering the questions asked of them in an online discussion forum.
- Evaluate peers' posters using a rubric.

As a technology-enhanced project, students are encouraged to do their research on the Internet. To encourage the use of reliable sources, students complete a lesson on how to judge the quality of online sources before beginning their research. This lesson includes providing the students with links to existing Web sites, such as Evaluating Information Found on the Internet[7] and Ten C's for Evaluating Internet Sources.[8]

Students must submit their topic for approval. Some general topics are provided (these are course specific), but students are encouraged to think creatively and pick a topic that is of interest to them. After a topic is chosen, students must write an abstract for their poster. Students must have completed enough of their online research to have a basic idea of what they will be covering. The abstract is to be 250 words or less and concisely describe the topic they will be presenting on their poster. Feedback is then provided on the abstract to encourage students to move forward with their topic or to guide them in the right direction should their focus not be appropriate. Having small assignments due throughout the length of the project encourages students to distribute their work throughout the time of the project rather than wait until night before the final poster is due to start their research.

Students are provided with a PowerPoint template. The template is used to give students a start on the appropriate formatting of their poster. The slide is set to 24 × 36 in. with a font size of 24 for the text and titles, and a slightly larger font for headings. The dimensions and font size allow for adequate space and the finished product is viewable on a standard computer screen without needing to significantly increase the magnification. Students are encouraged to personalize the format of their posters as they wish. Some students will stick quite closely to the template; others use a creative approach when designing their poster. Many nonscience majors taking these courses appreciate the opportunity to use their more creative side. Posters are also required to include pictures and have proper ACS style reference formatting.

Once the posters are completed, they are turned in through the online course system. At University of Wisconsin—Whitewater, D2L is used. Posters are then converted to PDF files and reposted to the open content area of the course by the instructor. Depending on the online system used, students may have the ability to post posters directly to a publically viewed folder. Students are then asked to view other students' posters and evaluate them based on a provided rubric (available in the Supporting Information). The posters are also evaluated by the instructor using the same rubric.

■ COURSE SPECIFIC ALTERATIONS

Depending on the course in which it has been used, a number of variations on the general implementation have been completed. For the online-only course, students are required to post to a successes and struggles discussion forum. Here, they are to talk about any issues they are having while making their poster or any significant successes, such as a PowerPoint shortcut or an online source they have found useful. The discussion forum format allows the instructor and other students to respond with suggestions, and all students are able to benefit from the experiences of others. The most typical struggles are condensing all of the information they have found down to the limited space of the poster and some formatting questions within PowerPoint. The ability to communicate a topic in a concise manner takes practice and is a skill that many do not possess. While this was not an original learning objective of the project, it became an additional benefit. The PowerPoint questions are usually quite basic and answered by a fellow classmate. The successes vary from a short cut they discovered in using PowerPoint to a Web site with general information that may be helpful for someone else's topic. Many struggles are addressed by the students and little input is needed from the instructor. Students also complete an online quiz written by the instructor that is based on the topics covered on the posters. To emulate the question-and-answer portion of a typical poster session in an asynchronous course, students ask questions of each other in a discussion forum. To ensure everyone gets asked questions, students are assigned which peers they must communicate with. The author of the poster then answers the questions by replying to the posts. For courses with a synchronous component to it, students could discuss their posters with each other in a chat room. This portion of the project lets students expand on the information they were able to include on their poster. It is rare that a question comes up that is not something students remember reading about during their research. While not required, students are encouraged to expand their conversation beyond the one question and one answer requirement.

While the components used in the online course could also be used in face-to-face courses, they can be time-prohibitive for a larger class. For the Chemistry for the Consumer and the Chemistry for Occupational and Environmental Applications courses, these added components were not implemented. Instead, students worked in groups of three–four on the project. The group component adds the aspect of cooperative learning to the project, which tends to enhance both learning and interpersonal skills.[9] For a large class, instead of requiring students to view all posters, they are told which posters to view and peer evaluate; this is typically three posters per student.

Topic choices will also vary with the course. For the STS course, students focused on a scientific discovery that has had a significant impact on society. The Chemistry for the Consumer course typically had more chemistry-specific topics such as global warming, water pollution, or recycling. The Chemistry for Occupational and Environmental Applications course had topics focusing more on the general reactivity and safety of a class of organic compounds.

While direct feedback from students has not been requested, general comments from students have always been on the positive side. For the online course, this is a large portion of the class and their final grade. They appreciate the flexibility to focus their time on a topic in which they are interested. For the larger classes, some students struggle with working in groups, yet teamwork is a skill that requires practice and cannot be avoided in the workplace. Issues are typically resolved among the group members.

■ CONCLUSION

The options for the online poster session are limitless. They could be used for large or small classes, face-to-face or purely online courses, lecture courses or lab courses. The requirements

for students to view their peers' posters can be varied based on the goals of the project. Because of the electronic nature of the project, posters created in previous semesters could be used as learning tools in future semesters, either as examples or to teach the topic covered in the poster. Students take pride in their work when they have the ability to choose a topic and use their own creativity in its development. This project allows for even greater flexibility on the idea of a typical poster session, which has already been shown to be used successfully in the classroom and laboratory.

■ ASSOCIATED CONTENT

Ⓢ Supporting Information

Sample evaluation rubrics. This material is available via the Internet at http://pubs.acs.org.

■ AUTHOR INFORMATION

Corresponding Author

*E-mail: menkej@uww.edu.

Notes

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