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Keeping aBreast with liberal arts and science through STEAM

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Abstract

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Author/Artist Bio

Tanya Rivas is a gallery teacher at the Museum of Contemporary Art San Diego. She is a former K-12 teacher in the arts, and has also taught high school history, and AP level programs. She earned a Bachelor's Degree in Humanities from Loyola Marymount University as well as her Masters in Secondary Education and teaching credential while serving as a PLACE Corps (Partners in Los Angeles Catholic Education) member in urban Catholic education. The overarching goal in her advocacy work is concerned with meeting the needs of underrepresented groups, particularly by working with Spanish bilingual audiences and multicultural diversity in museum and education industries. Greg Knotts is an Associate Professor of Elementary Education in the Michael D. Eisner College of Education at California State University, Northridge. He earned his PhD in International/Intercultural Education from the University of Southern California. He also holds a Master's degree in Elementary Education and a BA in Business Administration, both from Loyola Marymount University. Greg's primary research interests are focused on issues of gender and sexual orientation and how they impact the elementary school. Social construction theory, arts integration, and integrating gender and sexual orientation consciously into the Social Studies curriculum continue to be prominent in Greg's research.

Keywords

Breast Cancer, Art Education, STEM, STEAM, Bio-Art

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Keeping aBreast with liberal arts and science through STEAM

Tanya Rivas & Gregory Knotts

In the context of No Child Left Behind (NCLB), our national public educational climate has been uncompromisingly concerned with assessable outcomes in language arts and mathematics (Lee, 2007; Mertler, 2010 & Rubin, 2011). Teachers are very often left to themselves to figure out how to integrate the sciences, social studies, and the arts into the curriculum (Chapman, 2007; Heilig, Cole, & Aguilar, 2010). The integrated unit on breast cancer described here includes biological science and visual art standards and was targeted at high school juniors and seniors. The goal was to make a potentially controversial and taboo subject relatable through an art-science approach

Unit structure and procedures

The unit was particularly successful because it began with a student's interest. A senior student began advocacy for breast cancer awareness in support of a basketball teammate whose aunt was going through breast cancer. The basketball team wore pink shoelaces to raise awareness and also held Think Pink Thursday when students and faculty wore pink to raise money and awareness about breast cancer. This level of student engagement made it clear that there was passion and investment from students. With this in mind an integrated unit on art and science curriculum was implemented with a focus on health education. Combining the real life context with art-science knowledge provided an immersive curriculum that was able to bridge theory and practice.

The curriculum was modeled on an existing project which had partnered with the Keep A Breast Foundation and raised over \$10K (<http://www.jbhsart.com/home.html>). This integrated unit highlighted statistical data related to breast cancer as a health issues, self-examination, and creating a process oriented three-dimensional work of art that addressed a social issue (California Health content standards 1.1P, 1.8P, and California Visual Arts content standard 2.6). The integration of Science, Technology, Engineering and Mathematics (STEM) knowledge with Art was delivered simultaneously which offered high school students access to breast cancer awareness that prevails over textbook use and traditional methods.



Students work on bust. The busts were either life size or miniature.

This STEAM project-based learning through “Bio-Art” offered a relevant and exciting invitation for students to activate their prior knowledge and experience. This unit contributed to empowering the students as they became an active agent for social change. In addition, critical awareness took place because there was an open forum in which many current issues in breast cancer awareness were discussed, such as the topic of male breast cancer. The hands-on and personal aspect of this unit allowed for discourse and exchanges that under conservative classroom structures would be less likely to be addressed.

Objectives included students being able to:

- describe the biological and physiological manifestations of cancer by creating a Public Service Announcement;
- create a 3-dimensional life-size bust depicting their advocacy for breast cancer awareness;
- create a 3-dimensional mini-bust depicting their advocacy for breast cancer awareness.

Students were enthusiastically engaged in all aspects of the curriculum. The unit included:

- teacher-created podcasts on statistical information related to cancer broadly and breast cancer specifically;
- information on physiological manifestations of cancer generally, as well as breast cancer specifically;
- information on mental health repercussions related to breast cancer;
- photo essays ranging from diagnosis, to living with cancer, to surviving, to social advocacy;

- a PowerPoint on the use of nudity (particularly breasts) in visual art;
- a Powerpoint on artists utilizing their various media to address social action through their art;
- reading an article on social change, “*Top Ten Things to Think About If You Want to Change the World*” from Postivepath.net;
- instruction on using a new method of casting to create three-dimensional artwork; and
- teacher modeling of cast making utilizing mannequins and Barbie-like dolls to demonstrate how students could make both life size and miniature busts.

Outcomes

Measureable science outcomes included:

- student-created Public Service Announcements incorporating statistical data and physiological outcomes of cancer;
- a criterion-based assessment on the physiology of cancer, statistical data, and existing treatments of cancer.

Measureable art outcomes included:

- a design worksheet (for the eventual 3D designed mini-and life size-busts);
- the plastering process and application of gesso;
- design: taking the form of painting, collage, bejeweling, and application of spray acrylic;
- packaging: the final mini bust was boxed with a pink ribbon and small card with a student-designed logo explaining where the proceeds would go (the unit intended

to have the student-created artwork sold in the local community to raise money and awareness).

Reasoning and Justification

Breast cancer affects both men and women with about 2,190 new cases in 2012 among men alone (American Cancer Society). This unit is a catalyst demonstrating how science and art instruction can complement each other to facilitate student-led interest. A less innovative path may only see students taking part by only wearing pink ribbons. It was necessary to adapt the existing public school curriculum to a Catholic school context because the Keep A Breast Foundation is widely known for their bracelets “I heart boobies” which have caused controversy in schools nationwide, taking its cause all the way to the Supreme Court. In spite of the excitement and interest from students, the administrators at this Catholic school banned the wearing of these bracelets or any formal partnering with existing foundations that advocated for any position outside of Catholic dogma or Catholic school policy; the creation of this curriculum needed to be one that was based solely on standards-driven assessable outcomes. Therefore, this unit assessed standards-driven outcomes. More importantly, however, it raised the emotional investment, consciousness, advocacy, and activism for students who might otherwise not have cared about an issue that was not personal; this unit in fact made breast cancer a personal matter. The degree of impact varied per student.

Ultimately, their involvement in, and the span of their individual projects, prompted inquiry into other issues such as body image and lifestyle choices that can lead to a cancer diagnosis. Overall, the cohesive success of this integrated unit involved interacting with body parts - in this case by touching, talking about, and painting, breasts - prompting higher order

discussions on breast cancer and breast cancer in men in a sophisticated, mature, and respectful way that was facilitated through art-science.

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