

Meta-reflective service learning poster fairs: purposive pedagogy for pre-service teachers

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Abstract: Given that teachers need to present information in a concise, understandable way, to reflect on their practices to inform future actions, and to know how to create and use a teaching artifact, this article reports the findings from a study conducted to examine the impacts from a class-based poster session in teacher education. First, a review of the literature provides insight into the advantages and disadvantages to poster fair use. Then, findings from the utilization of a poster fair in an undergraduate general teaching methods course at a large public university are presented and discussed.

Keywords: Teacher education, in-class poster fair, service learning, qualitative research, pre-service teachers

Poster sessions first appeared in Europe as a logistical solution to a lack of time to present papers orally (Hess and Brooks, 1998), and have steadily gained popularity in the United States since their first national appearance at the 1974 Biochemistry/Biophysics Meeting (Davis, 1997; Maugh, 1974). The need for adding poster sessions to academic conferences transpired from the growing interest in conference participation, evidenced by substantial numbers of proposal submissions. The increasing popularity, coupled with a lack of space at most conferences, resulted in many important, worthy proposals being rejected (Briscoe, 1996; Day and Gastel, 2006). To address this issue at the 1974 Biochemistry/Biophysics Meeting, for example, authors were asked at the application stage if they would be willing to make their presentations in a poster session. Those who were not opposed, and were at risk of being cut from the program, were selected for a poster session. Ultimately, almost a quarter of the conference research was presented as poster sessions (Maugh, 1974). Unlike paper panels, which require one large room to hold attendees for only 3-4 grouped presentations per session, poster sessions could allow hundreds of presenters a space and opportunity to share their work (Borchardt, 1999; Day and Gastel, 2006).

Although the new presentation format was criticized at first as less rigorous than oral paper presentations, the poster sessions quickly became a viable option for research dissemination. In the last 30 years, the promise of poster sessions has been evidenced by their proliferation at conferences, command of their own citation format in professional publication manuals (e.g., APA, MLA), and acceptance as “an established method of reporting scientific findings” (Brown, 1997, p. 136).

The use of posters for information dissemination is not restricted to large gatherings of researchers at professional conferences. Poster sessions have also been shown to function as an innovative and effective pedagogical method for classroom teachers, as well as alternatives to traditional assignments, regardless of level of instruction. Unlike conference poster sessions which are composed mostly of work by post-graduates and doctoral-level graduate students,

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evidence of successful class-based poster sessions have been found at the graduate, undergraduate, secondary, and even elementary levels (Dubois, 1985). Given the naissance of posters sessions at a science conference, it is unsurprising that studies on the educational use of poster sessions have primarily highlighted science and health fields, with a few exceptions. Examples of discipline-specific, class-based poster fairs include: psychology (Baird, 1991), psychopharmacology (Chute and Bank, 1983), biology (Hess and Brooks, 1998), medicine (Mansfield, 1993), nursing (Moneyham, Ura, and Bruno, 1996), and English for Specific Purposes (Van Naerssen, 1984; Weinstein-McShane, 1997).

Teachers need to present information in a concise, understandable way, to reflect on their practices to inform future actions, and to know how to create and use a teaching artifact. This article reports the findings from a study conducted to examine the impacts from a class-based poster session in teacher education. First, a review of the literature provides insight into the advantages and disadvantages to poster fair use. Then, findings from the utilization of a poster fair in an undergraduate general teaching methods course at a large public university are presented and discussed. In this article, both “poster session” and “poster fair” are used synonymously to refer to a structured gathering of individuals with the explicit intention of them sharing research via a poster. As a rule, poster session is the chosen term for such gatherings at academic or research conferences; poster fair is more often used to reference classroom-based reproductions of a poster session.

I. Advantages to Poster Fairs.

Commentary on the use of poster sessions began in the 1970s, immediately following their first conference appearance in United States. These writings have provided insight into the advantages and disadvantages to poster sessions, as well as to the structure of posters and the procedures for conducting a poster fair (e.g., Briscoe, 1996; Davis, Davis, and Wolf, 1992; Day and Gastel, 2006; Liegel and Thompson, 1989, Matthews, 1990; Rupnow and King 1995). While a review of the structural and procedural elements to poster fairs is beyond the scope of this article, and only tangential to its focus, the most often cited advantages and disadvantages to the use of posters are discussed below and will serve to frame a discussion of the study’s results.

A. Presentation Skills, Interaction, and Networking.

Woolsey (1989) suggests that a poster audience can be categorized into three groups: (1) colleagues who follow your work closely, (2) those who work in the same area but not in the same specialty, and (3) those whose work has little or no relationship to yours. In essence, anyone can become a poster session audience member. The large quantity of possible visitors to a poster has greater impact when one considers the quality of the interactions. Audience-presenter interactions at traditional oral presentations are constrained by time, feelings of intimidation by other aggressive audience members or a defensive speaker, and one’s uncertainty about the appropriateness of a question (Maugh, 1974; Rupnow and King, 1995). In the end, conversations at paper panels can be uni-directional, from author to audience only (Dubois, 1985).

In contrast, poster sessions intrinsically include an interactive component (Hailman and Strier, 2006; Hartman, 1996; Woolsey, 1989). Comparing the poster to a journal article, Koning (1996) states the interaction in a poster session echoes what an author might write in the

“discussion” section of a paper. This parallel can easily be drawn as poster sessions reverse the roles of questioner and responder, and allow for true dialogue (Dubois, 1985). Attendees control the flow of information, and can ask as few questions as they like, or engage in a lengthy discussion (Rupnow and King, 1995). Introductory material can be skipped, and attendees can focus on the aspects of personal interest (Borchardt, 1999; Woolsey, 1989). The number of potential attendees, coupled with the more in-depth quality interactions, increases the amount and sources of feedback (Hess and Brooks, 1998), which might inform a poster presenter of related work, suggest further lines of experimentation, or postulate alternative conclusions (Schowen, 1997).

Lastly, the breadth of types of poster session attendees allows for extensive opportunities for social networking, which is paramount for novice researchers (Woolsey, 1989). They can instantaneously demonstrate their confidence, knowledge, and professional communication skills through quality interactions (Baird, 1991; Davis, 1997; Farber and Penhale, 1995; Moneyham, Ura, Ellwood, and Bruno, 1996). Such personal connections can create the foundations for research collaboration and successful employment searches (Koning, 1996).

B. Economy of Words.

Effective communication relies on an individual’s ability to express an idea concisely, while avoiding redundancy. Unity, clarity, and simplicity are just as essential in posters as in other communications, and are more strongly enforced by the limited space on the poster itself (Davis, Davis, and Wolf, 1992). Poster designers should engage in “visual grammar” (Woolsey, 1989), wherein they are able to articulate “the big picture,” while simultaneously presenting the details of their project (Hess and Brooks, 1998). To accomplish this task, planning becomes key. Deciding what to incorporate and what to exclude is an integral step that differentiates effective posters from ambitious and vain scholars (Briscoe, 1996; Rupnow and King, 1995; White, 1981).

Space is not the only guiding factor for practicing parsimony, or communicating effectively and economically (Brown, 1997). Poster sessions can extend beyond two hours, which can mean that poster authors may not be present for the entire period. For this reason, researchers must focus their research, condensing their information to the most meaningful and important pieces so that interested parties are not required to wade through unnecessary information. This commentary carries greater weight when we consider that poster session attendees spend on average 90 seconds reading a poster (O’Connor, 1991). For this reason, posters should flow logically, be hierarchically organized, differentiated visually, and allow attendees to skip and skim for main points easily (Larkin, 1996).

C. Longevity of Impact.

Unless published, the life of a paper presented at a conference is short. Because of its visual appeal and concise presentation of information, a poster, on the other hand, “can be appreciated long after its official use” (Schowen, 1997, p. 28). Poster presenters have reported that they display their posters at their home institutions as a means to share their work with colleagues and students, or to impress visitors and potential colleagues who can more easily discern in what types of research a faculty member engages (Davis, Davis, and Wolf, 1992; Pechenik, 2006; Schowen, 1997; Woolsey, 1989).

Furthermore, many people appreciate that some material is more effectively presented as graphics than solely through a short oral presentation (Day and Gastel, 2006). A poster session's strong combination of the written word, spoken word, and nonverbal means of communication through illustrations (Davis, Davis, and Wolf, 1992; Davis, 1997; Schowen, 1997) has been called a "composition as a whole" (Imhof, 1982), and extends its impact beyond the actual location of the poster itself. Because a poster author purposefully contextualizes the information by limiting what the eye perceives, a poster attendee has personal interest in the research, and these are connected further via verbal interaction, poster messages are more easily stored into memory and the recall of material is easier (Fleming and Levie, 1978, 1993; Hartley, 1985; Jonassen, 1985).

II. Disadvantages to Poster Fairs.

Although fewer than advantages, some disadvantages to use of posters as academic discourse are found in the literature. The secondary status of poster sessions in academic communities remains (Hartman, 1996). It is not entirely clear from where the lack of respect derives. However, the tension may be simply one of quality over quantity. One reason may be a perception that academicians who present posters are not engaged in rigorous research, cannot write well enough, or are more teacher than researcher. Shalom (1993) acknowledges that although papers are seen as greater contributions, poster sessions allow for a "greater number of presentations to be made at a conference, thus allowing increased information to be distributed" (p. 39).

A. Misconceptions of Posters.

The cloud of disapproval hanging over poster sessions can also be explained by a relative misunderstanding of what a poster should be. Conference administrators seldom provide detailed expectations for accepted poster proposals (e.g., size, sections). For this reason, inexperienced poster presenters might get caught up in the aesthetic draw of the poster, rather than its more important content. With this said, there does seem to be movement toward accepting posters as valid forms of academic discourse. Davis, Davis, and Wolf (1992) comment that although opinions still differ, "standards are becoming relatively consistent from one discipline to another" (p. 156).

There is also a perception that to create a poster requires an increased amount of work (Hartman, 1996). Davis (1997) recommends that "time is the antagonist" when constructing a poster, but this pressure can be easily lessened by planning ahead, gathering necessary information and visuals (e.g., pictures), and organizing data into poster-friendly categories throughout the process. As a scholar, however, time is of the essence, so this may be a deterrent to some people even trying a poster. This too may support the aforementioned negative perception of poster presenters as weak scholars, in that they have abundant, disposable free time to create aesthetically-pleasing visuals.

B. Adapting Posters.

One aspect that goes unacknowledged by critics is the difficulty of adapting a study's findings to be delivered in poster format (Davis, Davis, and Wolf, 1992; McCown, 1981). Unlike

papers, posters have a finite space in which to present information. Although parsimony is a skill required in effective presentations and academic writing, presenting little more than an outline of one's latest achievements is daunting and emotionally-laden. Constructing a poster relies on a unique set of skills, to which scholars are not readily introduced during their graduate studies (Dubois, 1985; Hess and Brooks, 1998). For this reason, some suggest a safe "psychological layout" (Corbin, 1985), in which authors model their posters after a technical journal article (Dubois, 1985). This plan uses the Introduction, Method, Results, Analysis, and Discussion (IMRAD) format (Davis, 1997; Day and Gastel, 2006; Shalom, 1993).

Envisioning a poster as a "journal article on a board," instead of "idea-grams" (Koning, 1996), or "illustrated abstract of a publication" (McCown, 1981), can lead viewers to conclusions through graphic elements. Briscoe (1996) summarizes this point, "It takes intelligence, even brilliance, to condense and focus information into a clear, simple presentation that will be read and remembered. Ignorance and arrogance are shown in a crowded, complicated, hard-to-read poster" (p. 131).

D. Time, Money, and Transportation.

Lastly, there are several pragmatically-driven disadvantages to poster sessions. Poster sessions, unlike traditional paper panels, run for at least two hours and a presenter is expected to be present for this period of time (Borchardt, 1999; Dubois, 1985). Often this length of time overlaps two or more other sessions. The expectation that poster presenters are available for the entire session sends a message that these scholars are not as busy or important as those sitting on panels. This argument is further problematized given that the extended time of poster sessions reduces the opportunity for poster presenters to attend sessions of interest.

Although posters can be produced in the traditional board-mounted style, poster presentations are continuously expected to be printed as a single-unit photographic reproduction (Day and Gastel, 2006) via a photomechanical transfer process (McCown, 1981). This poster is recognizable as a large, single-sheet of glossy paper that requires special equipment. When done well, a single-sheet paper can stand out in a crowded room of other posters. Although most large universities can support these requests, other institutions might require faculty to seek printing assistance at professional print shops (e.g., Kinkos[®]). Regardless of the availability of equipment, the price to print a large conference poster is expensive, often nearing one hundred dollars (Woolsey, 1989). After printing, it is impossible to make changes to the presentation without reprinting the entire sheet (Borchardt, 1999). The financial strain is exacerbated by the awkwardness in transporting a fragile poster, regardless if across the country or locally (Davis, Davis, and Wolf, 1992).

III. Methodology.

A. Research Rationale and Conceptual Framework.

To determine the impacts from a class-based poster session in teacher education, questionnaires were sent electronically to instructors of and students in five sections of a general teaching methods course at a large state university in Florida. Students and instructors were asked open-ended questions themed around what they liked/did not like about the poster fair, how they saw the poster fair as beneficial to pre-service teachers, and if they had any particular

issues with the implementation or assessment of the poster fair. Three instructors and 20 students voluntarily responded. Pseudonyms have been used to protect the respondents' identities.

The study's design was drawn from the grounded theory paradigm (Strauss and Corbin, 1994), which derives analytic categories inductively from the data. Other analyses were completed through deductively coding and categorizing data according to constructs previously identified in the relevant literature. Individual responses were coded, and then analytic categories were developed in an effort to synthesize these diverse findings. The formulation of new theory, as well as the extension and support of existing theory, relies on these cases (Glaser and Strauss, 1967; Strauss and Corbin, 1990).

B. Coding.

Questionnaire responses were first analyzed through open coding (Strauss, 1987). In this step, responses were read carefully for emerging concepts and repeated themes. The purpose of "open coding" is to help the researcher to create order in the data (Charmaz, 1983). After open coding, the most prevalent and reoccurring themes were identified. Axial (Charmaz, 1983; Strauss, 1987) or focused coding (Charmaz, 2001; Glaser, 1978) refines categories and begins to make connections between concepts. The last stage of coding was selective coding (Charmaz, 1983). It is during this stage that subcategories of each concept or theme were identified and analyzed. Analyses of comparisons and contrasts were also made within and between the student and instructor data sets at this stage.

C. Course Setting and Service learning Requirement.

EDG 4323 is the general teaching methods course required of undergraduate education majors at a large state university in Florida. In this class students are exposed to various planning approaches, instructional methods, classroom management strategies, and assessment techniques. Class demographics in EDG 4323 mirror the overall student population in the College of Education at the university. Most students are female, elementary education majors between 20-25 years of age. In addition, there are typically 5-10 students in each section that are secondary, physical, music, art, or exceptional education majors. Male students remain underrepresented.

To practice the course methods in an authentic setting, students are required to complete a 15-hour service learning project in K-12 classrooms. Service learning is a pedagogy of engagement wherein students address a genuine community need by engaging in volunteer service that is connected explicitly to course curricula through reflective activities. According to the National and Community Service Act of 1990, service learning provides students with academic, experiential opportunities:

- a. under which students learn and develop through active participation in thoughtfully organized service experiences that meet actual community needs and are coordinated in collaboration with school and community;
- b. that are integrated into the students' academic curriculum or provide structured time for a student to think, talk, or write about what the student did and saw during the actual service activity;
- c. that provide a student with opportunities to use newly-acquired skills and knowledge in real-life situations in their own communities; and,

- d. that enhance what is taught in school by extending student learning beyond the classroom and into the community and helps to foster the development of a sense of caring for others.

EDG 4323 students responded to the pressures from teacher/paraprofessional shortages in neighboring school districts, mostly in Title 1 schools at risk of losing funding due to low school averages on state standardized tests, caused by legislation that limited class sizes and budget limitations. After all, having fewer students in classes does not mean that teachers no longer need extra assistance. Assistance is arguably more necessary nowadays given that Florida's student populations have also changed with inclusion and the mainstreaming of a significant number of English Language Learners. Paralleling mandated changes in class size, Florida continues to suffer from financial constraints which have led to significant reductions in budgetary appropriations to educational institutions. While school officials have considerable flexibility in how they address these reductions, some have chosen to layoff paraprofessionals and teaching assistants, except when they are legally obligated to retain them (e.g., classrooms with high numbers of students with documented disabilities). An examination of county websites around the state reveals requests for adult volunteers to work one-on-one with students who are at-risk or need additional help, as well as be an extra set of eyes, ears, and hands for everyday class activities/lessons.

D. Poster Preparation, Assessment Training and Poster Fair Logistics.

Eyler and Giles (1999) explain that a curriculum that incorporates service learning should ideally find harmony between the material students learn in the classroom and the service they provide to the community. For this reason, the impact of service learning is not centralized in the sole completion of field hours, but deepened by focused reflective activities which require students to link their experiential activities to their course topics, thereby expanding their understanding of both. The hyphen that links the terms "service" and "learning" symbolically connotes the necessary process of reflection and meaning making students experience as they simultaneously serve their community sites and learn academic topics in the classroom.

To culminate their service learning experiences and to demonstrate their learning, EDG 4323 students engaged in a meta-reflective poster fair in lieu of a final exam. The poster fair paralleled those at academic conferences, yet students presented analyses using tri-fold cardboard posters. Although reminiscent of science fairs, this decision was made with consideration for student finances, the expensive cost of printing laminated poster sheets, and the practical application of creating a visual teaching artifact.

EDG 4323 students were provided with a detailed explanation of poster fairs and model poster design (e.g., font size, use of white space, pictures, and graphics). Additionally, students were given a rubric highlighting the requirements of the poster and associated point values. A poster was assessed on its introduction to the service learning site, a description of the cooperating teacher and student demographics, an explication of the activities in which the student engaged, and the explicit connection between the pre-service teacher's service experiences and three class topics (e.g., teaching methods, classroom management, assessment). An aesthetic component was also included in the rubric; student posters should be clear, easily readable, creative, and colorful, include artifacts from the served classroom/population, and address an adult audience. Lastly, students were to prepare a 5-minute presentation to be shared

within small groups. This interactive component simulates the talk that one might provide at an academic conference to interested, wandering parties.

Procedures were taken to prepare students for the poster fair. First, the poster fairs and poster criteria were discussed. Most undergraduates are not familiar with academic poster sessions. For this reason, class time was devoted to familiarizing students with the process of creating posters. Students were provided with several examples of former students' posters, with a portion of this time used to assess the examples in small groups using the rubric against which students would score classmates' presentations and posters later in the semester. Instructors used the hands-on practice to guide students to discover peer assessment procedures, its advantages, and likely difficulties and possible solutions. This step served multiple purposes: 1) students were able to see the instructors' expectations of the assignment, 2) the instructor could model for students how to assess an assignment using preset criteria, 3) students could visualize what is "good" and "bad" poster practice, 4) students became intimately familiar with the scoring rubric, both for the sake of their own grade, but also for the sake of those posters which they would help to assess in teams, and 5) students learned how to engage in small group assessment in an authentic setting.

Second, creativity was highlighted. As part of EDG 4323, students are oriented to the Curriculum Materials Center, a division of the university library that provides representative K-12 materials for preview, analysis and circulation, primarily to Education students and faculty. They are introduced to different materials and production/multimedia equipment available to them, including poster creation tools. Students are also provided with a template to practice their poster's design. They are challenged to come up with three different ways to present the same information. Creativity is important as a teacher, and this exercise challenged students to think outside of their creativity comfort zones.

Lastly, attention was placed on the central role of course connections on the poster. Service learning experiences are discussed formatively throughout the semester when a new course topic is introduced. To highlight the major course components, students also complete 3-4 guided journal reflections, through which they are to analyze their experiential K-12 activities through course concepts. Students are advised to use these discussions and written reflections as a foundation on which to build their summative poster analyses. In other words, the poster represents a meta-reflection of their service learning experiences.

The service learning poster fair counts as the course final and is held the last week of the academic semester. Given that final exam periods are only 3 hours in duration, it is essential that the poster fair begins as soon as students have arrived. To facilitate a prompt start, instructors assign students to an even number of groups, each of which is then paired with another for presentation and assessment purposes (i.e., Groups A and F, Groups B and D, Groups C and E). Once the directions have been read and questions answered, students gather into groups to assemble their posters. Once members of both groups are together, each group member takes 5 minutes to present his/her posters.

When all paired group members have finished their presentations, groups separate and assess their paired group's posters using the rubric. Since the assessment is collaborative, dialogue must be made about an individual's score. This is a procedural attempt to ensure somewhat objective and balanced assessment of the posters. In addition, the collaborative assessment process provides students with insight into how others might assess a piece of work, and attempts to mirror grade-level assessment teams common at the elementary level.

IV. Discussion of Themes Identified.

A. Creating a Community of Vicarious Learners.

Student learning from experiential activities is limited to the host setting, host teacher, and connections that they make between their fieldwork and course concepts. Therefore, the poster fair was designed to increase the interaction between learners thereby multiplying the anecdotes, teaching examples, and ideas presented.

Across the board, students enjoyed sharing and hearing about their classmates' experiences. Pre-service teachers realized that learning and teaching do not exist in a vacuum, but are often social and collaborative processes. They understand that seeking information from their colleagues is helpful and often necessary. Furthermore, teachers are lifelong learners who see not only themselves, but their own students as knowledgeable, experienced educators from whom lessons may be learned.

From this interaction, students "learned a lot from listening to others' service learning experiences" (Maureen). Students realized the importance of always "discovering new ideas" (Danielle) and hearing about techniques and strategies that worked or failed. Sofia, for example, extended her understanding of classroom management through her group members' presentations.

I have learned that every teacher has his/her own way to manage the classroom. I learned different strategies and classroom management that my classmates talked about. For example, one elementary school teacher only used her hand (raising her hand when everybody was talking and said 'high five') to get the kids' attention and handled a situation. On the other hand, in middle school another teacher had to spend 2-3 minutes (sometimes more than that) to handle the classroom disruption. Middle school and high school students need different strategies than the elementary students.

Michelle, on the other hand, discussed how listening to a classmate's presentation allowed her to learn about schools that she could not visit, including the demographics and "what it would be like to teach there." This finding was echoed by another student who had recently moved to Florida and is not yet familiar with the schools close to her home, and where she would most likely want to teach.

Hearing multiple experiences also served to inspire pre-service teachers. From these presentations, they learned about successful and effective teachers that had graduated from the same program in which they were enrolled (Chrissy). Seeing these teachers' passion "jazzed up" the pre-service teachers and even created "a new respect for teachers" for some (Rhonda).

The outcomes from the student-to-student interactions parallel previous research on social learning (Bandura, 1997; Zimmerman, 1989). Through reciprocal teaching (Lubliner and Palincsar, 2001; Oczkus, 2003; Palincsar and Brown, 1989; Rosenshine and Meister, 1994), class-based poster sessions might offer more inclusive opportunities for dialogues in which information is shared and internalized. Reciprocal teaching provides opportunities to explore the content to be learned via classroom dialogue and group discussions. These discussions differ from typical classroom discussions which leave little opportunity for students to construct their own meaning and content interpretation due to time limits, aggressive students, and teacher-control of topics.

In situations which allow for more social dialogue, prosocial and professional behaviors are promoted and students experience how they can be responsible for each others' learning since the feedback, reinforcement, and support come student peers in the groups, as opposed to the teacher. Slavin (2001) has found that these interactions can increase the collaborative skills, self-esteem, and achievement of individual learners. Lastly, pre-service teachers learn through experience that didactic, teacher-led methods are not the only means by which to increase student learning and, in some cases, might actually be restricting learning and other positive outcomes. They discover that constructivist methods emphasize the learner's direct experience and the dialogue of the classroom as instructional tools while de-emphasizing lecturing and telling (Fosnot, 2005; Phillips, 2000).

B. Issues with Collaborative Assessment and Instructor Rubrics.

Reactions to the assessment of the poster fair were mixed. Students liked the peer assessment approach. However, many found it difficult to assess posters using an instrument that they had not created themselves. Students felt unclear as to what they needed to include on their posters as well as to what they were to be looking for on their classmates' posters. One student commented that "everyone still seemed confused on exactly what was supposed to be on it [the poster]," providing the example that if a poster included a picture of the host teacher and K-12 students engaged in activities, but the university student was not in the picture, some assessors thought that s/he had been an observer rather than participant and thus did not award points for engagement activities on the rubric. Students posited that one way to address this limitation would be to include more details on the rubric. This was further evidenced by students' requests to see poster examples that had previously received a 100% grade rather than deconstructing problem posters for missing pieces.

In the end, some students commented that some students were just trying to be nice rather than looking at the content itself, "while others approached the grading with a more critical eye" (Tracy). In fact, and as can be common in cooperative work, some students took a passive role. In one group, an individual did not care what score other group members gave the poster, and said that it was his opinion that everyone should receive full points. Students liked that the instructors circulated for this reason to guide student groups and provide input when needed (Cassandra); others felt that this negated the peer assessment aspect. One student recommended that "the rubric should be different for the peer evaluation and the professor evaluations," but understood that time limitations might preclude this practice.

Lastly, students also found it difficult to use a universal assessment tool for projects that had significant creative components. Some thought that their classmates should be awarded full points based simply on their creativity. The rubric critique was not shared by all students, however. Vita explained that she not only liked the feedback from peers, but also thought that "the rubric was great" because she knew what was expected of her project up front.

Regardless of their views, students found the poster fair assessment helpful in learning how to evaluate student work. One student, in particular, noted that because collaborative evaluation processes are used at times in elementary schools across grade level teams, she found the activity beneficial and learned how team discussions can "alleviate some of the ambiguity in assessment" (Sonya). The following quote summarizes this perspective.

I liked being able to be involved in assessing other students and having them assess me. It gave me great feedback; I was part of a great team. We really looked for the criteria on

the rubric and compared it to the poster. I think the team that assessed our group also took the assignment seriously. They took their time and looked over each project. I appreciated that because I felt like they cared enough to really assess my work and when I received my grade it felt good to see my peers appreciated the work I had done on my poster. I also agreed with the points they had taken off, I had completely missed that piece. (Ronda)

EDG 4323 student responses do hint at the potential difficulty that pre-service teachers might have in transitioning into assessors of student work. However, the tensions mentioned here center on the amount of information provided so that they might best complete the assignment, assess peers, and work from an assessment rubric that they did not create. Although it is frustrating at times for teachers to assess students using a tool developed external to the learning environment, and could arguably be bad assessment practice, teachers often find themselves in these situations. Novice teachers especially have a tendency to rely heavily on workbook assignments or textbook assessments to measure student learning. With this said, pre-service teachers need to learn how to translate these tools appropriately so that they and their students can use and understand them. This explanation carries additional weight when we acknowledge that issues of assessment are generally listed as one of the top areas in which novice teachers wished they had had more training in college.

On the other hand, students' comments also denote preoccupation with grades over learning; they would rather be told exactly what they must create in order to receive the best grade (i.e., cookie cutter assignments). Students attribute missed points to the instructor failing to provide sufficient information or examples. Although a connection could logically be made between this behavior and the much criticized consumer-driven/enabled-learner culture of education nowadays, there are other concerns and possible explanations. Most concerning and applicable to the pre-service teachers in the study is how these expectations will translate into their own classrooms later on. A fine line exists between providing enough guidance and enabling students to where they are not having to think critically or creatively.

Pre-service teachers might also reflect on their feelings about grading work and being liked by the student. In this case, pre-service teachers were grading their peers and future colleagues. As discussed previously, teachers constantly work together and need a strong network to assist them in their jobs. Concerns over "burning bridges" at this stage might have played a role in students grading more leniently than they should have according to the rubric. In addition, and related to these professional relationship issues, students in the class can still be classified in the adolescent and young adult stages of development, although these developmental periods are not bound by age. Individuals at these stages, and who are still developing an identity as a teacher, might retain some egocentric qualities that guide their behaviors toward their peer group. In other words, individuals would not want to grade poorly a peer group member who might then react negatively.

C. Time Limitations and Desire to Share.

As mentioned previously, students enjoyed talking about and listening to their colleagues' service learning experiences. In fact, student respondents overwhelmingly reported that the 5-minute time allowance per student was not sufficient and they would have liked to have had more time to present information displayed on their poster. For some students, pride

seemed to be the force driving their desire to talk about their experiences and share what they learned. For others, more time for each presentation could have increased peer assessors' understanding of poster concepts, and therefore resulted in more points being awarded. Laura, for example, enjoyed the poster fair, but felt that the presentation should be weighted more heavily in the overall grade because "there was so much information to condense into such a small space that it was hard to give the right explanations for some thoughts or theories." Bethany echoed this sentiment. She felt that students had spent a great deal of time preparing their posters, but were not given sufficient time to truly present their work: "I felt like we were expected to put forth all this effort and then only got to speak about it for 5 minutes. We should have just turned it [the poster] in if we weren't going to get to fully present" (Bethany).

Complaints about the presentation time were not only due to student pride or grade outcomes. Students also would have liked to have had an opportunity to hear everyone's presentations, not just those in their small group (Vinny). From these presentations, students seemed to gather ideas about how to creatively present information, as well as learn strategies about classroom management, teaching, and assessment. They further noticed the time that their classmates had spent creating their posters and wanted to acknowledge their efforts. However, students realized that logistics and time constraints, under the current configuration, would make that difficult.

Instructors also would have liked for all students to share more and for them to hear all presentations. However, as one instructor noted, "time constraints do not permit these opportunities" (Francine). Another instructor of a large section was more troubled by these limitations, however. He felt that by giving students a timeline to follow, he "may be restricting their expression" (Jack). In the quantity versus quality comments, no instructor mentioned how the five-minute limited presentation time might play a purposive role in helping pre-service teachers to understand teacher task orientation (Borich, 2007). This concept refers to a teacher's need to conscientiously devote fixed amounts of time to the task of teaching an academic subject, or presenting information, which might increase student engaged learning time.

Regardless, according to the responses, the limited time and number of posters might reduce opportunities for learning and proper assessment. Students and instructors cannot be in two places at once and can be inundated with information that is delivered in sound bytes and graphics. Exacerbating this issue is that, unlike paper panels, audience members cannot take copies of the research with them for later reference. This limitation is further problematized for researchers who need to contact presenters at a later time. There then becomes a pull between taking notes, noting presenters' contact info, and digesting the information in a short period of time. To address this shortcoming, some advise that a take-home handout should accompany the poster (Davis, Davis, and Wolf, 1992; Davis, 1997; Griffith, 1981; Mann and Everly, 1985; McCown, 1981; van Baren, 1983). Attendees no longer need to take notes, to remember everyone, or to wonder how to contact individuals' for information. Paralleling these points, Instructor Jack felt that he would ask his students to include a "talking paper" in future poster sessions. These handouts would highlight the poster information for audience members, provide a page of notes for students to refer to as they presented their poster, and assist him in evaluating student posters if needed and the posters have been taken home. The talking paper can also serve as a means of data collection for instructors interested in the Scholarship of Teaching and Learning (SoTL).

D. Presentation and Creativity Skills.

Research has identified that expert teachers have four different kinds of knowledge. General pedagogical knowledge is one of these knowledges and refers to an understanding of general principles of instruction and classroom management that transcends individual topics or subject matter areas (Borko and Putnam, 1996). Included in these general principles of instruction is the knowledge of how to present information, promote learning, check for understanding, identify which mode of presentation is most appropriate, and pace the presentation of information for maximum retention.

As an assignment in a general teaching methods course, it was important to find that the poster fair allowed students to practice general pedagogical skills that an effective teacher needs to master. Of these skills, one's ability to present information concisely, clearly, and in a set period of time was the most often cited by students. They acknowledged that a teacher "should be able to present information in a professional manner via PowerPoint, charts or other handmade articles and is a great reflection of who you are and how you can relay information" (Cassandra). These comments support previous research concluding that the most effective teachers use instructional variety, or variability and flexibility of delivery methods (Brophy, 2002). Teachers that possess this skill have been linked to increased student attention (Borich, 2004), student engagement in the learning process (Walqui, 2000), and decreased disruptive behavior (Emmer, Evertson, and Worsham, 2006).

Davis and Rimm (1998) have found that effective teachers are also creative and divergent thinkers. Most notably, effective teachers have fluency in their ability to produce many ideas of how to approach a single lesson/topic, flexibility in their ability to break from established perspectives in order to embrace new ones, and originality in how they generate new and different ideas. This theme was identified in several students' discussions of a teacher's role as marketer of information to consumers of learning. Vinny explained that teachers are "marketing the information that we have and hoping the students 'take our card.'" A female classmate felt that the poster project gave students the opportunity "to pitch" their message/lesson to peers and practice the terminology that they will need in the field. This theme was supported by instructors as well. Jack commented, for example, that some students experience anxiety when asked to present, a potentially hazardous reaction in the education profession, and the poster fair allows extra practice to perfect this skill.

Although the theme of improved general pedagogical skills was present in the data, students did not mention that the poster session increased their pedagogical content knowledge, or how to make specific subject information comprehensible to others (Shulman, 1986). Because the poster session took place in a general teaching methods course, this finding is not surprising but seems to limit the advantages of class-based poster sessions to the presentation skills needed as a classroom practitioner. Future inquiries might seek to determine if poster sessions can also increase pedagogical content knowledge when assigned in a content pedagogy course (e.g., social studies methods, science methods).

Lastly, no students, and only one instructor, noted how the poster session might prepare students for future engagement in professional meetings, even though she had explained explicitly to students how poster sessions are an excellent entrée into professional organizations. Instructor June hoped that by having already taken part in a poster session, students ideally would "feel capable of submitting proposals for poster sessions at professional meetings."

E. Learning Styles.

Parallel to a teacher's pedagogical knowledge is his/her knowledge of learner and learning (Borko and Putnam, 1996; Peterson, 1988; Shulman, 1987). It seems impossible for a pre-service teacher to graduate from an accredited teacher education program without having been introduced to issues of cultural diversity and differing learning styles. To effectively meet the needs of diverse learners, identifying these needs are only part of the task. Teachers must also know how to address students' individual learning needs and be able to create and use appropriate techniques/practices. Modeling different types of assessment and assignments for students is one way in which they can gain additional insight and boost their creativity skills.

The use of poster fairs for this end was mentioned by both instructors and students. Jack, for example, saw the poster fair as a way to ask students to take "a creative outlook they may have not otherwise explored." By asking them to do this, pre-service teachers must "delve into other modes/styles of teaching/learning, thus being more receptive to the diversity of learners they will interact with and their respective needs" (Jack). Students indirectly echoed this objective by acknowledging how the poster fair provided an alternative type of assessment by allowing the students to express "knowledge and creativity in a different way than usual" (Laura).

From creating their posters, students also recognized the importance of a teacher being creative, how teaching artifacts and styles reflect the personality of each presenter, and the amount of time and imagination needed to create effective artifacts and displays. In fact, Cammie commented that even though she is "pretty creative," she realized that she needs additional practice and the poster fair developed her creative skills.

F. Connecting Theory to Practice.

Service learning is a pedagogy that asks students to address a genuine need in the community through purposive service while simultaneously making explicit connections to academic course content. These connections are made via reflective activities. In EDG 4323, the end-of-the-semester poster fair served as a meta-reflective tool, guided by Crews' (2002) advice that reflection should happen "immediately" after the experience. As expected, students thought that the service learning poster fair was helpful in linking the text to real-world experiences.

This project was beneficial because it allowed me to reflect on what things I did learn inside the classroom. The most important skill I was able to witness was classroom management for an SED classroom. This may seem trivial, but it is quite different in the way a "normal" classroom is operated. For instance, the constant reinforcement of positive behavior with a chart that is used to record students "on-task" or "off-task" behavior every 10 minutes, as well as treats (usually small candy) given periodically during the day to keep the students in a positive momentum. (Tracy)

Another student had previously found it difficult to remember terms and concepts after the class has ended. The poster fair, however, would enable her to retain course information in her long-term memory because she had a visual connection to the class concepts. What is additionally striking about this student's comment is that she simultaneously connected her poster fair experience to memory and learning concepts learned in the Educational Psychology course, in which she was concurrently enrolled.

It appears that students' connections of course topics to their service learning experiences was due to the direction provided by instructors; students were required to focus on teaching strategies, classroom management, and assessment. Regardless students found this guidance to be beneficial because they knew what to focus on. By allowing students to focus on three topics, they saw clearer connections with the "lectures in class, the observations, and then reflecting about it all to put it on the poster" (Vita). Renae found that being provided with focused topics saved her from getting confused on where to start to make meaning from her service learning experiences. Another student echoed this perspective and comments on the impact of focused topics:

In my opinion it helped me focus better while I was observing I had things to watch for and it gave me great ideas of different ways to reach my students. In the past when I did my service hours I always thought they were kind of useless because I wasn't looking for anything specific. By needing to prepare my poster I had a topic and I became more involved in the learning experience. (Ronda)

Several students found the poster fairs such an effective pedagogical tool that they are considering for their future K-12 classrooms. Natalie commented that in order to complete the poster "you really have to think about the connections to the class." For this reason, she hopes to have her students engage in similar presentations that ask them to connect course concepts to more pragmatic, experiential activities. Laura found that the peer assessment of the poster fair would allow her to differentiate evaluation in her classroom, and increase student accountability not only for their own work, but also for the learning of others.

Instructors also saw the use of poster fairs as a way for students to understand how course concepts inform pragmatic applications. Instructor June said that although some students "see the connections between theory and practice during the semester, all see the connections during their participation in the fair." Another instructor attributed the increased learning with students being provided with a sense of direction and allowed them to reflect more fully on the meaningfulness of their experiences and connect what they are learning to possible applications in an actual K-12 classroom.

Through the class-based poster session, pre-service teachers appear to engage in elements of self-directed learning. In this approach, students are active participants in the learning process through the construction of their own understanding and meaning, helping them to reason, problem-solve, and think critically about the content (Costa and Kallick, 2003; Kerns, 1998). Metacognitive strategies used in self-directed learning are replaced with the reflection components of the service learning poster. This process assists learners to reflect on their thinking by internalizing, understanding, and recalling the content to be learned. An added benefit to students' engaging in reflective activities is that they experience firsthand how what they are currently learning, but also how it will affect their future thoughts and actions (Berger-Kaye, 2004). Previous studies have found that educators that undertake this contemplative process (i.e., reflective practitioners (Schön, 1987)) became more confident and self-assured about their teaching duties, which trickle down to student achievement (Lee and Wu, 2006). Although other reflective strategies might allow for the same outcomes, class-based poster sessions seem to offer additional advantages as identified in this study.

G. A Wasteful, yet Enjoyable Novelty.

Undergraduates are often asked, and expected, to create presentations or write reports that use available technologies. After all, the current undergraduate population, known as the Millennials, grew up with computers, remains current on the latest gadgets and gizmos, and is adept at using various technologies beyond their proposed purposes. However, they enjoyed the novelty of creating a poster and certainly welcomed the break from traditional end-of-semester assignments.

One adjective that was used to describe the poster fair in more than half of the student responses was “fun.” Part of the students’ enjoyment came from their being more relaxed during the final exam period of the semester. Students noted that they found preparing the poster to be much less stressful than taking a final exam. In fact, some comments even described the poster creation process as “therapeutic” (Cammie). Lastly, the novelty of the poster fair also played a role in students finding the experience fun: “I liked having to make it because I never had to do something like that before” (Vinny).

More important though is that students not only expressed that they enjoyed the poster fair, but that they had “fun while learning” and that “it was a great learning experience” (Vita). Students were so excited and interested in the posters that they consistently exceeded their 5 minute presentation limit in order to answer their classmates’ questions. They also wanted to extend the time allotments in order to look at each of their peer’s work. The following two quotes from students encapsulate the responses overall:

The service learning poster fair was a great experience for me. I had a chance to show what I did during my volunteer job and what I want to do after I graduate. I also had a chance to see and listen to other classmates and got some great ideas about teaching and managing the classrooms. Everybody in my group was very active, excited and enthusiastic. I cannot think anything that I did not like. It was exciting. (Sofia)

From a student's perspective, I thought the poster fair was fantastic. I don't think there's anything that I didn't like about it. It was all positive. The presentation was phenomenal. I think everyone did a great job, especially on creativity. (Michelle)

These responses have important implications for higher education and teacher education, in particular. Students seem to appreciate, enjoy, and be able to learn effectively through creative, out-of-the-box approaches to learning. Furthermore, findings parallel previous research on the relationship between student interest in learning when they see a connection to their own life experiences (past, current, or future). For pre-service teachers, seeing the immediate application of esoteric book concepts can send a message of the importance of their education to their future professional lives, helps them to gain self-confidence in teaching when they understand the application of these concepts to teaching, and empowers them to gain similar outcomes later by teaching their future students through similar approaches.

Although students commented positively about the poster fair, they were conscientious of the one-time use of materials and the personal expense required to buy adequate resources. As one student stated, “stuff adds up!” (Cassandra). There was a connection between money and resources used, and the amount of time displayed. Some students felt that it was an expensive project for the brief presentation and relative point value in the course. In fact, the only student that had a negative reaction to the poster fair cited these reasons. He felt that although he

understood the purpose of the poster fair, it still seemed to be a “waste of time, effort and money” and that “after spending many hours and money in preparation for this poster fair, it only receives a five minute recognition and a few points in the course” (Alvin). This student seemed unaware, and a point that instructors might share with students directly in the future, that the more time a learner is engaged with, thinking about, and working with the content being taught, adds to his/her rate of success (Good and Brophy, 2003; Marzano, Pickering, and Pollock, 2001). It should be also noted, however, that students who expressed disdain over the waste of money and resources, also did not report planning to use their posters again and were more likely to leave their posters behind.

Although only three students out of the 20 respondents voiced this concern, a greater sense of waste was evidenced by students disposing of their posters after the completion of the fair. One instructor explained that students did not feel a strong connection to the posters, unlike other types of creative projects that she had previously used (e.g., scrapbooking). She attributed this disconnect to the lack of mobility and difficulty in storing the posters – a theme identified in the review of literature on academic conference poster sessions.

In contrast, there were an equal number of students who were proud of and did not mind the amount of time needed to create the poster. Ray, in particular, noted that his poster will be displayed in the alternative education classrooms in which he completed his service learning hours. His poster will prove to the alternative education students that individuals are, in fact, interested in them and that the work that their teachers do with them is important and valued. Furthermore, Ray’s host teacher planned to use the poster “as a tool to raise additional grant funds from the state for after school programs.” Instructors that use posters and other “fun,” yet effective assignments might attempt to show pre-service teachers how pedagogical materials may be used more than once, an environmental and financial lesson that might trickle down to the novice teachers’ K-12 students later on.

H. Advantages Specific to Instructors.

Poster fairs appeared to be simultaneously advantageous for the course instructors. Most noted among all participating instructors’ responses was how the poster provided them with a retreat from the laborious, time-laden task of reading and responding to student reflection papers (Hess and Brooks, 1998). The use of an assessment tool that does not require extensive amounts of reading and feedback is a luxury for instructors who are bombarded at the end of the semester by preparing and marking exams and calculating grades of several classes. Furthermore, of the mediums most seen in service learning reflection, journals and other short written assignments are most common (Morton, 1996; Ramsay, 1990). Written reflections do play an important role if used correctly, and EDG 4323 instructors ask students to complete 3-4 short reflections throughout the semester. Rice and Pollack (2000) support journals as an effective reflective tool because they allow for private, individual student-teacher dialogue. The overuse of these traditional assignments has resulted in criticism, however (O’Connell and Dymont, 2006). For this reason, Waterman (1997) suggests that oral reflection can also be successful because it requires the learner to link theory to practice. Oral complexity of this type in service learning has been linked to higher class quality, learning, and intellectual stimulation (Eyler and Giles, 1997).

The second advantage for instructors parallels the break from written reflections. Posters allow the instructor to empower students. Like moving from guided to independent practice in a single lesson, the poster fair requires students to cumulatively look across the course topics and

their pragmatic experiences. They are only provided with the expectation of making connections to three course topics and explaining them. However, students are not limited in their choices, unlike more structured reflection paper questions.

Lastly, instructors know from their own years as a student in higher education, as well as education scholars, that one assessment tool is not a panacea for measuring student learning. Therefore, they model for their students how effective teachers use multiple, creative assignments in order to address myriad learning styles and to keep students interested in learning.

V. Conclusion.

This article has examined the impacts from a class-based poster fair in a general methods teacher education course. From this study, class-based poster fairs appear to concurrently allow pre-service teachers to gain and practice knowledge and skills required of effective teachers, including presenting the most important information to a broad audience in a fixed period of time, embracing students as co-teachers, and engaging in collaborative assessment strategies. Non-traditional assignments like poster fairs also provide opportunities for undergraduates to explore the culture of academic conferences in a comfortable, safe environment. With more requirements being added to teacher preparation courses every year, it behooves teacher educators to identify, use, and thereby model teaching methodologies that can meet several objectives simultaneously. Sharing these thought processes demonstrate that reflection before, during, and after the planning and implementation of a lesson is necessary to optimize student learning. Lastly, class-based poster fairs as described in this article might offer a unique and fun, yet still pedagogically effective alternative to more traditional, and often humdrum, reflection strategies. Peer-assessed service learning posters fairs particularly allow for the inclusion of the individual and group, the written and oral, and the practical and theoretical thereby reaffirming the multimodal, social, and collaborative nature of learning.

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