# USING ELECTRONIC POSTERS TO ASSESS FIRST YEAR STUDENTS' RESEARCH PROJECTS

**Brigid Conteh**
University of Botswana
Contehb@mopipi.ub.bw

## Abstract

*With the influx of digital technologies into students' lives, what it means to be literate is rapidly changing. This demands that educators should explore pedagogies that can enhance the development of academic literacy skills that are relevant to the 21st Century learner (The New London Group, 1996). Using open ended questionnaires, students' use of and views on the electronic posters for presenting research projects were explored. The results indicated that students enjoyed the experiences of using electronic posters for presenting their projects. Also, they valued the skills they perceived to have acquired through the use of electronic posters to present their research. It was concluded that using electronic posters can engage and motivate students to learn, thus enabling them to become self-directed learners.*
**Key Words**: Digitality, literacies, Posters, Self-directed Learners.

## Introduction

Paper-based posters have been widely used in the past to present research at scientific meetings and conferences. The benefits of poster presentations have evolved further into the teaching and learning contexts where students are required to do in- class poster sessions. Academic posters have been perceived to have a number of educational advantages. For instance, designing a poster equips students with research, organizational and presentational skills and it enables them to avoid mere recitation of poster content. Secondly, due to the limited space of a poster, students are forced to prioritize and focus their efforts on key arguments and evidence, key themes and key conclusions. In addition, they can provide students with opportunities for engaging in other types of written formats and highlight different strengths and learn in new ways. For example, while some students may have good writing skills, they may perform poorly when asked to communicate graphically. Therefore, developing students' understanding and skills in creating and using posters can facilitate a rapid communication of scientific ideas, visually represent ideas, stimulate an exchange of ideas between the presenter and the audience reading the poster, and allow for valuable networking opportunities (Rauschenbach, Keddis, and Davis, 2018; D'Angelo, 2012; Jones and Yates, 2011; Hofmann, 2010; Jarvis and Cain, 2003). Furthermore, when students use posters to present project work, the greatest value for them is the authenticity of the experience of using posters and the ownership and pride of their products (Baumgartner, 2004).

**Electronic Posters**

With the influx of digital technologies, poster presentations are undergoing a transition, and electronic posters (e-posters) are becoming increasingly popular. E-posters are used as a way of moving away from a static sheet of paper to an incorporation of multimedia such as videos, and photos, either on a single or multiple slides (Chopra & Kakar, 2014; Cook & Fern, 2013;Shin, 2012; D'Angelo, 2012) affording the presenter and the audience and experience that allows for interactive poster presentations and engagement.

Students entering the university are considered Digital Natives (Prensky, 2001a) because they are said to be inherently technologically savvy. The author of this paper therefore argues that students make meaning in ways that are increasingly multimodal; hence it is crucial for lecturers to explore literacy pedagogies that encourage students to  move between and across various modes and media, understanding when and why they might draw on specific technologies to achieve specific purposes (Cope and Kalantzis, 2008; Archer, 2006; Kress, 2000), and to actively engage, become more creative and promote sustained conversation in ways that differ from print scholarship (Blevins, Rice, and Carpenter, 2015). Therefore, engaging students in electronic poster projects would afford them opportunities to integrate multimodal and multimedia texts into the learning and teaching context, challenging the old basics of literacy and literacy pedagogy that is considered inappropriate in a world that is increasingly digital and requires students to be creative, problem solvers, and active contributors in the workplace or community setting (The New London Group, 1996).

While there is some research on students' use of electronic posters for research presentations in learning and teaching in higher education elsewhere, to the best of the author of this paper's knowledge there is none on students' use of and experiences with electronic posters in learning and teaching in the Botswana higher education context. Therefore, in this study first year science students' use of and experiences with the use of e-posters to present research projects as well as their views on how e-posters can be effectively used to support learning are explored.

**Study context**

The Academic and Professional Communication course for science (COM 142) is a three hour a week contact course offered to all first year science students in the second semester (January-May) at the University of Botswana. The overall aim of the course is to develop academic and professional skills that students require while at college and in the world of work. One of the

modules in this course is scientific report writing which exposes students to the different types of reports among them the investigative/ field report.

## The Research Project

The objectives of this research project were for students to acquire basic research skills, to read critically, to write research reports and to enhance their oral communication skills. For the report, students were expected to use the guidelines below to conduct a six week group research project on a science related topic.

## Guidelines

Students worked in groups of four to five (4/5) to identify a problem that related to their area of interest / specialisation. They were then expected to:
- Clearly define the topic so that it is manageable, that is, one that can be investigated in 5-6 weeks.
- Get their topic approved by their lecturer before they could engage in detailed research.
- Use the library research skills they learned in the information literacy module to collect information from various sources on the chosen topic.
- Choose appropriate data collection methods to investigate the problem.
- Analyse the data.
- Present the findings orally and submit a written report.

## E-posters for Assessing the Research Project

In my previous classes students' assessment of research projects entailed 10 minute group oral presentations followed by a five minutes question and answer session. However, I found this assessment lacking as it did not stimulate audience participation and not all presenters in the groups fully participated in the presentations because of the short speaking time allocated for each presenter. Secondly, in the era where digital literacy is an important facet of literacy education in higher education, assigning students projects such as e-posters, that require them to use digital technologies would enhance students' digital literacy skills that they need for both university study and in the world of work. Engaging science students in e-poster projects gave them an opportunity to communicate their research findings in a way that scientists present their research findings at conference meetings; hence affording them an authentic, challenging and novel strategy that might enhance their engagement and put impetus to their performance while at the same time equipping them with research, organisational and presentation skills which they might be able to use beyond their undergraduate study (Baumgartner, 2004; Jeffrey, Milne, Suddaby, & Higgins, 2012). Lastly, using electronic posters, was considered cheaper because unlike traditional posters, they not be required to print their final product. With e-posters they presented their work electronically.

**Creating e-posters**

In order to equip students with skills for creating electronic posters, tutorials were scheduled in computer labs to discuss and demonstrate how to create and present the material using electronic posters. This was considered important because students were exposed to a variety of online e-poster templates that were used to demonstrate what was expected from designing a high quality poster, criteria such as balance, visual effect, correct grammar and spelling and logical organisation of information as criteria for the aesthetic component (Newbrey and Blatezore, 2006 and Conyers, 2003).



**Figure 1: Sample Poster Template**

In addition, handouts with guidelines for creating and presenting effective e-posters and links to websites with online templates were also provided. They were also provided with the assessment guidelines for the poster (See appendix 2) and tips on how to present information from a poster. Groups worked on their projects in groups in the computer lab during class, exploring the links and choosing poster templates that they deemed appropriate for their group projects in terms of content requirements, the format, colour, use of tables and graphs, photos. This activity afforded students opportunities to collaborate, negotiate, make decisions and engage in discussions about their topics, their poster designs and also reflect on the guidelines of creating an effective poster.

*Presenting and Assessing e-posters*

The poster session was scheduled for the week before end of the semester and all the nine groups were required to participate in a 2 hour-poster session, a time allocated for their normal class time. Workstations were set up in the classroom for the groups to display their e-posters. During the session all the groups displayed their e-posters on their laptops at different workstations (see

Figure 2) where they were expected to give short presentations on their research projects, and to respond to questions and comments from the assessor and fellow students.



**Figure 2: Assessment at the various workstations**

**Evaluating the use of posters**

The objective of this exploratory qualitative study was to evaluate students' experiences on creating and presenting their research projects using e-posters, skills they thought they developed as a result of using e-posters, and their suggestions for improvement of e-posters for project presentation.

**Data Collection**

After the poster session, a short open-ended questionnaire was administered to all the 45 students in the classroom. Students were informed that the questionnaire was anonymous and will not affect their marks, and therefore, they should answer as honestly as possible since the responses would assist in the improvement of teaching and learning. The questionnaire included questions about:

- students' experiences with creating e- posters.
- students' experiences with using e-posters for presenting research projects.
- skills they developed through the use of e-poster.
- suggestions for improvement on the use of e-posters to assess projects.

All the questionnaires were collected. Students were also asked to send their e-posters by email after class to enable the lecturer to have samples of the posters (See Appendix 1 for sample posters)

**Data Analysis**

Forty-five (45) questionnaires were analyzed and a thematic approach was adopted (Braun & Clarke, 2006). Data were then grouped into the following themes: a). Students' experiences with creating e-posters (what they liked and/or did not like about creating e-posters); b). Students' experiences with presenting using e- posters (did they like using e-posters for presenting? Why?); c). Skills students perceived to have acquired (students were asked to indicate whether or not they thought they developed any skill as a result of using e-posters for the research project); d). If they were to use e-posters again what would they do differently? e). what suggestions they had for improving the use of e-posters.

**Findings**
i.     Students' experiences with creating e-posters
Although all the 45 students indicated that they had used power point slides for presentations in their various courses, using e-posters was a totally new experience for them. Despite their lack of prior exposure to this form of presentation, the majority of responses were positive. This indicated that students found the experience useful and enjoyable. Some of the responses were:

> *"It was fun, doing something for the first time is fun."*
> *"I have not done it before so it was a great experience"*
> *"It was my first time to use this presentation method, so I gained more experience like creating text box, modifying some part of the presentation so that it looks more attractive"*
> *"We learnt new skills of Microsoft, learnt how to modify large pieces of information so as to fit it into the poster"*

Some responses indicated that students were able to utilize skills learnt in other courses and from prior knowledge to complete the project.

> *"It allowed me to incorporate skills learnt from ICT course and past experience"*
> *"I applied my IT skills"*

However, some students who were not so positive claimed that creating e-posters was time consuming; "It was *very tricky and difficult plus needed a lot of time"*.

> *'It required us to invest more ideas and ensure creativity, which was time consuming'*

While other respondents' not so positive experiences were based on the lack of computer skills which they needed to create the e-posters.

> *"Electronic poster was limiting, we could not carry all the information that we could put"*
> *"It needs someone with skills on using computers"*
> *"the complication of software we used to prepare the poster, we ended up not presenting our poster as we wished it to be"*

Other students mentioned that the lack of collaboration and participation by some group members and conflicting schedules made them not to like the process of creating-posters;

*'Not all members participated well, arguments, disagreements made it boring sometimes'*

*"As members of the group, we didn't get enough time in meeting as we got different lessons on different times"*

*My interest were not aligned with other group members, when I said let's do this, they refused because I was the only girl in the group"*

ii.    Students experiences with presenting using e- posters,

Students expressed excitement in the use of a poster as an alternative presentation tool since they had only been exposed to PowerPoint and known it as the only presentation tool.  The following responses attest to this:

*"It helped me to deal with stage fright"*

*"I learnt how to present work in a nicer and attractive way better than slide show PowerPoint presentation"*

*"Posters are better than power point presentation because there is no need to press, next"*

*" posters are good because all the information is in one page which makes it easy to refer to or support your presentation points looking at the points in the poster unlike the power point where you have to press next in order to reach other supportive information"*

*"It taught me that power point is not the only software or application that can present, posters can too"*

They also mentioned the ease with which they were able to use posters for presentation. They indicated that they enjoyed the "*less intimidating environment of using posters"*. *One student mentioned that "I liked the fact that I was not under pressure as I did not face the whole class during presentation. This really favored me because I am shy"*.

Furthermore, the proximity of the audience to the presenters made the use of posters a preferred choice of presentation medium. One student mentioned that using posters*" allows the audience to come closer to you, therefore there is not fear of presenting to the crowd since one by one people to you asking questions."*

iii.    Skills developed by the use of e-posters

Although some students found the poster process time consuming and difficult, they indicated that it enabled them to develop some important learning skills. Among others they mentioned creativity, critical thinking, summary skills and team work and collaboration.

*"we had a challenge to think creatively when designing posters" "It allowed us to be creative in terms of data presentation"*

*"we learnt to summarize information as briefly as possible"*

*"Enhanced my summary skills"*

*"Enabled me to be a critical thinker"*

*"my skills of using computers were limited, so I had to learn from others.*

*"Collaboration and networking with peers"*

Students also believed that creating e-poster enabled them to develop ICT skills.

> *"It was my first time using this presentation method so I gained more experience like creating text boxes, modifying some parts of the presentation so that it could look attractive"*
>
> *"I learnt how to make a poster and it enhanced my computer skills"*
>
> *"I was able to interact with other students and learn from them and even made friend for we had to talk together to share ideas"*

iv.     If they were to use e-posters again what would they do differently?

Although some students' responses to a question about what they would do differently if they were to use e-posters again for presenting their projects indicated that they were happy with how they used posters, with comments such as *"nothing". "I think there was nothing wrong with the poster we presented, I can use the same approach"*, others were not happy with some of the design elements of e-posters such as layout, effects, colour, and content, that they did not consider when creating their posters. Comments such as the ones below attest to that:

> *"I would add more effects to make the presentation more appealing to the eye".*
>
> *"I will include voice and animation to make it capture people's attention"*
>
> *"I would include more picture, make it more colourful and eye-catching so it attracts more customers"*
>
> *"I will use a projector instead of a laptop screen, so that content is more visible"*
>
> *"I can change here and there for attractiveness"*
>
> *"I would just put the main points on the poster"*

v.     Suggestions for improvement.

Students' suggestions on how I should use e-posters next time indicated that the majority of them felt that presentations should not be confined to classroom setting where only the lecturer and the group benefit from the research findings. Poster sessions should be made open to other members of the university community so that they can also benefit from the researches that students conduct. Some of the comments

> *"Every student can present individually in front of multitudes"*
>
> *"Present posters where there is a bigger crowd"*
>
> *"you should take posters outside where many people will see them and learn from our findings because the information we gather just benefitted the lecturer and classmates instead of people"*

One student even suggested that the lecturer should consider *"uploading e-posters on the internet".*

**Reflections and way forward**

This study explored first year science students' experiences with the use of electronic posters for presenting research projects in the Academic and Professional Communication course. Interesting findings that emerged from the study were that although students had not created and used e-posters before to present research, the majority of students' responses seemed to indicate that they found the experience enjoyable. They opined that using e-posters enabled them to gain experience with using new computer software to create e-posters and that enhanced their ICT skills.

The findings also highlighted the fact that using e-posters enabled students to present their work in a less intimidating and formal environment and this minimized stage fright that is normally associated with presenting in front of large audiences. Posters have been recognized as valuable tools for enhancing collaboration, presentation and team work skills (Costa, 2001). Through participation, students were enabled to demonstrate their understanding of the research project and effectively communicate in order to make decisions that they deemed appropriate for the task at hand. In addition, engaging in conversations and interacting with peers during the creation and presentation of e- posters, allowed students to learn how to think critically and work collaboratively to plan, and monitor the progress of their work (Fuller, 2000) which is facilitated by the integration of digital technologies and tools. Self-directed or deeper learning is considered key in preparing students for success in the world of work because the most valuable skills an employee can have in the twenty-first century are teamwork, problem solving, and oral communication (http://www.hewlett.org/programs/education/deeper-learning). Finally, e-posters also promote the development of other academic skills such as summary skills which encourage students to present posters that have clear and concise information (Wimpfheimer, 2004).

Although the benefits of using e-posters have been documented, findings obtained from this study suggest that some students found creating e-posters difficult and very time consuming. They attributed the difficulty to the lack of adequate ICT that they needed to create electronic posters.  It is worth noting that beginning students have been characterized as Digital Natives (Prensky, 2001a). This has been debunked because research evidence has indicated that although students are using a variety of digital technologies in their social lives, their understanding and use of these technologies for learning in academic contexts was limited.

(Bennett, 2012; Bullen, Morgan, Qayyum, 2011). Goodfellow and Lea (2013) observe that students' use of digital technologies is limited by specific technologies that are used in universities and importantly by the policies and practices that are put in place by institutions and organizations and they argue for the importance of placing digital literacy at the heart of pedagogical approaches in the modern university to enable the development of digital literacies that are crucial for students.

**Conclusion**
The use of e-posters has proved to be a useful experience for students. However, suggestions by students on how to use posters for presentations have been helpful. Further poster sessions will

be hosted in a larger venue so that not only can the university community benefit from students' research projects but also students can be afforded an opportunity to present in an authentic environment, one that they will meet once they leave the university. Secondly, students will make use of the university learning management systems to upload students' posters so that they can view them at their convenience.

# References

Archer, A. 2006. A multimodal approach to academic literacy practices: problematising the visual/verbal divide. *Language and Education*. 20(6): 449-462. DOI: 10.2167/le677.0.

Baumgartner, E. (2004), Student Poster Sessions. *The Science Teacher*, 71(3), 39-41

Bennett, S. (2012). Digital natives. In Z. Yan (Eds.), *Encyclopedia of Cyber Behavior*, 1, 212-219.

Blevins, S., B., Rice, S., W., Carpenter, R., G. (2015). Designing Scholarly Multimodal Texts: A Peer Review Process. *The Peer Review*, Issue 0. http://thepeerreview-iwca.org/article.php?id=17.

Bullen, M., Morgan, T., & Qayyum, A. (2011). Digital learners in higher education: Generation is not the issue. *Canadian Journal of Learning and Technology*, 37(1), 1-24.

Conyers, V. (2003). Posters: An assessment strategy to foster learning in nursing education. *Journal of Nursing Education*, 42(2), 38-41

Cook, R. & Fenn, P. (2013). Dynamic digital posters: Making the most of collaborative learning spaces. *Electric Dreams*, 30th Ascillite conference, 1-4 December. Sydney.

Cope, B., & Kalantzis, M. (2009). 'Multiliteracies': New literacies, new learning. Pedagogies: An International Journal, 4, 164–195. doi:10.1080/ 15544800903076044

Costa, M. J. (2001). Using the separation of poster handouts into sections to develop student skills. *Biochemistry and Molecular Biology Education*, 29(3), 98-100.

Chopra, A. and Kakar, R. ( 2014) The art and science of poster presentation in a conference. *Current Medicine Research and Practice* 4. 298 – 304,

D' Angelo, L. (2012). From Posters to e- Posters: The Evolution of a Genre. *Language Studies working papers.* 4, 46- 54.

Fuller, R. (2000). Encouraging self-directed learning through poster presentations. Flexible Futures in Tertiary Teaching, from http://lsn.curtin.edu.au/tlf/tlf2000/fuller.html

Goodfellow, R. & Lea, M., R. ed (2013) Literacy in the digital university. Routledge. New York.

Hofmann, A.H. (2010). Scientific Writing and Communication. Oxford: Oxford University Press.

Jarvis, L. & Cain, J (2003) Diversifying Assessment 2: Posters and Oral Presentations in Undergraduate History of Science, 2003, https://www.ucl.ac.uk/sts/staff/cain/pubs/jarvis_and_cain_2003_da2.pdf

Jeffrey, L. M., Milne, J., Suddaby, G., & Higgins, A. (2012). Strategies for engaging learners in a blended learning environment. Retrieved August 2018, from https://akoaotearoa.ac.nz/download/ng/file/group3089/strategies-for-engaging-learners-in-a-blended-environment.pdf

Kress, G. (2010). Multimodality. A social semiotic approach to contemporary communication London: RoutledgeFalmer.

Newbrey, M.G & J.M Baltezore (2006). Poster Presentations: Conceptualizing, Constructing & Critiquing. *The American Biology Teacher*. 68(9), 550,- 555.

Prenski, M. (2001) Digital Natives Digital Immigrants. *On the Horizon.* 9(5). 1-6

---

Rauschenbach,I., Keddis,R.,   and Davis, D. ( 2018) Poster Development and Presentation to Improve Scientific Inquiry and Broaden Effective Scientific Communication Skills, *Journal of Microbiology & Biology Education*, 19(1), 1-19.

Shin, S., J. (2012) Evaluation of electronic versus traditional format poster presentations. *Medical Education* 46 (5), 519-520

The New London Group (*1996*). A Pedagogy of Multiliteracies: Designing Social Futures. *Harvard Educational Review*. 66(1), 60-93.

Wimpfheimer, T. (2004). Peer-evaluated poster sessions: An alternative method to grading general chemistry laboratory work. *Journal of Chemical Education*, 81, 1775-1776.