

# Monitoring Student Progress and Growth in International Research Programs Through E-Portfolios

*Abstract— This paper presents the utilization of e-portfolios in the Summer Undergraduate International Research Program (SUIRP) offered by the University of Florida's Center for Undergraduate Research (CUR). E-portfolios are electronic collections of pictures, documents, blog entries and videos that allows one to present their experience in a visually attractive format. CUR used e-portfolios to monitor students' progress during the program. Students gained the opportunity to reflect upon their time abroad. Self-reflection provided students a more holistic view of the benefits of conducting research abroad. We present a description of the effectiveness of using e-portfolios in SUIRP as a way to monitor the progress of the participating students.*

*Keywords—E-portfolios, international undergraduate research*

## I. INTRODUCTION

Undergraduate research has been identified as a high impact educational practice [1] that has multiple professional and personal benefits [2]. International research experience is consistent with the criteria set forth by ABET. To meet this need, institutions offers international research experiences to students.

In 2017, the Center for Undergraduate Research (CUR) at the University of Florida (UF) created the Summer Undergraduate International Research Program (SUIRP) to provide undergraduates the opportunity to conduct research abroad over the summer. The first cohort consisted of 12 undergraduates from various fields and, of the 12 scholars, three were engineering (one mechanical & aerospace, one chemical, and one biomedical engineering) students. CUR opted to go beyond the typical pre-posttest format and added the requirement that participants develop and use an e-portfolio during their research experience. This was to collect a more in-depth picture of the student experience.

The results of the pre-post survey and the e-portfolio allowed us to track students' experiences. We believe e-portfolios are a useful tool that can be used to track the progress of undergraduates conducting research abroad.

## II. BACKGROUND

Multiple universities in the United States have created international research programs for their undergraduates and some have implemented e-portfolios as part of their program. At Drexel University, a pilot study was conducted to see the effect of international research on early undergraduate researchers. This program relied on a Likert scale posttest to assess the effects of an international research experience on a number of measures of global competence [4]. A joint undergraduate international research program between the

University of Nottingham and Virginia Tech, the programing staff utilized a Likert scale survey to assess the impact of the program structure and the overall experience on their undergraduates. They concluded that the program had a positive effect on the development of their engineering students' global competencies and international research skills [5]. E-portfolios are being used in a number of settings. At the suggestion of the University of Washington's (UW) industry visiting committee, UW had engineering students in Co-Ops and summer research programs develop e-portfolios. They concluded that e-portfolios in experiential learning settings enhanced the overall experience. They also concluded that e-portfolios also provide the programing staff with a better understanding of the impact of the experience on the student [6]. Portfolios are useful tools to assess learning because they require students to review their work and engage in the process of reflection, selection, and description [7] [8].

## III. SUMMER UNDERGRADUATES INTERNATIONAL RESEARCH PROGRAM

The Summer Undergraduate International Research Program was created to give individual students the opportunity to conduct research abroad. To qualify for the program, scholars were required to have one year of on campus research experience. Students were also required to find a research placement on their own. The application included a budget (maximum of \$5,000), transcript, resume, statement of the research project, a letter of recommendation from their host institution, and a recommendation letter from the students' UF faculty research mentor.

Dr. Paloma Rodriguez, Associate Director of Undergraduate Academic Programs at the University of Florida International Center (UFIC) and an expert on e-portfolios trained the SUIRP scholars on how to design them. Students were allowed to use any free web design platform, but we encouraged our scholars to use Wix.com, due to its user-friendly interface. Each portfolio had four required sections:

- Research Log: Weekly updates on the progress of the research project
- Journal: Detailed day-to-day experiences in their host country and answered reflection prompts. They were required to post a journal entry once a week and to answer reflection prompts once every two weeks.
- Photo gallery
- Resume/professional work summary

Scholars were contacted via video conference bi-weekly on Facebook Messenger, to discuss their progress in the program and to receive prompts, which guided the students

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to reflect upon their experience abroad. Reflections were incorporated into the scholars' experience because reflections are an integral part of transformative learning [9]. Transformative learning proposes that adults learn new information through strengthening and building off the foundation they established as children and through reflecting upon this foundation [9]. Through critical reflections, adults are able to identify, assess, and possibly re-evaluate key assumptions created during the childhood [10]. Each SUIRP prompt revolved around intercultural competence, development and self-reflection in their host country.

The use of reflections and research logs gave us a comprehensive view of the undergraduates' experience in the program and allowed the students to reflect upon the experiences they gained from the program.

Selected reflections includes:

One student stated:

*"I've always imagined it must be hard for people who live in a country where their native language isn't spoken, but I have an entirely new level of empathy now. ... In English, I speak confidently and rest assured that any nuances I include in my speech are intentional. In Spanish, although I speak it all day long, my most common words by far are still "más despacio."*

Another student wrote in her first week:

*"The major "barrier" I've had to overcome at my lab is navigating Japanese aimai, or ambiguity. In Japan, people will rarely tell you things directly, which makes it difficult for an American like myself to know when I've done something wrong or offensive."*

Near the end of the program, many of the scholars' outlook on the program and their integration into their host country evolved. One scholar remarked:

*"I am really proud of the progress I've made. I can't wait to speak with my French professor."*

Another scholar's view on research changed after completing the program:

*"Learning about the tedious processes of vector research and disease control has made me think a lot about the challenges of large-scale international health interventions. .... Witnessing all the challenges of global public health makes me feel so in awe that we have any kind of system in the first place and so inspired to try to harness this system and work to expand it."*

After the scholars completed their time, they were given a post survey. In addition to the survey, SUIRP scholars also presented their e-portfolios at the UF Fall Undergraduate Research Conference and the UF International Study Abroad Conference.

#### IV. THE IMPACT OF THE E-PORTFOLIO

Upon completing all their requirements, the scholars were given a survey on the usefulness of the e-portfolio.

- Six of 10 respondents had already used their e-portfolio in the semester following their experience. One mentioned using it on a graduate school application, and one added it to their resume.
- Eight of the 10 agreed or strongly agreed that using their e-portfolio "allowed me to be more aware of my growth and development as a researcher."

The survey revealed that many of the scholars had a positive view on the use of e-portfolios.

- Six respondents agreed with the statement "Building my e-portfolio assisted me in making connections between ideas and question in my research."
- Eight agreed that "Creating my e-portfolio allowed me to reflect upon the *importance* of my research."

The results from the questionnaire showed that students believed e-portfolios helped them to better understand the benefits of conducting research abroad and helped them organize their thoughts on reflecting about their time abroad. One student stated:

*"The e-Portfolio, like reflective journaling, was such a powerful tool during my time in Uganda; it gave me the opportunity to take my direct experiences, then sit down and digest and cogitate. Because of that, I was able to find the vocabulary I needed to capture every week, to capture the stories and emotions and make them concrete. The best part is I get to use the product (the finished e-Portfolio) to better advertise myself for future med/grad school applications."*

#### V. CONCLUSION

We are now on accepting applications for the second cohort of the Summer Undergraduate International Research Program. We will continue to monitor and assess the SUIRP

scholars' progress in the program. Given the results and the value of e-portfolios at documenting international undergraduate research, CUR will continue to use this valuable monitoring tool.

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