Propósitos y Representaciones
Ene.– Jun. 2015, Vol. 3, N° 1: pp. 71-124.
http://dx.doi.org/10.20511/pyr2015.v3n1.69

ISSN 2307-7999
e-ISSN 2310-4635

ARTÍCULOS DE INVESTIGACIÓN

Development of a teaching methodology for undergraduate human development in psychology

Desarrollo de una metodología de enseñanza para el Desarrollo Humano en psicología de pregrado

Maria A. Rodriguez[1a*] & José M. Espinoza[1b]

[1]Pontificia Universidad Católica del Perú, Lima, Perú.

[a]Director of the Master's in Clinical Health Psychology. She received her PhD in Clinical Health Psychology from Yeshiva University, and completed her Postdoctoral training at the Department of Veterans Affairs. She is a licensed New York State psychologist. [b]Computer Engineer from the Pontificia Universidad Católica del Perú, with a Master's in Computer Engineering from Université de Poitiers in France.

Received: 01-02-15

Approved: 22-05-15

***Correspondencia**

Email: marodriguezg@pucp.pe

Citar Como:

Rodríguez, M., & Espinoza, J. (2015). Development of a teaching methodology for undergraduate human development in psychology. *Propósitos y Representaciones, 3*(1), 71-124. doi: http://dx.doi.org/10.20511/pyr2015.v3n1.69

Notas

The implementation of this teaching methodology was funded by a grant from the Direccion Académica al Profesorado, Pontificia Universidad Católica del Perú.

Summary

The development of a teaching methodology for the undergraduate Psychology course Human Development II in a private university in Lima, Peru is described. The theoretical framework consisted of an integration of Citizen Science and Service Learning, with the application of Information and Communications Technology (ICT), specifically Wikipedia and discussion boards, and fieldwork with Older Adults. Wikipedia, a free digital encyclopedia, allows students to create and edit articles about content within the course. The use of Wikipedia allows students to supplement classroom learning, distinguish between accurate and inaccurate information, and contribute to subject area content online for the public. The teaching methodology aimed to increase critical thinking skills and sense of social responsibility. Fifty-five students of a private university in Lima participated in the course; 26 in the control group during the 2014.1 semester and 29 in the experimental group during the 2014.2 semester. The planning and implementation phases of the methodology, as well as initial qualitative findings are discussed. Analysis of discussions in the student forum indicates that students appeared to utilize more critical thinking skills and demonstrated a sense of social responsibility related to the Older Adult.

Key words: Wikipedia, pedagogy, Human Development, education.

Resumen

Se describe el diseño de una metodología desarrollada para dictar el curso de Desarrollo Humano II, al nivel de pregrado, en una universidad privada de Lima, Perú. El marco teórico incluye la integración de Ciencia Ciudadana y Aprendizaje de Servicio, a través de Tecnologías de la Información y la Comunicación (TIC), incluyendo Wikipedia y el Foro, y trabajo de campo con adultos mayores. Wikipedia, una enciclopedia virtual y gratuita, permite que el alumno cree y edite artículos sobre el contenido del curso. Además, el alumno puede complementar su aprendizaje, distinguir entre información precisa e imprecisa y contribuir al contenido para el público. La metodología

tuvo como objetivo que los alumnos aumentaran el pensamiento crítico y la responsabilidad social. Cincuenta y cinco alumnos de una universidad privada de Lima participaron en el curso, 26 alumnos formaron parte del grupo control durante el semestre 2014.1 y 29 alumnos formaron parte del grupo experimental en el semestre 2014.2. Se presentan resultados cualitativos preliminares y la descripción de las fases de planificación e implementación. Análisis del uso del foro sugiere que los alumnos parecen haber utilizado el pensamiento crítico y desarrollado la responsabilidad social hacia el adulto mayor.

Palabra clave: Wikipedia, pedagogía, Desarrollo Humano, educación.

Introduction

Universities in more developed parts of Peru are experiencing postmodernism, characterized by the influence of science and technology. The Internet provides additional sources of information for students, and a potential learning tool in the classroom. In Aulas 2.0 2009-2011, professors of primary and secondary education participating in a study utilized technology in the classroom, and more than 90% of them reported benefits such as the ability to access, share and contextualize resources; increase student attention and motivation; increase participation; engage in collaborative group activities; and grant more opportunities to research, and develop the students' creativity (Microsoft / DIM-UAB, 2011). Teachers report positive experiences and benefits for both students and teachers, suggesting that the use of the Internet in the classroom should be integrated in teaching curriculum.

Citizen Science.

Citizen science involves the active participation of the public in different phases of scientific research that responds to real-world needs (Cohn, 2008). This approach to research is gaining more attention due to the potential impact, and positive experiences reported in the sciences. Disciplines such as astronomy, biology, human and environmental health, and ecology have developed research projects involving the public, and have motivated the development of an organization in the United States for promoters of citizen science in various disciplines, the Citizen Science Association (Citizen Science Association, 2015). In January 2015, the association created an open-access peer-reviewed journal, *Citizen Science: Theory and Practice,* to advance the field.

The public can be involved in different phases of the research project: definition of the research question, collecting relevant information for the conceptualization, developing the hypotheses, designing the study, collecting data, analyzing samples and/or data, interpreting data, drawing conclusions, disseminating results, and formulating new questions (Wiggins & Crowston, 2011). Citizen science projects pertaining to Education prioritize education

of the public and outreach either through formal or informal methods. In Wiggins and Crowston's review research projects utilizing Citizen Science, all of the projects used technology to disseminate findings (2011).

Psychologists are increasingly using an approach that has many characteristics similar to Citizen Science, Participatory Action Research (PAR). This approach aims to enable action, eliminate vertical relationships between researchers and participants, and attributes importance to the context of a research project (Baum, MacDougall & Smith, 2006). This methodology rejects the positivist paradigm, and instead adheres more to social constructionism. This approach has roots in the study of marginalized populations in Psychology (Freire, 1972). PAR is typically employed by Clinical-Community psychologists in Peru; and it is critical to testing and adapting concepts and theories developed in the United States and Europe to a Latin American context. The disseminating results phase is greatly influenced by the desire of the population. If the population chooses to disseminate results outside of the community to other people, the investigator can use a Citizen Science approach to involve students to help disseminate the findings through technology or other identified means.

Service learning.

Service learning is a:

> course-based, credit-bearing educational experience that allows students to (a) participate in an organized service activity that meets identified community needs and (b) reflect on the service activity in such a way as to gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility. (Bringle & Hatcher, 1995, p. 112).

According to Howard (1993) academic rigor is not compromised, and

academic credit is granted for the learning part of the course, not the service component. In addition, the traditional faculty instructional role should be reevaluated. Cooke and Kemeny (2014) conducted content analysis of interviews with students involved in a four-week leisure education program for veterans undergoing treatment for substance abuse, and found that students had enhanced understanding of course content and self-awareness. Berrios and colleagues report that students perceive service learning as a helpful learning strategy, allowing one to integrate knowledge, professional experience, and social responsibility, as well as solve complex problems (Berrios, Contreras, Herrada, Robles & Rubio, 2012).

A service-learning approach was utilized in an undergraduate introductory gerontology course whereby students were paired with elders in a rural community setting (Dorfman, Murty, Ingram, Evans, Mellor & Ivry, 2002). In comparison with students who were not involved in the service-learning component of the class, involved students displayed more positive attitudes toward the elderly and gained more knowledge about rural elders and communities. Similarly, elders reported a positive experience. Similarly, Schaber (2015) reported that students increased their knowledge and confidence in implementing skills learned in the classroom involving older adults of an adult day service. By developing one´s critical thinking skills, it is possible to contribute to a community (social responsibility) through service learning (Sedlak, Doheny, Panthofer & Anaya, 2003).

A combined citizen science/service-learning approach in the classroom whereby students disseminate psychological concepts through Wikipedia and also visit a community of older adults to engage them in activities and provide them with information, has the potential to increase students' sense of social responsibility, participation in the learning experience, and critical thinking skills. First, the literature on Information and Communications Technology is reviewed, followed by the literature on critical thinking and sense of social responsibility.

Information and Communications Technology.

Information and Communications Technology (ICT) includes internet applications, video technology, computer programs and other technology that assists in the use of information. There are two assumptions regarding ICT; first,

it is causing rapid transformations, and second, it is unifying and standardizing culture (World Youth Report, 2003). According to the Banco Interamericano de Desarrollo (2012) Latin America and the Caribbean have had the most rapid growth in ICT globally. However, much effort is still needed for all populations to have equal access to ICT. ICT has the capacity to enable students to acquire knowledge, express themselves in an ethical manner, solve problems, and learn to live peacefully with others (UNESCO, 2013). Moreover, educational proposals to use ICT should consider the six following aspects: tailoring to meet students´ needs, focus on learning results, broadening academic space and time, creating new learning experiences, providing collaborative experiences, and managing the use of evidence-based knowledge in decision-making. ICT can be successfully integrated in the classroom to create a more student-centered approach. Two forms of ICT, Wikipedia and discussion boards, are discussed.

Wikipedia.

Wikipedia is a free digital encyclopedia created in 2001 with more than 30 million articles in 287 languages (Wikimedia Foundation, 2013). There are more than 1,000,000 articles in Spanish (Bienvenidos a Wikipedia, 2015). Anyone can create or edit articles about diverse topics, as well as rate articles. Wikipedia has potential for academics to share information with the general public, but many articles lack appropriate content and references.

The Association for Psychological Science (APS) created an initiative in the past several years to encourage the dissemination of psychological science throughout the world using Wikipedia (Association for Psychological Science, 2014). More than 2,000 psychological researchers and their students have edited articles on Wikipedia in the United States. There does not appear to be a similar movement for Latin America. The virtual portal of APS helps professors assign work and disseminate articles to other members of the portal to encourage them to comment on the articles. Despite the initiative's attempt to encourage participation of APS members and disseminate information to the general public, more participation is needed.

In an analysis of 36 courses and 640 students involved in the initiative, Farzan and Kraut (2013) reported that university students contributed to high quality articles. Professors reported several advantages, such as students learning how to write about scientific topics for the public, increased understanding of the content, and increased critical thinking skills. Students reported that the tasks helped them to better learn course content.

Discussion Boards.

The use of a forum / discussion board is increasingly used in the both online and campus-based settings as a learning object. University online course platforms have typically offered discussion boards for professors' use for more than ten years. Students are able to discuss topics outside of the classroom and participate in conversations with each other as well as the professor. The following student benefits are cited in the literature: the use of critical thinking, students respond more and are more thoughtful than they are in the classroom, they develop a stronger class community, are more likely to cite research and class readings, and achieve greater cognitive and exploratory learning (Worcester Polytechnic Institute Academic Technology Center, 2008). Employing a constructivism learning theory approach, individual and group processes involved in participating in a discussion board should construct new knowledge for the participant (Harman & Koohang, 2005). A discussion board provides a space for students to process what they are learning and how they are applying this to real-world situations.

Critical-Thinking.

Critical-thinking is a process by which we search for knowledge through reasoning, solving problems, and decision making, which allows us to efficaciously obtain desired results (Saiz & Rivas, 2008). There does not seem to be one definition widely accepted, but many definitions depending on the discipline. Other definitions consider abilities such as detaching one's beliefs from the process of evaluating an argument (Stanovich &

Stanovich, 2010). Saiz and Rivas (2008) argue that critical thinking should not be measured by formal questions with likert scales because this format measures perception more than thinking. There is no opportunity to justify and evaluate options, comprehension but not thought production is measured, and examples provided often do not reflect real-life situations and therefore are of little interest to the test-taker. Currently, critical thinking as a concept lacks conceptual and methodological clarity. There are no known validated tests in the university setting in Peru; however, critical thinking can be measured through five fundamental thinking abilities: the ability to argue, hypothesize, produce probabilistic judgments, make decisions, and resolve complex problems (Saiz & Rivas, 2008).

Critical thinking skills are important in everyday life due to advances in technology, an increasing wealth of information available to us, a rapidly changing world, etc. (Halpern, 2003). Aside from the practical aspects, critical thinking is an essential skill for a researcher and practitioner, allowing one to make connections between observations, past experiences, and judgment (Ander-Egg, 2011; Plack & Greenberg. 2005). In order to address the challenges of a developing country such as Peru, it is imperative that students be trained to develop their critical thinking skills in the university setting. Disciplines such as sociology, philosophy, and political science have taken strides at applying critical thinking to the Latin American context and producing relevant literature (Acosta, 2010). The disciplines of Psychology and Education need to further develop the concept and apply it to a Latin American context.

Several studies support the use of Service-Learning in the classroom to enhance critical thinking (Li & Lal, 2005; Sedlak, Doheny, Panthofer & Anaya, 2003; Molee, Henry, Sessa & McKinney-Prupis, 2010; Goldberg & Coufal, 2009). Meanwhile, the literature suggests that a Citizen Science perspective involves critical thinking, but fewer empirical studies have been designed to study the association between Citizen Science and critical thinking. One doctoral dissertation suggests that the use of citizen science can promote different critical thinking skills (Basham, 2012).

Social Responsibility.

Many Latin American universities are beginning to prioritize Social Responsibility as an indispensable institutional characteristic. University Social Responsibility is defined as a university's capacity to communicate and put into practice principles through four key processes: management, teaching, research, and extension (Universidad: Construyendo País, 2004). Social responsibility as a concept does not have a concrete theoretical background; however, it can be defined as the responsibility for the social and environment impacts that result from the decisions and actions of organizations (Vallaeys, de la Cruz & Sasia, 2009). It is an ethical framework which posits that one has an obligation to help the community.

According to the World Declaration on Higher Education for the Twenty-First Century: Vision and Action (1998) higher educational students, personnel and students should "play a role in helping identify and address issues that affect the well-being of communities, nations and global society" (UNESCO, 1998, Article 2F). The university's function no longer suffices at the level of education, but each discipline is called to put theory into action. Similarly, the World Conference on Higher Education stated that "institutions of higher education worldwide have a social responsibility to help bridge the development gap by increasing the transfer of knowledge across borders… and working to find common solutions…" (UNESCO, 2009). In one study in Chile measuring 442 students' perception of university social responsibility representing 11 fields of study, more students participated in volunteer positions in the following fields Basic Education, Journalism, Commercial Engineering, and Agronomy (Cereceda, 2005). It is apparent that many universities need to further encourage their students to engage in socially responsible projects. Riesch and Potter (2014) reported that scientists participating in a Citizen Science project reflected on the ethical component of the investigation and questioned the methodology involved, analyzing their role in research and the community of study. Meanwhile,

literature spanning more than 20 years displays the positive influence of service learning on sense of social responsibility (Giles Jr. & Eyler, 1994; Celio, Durlak & Dymnicki, 2011).

Undergraduate Human Development II.

Human Development II consists of three hours of theory with a PhD-level professor and a two-hour laboratory course with a BA-level instructor on a weekly basis. The course covers adolescence through the end of life, covering central aspects in normal human development throughout the lifespan, as well as psychological and social difficulties encountered in each stage of life. Furthermore, there is an emphasis placed on the Latin American, and especially the Peruvian context. The laboratory section of the course allows students to discuss articles and movies and conduct interviews with adolescents and adults, working both individually and in groups.

The traditional methodology of the course was changed by integrating Citizen Science and Service Learning through the use of ICT (i.e. Wikipedia and discussion boards) and field work with Older Adults. The aim of this new methodology was to increase student critical thinking skills and sense of social responsibility (See Figure 1).

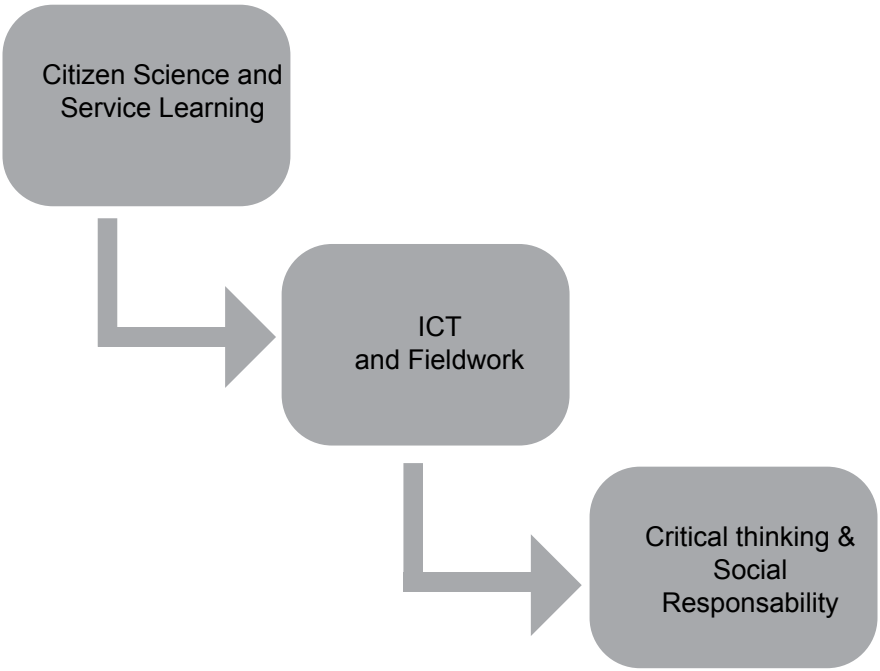

Figure 1. Theoretical Framework and Objectives.

Method

The project involved a quasi-experimental design.

Participants.

The project consisted of 55 Psychology students enrolled in Human Development II in a private university in Lima, 26 in the control group during the 2014.1 semester and 29 in the experimental group during the 2014.2 semester. The control group consisted of 21 females and 5 males between the ages of 18 to 26 years old; meanwhile, the experimental group consisted of 24 females and 5 males between the ages of 18 and 24. Students were informed of the changes that were being employed in the course due to a grant from the university, but signed informed consent was not necessary because the project was part of a quality improvement

project, and not a research project. When surveys were administered, students were assured of their confidentiality, and the professor did not collect the surveys individually from each student.

Intervention.

Students were divided into groups of three to five people and worked on two Wikipedia assignments. During the first part of the course they identified topics of interest pertaining to the content of Human Development II that were not found in the Spanish version of Wikipedia, and wrote an entry. They were responsible for addressing comments from the Wikipedia audience and ensuring that the entry was not eliminated by another Wikipedia member. During the second part of the semester, they continued perfecting the entry and engaged others to interact with them and discuss the article. They were also assigned articles that were already present on Wikipedia, but that needed additional information. Similarly, they had to engage in discussions regarding these articles. All of the student work was supervised by the professor and students were aware that their participation in all of the components would be graded.

The class is divided into three laboratory sessions with approximately 10 students in each practicum. Each group attended the Community Center for Older Adults (Casa del Adulto Mayor) in another district in Lima where the professor had an established relationship with a support group for people with Diabetes Type II. This experience aimed to reduce stereotypes about older adults and provide students with a social responsibility experience where they donated their time to older adults. The first lab section facilitated a dialogue with the group members in smaller groups, discussing topics pertaining to how they feel about being older adults in Lima. Dynamic activities were also planned (e.g. Bingo). The second lab section discussed resilience and facilitated conversations aimed at helping the group members identify ways that they are resilient. The last group facilitated debriefing

activities and facilitated a short dance, since that was a pleasurable identified in the earlier groups. The grade for this service-learning component was considered in the practicum part of the class.

The following criteria were taken into account in the grade for the first Wikipedia assignment: an assignment on the justification of the topic, an assignment on the plan for dividing the work among group members, quality of participation in the forum, quality of the article, writing/grammar, references (quality and appropriate use), addition of the Peruvian context, and article still published. Meanwhile, the following criteria were used to grade the second Wikipedia assignment: an assignment on the plan for dividing the work among group members; quality of participation in the forum, pertaining to the first Wikipedia assignment: additional contributions, references added, and discussion regarding the article; regarding the second editing assignment: discussion regarding the article and edits completed.

A third requirement for the course was participation in a forum for discussing the Wikipedia assignments and sharing preconceptions about Older Adults, as well as bringing up ideas for the practicum experience in the Community Center for Older Adults. The professor served as a facilitator of the discussion, and considered the quality of responses in the grade.

Measures.

After an extensive literature search for measures of critical thinking and sense of social responsibility in a Spanish-speaking context, measures were adapted and created. The professor of the theory section of the course, three professors of the laboratory section, and the project mentor (a computer scientist) worked together to develop the measures. Since the project began during the 2014.1 semester after being funded by the university, measures were only collected at the end of the course. First, the end of semester self-report survey was created and contained questionnaires about the use of

technology and Wikipedia, critical thinking, and sense of social responsibility. In addition, the last five group article summary assignments were rated for critical thinking using a rubric (See Appendix 1). The experimental group baseline measures were similar to the already created measures, but instead assessed future intentions and experiences in other Psychology courses with critical thinking, and sense of social responsibility. Meanwhile, the end of semester measures were identical, with the addition of a short web-based questionnaire that assessed students' perceptions on effectively completing the Wikipedia assignments. Figure 2 describes the design of the project.

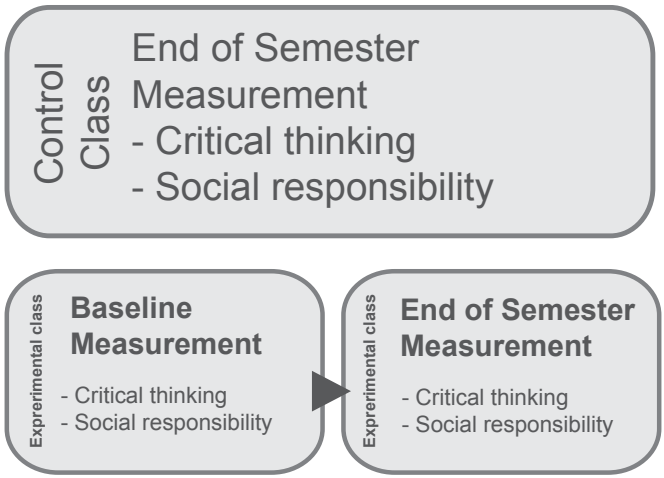

Figure 2. Project Design.

Critical Thinking.

Critical thinking was measured by self-report and assessment of group article reviews by the laboratory instructors (See Appendices A and B). The three laboratory instructors and professor created questions that adhered to the five domains of critical thinking: the ability to argue, hypothesize, produce probabilistic judgments, make decisions, and resolve complex problems (Saiz & Rivas, 2008). The self-report questions used for the experimental group at baseline had students rate their experiences in prior Psychology courses and

their expectations for the Human Development II course on a five-point scale ranging from total agreement to total disagreement on development of each domain. Meanwhile, at the end of both courses students rated lab exercises of analysis of interviews, group work, discussion of texts, and critical reviews of readings on a five-point scale ranging from total agreement to total disagreement. The assessment of article reviews was conducted using a rubric of 1 to 4 for each of the five domains, where 1 indicated a lack of the domain and 5 indicated an optimal level of the domain.

Social Responsibility.

Social Responsibility was conceptualized using the experience in Chile, Universidad: Construyendo País (2004). At baseline, the experimental group was asked about perception of prior courses and expectations for the current course in allowing students to recognize the importance of social responsibility, recognize capacities they possess that can be useful for social responsibility, and motivating students to participate in social responsibility projects. Students were also asked if they participated in social responsibility projects in the past, or were planning to participate in projects during the current semester or in the future. The assessment during the last class for both courses asked whether the course helped students develop the three skills mentioned earlier. Similarly, the same five-point scale ranging from total agreement to total disagreement on development of each domain was used.

Analyses.

SPSS Version 21 will be used to analyze differences between the two groups in the last class in critical thinking and social responsibility, as well as differences before and after the methodology was employed in the experimental group. The current analysis for this paper is based on preliminary findings from the use of technology questionnaire, the Baseline questionnaire from the experimental group, and content analysis of the discussion board comments.

Results

Students in both groups appear to be similar overall. Students mainly use Smartphones and laptops, and mainly access Facebook and the intranet for the university. They primarily communicate by texting, using the Facebook messenger, emails, and cell phone calls. Students utilize Facebook on average at most monthly, and they search for general content. They consider that it is not reliable given the ease at which one can modify content. They prefer practical learning activities both inside and outside the classroom. According to self-report, the experimental group perceived that prior classes in Psychology helped them develop critical thinking skills. They also considered that Psychology courses motivated them to engage in social responsibility, but they were mostly not involved in projects related to social responsibility. Students had a similar expectation that the Human Development II course would increase their sense of social responsibility.

Conversations in the forum about the creation of an article were mainly related to asking the opinion of other students for preventing the article from being eliminated, providing tips to classmates based on interaction with the Wikipedia community, and asking concrete questions about the assignments. They reported frustrations during the creation of a new assignment because most groups had their articles eliminated from Wikipedia several times and were not able to get concrete answers from the Wikipedia community as to how to improve the article. Many students struggled with the inability to use primary sources, since Wikipedia discourages their use. Community members from other disciplines (e.g. Physics) commented on articles that did not pertain to their areas of expertise. There were factors outside of the professor´s control that made students have to use critical thinking skills to create acceptable articles for Wikipedia. Meanwhile, conversations about editing an article and continuing to improve the original article created, stimulated reflection about the content of the article. Students described the assignment as easier, and feeling calmer and happier with this assignment due to enhanced understanding of how to efficiently participate in Wikipedia.

The discussion board stimulated the most debate regarding the Service Learning component of the course. Students demonstrated a sense of cohesion, sharing experiences in the Community Center and providing recommendations for the other groups. In addition, they demonstrated the ability to reflect about their own original perceptions of older adults (e.g. they are depressed and do not like much activity), and comment about the changes in their perceptions due to the interaction with older adults. Several students mentioned experiences with their own grandparents, and how these experiences influenced their expectations of interacting with the Older Adults. Based on conversations with their grandparents and reading other sources outside of the class, they began to propose activities that they could implement. After participating in the service learning activity, many students reflected on how active, motivated, and happy the Older Adults appeared. One student commented:

> I thought it was a lovely experience because these people want to be listened to, and that is what we were able to do when we visited them. Even though we could not complete all of the activities that we had planned, they told us about their feelings and experiences, and topics came up that I did not think were very common, like how they enjoy traveling and dancing. I thought that talking about feelings about aging and health would be difficult to talk about due to their age and the condition they have (i.e. diabetes), but they responded to all of the questions and the activities in an open manner and with enthusiasm.

Students demonstrated critical thinking skills while debating what activities should be implemented in the service learning component and commenting on the opinions of others. They also analyzed the likelihood of their work being accepted or rejected by the community based on their past experiences and conversations with the Wikipedia community and helping other students who were having difficulty with writing their article. They also

demonstrated a sense of social responsibility related to the Service learning component, whereby they made recommendations for future students and reflected on the importance of their role interacting with the Older Adults.

Discussion

The use of Citizen Science and Service Learning has the potential to increase students´ critical thinking skills and sense of social responsibility. The literature suggests a relationship between these frameworks and outcomes, however, there are challenges measuring the objectives in an educational setting in Latin America. First, this methodology was developed in the context of a class, and student burden was taken into consideration. Simple measures that could inform the refinement of the teaching methodology were created. Measures were not validated because the project was conceptualized as a quality improvement project, and not a research study. Future studies should validate these measures and attempt to apply findings to a wider audience in other disciplines. In addition, there is ambiguity in the scientific community as to how to define these concepts, measure them, and additionally measure them in the Spanish language.

Psychologists share a sense of social responsibility for disseminating accurate information to the public. There are many stereotypes about Older Adults, a vulnerable and often neglected population in Latin America. Negative stereotypes emphasize mental and physical decline, while positive stereotypes describe a worriless golden age; neither type of stereotype is beneficial for older adults (Yuste, Rubio & Aleixandre, 2004). This learning experience appeared to increase sensibility to the Older Adult and reinforce material learned in the classroom.

A future article will discuss the outcome variables (i.e. critical thinking and sense of social responsibility) and provide suggestions for measuring them in future studies. Several changes in the course are being employed

simultaneously, and it is difficult to separate the effects of each variable since they share commonalities. The gestalt of the experience in its entirety should be considered. Preliminary findings suggest that students can benefit from the methodology proposed for Human Development II at the undergraduate level.

References

Acosta, Y. (2010). Pensamiento crítico, sujeto y democracia en América Latina. *Utopía y Praxis Latinoamericana*, *15*(50), 15-43.

Ander-Egg, E. (2011). *Aprender a Investigar*. Córdoba: Brujas.

Association for Psychological Science. (2014). *APS Wikipedia Initiative.* Retrieved from http://www.psychologicalscience.org/index.php/members/aps-wikipedia-initiative

Atkinson, M.P. & Hunt, A.N. (2008). Inquiry-Guided Learning in Sociology. *Teaching Sociology*, *36*(1), 1-7.

Banco Interamericano de Desarrollo, BID (2012). Construyendo puentes, Creando oportunidades: La banda ancha como catalizador del desarrollo económico y social en los países de América Latina y el Caribe.

Basham, M. (2012). *Pathways of Knowing: Integrating Citizen Science and Critical Thinking in the Adult ELL Classroom* (Doctoral Dissertation). Retrieved from Arizona State University Respository.

Baum, F., MacDougall, C. & Smith, D. (2006). Participatory Action Research. J. *Epidemiol Community Health*, *60* (10), 854-857.

Berríos, V., Contreras, M., Herrada, M., Robles, M. & Rubio, X. (2012). *Resultados de Aprendizaje Servicio en la UC: Informe final de investigación*. Santiago, Programa Aprendizaje Servicio, Pontificia Universidad Católica de Chile.

Bienvenidos a Wikipedia (January 14, 2015). In *Wikipedia*. Retrieved January 13, 2015, from https://es.wikipedia.org/wiki/Wikipedia: Portada.

Bringle, R. & Hatcher, J. (1995). A service-learning curriculum for faculty. *Michigan Journal of Community Service Learning*, *2*, 112-122.

Celio, C.I., Durlak, J. & Dymnicki, A. (2011). A Meta-analysis of the impact of service-learning on students. *Journal of Experiential Education*, *34*(2), 164-181.

Cereceda, L. (2005). *Percepción de los estudiantes en torno a la Responsabilidad Social Universitaria en la Pontificia Universidad Católica de Chile*. Proyecto Universidad Construye País. Retrieved from http://vidauniversitaria.uc.cl/proyectos/documentos/documentos/rsu.pdf

Citizen Science Association (2015). *Overview*. Retrieved January 30, 2015; from https://www.library.cornell.edu/research/citation/apa.

Cohn, J.P. (2008). Citizen Science: Can Volunteers Do Real Research? *BioScience*, *58*(3), 192-197.

Cooke, C.A. & Kemeny, E.M. (2014). Student Perspectives on the Impact of Service Learning on the Educational Experience. *Schole: A Journal of Leisure Studies & Recreation Education*, *29*(1), 102-111.

Dorfman, L.T., Murty, S., Ingram, J.G., Evans, R.J., Mellor, J.M. & Ivry, J. (2002). Incorporating Intergenerational Service-Learning into an Introductory Gerentology Course. *Advancing Gerentological Social Work Education*, *39*(1/2), 219-240.

Farzan, R. & Kraut, R. (2013). *Wikipedia classroom experiment: bidirectional benefits of students'engagement in online production communities*. In: SIGCHI Conference on Human Factors in Computing Systems, 27 April - 2 May 2013, Paris.

Freire P. (1972). *Pedagogy of the oppressed*. Harmondsworth: Penguin.

Giles Jr., D.E. & Eyler, J. (1994). The impact of college community service laboratory on students' personal, social, and cognitive outcomes. *Journal of Adolescence*, *17*(4), 327-339.

Goldberg, L.R. & Coufal, K.L. (2009). Reflections On Service-Learning, Critical Thinking, and Cultural Competence. *Journal of College Teaching & Learning*, *6*(6), 39-50.

Halpern, D.F. (2003). *Thought and knowledge: an introduction to critical thinking.* New Jersey: Lawrence Erlbaum Associates, Inc.

Harman, K. & Koohang, A. (2005). Discussion Board: A Learning Object. *Interdisciplinary Journal of Knowledge and Learning Objects*, *1*, 67-77.

Howard, J. (Ed.). (1993). *Praxis I: A faculty casebook on community service learning*. Ann Arbor, MI: Office of Community Service Learning Press, University of Michigan.

Li, X. & Lal, S. (2005). Critical reflective thinking through service-learning in multicultural teacher education. *Intercultural Education*, *16*(3), 217-234.

Microsoft / DIM-UAB (2011). *Investigación: Aulas 2.0 2009-2011, Memoria - Julio 2011*. Pangea. Recovered from http://peremarques.pangea.org/aulas20/

Molee, L.M., Henry, M.E., Sessa, V.I. & McKinney-Prupis, E.R. (2010). Assessing Learning in Service-Learning Courses through Critical Reflection. *Journal of Experiential Education*, *33*(3), 239-257.

Plack, M. & Greenberg, L. (2005). The Reflective Practitioner: Reaching for Excellence in Practice. *Pediatrics*, *116* (6), 1546-1552. doi: 10.1542/peds.2005-0209

Riesch, H. & Potter, C. (2014). Citizen science as seen by scientists: Methodological, epistemological and ethical dimensions. *Public Understanding of Science*, *23*(1), 107-112.

Saiz, C. & Rivas, S.F. (2008). Evaluación en pensamiento crítica: una propuesta para diferenciar formas de pensar. *Ergo, Nueva* Época, *22-23*, 25-66.

Schaber, P. (2010). Teaching Program Development and Evaluation Through a Service Learning Project in Community-Based Adult Day Services. *Occupational Therapy in Health Care*, *24*(1), 107.

Sedlak, C.A., Doheny, M.O., Panthofer, N. & Anaya, E. (2003). Critical Thinking in Students' Service-Learning Experiences. *College Teaching*, *51*(3), 99-104.

Stanovich, K.E. & Stanovich, P.J. (2010). A framework for critical thinking, rational thinking, and intelligence. In D. Preiss & R.J. Sternberg (Eds.), *Innovations educational psychology: Perspectives on learning, teaching and human development* (pp. 195-237). New York: Springer.

UNESCO (1998). World Declaration on Higher Education for the Twenty-First Century: Vision and Action. World Conference on Higher

Education. Retrieved from http://www.unesco.org/education/educprog/wche/declaration_eng.htm

UNESCO (2009). 2009 World Conference on Higher Education: The New Dynamics of Higher Education and Research For Societal Change and Development. Paris. Retrieved from http://www.unesco.org/fileadmin/MULTIMEDIA/HQ/ED/ED/pdf/WCHE_2009/FINAL%20COMMUNIQUE%20WCHE%202009.pdf

UNESCO (2013). Enfoques Estratégicos Sobre las TICS en Educación en América Latina y el Caribe. Retrieved January 30, 2015 from http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Santiago/images/ticsesp.pdf

Universidad: Construyendo País (2004). *Observando la Responsabilidad Social*. Recovered from www.construyepais.cl

Vallaeys, F., De la Cruz, C. & Sasia, P. (2009). *Responsabilidad Social Universitaria, Manual de primeros pasos*. México, McGraw-Hill Interamericana Editores, Inter-American Development Bank.

Wiggins, A. & Crowston, K. (2011). From Conservation to Crowdsourcing: A Typology of Citizen Science. In *Proceedings of the 44th Annual Hawaii International Conference on System Sciences*. Koloa, HI, 4-7 January, 2011.

Wikimedia Foundation. *Ten years of sharing and learning*, 2013. Retrieved from https://wikimediafoundation.org/wiki/Annual_Report

Worcester Polytechnic Institute Academic Technology Center (2008). *Benefits of Using Discussion Boards in Your Classes.* Retrieved January 30, 2015 from https://www.wpi.edu/Academics/ATC/Collaboratory/Idea/boardbenefits.html

World Youth Report (2003). *Youth and Information and Communication Technologies (ICT).* Retrieved January 30, 2015, fromhttp://www.un.org/esa/socdev/unyin/documents/ch12.pdf

Yuste, N., Rubio, R. & Aleixandre, M. (2004). *Introducción a la Psicogerontología*. Madrid: Ediciones Pirámide.

Anexo A

Encuesta de Medición de Pensamiento Crítico y Sentido de la Responsabilidad Social

Parte I: El Pensamiento crítico

Marque el grado de acuerdo frente a las siguientes frases con respecto a los **ejercicios de análisis de las entrevistas**

	Muy de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Muy en desacuerdo
Han desarrollado mi capacidad para argumentar.					
Han desarrollado mi capacidad para plantear hipótesis.					
Han desarrollado mi capacidad para emitir juicios de probabilidad.					
Han desarrollado mi capacidad de decidir.					
Han desarrollado mi capacidad para resolver problemas complejos.					

Marque el grado de acuerdo frente a las siguientes frases con respecto a la **experiencia de trabajos en grupo.**

	Muy de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Muy en desacuerdo
Han desarrollado mi capacidad para argumentar.					
Han desarrollado mi capacidad para plantear hipótesis.					
Han desarrollado mi capacidad para emitir juicios de probabilidad.					
Han desarrollado mi capacidad de decidir.					
Han desarrollado mi capacidad para resolver problemas complejos.					

Marque el grado de acuerdo frente a las siguientes frases con respecto a **la experiencia de discusión de textos en clase**

	Muy de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Muy en desacuerdo
Han desarrollado mi capacidad para argumentar.					
Han desarrollado mi capacidad para plantear hipótesis.					
Han desarrollado mi capacidad para emitir juicios de probabilidad.					
Han desarrollado mi capacidad de decidir.					
Han desarrollado mi capacidad para resolver problemas complejos.					

Marque el grado de acuerdo frente a las siguientes frases con respecto a **la realización de resúmenes críticos de las lecturas.**

	Muy de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Muy en desacuerdo
Han desarrollado mi capacidad para argumentar.					
Han desarrollado mi capacidad para plantear hipótesis.					
Han desarrollado mi capacidad para emitir juicios de probabilidad.					
Han desarrollado mi capacidad de decidir.					
Han desarrollado mi capacidad para resolver problemas complejos.					

Parte II: Responsabilidad Social

Marque el grado de acuerdo frente a las siguientes frases con respecto a **la totalidad de la experiencia de práctica en el curso**

	Muy de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Muy en desacuerdo
Me ha permitido reconocer la importancia de la responsabilidad social.					
Me ha permitido reconocer las capacidades que poseo y pueden ser útiles para la responsabilidad social.					
Me ha incentivado a participar de proyectos de responsabilidad social.					

¿He participado de algún proyecto de responsabilidad social antes del presente semestre?
… No … Si ¿Cuál?.....

¿Durante el semestre me he inscrito para participar de algún proyecto de responsabilidad social?
… No … Si ¿Cuál?.....

¿Pienso inscribirme en algún proyecto de responsabilidad social en el futuro?
… No … Si ¿Cuál?.....

Anexo B

Rúbrica Pensamiento Crítico

		Niveles de logro			
		1	**2**	**3**	**4**
1	Capacidad de argumentar	No es capaz de reconocer argumentos del texto ni plantear uno propio.	El estudiante reconoce los argumentos del texto pero no plantea ninguno propio.	El estudiante plantea una argumentación personal pero no reconoce el argumento del texto.	El estudiante reconoce argumentos del texto y plantea argumentos personales.
2	Capacidad de plantear hipótesis	No se formula ninguna pregunta.	Presenta una hipótesis basada en la intuición.	Las hipótesis recogen una o más ideas principales del texto.	Las hipótesis son formuladas de manera clara, estructurada y lógica.
3	Capacidad de emitir juicios de probabilidad	No se formula ningún juicio de probabilidad.	El juicio da cuenta de un problema que se puede discutir en prácticas.	El juicio es idóneo para dar cuenta de un concepto.	El juicio está formulado de manera clara, estructurada y lógica.
4	Capacidad de decider	No presenta una postura personal.	Presenta una postura personal basada en la intuición.	Presenta una postura personal en base a una discusión teórica, un problema practico o en relación a principios éticos.	La postura personal está formulada de manera clara, estructurada y lógica.
5	Capacidad de resolver problemas complejos	El estudiante no plantea un problema.	El estudiante plantea un problema complejo pero no plantea una solución.	El estudiante plantea un problema no complejo y plantea una solución.	El estudiante plantea un problema complejo y una solución.