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The Global Text Project: Spanish Translation Phase

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Teaching Case
The Global Text Project: Spanish Translation Phase

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Abstract

The Global Text Project (GTP) was initiated in 2006 to provide free, high-quality, open-content textbooks to university students in developing economies. In 2011, the GTP refocused on marketing and distribution of its own and other open content textbooks, and in 2013 involved students and other volunteers in translating textbooks into Spanish. Translation and content localization is an ongoing issue in the Global delivery of information. The case follows a graduate student project leader managing a complex Spanish translation effort. The case encourages readers to reflect upon how the process of translation could be improved. Finally, it poses questions about how the translated textbooks could be promoted for use by professors in Spanish-speaking countries, particularly those in Latin America. The issues in this case relate to volunteerism, information systems and technologies, project management, translation methodologies, and textbook adoption. Readers are encouraged to consider if machine translation, computer-aided translation, or the application of computer game elements in distributed translation might increase productivity and provide high quality translated content.

Keywords: Open Educational Resource (OER), Textbooks, Information Systems, Translation, Project Management, Teaching Case

1. Introduction

It was Cynthia Morales' last week as the student project leader for a part of the Global Text Project (GTP) (http://www.globaltext.org), and although she was looking forward to a well-deserved break and her new job ahead, she could not help but think of how she could help her successor enhance the project's effectiveness. She had been working for the past year (2015) on the continuation of the GTP, a project that was close to her heart.

As discussed in the next section, GTP was initiated in 2006 in order to provide free, open content textbooks for university students, particularly students in developing economies. Cynthia's role was the oversight of one aspect of GTP, the translation of textbooks into Spanish. Her team had translated 5 books in the past year, but this was far short of the need. In fact, six translations were undertaken by GTP, and of these 3 were completed, 2 were in final review and one was still in process.

The current process of using distributed student volunteers to translate textbooks into Spanish was effective, but the slow pace of the translations was less than ideal. As she reflected on the last year and the work that was completed, she wondered if she had learned any lessons to help increase the production of translated texts.

She had a few ideas in mind which included some sort of gamification and possibly machine learning, but these thoughts needed to be further fleshed out in order to truly help her successor, Meghan McDonald, on the project. Her goal was to not only increase the output of translated books, but to maintain the accuracy and cultural relevance of the book at the same time. As she reflected on possibilities, she thought back on her year's work and also what attracted her to the translation effort in the first place.

2. Origin and Goals of the Project

It is well known that the cost of university (as well as K-12) textbooks concerns students, parents, and many faculty in the US (Bidwell, 2014; Otani, 2015). Prices have increased at three times the rate of inflation between 1977 and 2015 (Popken, 2015), and publishers often release unnecessary new editions to cripple the used book market (Reynolds, 2011). A recent report published by The College Board in the U.S. stated that just by adding textbooks and supplies to the base price of tuition and fees for a two-year public in-district school in 2013-2014, the cost of attendance increases by 40%. The report also shows "the average cost of textbooks for one year of college is between $1,225 and $1,328" (Baum & Ma, 2014, p. 12).

As a result, several alternatives to traditional textbooks arose to deal with the problem; some are not-for-profit, often university-based, and others are various forms of for-profit ventures. Taken together, all of the new alternatives reduced the cost of educational content and those that provided textbooks for free became known as Open Educational Resources (OER) (Caswell, Henson, Jensen, & Wiley, 2008; Downes, 2007).

One OER venture, the Global Text Project (GTP), was established in 2006 by Professors Don McCubbrey of the University of Denver and Rick Watson of the University of Georgia. GTP focused on furnishing free, high-quality, open-content textbooks to university students in developing economies because that was where the need was greatest (http://globaltext.terry.uga.edu/news_faqs?q=node/14). At the outset, the intention was to engage the collective intelligence of the worldwide academic community to write original content and develop a community around each textbook to keep them current. Each book was to be made available in English, Spanish, Chinese, and Arabic.

During the proof of concept phase, with funding from the Jacobs Foundation of Zurich, Switzerland, GTP put together an outline of two pilot texts and then reached out to academics from several countries to contribute chapters. What was learned was that, while the concept worked, the process was slow, as many contributors did not deliver completed chapters on a timely basis. In the meantime, as GTP gained some visibility in the media and through papers and presentations at conferences, other authors learned of GTP's mission, and several offered to have their books included in the GTP library either through direct donations or via links to the author's website. Several science texts originally written in Spanish by colleagues of Andres Sepulveda, a professor at the University of Concepción in Chile, are examples. Another example is an award-winning book on Art History (http://smarthistory.org), which was added to the GTP library at the request of the authors. As of June 4, 2016, GTP has over 100 texts available in English, several in Spanish, and a few in Arabic. Translations into Chinese are being handled by cooperating Chinese universities.

While Watson and McCubbrey were working on building the GTP library they became immersed in the Open Educational Resources (OER) "ecosphere" and met colleagues engaged in similar efforts, although none were focused on developing economies. Most, like GTP, offered free textbooks, but there were soon entrepreneurs with profit-making ventures offering low-cost alternatives for expensive texts to students in the developed world. Examples are sites permitting students to read a textbook online for free, purchase a download of individual chapters or an entire e-text, ship the students a paper copy, and even rent a textbook. Please see Appendix 1 for a representative list of open content or low cost textbook options.

As its library grew, GTP realized it was not effectively reaching professors for textbook adoption in developing economies despite the use of email lists, through regional associations of universities, and cross-links with other OER sites. In late 2009, GTP was contacted by students from AIESEC (original French acronym for Association International des Étudiants en Sciences Économiques et Commerciales, which translates in English to International Association of Students in Economic and Commercial Sciences. The full name is no longer used. (http://aiesec.org/about-aiesec/#tab-id-2)) working as volunteers in Cambodia who were referred by a mutual acquaintance.

AIESEC International is a student-run organization focused on developing the leadership potential of youth through experiential learning, volunteer experiences and professional internships. It was established shortly after World War II and currently has 70,000 active members at 2,400 universities in 126 countries. (More information on AIESEC is available on its website, http://www.aiesec.org.)

In short order, GTP concluded that AIESEC could help build awareness of OER in Cambodia and launched a pilot project with it. AIESEC recruited two additional volunteers to come to Cambodia to meet with professors, librarians, and students and familiarize them with GTP and other OER sites. The project was conducted in 2010 and was considered a success. As a result of the initiative in Cambodia, McCubbrey facilitated the establishment of an AIESEC chapter at the University of Denver (DU) (AIESEC Denver) so that DU students could benefit from the many opportunities for international service offered through AIESEC International. He also realized that AIESEC could play a role in making academic communities in other countries aware of OER, as it did in Cambodia.

3. Current Status of the Project

While GTP was started with the goal of publishing textbooks for university students in developing economies, there are now several organizations producing free or low cost textbooks, as previously noted, so there is a reasonable supply of materials. In 2011, because of these other alternatives and the fact that it had expended most of its initial grant, the Global Text Project decided to shift its emphasis from a production and marketing organization to one primarily of marketing, and move its locus from Athens, Georgia to Denver, Colorado.

Still, there is limited marketing to developing economies and, in particular, there is a limited supply of OER content in languages other than English. Its pilot OER awareness program in Cambodia made GTP believe there is the potential to turn GTP into a low cost international site in developing countries, and driven by students. At the same time, it was decided to focus translation efforts on Spanish, and to bring AIESEC interns to Denver to work with DU students studying Spanish as well as bilingual international students on the DU campus.

In the fall of 2013 a Spanish translation project was launched at the University of Denver. Because book translations can be onerous projects for those doing the translation (almost like writing a whole new book), it was decided that the pyramid method (described in detail in the next section) should be used. This translation method was adopted by Dr. McCubbrey because the cadre of volunteers had different levels of proficiency in the target language. Some of the students were slightly proficient, so the initial translations could be done by them. Others were more proficient and could lend their expertise to later translations, expressing the nuances of the vocabulary translated. Translations were done as a project for the public good as part of students' work assignments in language classes. Similar methodologies have been used in other settings, (see, for example, Nenkova, & Passonneau, 2004), although we have not been able to find them being used for language translation. Dr. McCubbrey later remarked: "It seemed like a good way of incorporating the relative language proficiency of volunteers in a way that would result in a high quality translation."

Using this method, the first step was to build a project leadership team. It was essential for the effort to get support from bilingual faculty as well as students. Professor Zulema Lopez, a Spanish professor and native of El Salvador, was recruited by Dr. McCubbrey as a Co-Supervisor of the translation project on campus. They had met at the University of Denver during a faculty function and as they casually conversed about GTP, Professor Lopez expressed a great interest

in assisting with the project and engaging students in the effort as well. Katie Stohs, a graduate student, was chosen as Student Project Manager. It was at this point that Cynthia Morales, fluently bilingual, joined the project as one of its key members.

A focus on recruiting student volunteers on campus followed. Fifty-five volunteers were recruited in the first two months. This was accomplished by posting flyers throughout campus, connecting with student groups on campus, and making announcements in Spanish classes. Out of the 55 original volunteers, 7 were selected to serve as Translation Mentors based on language fluency, willingness, and commitment to the project. The leadership team also delivered four presentations during the first term: two were informational sessions that explained the project background, and the other two were training sessions to provide volunteers with instructions on how to get started translating.

The Global Text textbook Business Fundamentals (McCubbrey, 2009), was chosen as the textbook to be translated for the academic year. This specific book was chosen for two main reasons: it was written for students in developing countries, and it contains entrepreneurial concepts that could help students lift themselves and their countries out of poverty.

3.1 The Pyramid Method

The Pyramid Method used for this project enables collaboration among student translators and facilitates the translation of a textbook. First, a book is broken down into small segments (work units) for volunteers to translate. A target deadline is set for everyone to complete their assigned work units, although volunteers have to agree on that deadline. Next, volunteers with stronger Spanish skills review the translation work performed, and finally a professional review is conducted before publishing the book on the Global Text website.

The effort required from volunteers at the bottom of the pyramid is small (translating 4-5 pages), and the effort at higher levels is not very demanding because volunteers are more proficient and they only review the work of lower levels. Collectively, the project requires a high involvement, but there is not an onerous amount of effort placed on any individual. Below (Figure 1) is a visual depiction of "The Pyramid Method."
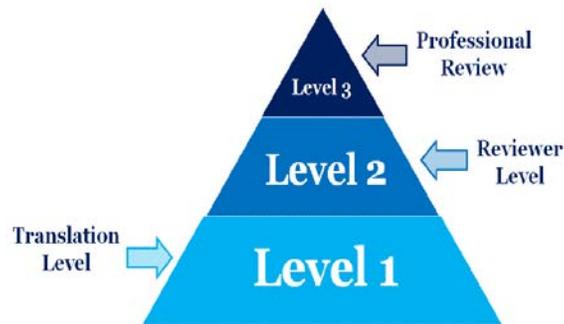

Figure 1. The Pyramid Method

The Business Fundamentals, textbook has 366 pages. The leadership team split the book up into several work units of approximately five pages each. Some work units were a little under or over the five page mark depending on the natural break of the particular section. After approximately three months all initial translations were completed.

In the review stage, 16 volunteers fluent in Spanish were selected and assigned one chapter each to review. The deadline for this second-round review was one month. Most of the reviewers met the deadline, but some asked for time extensions. When the second-round review was completed, a fluently bilingual MBA student performed a final review of the entire book.

3.2 Finding Volunteer Translators from Around the Globe

The leadership team's first thought for finding additional volunteers globally in order to translate more books was to use social media sites like Facebook, which had over 500 million users in 2011. They thought that if even a small

percentage of users would contribute to the translation effort, it could greatly increase output. They knew that gamification could be a way to entice qualified Facebook users to participate. However, the team did not have the resources to investigate this option properly and did not pursue it further at the time.

The leadership team also researched organizations that link experienced volunteer translators with non-profit organizations that need translation performed. They found and connected with Translators for Progress which turned out to be a perfect fit for the Global Text Project. Its mission is "to facilitate communication within the global grass roots community and to create opportunities for language students and professionals to get involved in social issues" (http://www.translationsforprogress.org/whatistp.php). According to its website, "It was created to meet the needs of two different groups:

1. "Organizations" and other social entities in need of translation work, but without the budget to pay for it, and
2. Students or professionals in foreign languages interested in building experience as translators and/or editors or proofreaders, working directly with organizations in their region of interest, and contributing to a good cause" (http://www.translationsforprogress.org/whatistp.php).

After noting the parallels between the Global Text Project and Translators for Progress, the leadership team submitted an application to be listed on the Translators for Progress site. There were several questions that had to be answered in order to submit the application.

Once the application process was complete, a volunteer job description (see below) was successfully posted to the Translators for Progress website. Watching the video in the job description gives a concise description of the work being done by domestic and international student volunteers on the University of Denver campus. It was conceived and created entirely by the students themselves.

> The Global Text Project is an Open Educational Resource (OER) Project that aims to make textbooks freely available to university students throughout the entire world. OERs are freely accessible, openly licensed documents and media that can be used for educational purposes. The project began in 2006 with Don McCubbrey (University of Denver) and Rick Watson (University of Georgia) as Co-Project Leaders. The project's current efforts are focused on English to Spanish textbook translations. However, we welcome volunteers for translation initiatives for any language. Our goal is to make free, high-quality, open content textbooks available to all university students, especially students in developing economies that have a hard time affording high-quality textbooks in their own language. Join a translation project by contacting Don.McCubbrey@du.edu.
> YouTube video for translators- *https://www.youtube.com/watch?v=PxKoavqW5-U*
> Global Text Project website- *http://globaltext.terry.uga.edu/*

Posting the volunteer description to the Translators for Progress website resulted in a consistent influx of high-quality volunteer translators from several countries. The volunteers expressed interest in the project by emailing Professor McCubbrey. Typically, a Skype meeting was arranged in which more background on GTP was covered. Topical interests of the volunteer were solicited along with the time commitment they were able to make. Candidate texts were discussed with volunteers, a book was chosen, and work started. Some books were translated by teams of volunteers while, in exceptional circumstances, as single volunteer translated an entire book.

3.3 Promoting Use

In the United States, representatives from publishing companies market to professors directly and try to convince them to utilize the most recent edition of a textbook their company has published. Such newer textbook editions often have only minor improvements from the previous edition. In marketing this way, of course, the publishing companies undercut the used textbook market. Professors find that the updated version is an easy transition for them rather than having to prepare for their class with an entirely new book. Many professors are not really aware of how much more students will have to spend to get the latest edition rather than buying a lower cost used book. For example, a professor well-known to one of the co-authors was sympathetic to the OER movement, but had continued to use high-priced traditional textbooks in her classes. When asked why she did not adopt low-cost textbooks she said that she never thought to ask the publisher's representative how much a student would have to pay for a new edition and besides that, she did not have the time to search around the various OER sites for a suitable substitute.

In some poorer countries, professors find textbooks from the library. Students pool their resources and make copies of the chapters needed for class and share them with each other. In some other poor countries, professors make copies of textbook chapters themselves and then distribute them to their classes for a small fee. This helps them supplement their low salaries. In yet other countries, professors write textbooks and assign them to their students. In this way they create readership for their texts and earn supplemental income. In these cases, it is clear to Cynthia that adoption rates of GTP texts are low because the professors would cut out a source of income for themselves, in addition to being unaware of their existence in the first place. She wondered if there could be a way around this for students (and professors) wanting to lower textbook costs. She knows that the GTP texts are high quality textbooks, she is just not sure how she can increase adoption rates.

4. Issues Moving Forward

As Cynthia thinks now about the future of GTP and the need for increasing the output of translated books from only 4 or 5 per year to a much larger number, she and the others involved with GTP began to deliberate on how to make this happen. The GTP team believes that the success of this project is to have a full library of textbooks that can be used around the world in different languages and the adoption of these books from professors around the world.

She contemplates how this can best be accomplished and although she has a few ideas, she knows that they all need to have more details fleshed out in order to make them viable. Importantly, since she is stepping down as project director and moving on to a full time job, looking for ways to scale the project will be the responsibility of her replacement, Meghan McDonald, who is also a bilingual graduate student. Therefore, she wants to pass along some of the thoughts she and others involved with the project have considered but were not able to pursue due to limitations on time and resources.

One of the first ideas was to involve AIESEC chapters or other university-based student groups in Latin America to translate some books, and promote OER locally as was done in Cambodia. Related to this, perhaps students could work with professors at their universities to make them aware of OER as alternatives to more expensive (or unavailable) textbooks.

A second idea was to involve multi-lingual centers at universities, like a Spanish/English center. Such centers could generate the excitement needed to get new volunteers. Her third idea was to engage paid professionals, but his would require additional funds.

As previously noted, another idea that was tried but was not successful was to recruit volunteers on Facebook or other social media sites. This approach could work if the team could come up with a way to incent volunteers to contribute without compensation of some sort. A gamification approach might work if the team could come up with an innovative structure. To explore this idea of gamification, Cynthia decided to explore the topic by looking at two sites on gamification: a wiki page with an explanation of gamification (https://badgeville.com/wiki/Gamification) and a gamification research web site (http://gamification-research.org/). Can the application of typical elements of game playing, e.g., point scoring or competition with others be used to increase productivity and participation?

Another approach is to tap into the advances in automated translation software being developed as applications of cognitive computing and/or machine learning by some of the large tech companies such as Google, IBM, and Microsoft. Can machine translation, computer-aided translation, or the application of computer game elements in a distributed translation information system increase productivity and provide high quality translated content?

Finally, there is always the possibility of obtaining additional funding for the project to amass the resources necessary to scale the project. The question here is to locate a source of funds with an interest in the project.

Cynthia's task, as she sees it, is to help her successor and other members of the GTP prioritize these ideas and perhaps add others. One idea she has been contemplating is how to make sure that, once these texts are on-line, professors in various countries adopt them. She would like to leave the project feeling that she will be able to look back at having set the stage for raising the effort to the next level.

5. Acknowledgements

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Author Biographies

Gisella Bassani is a PhD student and lecturer at the University of Colorado Denver Business School. She is also an adjunct professor at the Daniels College of Business at the University of Denver. Her research interests include Business Intelligence (BI), IS Implementations, Health IT, and Project Management. Her teaching interests include: database design and programming, data warehousing, visualizations and reporting, data analytics, BI, statistics, and business classes. She has worked professionally in various BI positions for the last 20 years, including managing international BI teams.

Donald J. McCubbrey is a Clinical Professor in the Department of Business Information and Analytics in the Daniels College of Business at the University of Denver. His teaching and research is focused on electronic commerce and strategic uses of information technology. He was President of the University Faculty Senate for academic years 2010-2012. At various times, he also served as director of the Colorado Advanced Software Institute, as a co-founder of the Colorado Technology Association, as director of the Center for the Study of Electronic Commerce and is currently a co-project leader of the Global Text Project. He has published articles and cases in peer-reviewed journals, published textbooks and has served as an associate editor of three academic journals.

Richard T. Watson is a Regents Professor and the J. Rex Fuqua Distinguished Chair for Internet Strategy in the Department of MIS at the University of Georgia's Terry College of Business. He is also the Research Director for the Advanced Practices Council of the Society for Information Management. He has published over 160 articles in leading academic and practitioner journals, written or edited more than 10 books and served as senior editor for MIS Quarterly. He was also co-conference chair for ICIS 2004 and AMCIS 2014. He was also President of the Association of Information Systems (AIS).

APPENDIX 1

Examples of Additional Open Content and Low Cost Textbook Sites

Search Sites to find educational resources
- OER Commons – www.oercommons.org
- Open Education Group - www.openedgroup.org
- DEHub Education Resources -
  www.wikieducator.org/DEHub/Research_Themes/Open_Education_Resources_(OERS)

Free e-books and textbooks
- bookboon.com – www.bookboon.com
- University of Minnesota – Open Textbook Library - www.open.umn.edu/opentextbooks/
- College Open Textbooks - www.collegeopentextbooks.org
- Openstax cnx - www.cnx.org
- Project Gutenberg - www.gutenberg.org/wiki/Main_Page
- Saylor.org - www.saylor.org/books/

Low/Lower cost or rentals
- Chegg – www.chegg.com
- Vitalsource Coursesmart - www.coursesmart.com
- Flat World Knowledge – www1.flatworldknowledge.com/

Textbook Marketplaces
- Boundless.com - www.boundless.com

APPENDIX 2

Examples of Paragraphs in Spanish to be used for the machine translations.

Below please find two paragraphs taken from the Business Fundamentals (McCubbrey, 2009) textbook on the GTP site that Cynthia used to test machine translations. Each of the paragraphs has the Spanish translation right below it, also taken from the GTP site, from the translated textbook Una Introducción a los Fundamentos de Negocios (McCubbrey, 2015).

Follow Cynthia's example and copy / paste the wording into an automated machine translation tool (such as Google or Microsoft translation tools) and see how close the translations are. You should also take the resulting text from the machine translation tool and add it into the translation tool again to see if the tool will translate it back to the original text or if there are extensive variations.

> **"The business eco-system**
> Whether you possess the characteristics of an entrepreneurial mindset, or work for someone who does, you can still be instrumental in starting a new venture by understanding the business eco-system. What is a business eco-system? A business eco-system is a set of business components that form the foundation of a new venture's creation. Figuratively, the business eco-system is like a wheel that rolls your new venture forward which is why we represent the business eco-system in a wheel-shaped model" (McCubbrey, 2009. p. 10).

> **"El Ecosistema de los Negocios**
> Si usted posee las características de una mentalidad de emprendedor o trabaja para alguien que las tiene, puede ser esencial para la creación de un nuevo proyecto al entender el ecosistema de lo negocios. ¿Qué es el ecosistema de los negocios? El ecosistema de los negocios es un grupo de elementos que forman la base de la creación de un nuevo proyecto. De un modo figurativo, el ecosistema de los negocios es como una rueda que mueve su nuevo proyecto hacia adelante, razón por la cual representamos el ecosistema de los negocios como un modelo en forma de rueda" (McCubbrey, 2015, pp. 9-10).

"What is ethics?
Ethics is the branch of philosophy concerned with the meaning of all aspects of human behavior. Theoretical Ethics, sometimes called Normative Ethics, is about discovering and delineating right from wrong; it is the consideration of how we develop the rules and principles (norms) by which to judge and guide meaningful decision-making. Theoretical Ethics is supremely intellectual in character, and, being a branch of philosophy, is also rational in nature. Theoretical Ethics is the rational reflection on what is right, what is wrong, what is just, what is unjust, what is good and what is bad in terms of human behavior" (McCubbrey, 2009, p. 257).

"Que es la ética?
La ética es la rama de filosofía que se ocupa con el significado de todos los aspectos de la conducta humana. Ética teórica, a veces llamada la Ética Normativa, es sobre descubrir y definir entre el bien y el mal; es la consideración de cómo desarrollamos las reglas y principios (normas) por el cual juzgar y guiar decisiones significativas. Ética Teórica es supremamente intelectual de carácter, y, siendo una rama de filosofía, también es racional en la naturaleza. Ética Teórica, es una reflexión racional sobre lo que es correcto, lo que está mal, lo que es justo, lo que es injusto, lo que es bueno y lo que es malo en términos de la conducta humana" (McCubbrey, 2015, p. 335).

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Teaching Notes

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Teaching Note

1. Case Purpose/Objectives

The case focuses on one of many Open Educational Resources (OER) initiatives, the Global Text Project's (GTP) (http://globaltext.terry.uga.edu/, https://en.wikipedia.org/wiki/Global_Text). In particular, it addresses the question of why the adoption of free, high quality textbooks is not more widespread. This is a timely topic which can be tied into not only the student's own experiences with textbook costs, but also with the current Affordable College Textbooks Act (S. 2176, 2015) in the US. The act was first proposed in 2013 (S. 1704, 2013), but did not advance and has again been introduced in the US Congress in October 2015.

With the increased number of OER and other low cost alternatives, GTP has been focused on translating OER texts (its own and others) to other languages, in particular Spanish. Since the uptake of OER has been slow, and translation is largely a manual effort, changes in the overall process are needed if OER sites are to realize their potential of reducing the cost of textbooks to students.

The case looks at various issues faced by the GTP as it transitions its operations from the current student project manager, Cynthia Morales, to her successor, Meghan McDonald. They include: Marketing (both to students and to faculty), Information Systems (IS) tools use, and project scaling. Questions that should be addressed by your students include:
1. Is the problem of expensive textbooks really an issue for the students?
2. How can GTP build awareness of its translated textbooks and encourage their adoption?
3. How can GTP measure the effectiveness of its marketing efforts and text book adoptions?
4. How can GTP scale the translation effort to increase production? Can advances in machine learning and other techniques of computer-enabled translation help scale the effort? Can using elements of computer game playing increase productivity and participation?
5. Can the failure to adopt OER be framed as an ethical issue?
6. Are there other ways that governments, universities, or public interest groups could increase the rate of adoption?
7. Can the Pyramid Model be applied to other settings?

Students will be engaged with this case because many see high textbook costs as a problem they face and that possible solutions could have an impact on their own textbook costs.

2. Teaching Suggestions

The case can be taught in one 75 minute class session and can easily be expanded for one 110 minute class session. The target audience is primarily an introductory information technology or business course for either undergraduate or general MBA students. As university students have had encounters with textbook purchasing, they are in a unique position to discuss the subject through personal experiences.

Students should read the case before coming to class. Additionally, advanced preparation should include viewing the GTP site and student-prepared video on page 11 of the case, as well as other OER, lower cost, or textbook rental sites. This will let students see ways that others are trying to reduce textbook costs. They should look at the web sites in the case to be comfortable with gamification. They should also explore machine translation tools. Please see some of the sources covered on page 4 below. This will set up a discussion on the effectiveness of currently available machine translators and the possibility of them being replaced by more sophisticated techniques based on NLP and machine learning in the near future. Another part of the preparation, which could truly get the students excited about the topic,

would be to have them answer the following question: "Is there a high-quality, low cost, alternative text that could have been used in one of your classes?"

When the students arrive for class, a question could be posed to them: What problem are we trying to solve? After an initial 5-7 minute discussion, divide the class into small groups and split the following six questions evenly between the groups. If the class is too large to break up into manageable groups, the questions can also be discussed with the class as a whole.

1. Is the problem of expensive textbooks really an issue for students?
   a. How serious is this problem within this group/class?
   b. How serious is this problem in Peru, Bolivia, Colombia, or Mexico?
   c. Is this really a problem or not?
2. How can GTP build awareness of its translated textbooks and encourage their adoption?
   a. How does Cynthia help her successor create a marketing plan to have more professors, in Latin America, adopt the GTP textbooks?
   b. Who do you think chooses the textbook for your class?
   c. Why do you think some professors are not using open textbooks?
   d. Why go through all the effort of creating free textbooks if few professors adopt them?
   e. How can the GTP project leaders build awareness of OER and their project among professors and others in target countries?
   f. Can awareness of low cost and free textbooks be created among students in order to encourage their professors to adopt them?
3. How can GTP measure the effectiveness of its marketing efforts and text book adoptions?
   a. What metrics can be used and are they practical? For example:
      i. How can GTP track the downloads for each textbook and the numbers of students benefitting from them?
      ii. How can GTP know which marketing techniques are most effective?
   b. What IS tools could be used for this effort? For example:
      i. What IS tools are available inexpensively (or free) which allow download and usability metrics to be calculated?
      ii. Could a guerrilla or viral marketing campaign help? If so, how?
      iii. Could IS solutions such as gamification and social media be useful in recruiting volunteers or in adoption efforts?
4. How does GTP scale the translation effort to increase production?
   a. What could be done to recruit more volunteer translators? (Public good, prize, some sort of money).
   b. Are the machine learning solutions for automatic language translation being developed by Google, IBM, Microsoft, and others nearing widespread availability?
   c. Are current machine translation tools sturdy and comprehensive enough to utilize as part of the Pyramid Model?
      i. Which of the tools they researched at home worked best?
      ii. What benefits / pitfalls do they see in utilizing machine translation tools?
   d. Would it be easier to recruit students through the involvement of professors such as Professor Lopez?
   e. Would it be helpful to use social media? If so, which programs would be most useful?
   f. How can adding computer game elements (badges, points, and inter-user competition) help with engaging distributed volunteers?
5. Can the failure to adopt OER be framed as an ethical issue?
6. Are there other ways that governments, universities or public interest groups could increase the rate of adoption?
   a. What types of current legislation is there that is attempting to address the ethical and/or the monetary issues of textbooks?
   b. Will it be effective?
7. Can the Pyramid Model be applied to other settings?

Set an appropriate time limit on the group discussions which could involve having them create a short presentation in PowerPoint or similar software with their proposed solutions.

Each group (or selected groups if the class is large) will then share their ideas with the rest of the class (up to 30 minutes all together – about 4-5 minutes per group). This would be followed by a full class discussion of proposed

solutions. The best and most innovative solutions could be e-mailed back to the authors of this study in order to give the students thanks and recognition on the GTP web site.

3. Discussion Questions/Answers or Proposed Solutions

Section 2, Question 1:

This question could lead to different answers for different students and could create interesting debate on whether this is truly a problem for students and why. It will allow them to get to know something about other students in their same class.

Section 2, Questions 2:

From current estimates, not many free GTP textbooks are being utilized in classrooms in various countries. This is an opportunity to be creative. Questions can be added to this sections such as: "Who will donate funds to support OER sites if few people are using the completed textbooks?"

It could also be important for the students to explore what other publishers have already tried to do. Has any of it caught on? Is there something else that could be done to lower textbook costs? Guerrilla and viral marketing concepts and solutions could also be included here.

Having more precision with utilization statistics is important. Google analytics is currently being utilized for some tracking, but it is not very precise. What other tools are there to get better statistics on utilization? The students could do some research on this topic.

Section 2, Question 3:

This is a great opportunity to have an analytics discussion with the students. In finding metrics that could be used to track GTP downloads and the number of students benefitting, what IS tools could be used? There are various tools such as Google analytics, bitly.com, and others that maintain metrics of downloaded files. Is the data they gather enough? What if you want to know which universities and professors are utilizing the free texts? We all know that having users fill in forms (or ignore them) in order to download something online can create false data, so what are the alternatives? Are they ethical? A discussion could be centered around cookies, and document tracking tools.

GTP used Google analytics and was able to find out how many downloads happened from which countries, however the data was not very granular. There was also a survey that people downloading the texts were encouraged to fill in, but most of the users downloading the texts did not take the survey.

One of the ideas mentioned is the use of IS (Information Systems) solutions such as gamification and social media. The students can utilize the information they learned from their homework on gamification to come up with creative ideas on the use of this technique for building OER awareness. Could talent from social networks (like Facebook) be used to recruit new volunteers? Could they be used to promote awareness too?

Section 2, Question 4:

Last year (2015), 6 translations were undertaken by GTP: As of this writing, 3 are completed, 2 are in final review and 1 is still in process. Again, using creativity here would be key. A couple of possible solutions are: 1. Using emerging automatic translation techniques; 2. Initiation of coordinated translation projects at other universities, particularly at universities in target countries.

A possible issue with solution 1 is that in all likelihood volunteers will still be needed to verify the accuracy of the translation, at least in the short term. For solution 2, the question that should be posed to the students is: "how do you engage additional universities in the effort?"

This would be a perfect place to talk about Collective Intelligence or Peer Production. How can this sort of project turn into something that is crowdsourced? A discourse about crowdsourcing would be optimal at this point. What is crowdsourcing? How does it work? What motivates people to participate in crowdsourcing efforts? Could an app be created for this?

An examination of the machine translation tools they found and explored as homework should also be conducted.

A couple of free tools that can be used are:
- https://translate.google.com/
- https://www.microsoft.com/en-us/translator/doctranslator.aspx

A Wikipedia page that compares various tools is:
https://en.wikipedia.org/wiki/Comparison_of_machine_translation_applications.

Students can be encouraged to see if they agree with the page and to find new tools not mentioned here. They can also use this page to find new tools.

Students should also look at differences between machine translation tools and computer aided translation (CAT) tools. The latter is an interactive human/machine tool that aids the translator in completing the translation and is not completely automated (Zhou, 2016).

This should allow students to start answering questions: "Is machine translation advanced enough currently to be used instead of a Level 1 translation?" "What about a Level 2 translation?"

Interesting web articles that can be shared with the students for machine translation:
- http://insidebigdata.com/2016/04/19/machine-translation-the-combination-of-machine-learning-and-human-intelligence/
- https://www.microsoft.com/en-us/translator/at.aspx
- http://www.monotype.com/expertise/articles/the-past-present-and-future-of-machine-translation/

A discussion focusing on the gamification of the translation phases can be conducted here. The dialogue can be enhanced with an examination of the journal article and the web site students reviewed prior to class. How can the translation effort be gamified? Would gamification increase the production of accurate translations? Would gamification assist in engaging and, thus, retaining volunteers?

For example, badges could be created for: most translation chapters, most accurate translations, translations to most languages. Possibly when certain badges are achieved, rewards are created such as posting the name of the translator on GTP's web site. These in turn could be posted on various social media sites (e.g. GTP's Facebook page).

Is there a way to engage tech companies which are developing automated translation software (e.g. Google, IBM, Microsoft) to support GTP's efforts as a way of creating successful pilot applications of their tools and as demonstrations of their corporate social responsibility?

What other ways can the students find to get greater and more productive participation for this type of a project?

Section 2, Question 5:

In some universities professors assign textbooks that they have written. Is this ethical? Why or why not? Other universities have policies in place whereby if the instructor wants to use his/her own textbook in classroom, royalties go to a university scholarship fund. Does this help with the ethical dilemmas?

Is it ethical for a professor to require students to buy a traditional textbook for over $200 when a perfectly usable textbook is available for free or at a much lower cost? Is this a more serious issue in poor countries?

Additionally, publishers now often come out with unnecessary new editions. The Student PIRGs site (http://www.studentpirgs.org/campaigns/sp/make-textbooks-affordable) shows some of the issues associated with this practice.

Section 2, Question 6:

Legislation called the "Affordable College Textbooks Act", was re-introduced in the US Congress in October of 2015 after languishing since 2013. The legislation would create grants for the support of programs that expand the use

of open textbooks (https://www.congress.gov/bill/114th-congress/senate-bill/2176/text).

Additionally, the Higher Education Opportunity Act of 2008 (https://www.congress.gov/bill/110th-congress/house-bill/4137) in the US requires a publisher's representative to make sure that a professor is told the differences between editions and how much a new edition would cost students. It also requires
the cost of the textbook to be shown to the students at registration time. Textbooks must also be offered as unbundled versions. Are there similar laws in other countries?

Section 2, Question 7:

A discussion could be added centering on how the Pyramid Model could be applied in other settings. Students could talk about settings from their major or their area of expertise. The key here would be that the lower levels don't need as much expertise (can be done by novices) and the higher levels would need to be progressively more proficient. For example, application programming where some code could be done by novices and more complex code could be done by experts.

4. Conclusions

This case study has a unique perspective for students as they could easily see themselves, not only involved in the case from Cynthia's perspective, but also as the students who could benefit from GTP's efforts. There are many IS themes here: open content, peer production, viral and guerrilla marketing, social media, gamification, crowdsourcing, machine learning, and machine translation. Related themes include international marketing as well as AI and machine learning.

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