SHOULD CONTENT BE TAUGHT IN ENGLISH?

Trabajo Final para la obtención del Título de Magíster en Educación Superior: Investigación e Innovaciones Pedagógicas, Guayaquil, Enero 2018

DENNIS CALDERON RODRIGUEZ

ABSTRACT

This article reports the results of an eight-week action research study of a university classroom innovation using direct instruction in English and peer assessment of an authentic professional task to help students learn 3Ddesign technical English. It is a quasi-experimental study with analysis of qualitative and quantitative data. The main objective was to investigate the impact of teaching a subject in English normally taught in Spanish. The purpose was to add additional guided learning hours and professional vocabulary in English to help students reach new national graduation requirements for English.   The methodology included a pre-and post-test quantitative analysis of learning to use software for 3Ddesign, a comparison of final grades for a design project for the innovation group and a control group, and qualitative analysis of interviews of student perspectives to support findings and results. The control group was to assure that content learning was not affected. Results indicate that content learning was not affected, and professional English vocabulary improved. The results show a pre-test average of 4.12 and after the innovation we have a post-test average of 7.5, showing an improvement of 82% during the eight-week classroom innovation. Peer assessment probably had a stronger influence than direct instruction in English because the assessment of students' work by other students of equal status allowed them to improve design analysis through reflection and interaction and it helped them to understand content in English.

Keywords: Peer assessment, authentic tasks, content-based instruction

Should Content Be Taught in English?

Students must become fully prepared professionals to face the challenges of a globalized economy, where the knowledge of English and clear communication are a necessity. Communicating in English is no longer an option but a priority. In many countries, measures have been taken to improve English instruction because English is a key to international mobility of professionals. The *Common European Framework of Reference for Languages: Learning, teaching (CEFR)* is an international standard for describing language ability that started in 1991 to create a standardized system for talking about English levels and was officially adopted in 2001. It helps employers and educational institutions to understand easily what a student or professional can do with English.

Ecuador, like other countries, is looking for ways to improve English instruction and the CEFR helps set goals. Education First (2017), ranked Ecuador number 55 out of 72 countries on English Proficiency. Urquijo (1999) says that many students do not realize the significance of learning English and this results in low levels of comprehension and productivity. Inappropriate methodology and bad curricular planning also turn students off from studying English and contribute to this misconception.

Research is being done in Ecuadorian schools and universities to find ways of improving English instruction. According to Bermudez (2013), many Ecuadorian universities do not produce graduates with the required English level. One explanation could be that English teachers of public schools continue to use traditional methodology making it difficult to learn and develop the linguistic skills of reading, writing, listening and speaking. The Ministry of Education (2008), reported that nationwide English teaching is still focused on grammar and passive instruction of rules.

Another factor associated with low English levels according to Arevalo (as cited in Calle, Calle, Argudo, Moscoso, Smith, & Cabrera, 2015) is the fact that teachers barely use spoken English in class and the class focuses on linguistic rules and not on its use. According to Carrera (2010) in his analysis of students and their English knowledge, everything depends on the efficiency of the academic system in which they studied. Since many college students have full time jobs, is an impossibility to try solving the problem with English curriculum by adding more lesson time. It is important to re-evaluate educational systems to know how they work and to improve them.

To improve English levels in Ecuador, the government has passed tough regulations for the level that English students must have to graduate from the university and this has caused a gap between language skills of students and Ecuadorian educational policy goals. In 2016, Ecuador´s Council of Higher Education (CES) passed Academic regulations including CES RPC-SE-03-No.004-2016, which indicates that a CEFR B2 level is required for graduation**.** This situation forces university students to take extra courses during their free time to improve English acquisition. A possible cause for the gap is the insufficient number of guided learning hours in English. Students of the sixth semester at the university Guayaquil, where this study took place, have received only three levels of English or 224 guided learning hours of English before entering a 3DDesign course. Verhelst, Van, Takala, Figueras and North (2009), in their analysis of the *CEFR* Cambridge exams estimate that each level is reached with the following guided learning hours: A2, 180–200; B1, 350–400; B2, 500–600; C1, 700–800, and C2, 1,000–1,200. Now, at the end of their career, students will have had only 288 guided learning hours of English in the four levels they see during the entire career, so they may not even reach B1 level when they graduate. Thus, the current program lacks the number of hours needed to have the required B2 level of English.

Because of this, I wondered how to help university students reach that goal even though I teach in Spanish. My subject is 3DDesign, a software related subject, in which many tools do not even have a Spanish translation, so what if the students don´t need to translate? What if the course is taught in English and we just call the tool by its real name, and learn how to use them without using Spanish? Could this crazy idea help them with the struggle of meeting graduation requirements? Would the faculty let me do that? And in the middle of the semester? Luckily, my plan was accepted, and this study explored the possibility of connecting professional subjects to English, as a way of adding more contact hours of English to the curriculum.

For the students in the Graphic Design career, another problem is that no English courses offer opportunities to gain theoretical or practical career knowledge and vocabulary in English. This situation not only affects negatively students' reactions towards English, it also misses the opportunity to enrich learning by using it in subjects where terminology and literature is mainly in English.

To help students, reach graduation requirements and feel comfortable reading and working in English, this study focuses on an innovation in a large Ecuadorian public university in Guayaquil in the Graphic Design career where students do not receive enough contact hours of English to reach the government standard.

In the university where the study was conducted, the guidelines for English teaching are based on the regulations of the Council of Higher Education (CES) which indicate that universities are responsible for graduating B2 level students, but the university may or may not include English subjects as part of the curriculum. This flexibility leads to English subjects even being eliminated from the curriculum.

Before planning the innovation, eight English teachers who have taught subjects in English filled out an online survey to share their experiences. The purpose of the survey was

to understand teachers' perspectives about English content learning. Regarding teachers' experiences giving content in English, the main concerns are the students' shortcomings to comprehend the content and to express themselves properly. According to the teachers, this makes the teaching/learning process more difficult because it requires a double effort to explain the class first and then explain or even translate words and sentences. Nevertheless, it is important to point out that teachers agree that English is necessary, and the possibility of being immersed in a content class in English is a learning opportunity to prepare students better for this demanding and globalized world.

This study investigates the possibility of improving students´ English by receiving professional content in English and adding English hours to their formation. This study took place in a mixed English level Graphic Design class normally taught in Spanish. During that time English was used to address the class, but the students could interact in either Spanish or English. Besides receiving the class in English, the students did a weekly report in English assessing a peer's graphic design. The weekly report was not part of the grade for the course. Thus, the innovation consisted of addressing the class in English and incorporating peer assessment of an authentic task. This added forty English contact hours to their studies in the eight-week period that the study lasted. The research objectives were to determine English and 3DDesign learning and whether studying in English affected their learning of content. A control group was used to determine whether the innovation affected content learning. Both classes received five hours per week for eight weeks and were taught by the author of the study. Data was collected using the peer assessment in Weeks 1 and 8 and an interview was held to determine students' perspectives about the experience.

Literature review

This innovation focuses on teaching the class in English to add exposure to English and professional vocabulary by enriching the class with one authentic activity weekly in English – the peer assessment of a 3Dgraphic design. It was important to understand how peer assessment, authentic professional tasks, and teaching content in English could advance learning English as well as learning content.

Peer assessment

For Dochy, Segers and Sluijsmans (1999), peer assessment consists of a process in which a group of people grade their equals. According to Falchikov and Goldfinch (2000), it is an evaluation that students do about their classmate's work and accomplishments. In peer assessment, students consider the value, quantity and quality of the products their peers develop and their achievements.

Brew (2003) indicates that evaluation among peers can be understood as a specific way of collaborative learning where the apprentices evaluate the process or product of a student or a group of students. Self and peer assessment is about revision and improvement. It enables students to assess independently their own and other students' progress with confidence rather than always relying on teacher judgment. When student's self and peer assess, they are actively involved in the learning process and their independence and motivation are improved.

This kind of evaluation can become a very effective way to promote cooperation and collaboration among students (Prinz, Sluijsmans, Kirschner, and Strijbos, 2005).   The cooperation increases formative intentionality. It means the process used by teachers and students to recognize and respond to student learning to enhance that learning during the

learning Falchikov and Goldfinch (2000), and it encourages dialogue, interaction and creation of common meanings among classmates and even teachers.

There are many reasons why teachers may wish to use and/or further develop peer assessment in your modules. Peer assessment involves students taking responsibility for assessing the work of their peers against set assessment criteria. They can therefore be engaged in providing feedback to their peers (sometimes referred to as peer review), giving summative grades (moderated by the teacher or colleagues), or a combination of the two (Fan, Robson & Leat, 2015).

Studies like Liu and Carless (2006), with a sample of 1.740 students and 460 teachers have proven that both students and teachers resist the idea to participate or to promote activities with peer assessment. Brew (2003), speaks of the possibility to frame auto evaluation and peer evaluation together as described by Habermas and Husserl (1995). In this evaluative process every aspect is connected to specific tasks of learning and evaluation. Peer evaluation can be compared with self-evaluation results and help students get accurate responses about their own learning process. This improves their life long self-evaluation and autonomous learning process.

According to Prins et al. (2005), students immersed in peer evaluation accept positively the response and the scores obtained from classmates, and the feedback they can give from it is more accurate. The continued use of peer evaluation improves productivity in work groups. Anderson and Freiberg (1995) claim that not only teamwork improves, individual work quality also gets a boost.

Authentic tasks

The principle of authentic tasks changes the conception of what a teaching/learning activity must be. It uses real experiences instead of artificial situations. Authentic tasks are designed to assess students' ability to apply standard-driven knowledge and skills to real-world challenges (Ordoñez, 2004). They are activities that show the ability of a learner to use his comprehension to solve problems in a work environment using critical thinking to solve problems in different contexts.

Patiño (2012) says that an activity, even if it is presented as a professional one, does not necessarily construct comprehension. For example, a repetitive activity only to follow a procedure is not an authentic task. True comprehension can be seen when "the student uses what he already knows in a different way" and the author suggests that a task must have "intellectually challenging activities to explain, and to apply his comprehension" (p. 9), if the task is intended to develop comprehension.

Authentic tasks are recognized through problem analysis and by the performance of professionals of every discipline in the real world to resolve problems and develop ways of thinking to apply knowledge acquired from classrooms, this is called an authentic performance (Perrone, 1997; Boix Mansilla & Gardner, 1997).

Content Based Instruction (CBI)

This study, which was carried out with 3DDesign students, adapts ideas from CBI. In this methodology, language is not being taught directly but indirectly through content. The priority is to learn content. CBI integrates activities with English instruction, but this was not done in this study.

Richards and Rodgers (2001) say that "Content-Based Instruction refers to an approach to second language acquisition in which teaching is organized around the content or information that students will acquire, rather than around a linguistic syllabus" (p. 204). Content usually refers to the subject that people learn using language, content-based instruction is "the teaching of language through exposure to content that is interesting and relevant to learners" (Brinton, 2003, p. 201).

Though CBI is highly valued because it promotes cognitive and academic learning through a foreign language (Cummins, 1981), finding teachers capable of teaching courses in a foreign language is hard (Bell, 1999). Teachers who teach content frequently do not have the appropriate level of English, and English teachers lack the academic content knowledge to teach other subjects. Crandall and Kaufman (2002) think there are challenges to identify and develop content, to motivate teachers to immerse into it, to work with other teachers, to learn new content and to bring this methodology to their institution. Communication and collaboration among teachers prevents isolation or individualism of the teaching staff. This collaboration will accomplish professional satisfaction and will improve motivation, behavior and achievement of students.

Methodology

The main objective of this quasi-experimental study was to describe the impact on learning 3DDesign by using English as a Foreign Language (EFL) as a mean of instruction for eight weeks with sixth semester students of the Graphic Design career in a public university in Guayaquil in 2015-2016. The study describes content and English learning as well as the participants' perceptions of the experience. A control group was used to compare content learning for the innovation group and the control group at the end of the eight weeks.

Content learning is measured by final grades for the semester of the software usage project for each group.

The innovation consisted of a quasi-experimental study with analysis of qualitative and quantitative data to know the effect of using direct instruction in English and peer assessment of an authentic professional task to help students learn professional English. The weekly Design Report in English was not included as part of the final course grade. The research design consisted of a pretest and post-test in Weeks 1 and 8 for the innovation group to determine learning of professional content and vocabulary in English and both groups had to complete a software usage project in Spanish. Scores were compared between the two groups to make sure the innovation did not affect content learning.   Six students were interviewed at the end of the innovation to learn students' perspectives of receiving content classes in English.

Participants

Sixty-eight sixth semester Graphic Design students in a public university in Guayaquil participated in this study. They were enrolled in the 3DDesign course. Usually this course is given in Spanish. The experimental group consisted of 34 students who received the course in English. This included exercises, peer assessment and tasks using English. The control group had 34 students who received the same content but in their native language Spanish. The reason to have a control group was to describe the impact on content learning when teaching subjects in English. Their ages range between 21 to 28 years in both groups. The experimental group was divided in 14 males (41 %) and 20 females (59%). The control group is divided in 18 males (53%) and 16 females (47%).

Before entering classes, the experimental group reported having different levels of English proficiency. To collect demographic information and to know their English background, only experimental group students completed the Background Information

section of the Strategic Inventory for Language Learning (See Appendix A – SILL

Background Information form). The SILL Background Information section was selected

because it collected information about the students' background in English and their

perceptions of learning English. They had never received subjects in English. The

teacher/author of the study also perceived the group to be of mixed English levels. SILL

results showed that 59% of the students thought that their English level was reasonable, 15 %

of them thought they had a good level and 26% thought they were low level. The results

showed that most students felt their English level would not be an issue and it would not have

a negative effect on content learning.

Instruments

The instruments used to determine content learning through English were a Design

Report Form, a Design Report Rubric, and a semi-structured interview protocol. Also, to

determine if studying in English affected their learning of content, the students individually

worked on a semester long Software Usage Project.

Design Report form. The Design Report form was designed by the author and aligned with

syllabus objectives. It also simulated an authentic multimedia task. Students completed the

Design Report form (See Appendix B - Design report form) weekly as a peer assessment of

new design concepts introduced. The form was used as a teaching tool when the students peer

assessed and was used to determine students' progress learning professional English content

relating to drafting analysis, technical vocabulary, coherence, and syntax.   This report form

facilitates learning through reflective analysis of the designs, the tools used and the skills they

are developing with the software.

The task in Week 1 was to assess in English the 3Dimages of a living room created on

Cinema 4D. The first task consisted in creating basic furniture for the living room using

proper design criteria, proportion, shape, placement, harmony and the second and final task was to design a complete living room adding more complex elements such as the use of textures and lights to create an illumination scheme. After the eight-week innovation unit, this task was rated by the teacher in Week 8 using design criteria to evaluate all aspects of the final scene submitted by students to measure progress and content learning related to 3Ddesign.

The Design Report simulates an authentic design report addressed to a major 3Danimation studio to make it meaningful and to motivate students to be responsible. The form has five sections that they needed to complete: (1) basic information regarding the name of the evaluator, the date, the name of the artist -they must evaluate (classmate); (2) description of the scene to be reviewed (living room); (3) design strengths section required opinions and detailed examples, (4) the design weaknesses also called for opinions and detailed examples; The (5) Recommendation section required the reviewer's opinion as what to improve or change on the reviewed scene.

Design Report Rubric. The Design Report Rubric (See Appendix C - Design report rubric) was used to analyze data from the Design Report form and was designed by the teacher/researcher. It measured different levels of learning in three categories: design content, design related vocabulary and communication clarity. It was tested with six colleagues by grading three samples of student work. Changes were made to the rubric based on colleagues' suggestions.

Students were graded from one to five points on each of the three categories, so the lowest score a student can get is three and the highest score is fifteen by adding the scores of the three categories. The different levels of learning are: Beginning Expectations, Close to Meeting Expectations, Meets Expectations, Close to Exceeding Expectations and Exceeds

Expectations. Students receiving 1-3 points are considered as meeting Beginning Expectations, students with 4-6 points Close to Meeting Expectations, students with 7-9 points Meets Expectations, students with 10-12 points Close to Exceeding Expectations and students with 12-15 points Exceeds Expectations.

Interview Protocol. Interviews were done to learn the students' perspectives of learning content through English. The students were selected based on their progress learning, three were at Beginner's level, and three were at Meets Expectations level; this mix provided the opportunity to analyze different points of view. The interviews were conducted in person. Four females and two males were asked the following questions in Spanish:

Have you previously received a subject in English?

Do you think that English is necessary to achieve success? Why?

Did you have any problem with the use of English?

Did you learn something useful during this innovation career wise?

What was the most difficult?

What did you like the most?

Do you think that the Graphic Design career should give content classes in English?

The interviews determined the students' perceptions of learning subjects in English.

Software Usage Project Checklist. The Project Checklist (See Appendix D- Software usage project checklist) was used to assess skills on using the software. It was done individually by each student. Both the innovation and control groups did the Software Usage Project in Spanish to learn whether direct instruction in English affected learning to use the software. This project was divided in two parts: the first part was graded by the teacher on Week 3 and the second part during Week 8. They were graded according to four design parameters: proportion, design, texture and illumination. Proportion is a critical part of a 3Ddesign because

length, height and width of the objects must be correct; design, refers to the quality of the models, the decorative details and the harmony within the scene. Texture is a key aspect to achieve a professional look for any 3Dproject, for example to give the appearance of fabric for the furniture, we use textures. Illumination parameter refers to lights and shadow casting on scenes. For the first part of the Software Usage Project, students had to model a complete living room furniture set with the tools they were learning. In this first part only two parameters were graded, proportion and design, five points each. The second part of the software usage project was to present a finished living room with walls, furniture, electric appliances, and decoration. In this case the four parameters were graded with a score of 2.5 each to complete 10 points. During the eight weeks' unit students were learning the modeling tools required to create any 3Dscene. The control group also presented the same two parts software usage project and were graded with the same four parameters as innovation group.

Innovation

For this study, two 3DDesign classes participated: An innovation group and a control group. To determine the advantages and disadvantages of teaching a professional subject in English, the following innovations were made in teaching the innovation group.

Use of oral English for direct instruction. Classes were addressed orally in English, but the students could use Spanish or English to ask and answer questions. The purpose of teaching in English was to introduce professional vocabulary and increase the number of contact hours. Spanish was used to help students individually. The control group received classes in Spanish.

This innovation consisted of adapting 3DDesign content to English, since most of the software is originally launched in English as well as discussed in the most acclaimed scientific articles. Explanations of the tools are more meaningful because there is a real

connection between the name of the tool and its use. By using English in class, errors due to Spanish translation are minimized and students have the advantage of having formal instructions in English to accomplish learning.

The objective of the course is to learn the use of a 3Ddesign software and develop graphic design related vocabulary. Teaching content in English is not a mere translation, it also involves teaching/learning methodology prioritizing authentic tasks for students pointing out the practical application of learning content in English because tools, software and contents are being developed in English. For the Innovation Group, the innovation started on Day One of class and lasted for eight weeks.

During the eight weeks, the teacher used spoken English supported by white board instructions written in English. The students decided whether they wanted to communicate using Spanish or English to address the teacher and they had the option of calling the teacher aside for a Spanish explanation in case one was needed.

Table 1 Innovation Timeline shows the weekly activities for the innovation and control groups. The activities for both groups are the same except for the pretest and post-test and the peer assessment, which were done only by innovation group.

Table 1. Innovation Timeline

Week	1	2	3	4	5	6	7	8
Innovation group English instruction	-Pre-test -Subject introduction	-Weekly task -Peer assessment	-Software usage Project part 1 -Peer assessment	-Weekly task -Peer assessment	-Weekly task -Peer assessment	-Weekly task -Peer assessment	-Weekly task -Peer assessment	-Post test Software usage Project part 2
Control group Spanish instruction	-Subject introduction	Weekly task	Software usage Project part 1	Weekly task	Weekly task	Weekly task	Weekly task	Software usage project part 2

Table 1

The control group used the same syllabus, software and shared the same weekly tasks but they received classes in Spanish. They did not have to fill out the design report; just do the Software Usage Project. Grades are compared to determine the impact on content learning when teaching subjects in English.

Peer assessment in English. The weekly peer assessment was done by students in English and graded by the teacher but not included as part of the course grades. Students used the Design Report form (See Appendix B-Design report form) to review each other's work in pairs thus creating an opportunity for using and practicing new professional vocabulary, improving their communication skills. It also encourages students to get more involved in their learning process passing from passive learner to active learner and assessor. When assessing peer's students reflect about their work and the ways it can be improved.

Results

Participant Progress

The research objectives were to determine English learning and whether studying in English affected their learning of content. The following figures will show the obtained results. Pre and post-tests were given to the Innovation Group in Weeks 1 and 8 to determine learning of 3Dcontent, vocabulary and English because of direct English instruction and weekly peer assessment tasks. Figure 1 presents the overall pre-post test results.

.

Figure 1. Overall pre-post test results
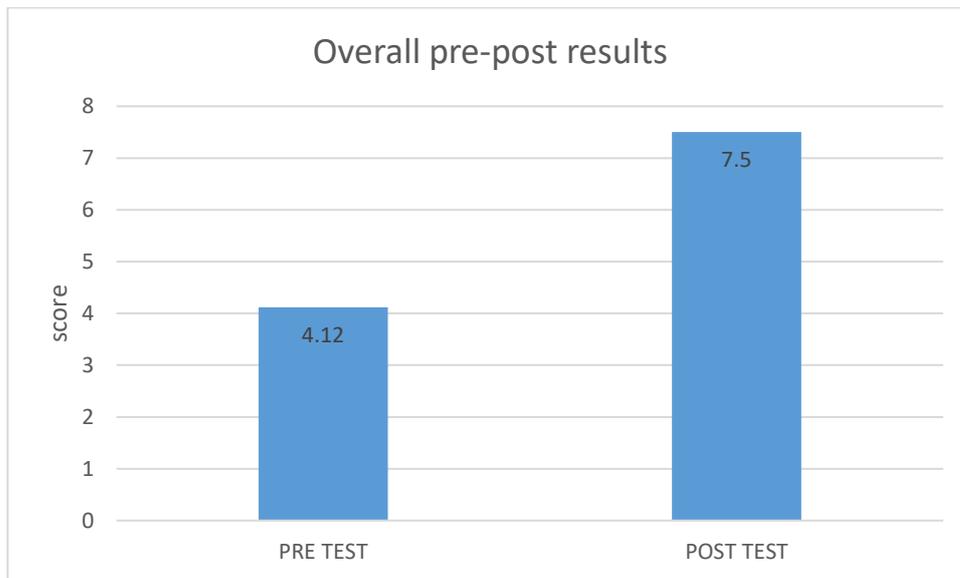
Regarding learning content through English, we can see a pre-test average of 4.12 and after the innovation we have a post-test average of 7.5, showing an improvement of 82% during the eight-week classroom innovation.

The pre-post tests were designed to provide evidence of learning design content, design related vocabulary and clarity of communication in English. The maximum grade for each category was three points. Figure 2 shows the innovation group averages per category.

Figure 2. Groups Average – Pre and Posttest by sub-categories
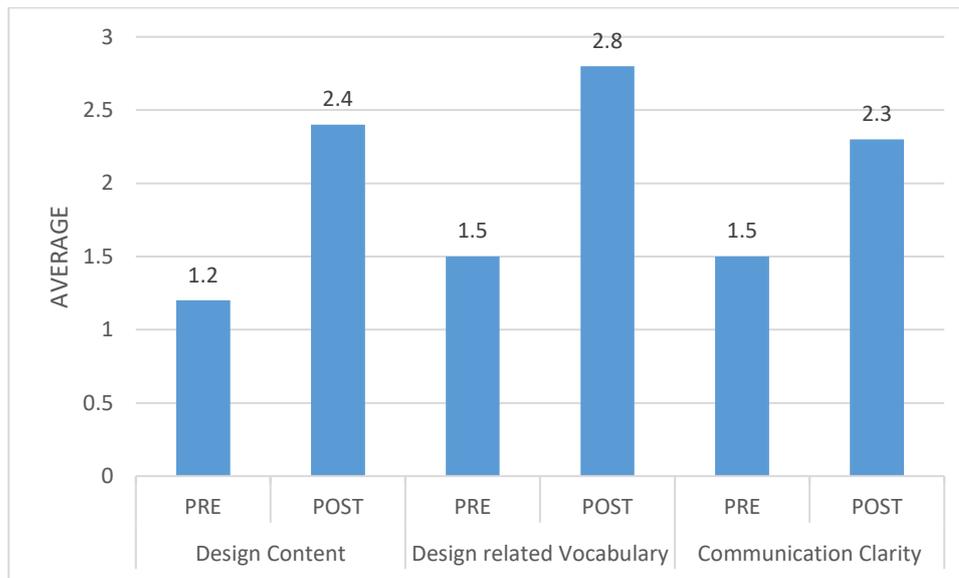
Design content knowledge improved 100%, Design Related Vocabulary improved 87% and Clarity of Communication in English improved 53%. Though all categories show good improvement, design content and vocabulary improved the most. Even though the innovation did not include explicit instruction in English communication, there was still important improvement in English communication.

In order to know whether direct instruction in English affected the learning of content the results of the innovation and control group for the Software Usage Project were compared.   Figure 3 reports the group averages.

Figure 3. Software Usage Projects average
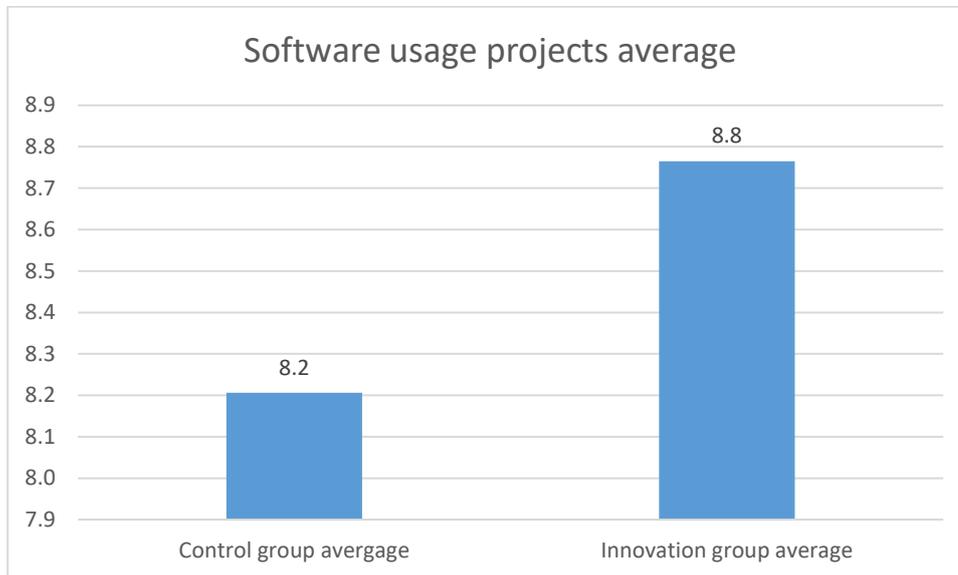
Figure 3 results show an average of 8.2 for control group and a higher average of 8.8 (6%) for innovation group. The grades represent good progress for both groups.

Participants' perspectives of studying content in English

The six interviewed students, two males (M1, M2,) and four females (F1, F2, F3, F4), indicated that they had not received content in English before. Students said they had problems understanding some instructions. For example, F1 said, "I listened but didn't understand." Nevertheless, when asked what the most difficult part of the innovation was all of them agreed that it was to learn the use of specific tools.   M1 indicated that, "the use of the more advanced tools" was the hardest part. This proves that English was not the most difficult obstacle to overcome according to the student's perception. This does not mean they did not enjoy learning 3DDesign because of the difficulty of direct instruction in English, because all students agreed that what they liked the most was to learn the use of the software. M2 responded, "I really like learning to use the program since I've always wanted to do

3Ddesign. Most of them agreed on the importance of receiving content in English in the Graphic Design career, and that it is important to improve English skills. F4 said that, "It is very important to improve my English level." However, some of them felt it was not relevant, because they do not need it to work. The opinion of F1 was that, "… (English) is not necessary…no, I don't think that at work your boss will only speak in English."

The students indicated that all of them enjoyed learning the use of software. This subject by its practical nature is very interesting to most students because they are familiarized with 3Danimation in movies. This is the real motivation for learning a 3Dsoftware, regardless of the language in use.

Discussion

After reviewing the data obtained with the investigation about the impact of teaching 3DDesign in English to the sixth semester Graphic Design students, based on the averages pre-and post-tests, we can answer the research question and confirm that the innovation had a positive impact on English learning, showing an overall pre-post improvement of 82% during the eight-week classroom innovation. Even though the students received direct instruction in English their knowledge of 3Ddesign and vocabulary as well as their ability to communicate in English improved, thus supporting the idea that content courses taught in English can help students reach the government requirements for graduation.

Students improved especially in two categories, Design Content Knowledge with a 100% improvement and Design Related Vocabulary with 87% improvement. This is a result of continued use of design related terminology during direct instruction over eight weeks and by the weekly peer assessment reports they did. Peer assessment encourages reflection on practice and it might have had a stronger influence on the results than direct instruction in English due to students' interaction and reflection. It allowed them to improve analysis

through interaction and it helped them to understand direct instructions in English even though they had different English levels. Peer assessment requires reflecting on design criteria to make recommendations. According to Brew (2013), peer assessment enables students to assess independently their own and other students' progress with confidence rather than relying on teacher's judgment. When student's self and peer assess, they are actively involved in the learning process and their independence and motivation is improved.

To determine if content learning was affected by the innovation the Software Usage Project result for the innovation group was 8.7 and 8.2 for the control group indicating that the innovation group was 6% higher even though both groups were able to successfully apply knowledge of 3Ddesign and that direct instruction in English did not have a negative effect on learning. The better score for the innovation group was explained by Calvino (2012), who explained that when receiving content in English linked with practical application of a subject students pay more attention to content and therefore grades are improved, and the motivation rises.

Conclusion

Can content be taught in English? Yes, because students can learn both content and English. Also, results confirm that the innovation had a positive impact on learning, showing an overall improvement of learning content through English of 82% by adding 40 English contact hours without affecting curricular grid.

The main motivation students had was to learn software because they knew what 3Ddesign stands for; they see it in movies, video games and advertisements. According to Piaget (1969), pedagogy focused on student's interests leads to self-discipline and a voluntary effort. We only learn what we like, and since they like 3D, receiving classes in English was not an impediment. This made it easier for the students to accept to take the course in

English. Based on the results, this methodology should work in any software related subject. According to Guerrero (2016), in his analysis of graphic designer's formation, this is because the tools and fundamentals of the subject are common to other subjects of the same career.

The results obtained from this study validate the idea that teaching subjects in English creates an opportunity to add extra contact hours to help achieve CEFR. B2 level. Instead of adding more hours to the curriculum, a possible solution might be to restructure some subjects to be taught entirely or partially in English to create real connection between the subjects and the language to be learned.   It will also allow us to overcome issues like software translation to Spanish which goes against the professional sense of a Graphic Designer who is conceived to be a creative and professional expert in the use of technology (software) in English because in many occasions, there is no Spanish counterpart for some terminology.

According to Richards and Rodgers (2001), students learn a language more efficiently when they use it as a way of communication. In the case of the 3DDesign subject, the results of interviews, pre/post-tests and software usage projects showed that students were comfortable using the tools even though they did not learn them in Spanish. Students were focused on presenting good quality designs because they were reviewing each other´s tasks and everyone wanted to show their peers how good they were.

The pre-innovation Google form survey of 12 English teacher's thoughts, revealed that when asked "What were the difficulties you had?" eight teachers agreed that their main concern was the inadequate English level students have which could make content learning very difficult. Nevertheless, attention must be paid to the fact that many teachers do not have the proper training to develop their class content in English according to Clavijo (2016). A recommendation would be to train personnel on English content teaching and syllabus adaptation to facilitate students learning process of subjects.

Finally, it must be highlighted that teachers and students have important responsibilities and challenges when working with a content-based instruction approach. Teaching content in English should not be an obstacle but a challenge, as expressed in the Graphic Design Career vision "to shape and capacitate professionals with human and technical perspectives in graphic design, to become creative leaders, enterprisers and innovators capable of transcending through their competences and values" FACSO. (2015).

Educational Institutions should not only encourage the implementation of this methodology but also provide the necessary resources and time to train teachers and evaluate educational practices and be open to innovations in the educational field in favor of the professional development of students and teachers.

REFERENCES

Anderson, J. B., & Freiberg, H. J. (1995). Using self-assessment as a reflective tool to

enhance the student teaching experience. *Teacher Education Quarterly*, 4(77-91).

Bell, T. (1999). Do EAP teachers require knowledge of their students' specialist

academic subjects? The Internet TESL Journal, 5(10). Retrieved from:

http://iteslj.org/Articles/Bell-EAPRequireKnowledge.html

Bermúdez Miranda, R. O. (2013). *Enseñanza de la Fonología y Su Incidencia en la
Pronunciación del Idioma Inglés de los Estudiantes del Décimo Grado de Educación
General Básica, Paralelo "A2" del Colegio Técino "Atahualpa" Provincia de
Tungurahua* [Teaching of Phonology and its Impact on the English Language
Pronunciation of the Tenth Grade Students of Basic General Education to A2 course of
"Atahualpa" Tecino high school Ambato city]. (Master's thesis, Universidad técnica de
Ambato) retrieved from http://repositorio.uta.edu.ec/handle/123456789/5042

Brinton, D. (2003). Content-Based Instruction. In Nunan, D. (Ed.), *Practical English

Language Teaching.* McGraw-Hill Contemporary. Retrieved from:

https://dialnet.unirioja.es/descarga/articulo/5181354.pdf

Brew, A. (2003). La autoevaluación y la evaluación por los compañeros. In *Evaluar en la

universidad: problemas y nuevos enfoques* [self-assessment and peer assessment on

university settings: problems and approach]. (pp. 179-189). Narcea.

Boix-Mansilla,V. & Gardner, H. (1997).What are the qualities of understanding? En M. S.

Wiske (Ed.). *Teaching for Understanding* (161 - 196). San Francisco: Jossey-Bass

Publishers.

Calle, A. M., Calle, S., Argudo, J., Moscoso, E., Smith, A., & Cabrera, P. (2015). Los

profesores de inglés y su práctica docente: Un estudio de caso de los colegios fiscales de

la ciudad de Cuenca, Ecuador. *Maskana*, *3*(2), 1-17.

Calvino, L. (2012). Content and Language Integrated Learning.*Tlatemoani*, (9). Retrieved

from: www.eumed.net/rev/tlatemoani/09/mamc.pdf

Carrera, P. (2010). Diseño del sistema académico por competencias de la Escuela de Turismo

y Hospitalidad de la Pontificia Universidad Católica del Ecuador [Curricular design based

on competence for the tourism and hospitality School of the Pontifica Universidad

Católica del Ecuador]. *Gest. tur.(Valdivia)*, (13), p. 93-112. Retrieved from

https://dialnet.unirioja.es/descarga/articulo/3744718.pdf

Clavijo Olarte, A. (2016). English teaching in the elementary school: Some critical issues.

Colombian Applied Linguistics Journal, *18*(1), 7-9.

Crandall, J., & Kaufman, D. (2002). *Content-Based Instruction in Higher Education Settings*.

Teachers of English to Speakers of Other Languages, Inc. 1925 Ballenger Avenue Suite

550, Alexandria, VA 22314.

Consejo De Educación Superior (CES).2016. Reglamento del régimen académico.

[Regulation of the academic regime]. Art.31 *Quito : CES*, p. 15

Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Comp.), *Schooling and language minority students: A theoretical framework* (pp. 3-49). Los Angeles, CA: National Dissemination and Assessment Center.

Dochy, F., Segers, M. and Sluijsmans, D. (1999). The Use of Self-, Peer and Co-Assessment in Higher Education: a Review. *Studies in Higher Education,* 24 (3), 331-350.

Education, First (2017). EF EPI. English proficiency Index. Retrieved from: http://www. ef.com.co/epi, p.6

FACSO (2015). *Diseño Gráfico.* [Graphic design]. *Facultad de Comunicación Social.* Retrieved from: http://www.facso.ug.edu.ec/diseno-grafico/

Falchikov, N. and Goldfinch, J. (2000). Student Peer Assessment in Higher Education: a Meta-Analysis Comparing Peer and Teacher Marks. *Review of Educational Research,* 70 (3), 287-322.

Fan, M., Robson, S., & Leat, D. (2015). International postgraduate students' perceptions and experiences of peer assessment in a UK university: a case study. In *International Teaching and Learning at Universities* (pp. 135-157). Palgrave Macmillan US.

Habermas, J., & Husserl, E. (1995). *Conocimiento e interés/La filosofía en la crisis de la humanidad europea* [Knowledge and interest / Philosophy in the crisis of European humanity]. (Vol. 12). Universitat de València.

Lightbown, P. M., & Spada, N. (1990). Focus-on-form and corrective feedback in communicative language teaching. *Studies in second language acquisition*, *12*(4), 429-448.

Liu, N. F., & Carless, D. (2006). Peer feedback: the learning element of peer assessment. *Teaching in Higher education*, *11*(3), 279-290.

Gardner, H. (1991). *The unschooled mind: How children think and how schools should teach.* New York: Basic Books. 10 (8)

Guerrero, M. F. C. (2016). *Primer Congreso Científico Internacional de Diseño Gráfico. Visiones Convergentes*. [Convergent visions. First international graphic design congress]. Revista AUC, (37), 67.

Liu, N. F. y Carless, D. (2006). Peer Feedback: The Learning Element of Peer Assessment. *Teaching in Higher Education*, 11 (3), 279-290.

Martel, J. (2016). Three foreign language student teachers' experiences with content-based instruction: exploring the identity/innovation interface. *Innovation in Language Learning and Teaching*, p 1-13.

North, B., Press, C. U. P., Jones, N., Saville, N., Goullier, F., Coste, D., ... & Noyons, J. (2009). Common European framework of reference for languages. *Annual Review of Applied Linguistics*, *29*, 51-63.

Ordoñez, C. L. (2004). *Pensar pedagógicamente desde el constructivismo* [Pedagogical thinking based on constructivism]. De las concepciones a las prácticas pedagógicas *Revista de estudios sociales*, (19), 7-12.

Patiño, S. (2012). La enseñanza para la comprensión (epc): propuesta metodológica centrada en el aprendizaje del estudiante [Teaching for understanding: methodological proposal focused on student learning]. *Revista Humanizarte*, *5*(8), 1-10.

Peachey, N. (2003). *Content-based instruction* [online file]. Retrieved from http://www.teachingenglish.org.uk/articles/content-based-instruction

Perrone, V. (1997). Why do we need a pedagogy of understanding? En M. S. Wiske (Ed.). *Teaching for Understanding*(13 - 38). San Francisco: Jossey-Bass Publishers.

Piaget, J. (1969). Stage-related properties of cognitive development. *Cognitive Psychology*, *2*(4), 421-453.

Prins, F. J., Sluijsmans, M. A., Kirschner, P. A. y Strijbos, J. W. (2005). Formative Peer Assessment in a cscl Environment: a Case Study. *Assessment & Evaluation in Higher Education,* 30 (4), 417-444.

Richards, J. & Rodgers, T. (2001). *Approaches and Methods in Language Teaching.* Second Edition. NY: Cambridge University Press.

Urquijo, P. M. A., & Rodríguez, M. (1999). La opinión de los alumnos en la evaluación de la calidad docente: posibilidades, limitaciones y estructura dimensional de sus indicadores [The opinion of the students in the evaluation of the teaching quality: possibilities,

limitations and dimensional structure of their indicators]. In *Indicadores en la Universidad, información y definiciones.* (pp. 311-328). Ministerio de Educación. Centro de Publicaciones.

Verhelst, N., Van Avermaet, P., Takala, S., Figueras, N., & North, B. (2009). *Common European Framework of Reference for Languages: learning, teaching, assessment.* Cambridge University Press.

APPENDIX

Appendix A.

Strategic Inventory for Language Learning

Cuestionario de Antecedentes

1. Nombre.		2. Fecha.		
3. Edad.	4. Sexo.	5. Correo		
6. Carrera				
7. ¿Cuántos años ha estado aprendiendo inglés?				

8. ¿Cómo califica su conocimiento del inglés, comparado con otros alumnos de inglés de su universidad?

(Encierre una de estas opciones):	Excelente	Bueno	Razonable	Malo

9. ¿Cómo califica su conocimiento del inglés comparado con hablantes nativos?

(Encierre una de estas opciones):	Excelente	Bueno	Razonable	Malo

10. ¿Cuán importante es para Ud. alcanzar eficiencia en inglés?

(Encierre una de estas opciones):	Muy importante	Importante	No importante

11. ¿Por qué quiere aprender inglés?:

………………………………………………………………………………………………..

12. ¿Disfruta el aprendizaje de Inglés? (Encierre una de estas opciones):	Si	No

13. ¿Qué otros idiomas ha estudiado?

14. ¿Cuál ha sido una experiencia agradable en el aprendizaje de inglés?

………………………………………………………………………………………………..

………………………………………………………………………………………………..

………………………………………………………………………………………………..

Versión para Hablantes de Otros Idiomas Aprendiendo Inglés

Versión 7.0 (ESL/EFL) © R.L.Oxford, 1989

Versión español preparada por Karen Nieto, Rosa Clara Menjivar y Samantha Quintana 2012

Appendix B.

Design Report Form

Disney · PIXAR

DESIGN REPORT

For: John Lasseter .

Creative director for Pixar Animation Studios, Walt Disney Animation Studios

Design Evaluator:

Design Artist:	**Project:**
Date received:	**Date report:**

 Description:

Design strengths: (Support opinions with details and examples.)

 Design weaknesses: (Support opinions with details and examples.)

Recommendation:

Appendix C.

Design Report Rubric

Design Report Rubric

	Beginning expectations 1 pts.	Close to meeting expectations 2 pts.	Meets expectations 3 pts.	Close to exceeding expectations 4 pts.	Exceeds expectations 5 pts.
Design content	Analysis includes 3 unsupported inputs related to strengths, weaknesses and recommendations	Analysis includes 3 to 4 supported inputs related to strengths weakness and recommendations	Analysis includes 5 to 6 supported inputs related to strengths weakness and recommendations	Analysis includes 7 to 8 supported inputs related to strengths, weakness and recommendations	Analysis includes 8 to 9 inputs related to strengths weakness and recommendations
Design related vocabulary	Uses between 0 to 3 technical words in English	Uses between 4 to 5 technical words	Uses 6 to 7 technical words	Uses 8 to 9 technical words	Uses 10 or more technical words
Communi-cation clarity	Communication requires reading and re-reading to understand.	Communication in English is clear even though there are errors.	Communication is clear and there are a few errors.	Communication is clear, and has only 1 error	Communication is clear and without any errors

Appendix D.

SOFTWARE USAGE PROJECT

CHECKLIST

Design parameters	Design descriptors	Points
	PART I (Week 3)	
Proportion	Length, height and width of the objects are correct, and the size of the furniture matches each other	5
Design	The quality of the model including decorative details on furniture are correct.	5
		/10
	PART II (Week 8)	
Proportion	Length, height and width of the objects are the correct size when compared to real objects. The sizes of the furniture sets match with the rest of the objects and the walls.	2.5
Design	The quality of the model including decorative details on furniture are correct. The design of the electric appliances and decorative objects is adequate. The designer maintains the same design style between objects to achieve harmony within the scene.	2.5
Texture	Appearance of fabric for furniture looks real, reflection on metallic textures is correct, and the projection of the textures matches the objects	2.5
Illumination	Correct representation of light and shadows, student uses only soft shadows in scene. The scene is well illuminated. The scene has at least three lights applied.	2.5
		/10

Appendix E.

Lesson plans and schedule

WEEK	UNIT	OBJECTIVE	Authentic Situation
1 (16-20 NOV)	Software introduction Tools layout Axis Creating basic forms Using primitive objects	Creating a toy car with primitive objects, to use new words related to design to familiarize students with design terms (vocabulary)	Students will learn how to build a toy car using primitive objects and explain in English about the X, Y,Z axes and the tools required to move, scale and rotate objects, and also an explanation of the principle of proportion and its importance in 3Ddesign after that students face the first design assessment of a 3Dmodeled furniture set using an evaluation form that will be used as pre-test
2 (23- 27 NOV)	Modeling techniques Basic modeling Extrude and deformers	The objective in this unit is to create a dinner table with chairs. Explaining the class using new technical terminology and new vocabulary Peer assessment	Students will learn how to model Livingroom furniture Using extrude tools and deformers and they must fill in the second design assessment by the end of the week about the dinner table design created by a partner. We Explain design concepts. Proportion, functionality, and style.
3 (30 NOV- 4 DEC)	box modeling Slice tools Connect tool Bridge Tools Create polygon hole nurbs	Software usage projects part1 To Create design elements for the Livingroom (furniture) with new toolset, use more advance 3Drelated terminology.	Students will learn how to model decorative objects related with Livingroom design slicing objects and combining them together. The third design assessment is launched about decoration objects, 3 bases, framed pictures and books, on a bookshelf. Student must submit the Software usage project. part 1 to be graded by the teacher.
4 (7 - 11 DEC	Advance box modeling, nurbs system and materials creation texturization	To model more complex elements and add materials to them	Students will learn how to model more complex objects and they will learn how to create materials based on images and use them as texture for the walls, furniture and decorative objects on their project. They will learn new tools

		To Use a more formal and complex vocabulary related to the use of textures as materials Peer assessment	names and 3Ddesign vocabulary and they will have to fill in the fourth design assessment and as task. Also, students must model a flat screen tv with all its details and connectors.
5 (14 -18 DEC)	Advance texturing	Combine textures in a single object using set selection tools And alpha channel Peer assessment	Students are immersed on advance texturing to objects with materials to simulate, wood, metal with reflections, mirror textures, grain, stone, tiles and we address texture projection. Students must add all textures to the flat screen tv they already modeled Students fill the fifth design assessment reviewing a partner's LCD tv set design
	VACACIONES FERIADO NAVIDAD YFIN DE AÑO		
6 (4 – 8 JAN)	Illumination. Type of lights Casting shadows. Ambien occlusion.	To illuminate Living room scene with proper lighting. Peer assessment	Students must complete the scene with an illumination scheme. Based on their living room design. And do the sixth design assessment reviewing a partner's entertainment console with the LCD tv as a center piece.
7 (11 – 15 JAN)	Complementary tools related to object modeling.	To create a complete fully detailed Living room with furniture, appliances and electronics to present for final task on week eight	They will present the final project a full living room all appliances and materials included. It is reviewed individually by the teacher and observations and recommendations are made upon grading using spoken English. For this week there is no design assessment, because we are focusing on individual reviews from the teacher.

8 (18-22 Jan)	Software usage project part 2. Complete Living room design, with complete set of textures materials and lighting	Software usage project part2. And Post-test	Student do the last design assessment reviewing the same living room used for pretest. And present the Software usage project part 2.

Appendix F.

<p align="center">Livingroom to be assessed pre-post-test.</p>