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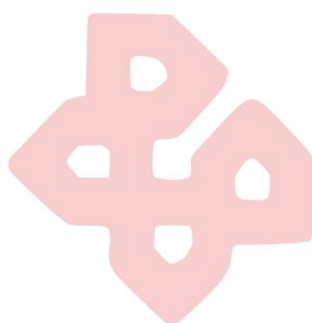
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EFFECTS OF CO-TEACHING ON CLIL TEACHER TRAINEES' COLLABORATIVE COMPETENCE

*Efectos de la docencia en equipo en la competencia colaborativa de los
futuros docentes de AICLE*



*Magdalena Custodio-Espinar; Alfonso López
Hernández; Lyndsay Renee Buckingham Reynolds
Universidad Pontificia Comillas*

E-mail: mcustodio@comillas.edu ;

alhernandez@comillas.edu ; lrbuckingham@comillas.edu

ORCID ID: <https://orcid.org/0000-0001-5314-1606>

<https://orcid.org/0000-0001-8174-595X>

<https://orcid.org/0000-0002-4888-885X>

Abstract:

The effective implementation of Content and Language Integrated Learning (CLIL) requires teamwork among teachers in order to coordinate teaching. This study aims to determine whether learning through co-teaching significantly affects teacher trainees' collaborative competence in three dimensions: knowledge about the foundations of co-teaching, the quality of their learning experience, and the transferability of this teaching strategy in their academic performance and future teaching practice. An *ad hoc* questionnaire was created and administered to 50 Education degree students before and after taking a co-taught CLIL course. Results show that learning through co-teaching did not have an effect on students' general collaborative competence (paired samples). However, statistically significant differences were found in their learning experience. Similar results were found when comparing the sample with a control group (N=35) (independent samples), resulting in statistically significant differences in favour of the experimental group. Finally, differences in all the three dimensions studied were found in favour of those participants who perceive a greater need

for training in collaborative competence. In conclusion, taking the co-taught CLIL course has not influenced on dimensions one and three, but it has led to a more effective learning experience perceived by students. The authors suggest that modelling a collaborative teaching relationship should be accompanied by explicit analysis of the theoretical foundations of co-teaching and the analysis of the influence of variables such as academic ability or language proficiency in order to ensure that the benefits reach all students in the classroom.

Key Words: preservice teachers; bilingual education; team teaching; preservice teacher education; questionnaires.

Resumen:

La implementación del Aprendizaje Integrado de Contenido y Lenguas Extranjeras (AICLE) requiere trabajo en equipo para coordinar la enseñanza. Este estudio pretende determinar si el aprendizaje a través de la enseñanza en equipo afecta a la competencia colaborativa de los alumnos en tres dimensiones: conocimiento sobre la enseñanza colaborativa, experiencia de aprendizaje y transferencia al desempeño académico y profesional. Se administró un cuestionario, creado *ad hoc*, a 50 estudiantes de los grados de Educación antes y después de estudiar la asignatura AICLE, impartida por dos profesores en equipo. Los resultados muestran que la docencia colaborativa no tuvo efecto en la competencia colaborativa general de los estudiantes (muestras pareadas). Sin embargo, se encontraron diferencias estadísticamente significativas en su experiencia de aprendizaje. Se encontraron resultados similares al comparar con un grupo de control (N=35) (muestras independientes), con diferencias estadísticamente significativas a favor del grupo experimental. Finalmente, se hallaron diferencias en todas las dimensiones estudiadas a favor de aquellos participantes que perciben una mayor necesidad de capacitación en competencia colaborativa. En conclusión, la docencia colaborativa no ha influido en las dimensiones una y tres, pero ha contribuido a generar en los alumnos una percepción de la experiencia de aprendizaje más eficaz. Los autores sugieren que este modelo debe ir acompañado de un análisis explícito de los aspectos teóricos de la co-enseñanza y un análisis de la influencia de variables como la capacidad académica o el dominio del idioma, para garantizar que los beneficios de la co-enseñanza lleguen a todos los estudiantes.

Palabras clave: estudiante para profesor; enseñanza bilingüe; enseñanza en equipo; formación de profesores; cuestionario.

1. Introduction and aim of the study

After several decades implementing bilingual (English) programmes throughout Spain, there is still a great need for initial teacher training in Content and Language Integrated Learning (CLIL), which is the predominant form taken by bilingual education in Europe (Coyle et al., 2010; Escobar, 2011; Madrid & Pérez Cañado, 2012). In Madrid, the geographical focus of this study, roughly 50% of primary and secondary schools offer bilingual education based on this approach. Thus, initial teacher training programmes should consider the effective training of teachers in CLIL (Author, 2019; Fernández-César et al., 2013). In doing so, one of the most important competences to develop is the collaborative competence (Pérez Cañado, 2017; 2018; Bertaux et al., 2010), given that CLIL teachers should develop teamwork skills in order to coordinate with the different agents at school, including language assistants, co-teachers and teachers of other subjects.

Bacharach et al. (2008) defined co-teaching as “two teachers working together with groups of students and sharing the planning, organization, delivery and assessment of instruction, as well as the physical space” (p. 9). This particular form of collaboration among teachers has been shown to increase cooperation among students and positively impact overall student achievement (McDuffie et al., 2009). Indeed, co-teaching emphasises the collective and social nature of the learning process as the classroom becomes more democratic and allows more voices to be heard (Murphy et al., 2015).

While it is natural that teacher preparation programmes would include co-teaching as a model for future teachers, there are relatively few documented experiences of co-teaching in such programmes, though the literature seems to have grown in recent years (Bacharach et al., 2008; Ferguson & Wilson, 2011; Graziano & Navarrete, 2012; Murphy et al., 2015; Pettit, 2017; Ricci & Fingon, 2018; Simons et al., 2020; Turan & Bayar, 2017). Many programmes that offer co-taught modules are focused on preparing special education and general education teachers for working together (Bacharach et al., 2008; Pettit, 2017; Ricci & Fingon, 2018), and other co-teaching experiences at university level are focused on other degrees (Blanchard, 2012; Carbone et al., 2017; Lasagabaster et al., 2019; Lock et al., 2016; Morelock et al., 2017).

A co-teaching setting may be beneficial for students in several ways. Because two or more instructors are planning and teaching classes, there is more variety of instruction and pedagogical activities (Ferguson & Wilson, 2011; Graziano & Navarrete, 2012). Students have reported enjoying the different perspectives offered by more than one teacher when discussing any given topic as it helps them to see different sides of an issue (Bacharach et al., 2008; Ferguson & Wilson, 2011). For example, Blanchard (2012) describes interdisciplinary co-teaching experiences in which students are offered sometimes opposing views from which they must draw their own conclusions, therefore encouraging critical thinking. Similarly, Liebel et al. (2017) report that students “think more” (p. 68) and remember more of a co-taught lecture. Students also enjoy receiving a greater amount and more diverse feedback from their instructors (Ferguson & Wilson, 2011). When co-teachers have different expertise, as in the case of one content specialist and one language specialist teaching together, students logically report benefiting from the collaboration (Lasagabaster et al., 2019).

Finally, if both instructors are simultaneously present in the classroom, co-teaching allows for differentiating learning for diverse groups of students. Graziano and Navarrete (2012) and Murphy and Martin (2015) describe advantages such as more immediate and individual attention and naturally scaffolded learning through the use of cogenerative dialogue and clarifying questions, among other techniques.

Furthermore, co-teaching has the potential to serve as a positive model of collaboration for students. In the case of teacher trainees, this is especially important, as the collaborative competence is an essential skill for teachers, in particular in CLIL settings, one which should be addressed in their initial training programmes (Bertaux et al., 2010; Halbach, 2011; Pérez Cañado, 2017; 2018). In the context of bilingual

education, as is addressed in this study, one of the essential competences of CLIL teachers is that of collaboration with peers and creating a collaborative environment in the classroom (Bertaux et al., 2010; Marsh et al., 2010; Pérez Cañado, 2017). Pavón Vázquez et al. (2015) found that teachers of L1, L2 and curricular subjects are able to identify opportunities and carry out coordination of objectives and contents but find it more difficult to design coordinated learning activities. Likewise, CLIL teachers are often teaching in the classroom with the support of a foreign language assistant, yet they lack the proper training on how to efficiently employ them (Buckingham, 2018). It is thought that an effective model of collaboration may provide some insight in both regards.

Some teacher training programmes have opted to allow students to participate in co-teaching partnerships as part of their teaching practice. Montgomery and Akerson (2019) reported an improvement in collaboration skills among future teachers as well as more positive views of the benefits of co-teaching after having participated in such an experience. Simons et al. (2020) reported these skills to be more marked in sequential teaching as compared to other co-teaching models. Murphy et al. (2015) found that a co-teaching partnership between teacher trainees and in-service teachers resulted in a smaller gap between theory and practice, the development of reflective practice, and the development of pedagogical content knowledge, all desirable aims. Even if trainees are not directly involved in the partnership, benefits have been reported for future CLIL teachers in experiencing a model of collaboration between their university lecturers and the in-service primary teachers in their assigned schools (Delicado Puerto & Pavón Vázquez, 2016). Baeten et al. (2018) propose an assistant teaching model for teacher trainees in order to strengthen specific competences that are often left underdeveloped and to allow trainees to gradually transition into teaching independently. Similarly, Custodio-Espinar (2019) describes alternative approaches for initial teacher education in which trainees became more actively involved in their own professional development process through engaging in action research.

There are several possible arrangements of co-teaching, including One teach, one observe; One teach, one assist; Parallel teaching; Station teaching; Alternative teaching; and Team teaching (Cook & Friend, 1995). Honigsfeld and Dove (2015) propose seven models of instruction which depend on the number of student groups involved; they are described in Table 1.

Table 1
Models of instruction.

| Model | Number of groups | Role of Teacher 1 | Role of Teacher 2 |
|-------|------------------|----------------------------------|------------------------------------|
| 1 | 1 | Lead the class | Assist individuals or small groups |
| 2 | 1 | Teach content simultaneously | Teach content simultaneously |
| 3 | 1 | Teach content | Assess students |
| 4 | 2 | Teach content to separate groups | Teach content to separate groups |

| | | | |
|---|----|--------------------------------------|--------------------------------------|
| 5 | 2 | Pre-teach | Teach alternative information |
| 6 | 2 | Re-teach | Teach alternative information |
| 7 | 3+ | Monitor and teach the various groups | Monitor and teach the various groups |

Source: Adapted from Honigsfeld and Dove (2010).

For each type of collaborative teaching, the degree of each instructor's engagement with the students varies, as well as the number of students that accompany each teacher and the real-time collaboration that is necessary. However, all types suggest some form of prior collaboration among professionals in order to agree on contents, pedagogy and classroom interaction. This proposal centres on the arrangement of team teaching, or Model 2 as described in Table 1, as the majority of classes were taught by two instructors simultaneously. However, on occasion single classes were organised as parallel sessions, with one teacher with each smaller group working through the same concepts, in order to provide a more intimate setting (Model 4 in Table 1). It is thought that team teaching may provide the richest experience and make the most of the resources involved (Morelock et al., 2017).

The study investigates to what extent being exposed to co-teaching practices in preservice teacher education can affect trainees' development of the collaborative competence. It has been carried out at University U. (Spain), as part of an innovation project that aims to improve students' learning experiences by introducing co-teaching models in various forms across different degrees. These co-teaching experiences will be compared in order to propose best practices to the university in the form of training for instructors and a manual of co-teaching. The aim of this study is to analyse the use of co-teaching in preservice education and measure its impact on the development of students' collaborative competence. This is done through an instrument divided in three dimensions which measure the effect on their awareness of the foundations of co-teaching and its role in CLIL (Dimension 1), their own experience as learners in a co-taught module (Dimension 2), and their perception of the transferability of co-teaching practices to their own professional environments, such as teaching practice or future teaching assignments (Dimension 3).

2. Method

This study is a causal-comparative design aimed at determining whether a CLIL module taught through co-teaching affects students' collaborative competence in CLIL settings. For this purpose, students' degree of collaborative competence and their perception regarding the effectiveness of two instructors together in the classroom is measured and compared before and after the co-taught course. They are also compared with those of students who do not study the co-taught CLIL course. Likewise, the effect of the perception of the need for training in collaborative competence on CLIL students' degree of collaborative competence is measured and compared before and after the co-taught course.

2.1. Hypotheses

This study aims to test the following main hypothesis: students who participate in co-taught courses will develop their own collaborative competence. Other operational hypotheses are:

- H1 Students who take a co-taught CLIL course will develop to a further degree their collaborative competence.
- H2.1 Students who take a co-taught CLIL course will acquire a greater degree of knowledge of co-teaching foundations.
- H2.2 Students who take a co-taught CLIL course will have a greater positive perception of co-teaching as a beneficial learning experience.
- H2.3 Students who take a co-taught CLIL course will perceive a greater degree of transferability of co-teaching to their academic and professional performance.
- H3 Students who take a co-taught CLIL course will have a greater positive perception of the effectiveness of two instructors together.
- H4 Students who take the co-taught CLIL course will have a greater positive perception of the effectiveness of two instructors together as compared with students who do not study the co-taught CLIL course.
- H5 Students who take the co-taught CLIL course will develop their collaborative competence to a greater degree than students who do not take the co-taught CLIL course.
- H6.1 Students who take the co-taught CLIL course will acquire a greater degree of knowledge of co-teaching foundations than students who do not take the co-taught CLIL course.
- H6.2 Students who take the co-taught CLIL course will have a greater positive perception of co-teaching as a beneficial learning experience as compared with students who do not take the co-taught CLIL course.
- H6.3 Students who take the co-taught CLIL course will perceive a greater degree of transferability of co-teaching to their academic and professional performance than students who do not take the co-taught CLIL course.
- H7 Students who perceive a higher need for training in collaborative competence will develop their collaborative competence to a greater degree than those students who perceive a lower need.
- H8.1 Students who perceive a higher need for training in collaborative competence will acquire knowledge of co-teaching foundations to a greater degree than those students who perceive a lower need.
- H8.2 Students who perceive a higher need for training in collaborative competence will have a greater positive perception of co-teaching as a beneficial learning experience than those students who perceive a lower need.
- H8.3 Students who perceive a higher need for training in collaborative competence will perceive a greater degree of transferability of co-teaching to their academic and professional performance than those students who perceive a lower need.

2.2. Participants

The population of the study consists of students at University U. who study the degrees in Education, a total of 300 students. The sample consists of 85 students distributed in two groups: the experimental group includes 50 students attending the CLIL module and the control group 35 students who have not yet taken the course. The majority of the sample are women (91%) and more than 55% are 21 years old. About 91% of the students have a B2 (59.4%) or a C1 (31.3%) level of English according to the Common European Framework of Reference for Languages (CEFRL) (Council of Europe, 2001). Table 2 describes the sample according to the degree they are studying.

Table 2
Distribution of the sample according to the degree.

| Degree | Frequency | Percent | Valid percent | Cumulative percent |
|-----------------------------------|-----------|---------|---------------|--------------------|
| Pre-primary Education | 17 | 20.0 | 20.0 | 20.0 |
| Primary Education | 13 | 15.3 | 15.3 | 35.3 |
| Pre-primary and Primary Education | 26 | 30.6 | 30.6 | 65.9 |
| Primary and Pre-primary Education | 29 | 34.1 | 34.1 | 100.0 |
| Total | 85 | 100.0 | 100.0 | |

2.3. Objectives and variables

The main objective of this study is to determine if there are significant differences in teacher trainees' collaborative competence due to the training effect, attending the CLIL module taught through co-teaching. Thus, the main independent variable is the type of instruction, with two levels: experimental (CLIL module taught through co-teaching) and control (no CLIL module taught through co-teaching). Another secondary independent variable studied is "the perceived need to be trained in collaborative competence". It includes four levels: none, low, moderate and high.

Moreover, the dependent variables of the study are the 33 items of the questionnaire (9-41), which measure the degree of development of the collaborative competence. These items are grouped in three dimensions: D1 Co-Teaching Foundations (items 9-24); D2 Learning through Co-Teaching (items 25-33); D3 Transferability (items 34-41). The questionnaire includes a fifth dependent variable, "effectiveness of two instructors together in the classroom" (item 7), in order to measure the impact of the team taught CLIL module on students' perception of this particular model of co-teaching.

2.4. Instrument

It was necessary to create an *ad hoc* instrument based on the relevant literature. The items that measure D1 Co-Teaching Foundations were based on the CLIL teacher competences as defined by Bertaux et al. (2010) and the tendency of co-teaching to contribute to more personalised attention toward the students (Graziano & Navarrete, 2012; Murphy & Martin, 2015), active learning (Murphy et al., 2015), and

more comprehensive evaluation of learning (Ferguson & Wilson, 2011). Items that quantify D2 Learning through Co-Teaching are those that gauge a possible improvement in students' learning experience (Bacharach et. al., 2008; Ferguson & Wilson, 2011) and their academic performance (McDuffie et al., 2009). Finally, items were constructed to estimate the possibility of D3 Transferability of collaborative competence (Delicado Puerto & Pavón Vázquez, 2016) in both the preservice (Halbach, 2011) and in-service (Pérez Cañado, 2017; 2018) settings.

The first draft of the questionnaire was validated by four experts, using a Likert scale 1-6. The validation process allowed the reduction of the number of items and the improvement of their clarity, precision, and relevance. In addition to the criteria related to central tendency and dispersion, as an analytical strategy of inter-consensus, Kendall's W was used to establish the suitability of the proposed elements. The coefficient of agreement among the four judges with respect to the items of the three dimensions showed a result of $W=0.81$, which means a strong agreement among the judges. The final version of the instrument includes 43 items: seven identification variables, one study variable to measure the efficacy of different co-teaching models, and 33 study variables distributed in three dimensions. Two criterion items were also included at the end of the questionnaire. The reliability of the instrument was analysed. The results of these analyses are shown in Table 3.

Table 3
Instrument reliability.

| Reliability | | Cronbach α | | Result |
|--------------|--|-------------------|----------|-----------------|
| | | Pretest | Posttest | |
| Global scale | Collaborative competence (33 items) | 0.93 | 0.91 | Excellent |
| Dimension 1 | Foundations of Co-Teaching (16 items) | 0.89 | 0.91 | Excellent |
| Dimension 2 | Learning through Co-Teaching (9 items) | 0.71 | 0.81 | Acceptable-Good |
| Dimension 3 | Transferability (8 items) | 0.83 | 0.83 | Good |

Note. Based on George and Mallery (2003).

On the other hand, the criterion validity analysis shows that there is a statistically significant linear correlation between the total score in the sum of the 33 items and each of the three dimensions and the two criterion-items (CI) included at the end of the questionnaire, all correlations being significant at a significance level of 0.01 (correlations Pearson type) (Table 4).

Table 4
Convergent criterion validity of the global scale and the three dimensions.

| Dimension | Corr. CI1 | Corr. CI2 |
|---|-----------|-----------|
| Global scale of collaborative competence (three dimensions) | 0.677** | 0.631** |
| D1 Foundations of Co-Teaching | 0.613** | 0.543** |
| D2 Learning through Co-Teaching | 0.561** | 0.666** |
| D3 Transferability | 0.623** | 0.468** |

CI: criterion item.

** $p < .01$

2.5. Procedure and analysis

The pretest was applied in February and the posttest in May 2019, that is, before and after the CLIL module. The IBM SPSS 20 application was used to analyse the data collected. Descriptive and differential analyses were carried out. Student t for paired samples was used to analyse the differences in the means in the experimental group.

However, student t for independent samples was used to study the differences in the posttest between the control and experimental groups. ANOVA (with Bonferroni and Scheffé for subsequent contrasts) was used to study statistically significant differences in the groups of the independent variable “perceived need to be trained in collaborative competence” which has four levels: none, low, moderate, and high. Significance levels were set at the 5% level.

3. Results

3.1. Descriptive analysis

The normality curve of the variable that globally quantifies the level of collaborative competence is quite close to normal, although with an asymmetry, which indicates a negative bias, that is, with lower than average scores. This variable shows a mean of 156.54, out of a possible score of 198, and a standard deviation of 20.10 points.

The normality curve of the variable that measures the “effectiveness of two instructors together in the classroom” is also quite close to normal, although with an asymmetry to the right. This variable has a mean of 4.24 out of a possible score of 6 and a standard deviation of 1.44 points.

Additionally, the results of the Kolmogorov Smirnov test in both variables confirm that the sample comes from a normal distribution. They show that Z is 0.769 with a p value of 0.596 in the variable “post sum of total scores in the three dimensions” and Z has a value of 1.232 with a p value of 0.096 in the variable “effectiveness of two instructors together in the classroom”; therefore, the p value is higher than 0.05 in both cases, confirming the normal distribution of the sample.

Regarding the independent variable “type of module”, the distribution of the sample ($N=85$) in the two groups of the variable was 50 students in the experimental group (co-taught CLIL) and 35 in the control group (no co-taught CLIL module).

Finally, Table 5 shows the comparative between the pre and posttest scores in the other independent variable, “need to be trained in collaborative competence”.

Table 5
Description of the sample according to the variable “need to be trained”.

| IV Need to be trained in collaborative competence | Frequency pretest | Frequency posttest |
|---|-------------------|--------------------|
| None | 3 | 0 |
| Low | 5 | 2 |
| Moderate | 18 | 20 |
| High | 24 | 12 |
| Total | 50 | 34 |
| System missing values | 0 | 16 |
| Total | 50 | 50 |

3.2. Differential studies

The results of the hypotheses, which measure the effect of the “CLIL module taught through co-teaching” on the five dependent variables of the study, is shown in Table 6.

Table 6
Differences in the degree of collaborative competence and the perceived “effectiveness of two instructors” after the CLIL module (paired samples).

| Null hypothesis (means are equal) | Posttest Mean | Pretest Mean | Difference in means | Student <i>t</i> | Sig. | Statistical decision and conclusion |
|---|---------------|--------------|---------------------|------------------|-------|--|
| H1 Differences in the global degree of collaborative competence between pre-posttest. | 159.63 | 155.66 | 3.97 | 1.20 | 0.239 | H0 is accepted. No differences. Improvement is not significant. |
| H2.1 Differences in the degree of collaborative competence in D1 between pre-posttest. | 80.65 | 81.68 | -1.03 | 0.66 | 0.513 | H0 is accepted. No differences. Improvement is not significant. |
| H2.2 Differences in the degree of collaborative competence in D2 between pre-posttest. | 42.16 | 37.47 | 4.67 | 4.03 | 0.000 | H0 is rejected. Differences in favour of posttest. The CLIL module significantly improves the scoring in Dimension 2. |
| H2.3 Differences in the degree of collaborative competence in D3 between pre-posttest. | 37.03 | 36.24 | 0.79 | 0.80 | 0.428 | H0 is accepted. No differences. Improvement is not significant. |
| H3 Differences in the perceived “Effectiveness of two instructors together” between pre-posttest. | 5.04 | 4.30 | 0.741 | 2.92 | 0.007 | H0 is rejected. Differences in favour of posttest. The CLIL module significantly improves the degree of perceived “effectiveness of two instructors together”. |

H: hypothesis.

Table 7 shows the results of the hypotheses which measure the effect of the independent variable “type of module” on the five dependent variables between students who take the CLIL module and those who do not take the module.

Table 7
Differences in degree of “effectiveness of two instructors together” and the “collaborative competence” according to the type of module (independent samples).

| Null hypothesis (means are equal) | Homogeneity of variances (Levene) | Mean Exp. | Mean Cont. | Student t | Sig. | Statistical decision and conclusion |
|--|-----------------------------------|-----------|------------|-----------|-------|---|
| H4 Differences in the perceived “effectiveness of two instructors together” between the control and experimental groups. | Yes | 5.06 | 3.19 | 6.43 | 0.000 | H0 is rejected. Differences in favour of the Experimental group. The CLIL module significantly improves the scoring in this variable. |
| H5 Differences in the global degree of collaborative competence between the control and experimental groups | Yes | 160.03 | 153.14 | 1.43 | 0.156 | H0 is accepted. No differences. Improvement is not significant. |
| H6.1 Differences in the degree of collaborative competence in D1 between the control and experimental groups | Yes | 80,65 | 78,31 | 0.95 | 0.345 | H0 is accepted. No differences. Improvement is not significant. |
| H6.2 Differences in the degree of collaborative competence in D2 between the control and experimental groups | Yes | 42.35 | 38.26 | 2.66 | 0.010 | H0 is rejected. Differences in favour of the Experimental group. The CLIL module significantly improves the scoring in this variable. |
| H6.3 Differences in the degree of collaborative competence in D3 between the control and experimental groups | Yes | 37.03 | 36.57 | 0.32 | 0.747 | H0 is accepted. No differences. Improvement is not significant. |

H: hypothesis.

Finally, Table 8 includes the results of the hypotheses which measure the differences in the degree of development of the collaborative competence of students who study the CLIL module taught through co-teaching according to the perceived “need to be trained” in collaborative competence.

Table 8
Differences in the level of collaborative competence according to the perceived “need to be trained”.

| Null hypothesis (means are equal) | Homogeneity of variances (Levene) | Mean None | Mean Low | Mean Moderate | Mean High | F | Sig. | Statistical decision and conclusion |
|---|-----------------------------------|-----------|----------|---------------|-----------|-------|-------|---|
| H7 Differences in the global degree of collaborative competence according to the perceived “need to be trained” | Yes | --- | 104.50 | 156.80 | 174.67 | 24.37 | 0.000 | H0 is rejected. Differences in favour of the groups who perceive a greater need |

| | | | | | | | | | |
|---|-----|-----|-------|-------|-------|-------|-------|--|---|
| | | | | | | | | | to be trained in collaborative competence. |
| H8.1 Differences in the degree of collaborative competence in D1 according to the perceived "need to be trained" | Yes | --- | 51.00 | 78.70 | 88.83 | 14.42 | 0.000 | | H0 is rejected. Differences in favour of the groups who perceive a greater need to be trained in collaborative competence |
| H8.2 Differences in the degree of collaborative competence in D2 according to the perceived "need to be trained" IV Need to be trained | Yes | --- | 28.00 | 41.65 | 45.92 | 8.62 | 0.000 | | H0 is rejected. Differences in favour of the groups who perceive a greater need to be trained in collaborative competence |
| H8.3 Differences in the degree of collaborative competence in D3 according to the perceived "need to be trained" | Yes | --- | 25.50 | 36.45 | 39.92 | 22.70 | 0.001 | | H0 is rejected. Differences in favour of the groups who perceive a greater need to be trained in collaborative competence |

H: hypothesis.

4. Discussion

This section interprets the results yielded by the differential studies, in the light of the theoretical framework outlined in section I. Firstly, as Table 6 shows, having studied the higher education CLIL module that is co-taught does not seem to have a significant effect on the trainees' development of the collaborative teaching competence, as defined by the sum of the three dimensions. In fact, taking the dimensions in turn, significant differences between the pretest and posttest means are only found in D2 Learning through Co-Teaching, whereas in D1 Co-Teaching Foundations and D3 Transferability, the effect of having studied CLIL through co-teaching is not significant. Similar results were obtained when comparing the experimental group (CLIL students) to the control group (other Education students), as reflected in Table 7.

Overall, teacher trainees highly value their experience of learning through co-teaching (D2) in such aspects as the quality of lecturers' explanations, feedback to projects and tasks and the ability of two instructors to better attend to multi-ability groups. This is consistent with previous research findings, which, as we have seen, report an overall positive impact on student achievement (McDuffie et al., 2009), higher quality feedback (Ferguson & Wilson, 2011), as well as an increased inclusiveness in module design and instructional practices (Murphy et al., 2015; Graziano & Navarrete, 2012), from which most students benefit.

Furthermore, CLIL trainee responses reveal that they were at ease with the form of co-teaching that was used in most sessions, namely, team teaching, with two instructors in class adopting balanced instructional roles (Model 2 in Honigsfeld & Dove's [2010] taxonomy of instruction models, or team teaching in that of Cook and Friend [1995]). Indeed, Table 6 reveals that the respondents' perception of the effectiveness of this form of co-teaching was positively affected by their experience in the co-taught CLIL module, showing statistically significant differences between the means in the pre-posttest, in favour of the posttest. Moreover, as Table 7 shows, this perception was significantly higher for the experimental group than for the control group, whose members had not experienced team teaching in their university modules.

The reasons that explain this result partly overlap with the ones suggested for the successful effect of the students' exposure to co-teaching in Dimension 2. Students' experience seems to support the research finding that team teaching contributes to the learning experience by providing a greater degree of differentiation, and that student learning is naturally scaffolded through the interaction of the two instructors between them and with the class (Ferguson & Wilson, 2011; Graziano & Navarrete, 2012; Murphy & Martin, 2015). In this respect, it is worth noting that the benefits of team teaching were probably maximised by the teaching team's instructional methodologies, which favoured task-based learning and learner-centred practices over traditional teacher-focused instruction.

Contrary to what the co-teaching team expected, however, the CLIL module had no noticeable effect on either the trainees' perception of the theoretical foundations and rationale of co-teaching strategies in CLIL (D1), or the applicability of those strategies in the trainees' career as CLIL teachers (D3). In other words, trainees generally failed to connect the methodology used to teach the module, which heavily relied on team teaching, with the content taught in it. This failure could be owed, at least in part, to contextual factors, such as short time-span during which the module was taught, only 2.5 months, or the fact that it is placed in the last semester of the degree, coinciding with the challenging and time-consuming writing of their undergraduate degree dissertation. As a result, students may have prioritised success in the module's exams and assignments over a deeper learning that would have connected their learning through co-teaching in the CLIL module with previous teaching experience in schools.

In addition, the co-teachers could also be blamed for failing to explicitly link their co-teaching practices to the contents of the module. Although the collaborative

CLIL teacher competence was briefly discussed in both the introductory and concluding units, by reference to the CLIL teacher profile outlined by authors such as Bertaux et al. (2010) and Pérez Cañado (2018), it was not revisited in the more central units devoted to the 4 Cs, scaffolding instruction, assessment, resources and, most critically, CLIL lesson planning. Similarly, only occasionally did the co-teaching team ask the students to reflect on the co-teaching experience from a teacher's perspective, in much the same way that would be done in relation to other strategies or resources discussed throughout the module, such as formative assessment tools or graphic organisers, for instance.

In this respect, the results of this study suggest that, if students are to better integrate the collaborative teacher competence as part of their training as CLIL teachers-to-be, there are a number of improvements that must be incorporated into future editions of this module. One of them is to discuss, in very specific terms, how the different co-teaching roles, arrangements, and strategies demonstrated in class could serve to support learning in CLIL settings in Pre-primary and Primary education. Students would also benefit from reflecting on their own learning experience with two instructors in class, not only from a university student's perspective, as suggested by Morelock et al. (2017), but from that of a Primary or Pre-primary teacher.

Lastly, the results of the survey reveal significant differences in the collaborative competence scores depending on the perceived need of training in the collaborative competence. This is the case for each of the three dimensions, and at the aggregate level. In other words, students who believe that training in this competence is very necessary are more likely to understand its role in CLIL, identify the benefits of co-teaching when applied to their university class, and envisage transferring co-teaching strategies to their own professional settings, that is, teaching practice or future professional practice.

This result may be explained by several factors. Firstly, it is likely that students who recognise a greater need for training are also the most academically able ones, who, having better integrated the different training components of their studies than their weaker peers, are more aware of their own formative lacunae. Likewise, stronger students are arguably more predisposed to apply metacognitive strategies and connect their experience in class with the theory (D1), their own process of learning (D2) or consider ways in which this experience could be transferred to their own instruction with younger learners (D3), even without instructor prompting.

Students' levels of English might also help explain these results. Indeed, several studies conducted on Spanish teacher trainees have found that a low competence in English very negatively affects perceived self-efficacy of EFL teacher trainees (Amengual Pizarro, 2013; Fernández-Viciana & Fernández-Costales, 2017). As a result, trainees with lower levels of English tend to prioritise language improvement over other training needs. Furthermore, the challenge of taking the module in a language in which they are not proficient could negatively affect their ability to integrate the co-teaching model offered by the instructors with the contents of the module (D1), critically analyse the effect of co-teaching on their learning and academic performance

(D2) and its transferability to their own lesson planning and instruction with young learners (D3).

5. Conclusions

This study set out to investigate the effect of a co-taught CLIL module on the development of the collaborative competence of future CLIL teachers. Regarding H1, H2.1, 2.2, 2.3, H5, and H6.1, 6.2, 6.3, results show that this effect is only significant in one of the three dimensions of the study, namely, the trainees' perception of co-teaching as a valuable form of instruction that enhances their own learning process in the university class. Furthermore, the module significantly affected the students' assessment of the specific form of co-teaching that was implemented, namely, team teaching (Cook & Friend, 1995) with two instructors adopting balanced instructional roles (H3 and H4).

However, studying the module did not lead to a better understanding of the foundations and rationale of co-teaching and its relationship with CLIL, or to the perception that co-teaching experience could be successfully transferred to future professional practice in Pre-primary or Primary Education. The lesson obtained from the results seems to be that demonstrating the collaborative competence is necessary, but not sufficient. For students to develop the collaborative teaching competence more effectively in the framework of a university module, the model provided by the co-teacher needs to be explicitly discussed and connected to both the contents of the module (CLIL) and to the specific educational settings where the students will pursue their teaching careers. As this study is carried forward, effort will be made to draw connections through more purposeful dialogic practices in the classroom, because of their potential as a constructive and effective classroom tool in both university and primary classrooms (Howe et al., 2019; Mercer et al., 2019).

Finally, with respect to H7 and H8.1, 8.2, 8.3, there exists a positive correlation between the trainees' perceived need for training in the collaborative teaching competence and their ability to integrate its principles, reflect on the effect of co-teaching on their own learning and consider applying it in their own professional practice.

This study expands the scope of the literature that examines the effectiveness of co-teaching by adding a control group and utilizing a more comprehensive instrument created *ad hoc*. It also contributes to the analysis of the benefits of co-teaching practices in preservice teacher education and, specifically, in English as Medium of Instruction (EMI) settings in which the language competence of students may be heterogeneous. In practical terms, the findings of this study suggest that university administrators should consider offering opportunities for team teaching as a way of enhancing student learning, especially in courses that are taught following learner-centred methodologies. As to instruction, results support the view that, if

developing the collaborative competence is a specific goal of any given module, collaborative teacher practices should be explicitly discussed, and not just modelled.

However, this study is not without its limitations. First, due to organizational problems, it was not possible to establish a pretest control group. In order to compensate for this imbalance, the posttest scores were taken as identical to the scores of the pretest on the assumption that opinions would not change significantly given the relatively short duration of the module and the lack of a relevant stimulus. Second, the data collected relies only on students' perceptions as measured by the questionnaire. Additional information about the effect of co-teaching on the collaborative competence of students could be provided by classroom observations of the co-taught modules, analysis of students' evaluation marks and focus group interviews conducted with students.

Further research should investigate to what extent this result is influenced by variables such as academic ability or language proficiency, and, if there is a direct relationship, explore ways to ensure that the training benefits of co-teaching can reach all participants of the module. Finally, concerning the validity of the construct "collaborative competence", further work with the research tool presented would include the development of a confirmatory factor analysis (CFA) in order to corroborate the results presented in this article.

The experience of team teaching is clearly beneficial for both students and instructors, and therefore it is worthwhile to continue fine-tuning the module and the dynamics involved in order to make the most of the presence and cooperation of both instructors in the classroom. It is a significant investment of effort, time and other resources, but one that brings about great returns in terms of student achievement and engagement.

References

- Amengual Pizarro, M. (2013). Primary education degrees in Spain: do they fulfil the linguistic and pedagogic needs of future teachers? *Vigo International Journal of Applied Linguistics*, 10, 9-27. <https://cutt.ly/TpPnzFe>
- Buckingham, L. R. (2018). Defining the role of language assistants in the bilingual classroom. *Revista Tecnología, Ciencia y Educación*, 9, 38-49. <https://doi.org/10.51302/tce.2018.173>
- Custodio-Espinar, M. (2019). CLIL teacher education in Spain. In K. Tsuchiya & Pérez-Murillo (Eds.), *Content and language integrated learning in Spanish and Japanese contexts* (pp. 313-337). Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-030-27443-6_13

- Bacharach, N., Heck, T. W., & Dahlberg, K. (2008). Co-Teaching in higher education. *Journal of College Teaching & Learning (TLC)*, 5(3), 9-16. <https://doi.org/10.19030/tlc.v5i3.1298>
- Baeten, M., Simons, M., Schelfhout, W. & Pinxten, R. (2018). Team teaching during field experiences in teacher education: Exploring the assistant teaching model. *European Journal of Teacher Education*, 41(3), 377-397. <https://doi.org/10.1080/02619768.2018.1448780>
- Bertaux, P., Coonan, C. M., Frigols-Martín, M. J. & Mehisto, P. (2010). *The CLIL teacher's competences grid*. Common Constitution and Language Learning (CCLL) Comenius Network. http://tplusm.net/CLIL_Competerences_Grid_31.12.09.pdf
- Blanchard, K. D. (2012). Modeling lifelong learning: Collaborative teaching across disciplinary lines. *Teaching Theology & Religion*, 15(4), 338-354. <https://doi.org/10.1111/j.1467-9647.2012.00826.x>
- Carbone, A., Evans, J., Ross, B., Drew, S., Phelan, L., Lindsay, K., Cottman, C., Stoney, S., & Ye, J. (2017). Assessing distributed leadership for learning and teaching quality: a multi-institutional study. *Journal of Higher Education Policy & Management*, 39(2), 183-196. <https://doi.org/10.1080/1360080X.2017.1276629>
- Council of Europe. (2001). Common European Framework of Reference for Languages: Learning, teaching, assessment. Press Syndicate of the University of Cambridge. <https://rm.coe.int/16802fc1bf>
- Cook, L. & Friend, M. (1995). Co-teaching: Guidelines for creating effective practices. *Focus on Exceptional Children*, 28(3), 1-16. <https://doi.org/10.17161/foec.v28i3.6852>
- Coyle, D., Hood, P., & Marsh, D. (2010). *CLIL - Content and Language Integrated Learning*. Cambridge University Press.
- Delicado Puerto, G. & Pavón Vázquez, V. (2016). Training primary student teachers for CLIL: innovation through collaboration. *Pulso, Revista de Educación*, 39, 35-57. <https://cutt.ly/HpPEuN8>
- Escobar, C. (2011). Colaboración interdisciplinar, partenariado y centros de formación docente: tres ejes para sustentar la colaboración del profesorado AICLE. In C. Escobar Urmeneta & L. Nussbaum (Eds.), *Learning through another language* (pp. 203-230). Servei de Publicacions de la Universitat Autònoma de Barcelona.
- Ferguson, J. & Wilson, J. (2011). The co-teaching professorship: Power and expertise in the co-taught higher education classroom. *Scholar-Practitioner Quarterly*, 5(1), 52-68. <https://cutt.ly/JpPTdcD>

- Fernández César, R., Aguirre Pérez, C., & Harris, C. (2013). La formación de maestros en Aprendizaje Integrado de Contenidos en Lengua Extranjera (AICLE): Un estudio en Castilla La Mancha. *Revista de Formación e Innovación Educativa Universitaria*, 6(1), 33-44. <https://cutt.ly/ApPTPf0>
- Fernández Viciano, A. & Fernández Costales, A. (2017). El pensamiento de los futuros maestros de inglés en Educación Primaria: Creencias sobre su autoeficacia docente. *Bellaterra Journal of Teaching and Learning Language and Literature*, 10, 42-60. <https://doi.org/10.5565/rev/jtl3.684>
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference 11.0 update (4th ed.)*. Allyn & Bacon.
- Graziano, K. J., & Navarrete, L. A. (2012). Co-Teaching in a teacher education classroom: Collaboration, compromise, and creativity. *Issues in Teacher Education*, 21(1), 109-126. <https://cutt.ly/FpPYRhT>
- Halbach, A. (2011). Same but different: La enseñanza de la lengua extranjera en contextos bilingües. In R. Johnstone (Ed.), *Retos de la educación bilingüe* (pp. 24-37). Ministerio de Educación, Cultura y Deporte.
- Honigsfeld, A., & Dove, M. G. (2015). Co-Teaching ELLs: Riding a tandem bike. *Educational Leadership*, 73(4), 56-60. <https://cutt.ly/FpPO9UR>
- Honigsfeld, A., & Dove, M. G. (2010). *Collaboration and co-teaching: Strategies for English learners*. Corwin.
- Howe, C., Hennessy, S., Mercer, N., Vrikki, M., & Wheatley, L. (2019). Teacher-Student dialogue during classroom teaching: Does it really impact on student outcomes? *Journal of the Learning Sciences*, 28(4-5), 462-512. <https://doi.org/10.1080/10508406.2019.1573730>
- Lasagabaster, D., Doiz, A., & Pavón, V. (2019). Undergraduates' beliefs about the role of language and team teaching in EMI courses at university. *Rassegna Italiana di Linguistica Applicata*, 50(2-3), 111-127. <https://cutt.ly/8pPPNi5>
- Lock, J., Clancy, T., Lisella, R., Rosenau, P., Ferreira, C., & Rainsbury, J. (2016). The lived experiences of instructors co-teaching in higher education. *Brock Education: A Journal of Educational Research and Practice*, 26(1), 22-35. <https://doi.org/10.26522/brocked.v26i1.482>
- Liebel, G., Burden, H., & Heldal, R. (2017). For free: Continuity and change by team teaching. *Teaching in Higher Education*, 22(1), 62-77. <http://dx.doi.org/10.1080/13562517.2016.1221811>
- Madrid, D. y Pérez Cañado, M. L. (2012). CLIL teacher training. In J. de D. Martínez Agudo (Ed.), *Teaching and Learning English through Bilingual Education* (pp. 181-212). Cambridge Scholars.

- Marsh, D., Mehisto, P., Wolff, D., & Frigols, M. J. (2010). *European Framework for CLIL Teacher Education: A Framework for the Professional Development of CLIL Teachers*. European Centre for Modern Languages.
- McDuffie, K. A., Mastropieri, M. A., & Scruggs, T. E. (2009). Differential effects of peer tutoring in co-taught and non-co-taught classes: Results for content learning and student-teacher interactions. *Exceptional Children*, 75(4), 493-510. <https://doi.org/10.1177/001440290907500406>
- Mercer, N., Wegerif, R., & Major, L. (2019). *The Routledge International Handbook of Research on Dialogic Education*. Routledge.
- Montgomery, Mark S. and Akerson, Adam (2019). Facilitating collaboration through a co-teaching field experience. *Networks: An Online Journal for Teacher Research*, 21(1). <https://doi.org/10.4148/2470-6353.1284>
- Morelock, J. R., Lester, M. M., Klopfer, M. D., Jardon, A. M., Mullins, R. D., Nicholas, E. L., & Alfaydi, A. S. (2017). Power, perceptions, and relationships: A model of co-teaching in higher education. *College Teaching*, 65(4), 182-191. <https://doi.org/10.1080/87567555.2017.1336610>
- Murphy, C., & Martin, S. N. (2015). Coteaching in teacher education: Research and practice. *Asia-Pacific Journal of Teacher Education*, 43(4), 277-280. <https://cutt.ly/ApPSVma>
- Murphy, C., Scantlebury, K., & Milne, C. (2015). Using Vygotsky's zone of proximal development to propose and test an explanatory model for conceptualising coteaching in pre-service science teacher education. *Asia-Pacific Journal of Teacher Education*, 43(4), 281-295. <https://doi.org/10.1080/1359866X.2015.1060291>
- Pavón Vázquez, V., Ávila López, J., Gallego Segador, A., & Espejo Mohedano, R. (2015). Strategic and organisational considerations in planning content and language integrated learning: A study on the coordination between content and language teachers. *International Journal of Bilingual Education and Bilingualism*, 18(4), 409-425. <https://doi.org/10.1080/13670050.2014.909774>
- Pérez Cañado, M. L. (2017). CLIL teacher education: Where do we stand and where do we need to go? In M. E. Gómez Parra, & R. Johnstone (Eds.), *Bilingual Education: Educational Trends and Key Concepts* (pp. 129-144). Ministerio de Educación, Cultura y Deporte.
- Pérez Cañado, M.L. (2018) Innovations and challenges in CLIL teacher training. *Theory Into Practice*, 57(3), 1-10. <https://doi.org/10.1080/00405841.2018.1492238>
- Pettit, S. L. (2017). Preparing teaching candidates for co-teaching. *Delta Kappa Gamma Bulletin*, 83(3), 15-23. <https://cutt.ly/fpPGbyx>

Ricci, L. A.; Fingon, J. (2018). Experiences and perceptions of university students and general and special educator teacher preparation faculty engaged in collaboration and co-teaching practices. *Networks: An Online Journal for Teacher Research*, 20(2). <https://cutt.ly/XpPGVVRG>

Simons, M., Baeten, M., & Vanhees, C. (2020). Team teaching during field experiences in teacher education: Investigating student teachers' experiences with parallel and sequential teaching. *Journal of Teacher Education*, 71(1), 24-40. <https://doi.org/10.1177/0022487118789064>

Turan, M., & Bayar, B. (2017). Examining teachers view on Primary teaching practices based on co-teaching model. *Journal of Education and Training Studies*, 5(11), 82-97. <https://doi.org/10.11114/jets.v5i11.2708>

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