# Teacher training at the University of Barcelona: satisfaction, transfer and impact

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*Resumen*
Este estudio analiza el efecto que los programas de formación del Instituto de Ciencias de la Educación (ICE) de la Universidad de Barcelona (UB) tiene sobre la acción docente del profesorado que recibe esta formación. Se ha valorado la satisfacción del profesorado sobre los cursos recibidos, el nivel de transferencia de los conocimientos adquiridos a la docencia y su repercusión en el rendimiento académico, en la motivación y en la participación de los estudiantes. También se analizan las dificultades para transferir a la práctica los conocimientos y las habilidades adquiridas en la formación. Los indicadores utilizados para la recogida y el análisis de datos forman parte del Sistema Interno de Garantía de Calidad (SIGC) de los programas de formación del ICE de la UB.
Los datos muestran una alta satisfacción del profesorado con la formación recibida. Indican que los programas diseñados favorecen la adquisición de competencias docentes y proporcionan a los profesores una mayor capacidad para introducir cambios en su docencia Dichos cambios repercuten en la mejora del rendimiento académico, así como en la participación y motivación de los estudiantes. La percepción de que algunos aspectos organizativos de la institución obstaculizan la transferencia es mayor en el profesorado que ha recibido más formación. Así mismo, se pone de manifiesto que el SIGC es una buena herramienta para el seguimiento y la evaluación de los programas de formación, para su acreditación, y en consecuencia, para acreditar también el desarrollo docente del profesorado.

*Palabras clave:* formación docente; profesorado universitario; Sistema Interno de Garantía de Calidad; percepción sobre transferencia e impacto.

*Resum*
Aquest estudi analitza l'efecte que els programes de formació de l'Institut de Ciències de l'Educació (ICE) de la Universitat de Barcelona (UB) té sobre l'acció docent del professorat que rep aquesta formació. S'ha valorat la satisfacció del professorat sobre els cursos rebuts, el nivell de transferència dels coneixements adquirits a la docència i la seva repercussió en el rendiment acadèmic, en la motivació i en la participació dels estudiants. També s'analitzen les dificultats per transferir a la pràctica els coneixements i les habilitats adquirides en la formació. Els indicadors utilitzats per a la recollida i l'anàlisi de dades formen part del Sistema Intern de Garantia de Qualitat (SIGQ) dels programes de formació de l'ICE de la UB. Les dades mostren una alta satisfacció del professorat amb la formació rebuda. Indiquen que els programes dissenyats afavoreixen l'adquisició de competències docents i proporcionen als

professors una major capacitat per introduir canvis en la seva docència Aquests canvis repercuteixen en la millora del rendiment acadèmic, així com en la participació i motivació dels estudiants. La percepció que alguns aspectes organitzatius de la institució obstaculitzen la transferència és més gran en el professorat que ha rebut més formació. Així mateix es posa de manifest que el SIGQ és una bona eina per al seguiment i l'avaluació dels programes de formació, per la seva acreditació, i en conseqüència, per acreditar també el desenvolupament docent del professorat

*Paraules clau:* formació docent; professorat universitari; Sistema Intern de Garantia de Qualitat; percepció sobre transferència i impacte.

*Abstract*
This study analyses the effect of training programmes offered by the University of Barcelona's (UB) Institute of Education (ICE) on the teaching performance of university teaching staff. Teachers' satisfaction with the courses, the level of transfer of acquired knowledge to their teaching and its impact on students' academic performance, motivation and participation have been evaluated. In addition, difficulties in transferring acquired knowledge and skills to teaching have been analysed. The indicators used for collection and analysis of data are part of the Internal Quality Assurance System (IQAS) of the ICE's training programmes.
Data show teachers were highly satisfied with the training. Programmes favour the acquisition of teaching competencies and provide teachers with a greater capacity to introduce changes in their teaching. These changes have a positive effect on students' academic performance, participation and motivation. The perception that some organisational aspects of the institution hinder transfer is greater in teachers who have received more training. Furthermore, the IQAS is shown to be a good tool for monitoring and evaluating training programmes, accreditation, and consequently, the accreditation of professional development.

*Keywords:* teacher training; university teaching staff; Internal Quality Assurance System; perception on transfer and impact.

## 1. Introduction and the current status of research

The University, as a higher education institution, has the specific mission to train professionals needed by society; thus, professional development is imperative for its teaching and research staff (TRS). To the detriment of teaching, institutional culture has traditionally placed more importance on research. The need to strengthen and enhance teaching performance has increasingly been recognised, reinforcing its link with research. This ongoing change, influenced by internal and external demands, has become absolutely essential ever since the implementation of the European Higher Education Area (EHEA). In this context, the TRS teaching profile needs to be strengthened, and should be defined based on required competencies. For this reason, training programmes are a key element in facilitating institutional change towards achieving this profile (Sánchez, 2015; Torra et al., 2012, 2013; Triadó et al., 2014).

The Internal Quality Assurance System (IQAS) for Spanish universities sets forth the obligation to ensure professional development of TRS, with the understanding that along with mastery of the scientific knowledge of their specialty, teachers must also have competencies enabling them to design teaching situations and foster students' acquisition of knowledge, abilities and attitudes. Most higher education institutions provide training services that design and carry out a wide range of training programmes within the framework of each university's teaching policy. As a consequence of the Bologna process, education has shifted its focus from a teacher-centred to a learner-centred approach, thereby making training essential.

Although training services for university teaching staff reflect the institution's quality policy, little interest is generally placed on assuring the quality of the training programmes themselves, which hinders the recognition of teacher training undergoing the process of accreditation. As proposed by some authors (García-

Berro et al., 2014), since the university is an institution of higher education and research, there needs to be an overall assessment of university teaching staff, with indicators for evaluating both research and teaching performance.

It is in this context that the University of Barcelona's (UB) Institute of Education Sciences (ICE) decided to create and apply the IQAS to assess training programmes offered to university teaching staff, starting with the idea that such programmes need to be linked to the teacher evaluation process carried out by evaluation agencies.

Training programmes proposed by the ICE entail ongoing teacher training and encompass all stages of professional development. Based on Shulman's model of pedagogical reasoning and action (2005) [1] and the principles of the Scholarship of Teaching and Learning movement, the following aspects are taken into account:

- the teacher profile has been defined based on required competencies; therefore, it is logical that teachers should have certain teaching competencies;
- there is ongoing social change that modifies the approach of the teaching-learning process, making it necessary to reconsider training content and models proposed to teachers;
- it is necessary to use methodologies that help to facilitate learning through action, reflection and self-criticism while promoting continued teacher interest in student learning.

Starting progressively a few years ago, there has been a change from predominantly lecture courses to courses where active participation, project work and reflection on

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[1]  Originally published in *Harvard Educational Review*, 57 (1), 1987, pp. 1-22.

the participants' teaching performance prevail. The aim is for teachers to implement knowledge acquired during training and use it in the classroom.

Self-assessment guides, external evaluation and meta-evaluation from the 'Programme for the evaluation of teacher training', designed in its day by ANECA within the framework of an experimental programme (Zabalza, 2011) have been used to design the IQAS for ICE training programmes. Attempts have also made to adapt to the AUDIT programmes as much as possible.

The IQAS considers four dimensions:

1. Design and approval of the training programme
2. Planning and implementation
3. Monitoring of the training process
4. Results of the training

A series of indicators are proposed for each dimension. These are analysed according to quantitative and qualitative evidence provided by teaching staff, ICE, trainers and training coordinators at different times throughout the training process (before, during, after). Analysis of these indicators determines if the programme has achieved the desired results and if it has effectively contributed to professional development. It also determines if it has had a positive impact on enhancing student learning and the institution. For a full description of the IQAS please check (Sayós et al. 2016): <http://www.ub.edu/ice/quest_uni/SIGCplanesformacionICE-UB.pdf>

To ensure quality training for university teaching staff, it is necessary to design and implement an evaluation mechanism that allows for monitoring of the training process in order to verify that the desired results have been achieved. In any training evaluation, learning transfer must be considered; that is, the way in which participants include acquired knowledge in their daily work. This training should also be evaluated for impact in areas in which it aims to influence: better teaching resources, better results in students' academic performance and more emphasis placed on teaching in the institutional culture. Evaluating transfer and impact of training verifies the quality of the training and, therefore, verifies if it meets the desired results and leads to improvements in the individual's professional development and the institution. (Amador et al., 2013; Amador & Pagés, 2014; Tejada & Fernández, 2007).

There are several models including Kirkpatrick's 4-level training evaluation model and Pineda's holistic training evaluation model (Kirkpatrick, 1998; Kirkpatrick & Kirkpatrick, 2006; Pineda Herrero, 2011).

In our case we chose Kirkpatrick's 4-level training evaluation model, which is one of the most widely used. This model considers:

- *Level 1: Reaction*. Refers to the participants' satisfaction with training activities after completion of the training.
- *Level 2: Learning*. Defined as the amount of change in the participants at the level of knowledge as well as abilities, skills and attitudes.
- *Level 3: Behaviour*. Refers to new behaviours that participants display in the workplace, in our case, the classroom.

- *Level 4: Results*. Refers to the effectiveness and impact of training in different areas of the organisation. In our case, it refers to the way in which the changes affect the classroom, the department, the faculty and the university.

Although Pineda Herrero (2011) regards it as too simplistic, we believe it is a good model which is clear and viable. Complexity increases as the evaluation processes of the training advance, and we have included this model in our IQAS.

Figure 1 shows the relationship we established between the indicators of IQAS dimensions 3 and 4 (by the University of Barcelona's ICE), analysed in this study, with the levels of the evaluation model described by Kirkpatrick.

| Kirkpatrick's levels of evaluation | IQAS Indicators | IQAS Dimension |
|---|---|---|
| Level 1: Reaction | Evaluation of satisfaction | dimension 3 |
| Level 2: Learning | Evaluation of transfer | dimension 3 |
| Level 3: Behaviour | | |
| Level 4: Results | Evaluation of impact | dimension 4 |

*Figure 1. Relationship between Kirkpatrick's levels of the evaluation model and those by the IQAS of the University of Barcelona's ICE. Source: authors.*

The first three levels measure changes that occur in the individual's attitudes, knowledge and skills. The fourth level refers to changes that occur at the institutional and organisational levels.

The most basic level (Level 1) assesses the participants' general satisfaction with the training course. Levels 2 and 3 refer to knowledge acquired during training and how it is transferred to teaching performance. By transfer we refer to the application of knowledge, skills and attitudes acquired in training courses to teaching, management processes or research. Finally, in Level 4 the results of the training (impact) are evaluated. By impact, we refer to the effects that training has on different spheres of the institution: indices of students' academic performance, teaching performance in the medium and long term, changes in other teachers of the course and in the department, etc.

The aim of this paper is to analyse the results of the training received by UB teaching staff. This analysis is focused on two IQAS dimensions that we developed: dimension 3, *Monitoring of the training process* and dimension 4, *Results of the training*. We collected teachers' satisfaction with the training, their perception of learning transfer to their teaching and the impact on students' academic performance.

## 2. Methodology

In order to gather information on each IQAS indicator, specific questionnaires were designed: one on satisfaction and the other on transfer and impact. We distributed questionnaires to the teaching staff who had taken the courses, and responses were collected.

The transfer and impact questionnaire was based on work carried out in the REDU2012 project (Pagés, 2014). A number of studies were also considered (Baldwin & Ford, 1988; Cano, 2014; Feixas & Zellweger, 2010; Feixas et al., 2013ª; 2013b; 2015). These studies propose tools to identify factors influencing the transfer of training to the classroom related to: the individual (contextual or personal factors that could favour

transfer), the work environment (aspects of processes related to the organisation), and the design of the training itself (aspects of processes related to training).

### 2.1. Questionnaire to evaluate satisfaction with the training

The questionnaire to evaluate satisfaction is organised in five blocks which gather data on the trainer (block 1), content and methodology (block 2), level of acquired knowledge and learning (block 3), organisational aspects (block 4) and overall satisfaction (block 5). The questionnaire concludes with open-ended questions to gather opinions on 1) obstacles that hinder the implementation of acquired knowledge in the classroom, 2) positive aspects of the courses, 3) aspects to improve and 4) topics of interest to be included in future courses. To view the questionnaire, please click the following link: <http://www.ub.edu/ice/quest_uni/Cuestionariopresencial.pdf>

A 6-point Likert scale has been used for quantitative type questions (from 1, minimum, to 6, maximum). This scale was chosen to avoid the centrality of the responses and force a more positive or negative tendency of the items.

From this questionnaire, a version for online courses was created, including specific questions on material and group dynamics. To view the questionnaire, please click the following link:

<http://www.ub.edu/ice/quest_uni/Cuestionarioenlinia.pdf>

Once the questionnaires are analysed, a report including the qualitative comments from participants is sent to the course trainer. In addition, the trainer's comments regarding satisfaction with the programme are gathered, which helps to improve the courses because it provides a different point of view.

The questionnaire is usually distributed to teaching staff at the end of the course they attended. The period evaluated in this study is from 2010 to 2015, with a total of 4953 teachers enrolled.

### 2.2. Questionnaire to evaluate the transfer and impact of training

The questionnaire does not attempt to obtain specific information on particular courses. Instead, its aim is to assess the usefulness of training activities to improve teaching, evaluate the possibility that teachers have to transfer acquired knowledge to their teaching and detect factors that facilitate or hinder its applicability. To view the questionnaire, please click the following link: <http://www.ub.edu/ice/quest_uni/encuestatransferencia_ICE-UB.pdf>

The questionnaire is organised in two sections:

- The first section gathers information on socio-demographic and academic aspects of the participants (age, gender, professional category, part-time/full-time contract, faculty, area of knowledge, years of teaching experience, training courses, reasons for taking the training courses).
- The second section focuses on the transfer and impact of knowledge and skills acquired in the courses. It covers 46 items, which are rated on a 4-point Likert scale (0=none/nothing; 1=some change /little; 2=sufficient; 3=significant changes/a lot). These items are grouped into four blocks:

A. Changes introduced in teaching as a result of the training received. It covers 17 items that make reference to teaching competencies offered in the training, grouped according to the competency that contributes to developing: Interpersonal and Communicative (items 1-4 and 10- 12), Planning and Management, and Methodology (items 6-9 and 13-14), Innovation, and Teaching Teams (items 15-17).

B. Benefits of the training which have an effect on teaching performance (items 1-4) and on students (items 5-7).

C. Factors that aid in transferring knowledge acquired in training, related to the teacher (items 1 and 5), the students (items 3 and 4) and the institution (items 2, 6, 7 and 8).

D. Factors that hinder transfer, from the standpoint of the teacher (items 2-4), the training (items 1 and 10) and the institution (items 5-9).

The questionnaire concludes with open-ended questions requesting suggestions for improving training programmes.

The questionnaire was sent to 2919 UB teachers who had taken part in some of the permanent training courses between 2010 and 2015. It was emailed to the participants, along with a link to its access. A presentation of the questionnaire was sent in the email, which explained the objectives of the study and requested collaboration. Two reminders were sent, 15 and 30 days after the first email.

The effect of the number of training courses taken was studied through a factorial analysis of variance (ANOVA) and a Bonferroni correction was applied for multiple comparisons. The teaching experience variable was made up of five intervals (0-5, 6-10, 11-15, 16-20 and more than 20 years of experience), which were recoded to three (0-5, little; 6-15, average; and more than 15, high) to avoid empty boxes in the group comparison. The same procedure was applied to the training courses variable, in which its six intervals (1-3, 4-6, 7-9, 10-12, 13-15 and over 15), were regrouped in three: 1-6, 7-12, and more than 12 courses.

## 3. Results
### 3.1. Satisfaction with training

Of the 4953 teachers enrolled on the training courses, 3566 responded to the questionnaire, which corresponds to a participation rate of 72%. For a sample error of 3% and a confidence level of 95%, the sample size required 878 participants, so the sample of responses is highly representative.

With regard to "Overall satisfaction" with the courses, the score is equal to or greater than 5 on a scale of 6 for 92% of the responses.

In 95% of the courses, trainers were positively rated. In addition, the chance for participants to share experiences with colleagues from other disciplines was reported to be a strength.

Analysis of the open-ended questions shows that face-to-face courses need to offer more practical components with more examples that apply to the participants' areas of knowledge.

Comments regarding the online courses reveal that scheduling does not match the demand, forums are not well-managed, instructions are unclear for activities and sometimes more time is needed to do the activities. To

resolve these issues, a brief virtual trainer's guide was developed providing guidelines for online courses and clarifying the type of communication the trainer needs to establish with course participants.

### 3.2. Transfer and impact of training

464 of the 2919 teachers surveyed responded to the questionnaire on the transfer and impact of training. Even though the number of obtained responses is small with regard to the number of teachers surveyed, the sample is sufficiently representative for the results to be considered valid (for a sample error of 5% and a confidence level of 95%, the sample size required 340 participants). 247 were women (53.2%), 205 men (44.2%) and 12 (2.6%) did not indicate gender, with ages ranging from 26 to 70 (mean: 49.74 years; t=9.16).

66.8% of the teachers in the sample were permanent teaching staff (310), 31.7% (147) were non-permanent teaching staff and 1.5% (7) did not provide this information.

The distribution according to areas of knowledge was 17.7% from Arts and Humanities, 25.2% Sciences, 22.4% Health Sciences, 30% Social and Legal Sciences and 3% Engineering and Architecture.

There were no statistically significant differences found in the distribution of the number of training courses taken by permanent and non-permanent teaching staff ($\chi 2$ (2; N=445), p=0.575). Among the permanent teaching staff, 71.8% had taken between 1-6 courses, 25.25% between 7-12 courses and 5.98% more than 12 courses; among non-permanent teaching staff, 75% had taken between 1-6 courses, 18.05% between 7-12 and 7% more than 12 courses.

Significant differences were found between permanent and non-permanent teaching staff and the distribution of years of teaching experience ($\chi 2$ (2; N=431), p< 0.001). 1% of permanent teachers had 1-5 years of teaching experience, 15.4% between 6 and 15 years and 84.6% had more than 15 years of teaching experience; whereas 18.7% of non-permanent teaching staff had between 1 and 5 years of teaching experience, 54% between 6 and 15 years and 27.3% had more than 15 years of teaching experience.

To analyse the effect that the number of courses taken (1-6, 7-12, or over 12) had on the acquisition of teaching competencies linked to the courses taught and the transfer of each competency to teaching, a factorial analysis of variance of the different variables was carried out. This considered years of teaching experience and professional category (permanent, non-permanent) as co-variables since significant relationships were found between them (Spearman's rho = 0.584; p<0.001).

Figures 2 and 5 collect average scores, F values, the effect size and the observed power for each dependent variable.

The training received and the number of courses taken had a clear effect on the acquisition of teaching competencies (Figure 2): Interpersonal and Communicative F(2.390) = 3.560; p=0.02); Planning and Management, and Methodology F(2.383) = 7.657; p=0.001); Innovation and Teaching Teams F(2.388) = 12.312; p<0.001).

| | Training courses taken M (SD) | | | F (df) | p | η² | P/obs | Bonferroni contrasts |
|---|---|---|---|---|---|---|---|---|
| | 1-6 a | 7-12b | more than 12c | | | | | |
| Interpersonal and Communicative | 8.780 (4.53) | 9.777 (4.22) | 10.822 (5.62) | F(2.390) = 3.560 | .029 | .018 | .660 | |
| Planning and Management, and Methodology | 10.01 (4.41) | 11.53 (4.54) | 12.92 (4.98) | F(2.383) = 7.657 | .001 | .038 | .947 | a<b, c |
| Innovation and Teaching Teams | 3.35 (2.08) | 4.39 (2.12) | 4.88 (2.39) | F(2.388) = 12.312 | <0.001 | .060 | .996 | a<b, c |

M= Mean, SD= standard deviation, F: Snedecor's F distribution, df: degrees of freedom, p: significance level, η²: effect size, P/obs: observed power, Bonferroni contrasts: posteriori comparisons.

*Figure 2. Changes applied to teaching, linked to acquired competencies.*

Bonferroni contrasts indicate that teachers who had taken between 1 and 6 training courses reported a lower acquisition of the competencies for Planning and Management, Methodology, Innovation and Teaching Teams than the other two groups, with no statistically significant differences between the groups that had taken between 7 and 12 courses or more than 12 (section A of the questionnaire).

Significant differences were found between the number of training courses and the benefits that training had on students' academic performance, class participation and motivation F(2.386) =3.664; p=0.027). The group of teachers who had taken more than 12 training courses reported a greater benefit for their students (section B of the questionnaire). (Figure 3).

| | Training courses taken M (SD) | | | F (df) | p | η² | P/obs | Bonferroni contrasts |
|---|---|---|---|---|---|---|---|---|
| | 1-6 a | 7-12b | more than 12c | | | | | |
| For the teacher | 7.19 (2.76) | 7.64 (2.64) | 8.23 (3.35) | F(2.288) = 2.138 | .120 | .015 | .436 | |
| For the students (impact) | 3.95 (2.24) | 4.33 (2.20) | 5.11 (2.62) | F(2.386) = 3.664 | .027 | .019 | .673 | a<c |

M= Mean, SD= standard deviation, F: Snedecor's F distribution, df: degrees of freedom, p: significance level, η²: effect size, P/obs: observed power, Bonferroni contrasts: posteriori comparisons.

*Figure 3. Benefits obtained by teachers and students.*

There were no significant effects of the number of training courses on the factors that facilitate transfer related to the teacher's attitude or perception F(2.395) =1.319; p=0.269); student response F(2.391); p=2.017; p=0.134) or institutional support F(2.381) =1.314; p=0.270 ) (section C of the questionnaire). (Figure 4).

| | Training courses taken M (SD) | | | F (df) | p | η2 | P/obs | Bonferroni contrasts |
|---|---|---|---|---|---|---|---|---|
| | 1-6 a | 7-12b | more than 12c | | | | | |
| Teacher's opinion | 3.56 (1.43) | 3.68 (1.43) | 3.96 (1.68) | F(2.395) = 1.319 | .269 | .007 | .285 | |
| Perception by the students | 2.68 (1.54) | 2.89 (1.54) | 3.23 (1.88) | F(2.391) = 2.017 | .134 | .010 | .416 | |
| From the institution | 3.47 (2.32) | 3.94 (2.46) | 3.50 (2.45) | F(2.381) = 1.314 | .270 | .007 | .284 | |

M= Mean, SD= standard deviation, F: Snedecor's F distribution, df: degrees of freedom, p: significance level, η²: effect size, P/obs: observed power, Bonferroni contrasts: posteriori comparisons.

*Figure 4. Factors facilitating transfer to teaching.*

The difficulty for teachers to transfer acquired knowledge from training to their teaching (section D of the questionnaire) revealed significant effects for the factors dependent on the institution (number of students per group, teaching/exam timetable, difficulty working in teaching teams, lack of computer and technology resources and lack of support from department heads and faculty: F(2.385) =7.162; p=0.001). There were no significant differences according to the number of courses taken in the factors associated with the

teacher's attitude or perception (lack of time to apply acquired knowledge, results obtained in applying acquired knowledge: $F_{(2.390)} = 4.624$; $p=0.010$) or the training (lack of advice or lack of guidelines or strategies to apply to teaching: $F_{(2.389)} = 1.654$; $p=0.193$). (Figure 5).

| | Training courses taken M (SD) | | | F (df) | p | η2 | P/obs | Bonferroni contrasts |
|---|---|---|---|---|---|---|---|---|
| | 1-6 [a] | 7-12[b] | more than 12[c] | | | | | |
| Teacher's opinion | 2.48 (1.81) | 2.94 (1.88) | 3.44 (2.22) | $F_{(2.390)} =$ 4.624 | .010 | .023 | .779 | |
| From training | 1.79 (1.50) | 2.09 (1.55) | 2.08 (1.47) | $F_{(2.389)} =$ 1.654 | .193 | .008 | .348 | |
| From the institution | 5.98 (3.79) | 7.66 (3.72) | 7.26 (3.72) | $F_{(2.385)} =$ 7.162 | .001 | .036 | .932 | a<b=c |
| M= Mean, SD= standard deviation, F: Snedecor's F distribution, df: degrees of freedom, p: significance level, η²: effect size, P/obs: observed power, Bonferroni contrasts: posteriori comparisons. | | | | | | | | |

*Figure 5. Difficulties for transfer.*

## 4. Discussion and Conclusion

The assessment of transfer and impact of teacher learning leads to the need to check the extent in which knowledge, skills and attitudes acquired during training are reflected in teaching performance. However, in order to carry out such an assessment, it is important to have prior information on the initial situation to verify effective and regular changes that the training has provoked and to verify how the desired change occurs. It is also important to detect factors (personal, environmental or methodological) that facilitate or hinder transfer.

If we analyse the evaluation systems used by training services in different universities, we observe that all of them assess teachers' acquired knowledge and satisfaction with the courses. Yet, it is much less frequent to assess transfer (Pagés, 2014; Rent-Davis, 2013), and the impact of training is rarely evaluated (Tejada-Fernández & Fernández-Lafuente, 2007; Trigwell, et al., 2011). Monitoring the difficulties teachers face when they transfer knowledge acquired in training is not common.

Data from this study partly fill this gap and contribute to completing the existing bibliography on the overall monitoring of training activities, with the aim of adapting to recommendations from the EU high-level group to improve higher education and accreditation processes. (European Commission, 2013).

In this paper we have basically gathered the perception and assessment of one part of the process—the teachers—as privileged informants of the changes introduced to their teaching, related to the training received. We have collected their insight on factors influencing the transfer of knowledge and different elements that hinder or facilitate its application (trainers, teaching staff, students, institution), since these can affect the final results when evaluating the extent of transfer to the workplace of university teachers.

As shown, permanent and non-permanent teaching staff report a beneficial effect regarding the acquisition of competencies. The more courses teachers take, the greater their capacity to introduce changes in their teaching performance, linked to acquired competencies. Likewise, increasing the number of training courses increases the impact on students' academic performance, motivation and class participation.

A notable aspect is that there were significant differences between the number of courses taken and the institutional barriers encountered when teachers attempt to transfer acquired knowledge. Teachers who have taken more courses perceive more barriers.

This paper highlights several noteworthy points: 1) the number of teachers who responded to the questionnaire is high and representative of UB teachers who take ICE training courses; 2) satisfaction with training, as indicated in the results section, is very high; 3) data provided by teachers regarding: the usefulness of the training for the acquisition of teaching competencies; the impact perceived in their students; and the aspects that favour or hinder training. These data are essential to ensure the effectiveness of future training programmes.

Finally, the data analysed in our study come from a single information source: the teachers who received training. This is a limitation that is frequently observed in the few universities that evaluate the impact of training. Data on teachers' perceptions, while necessary in the quality evaluation system, are very subjective and are not enough to determine if the training objectives proposed by the institution have been met.

In future studies, it will be necessary to extend the analysis by including students' contributions on teaching performance. Data contributed by teachers and students must be triangulated with the analysis of academic performance and with changes perceived by the institution (department, faculty). This will enable us to make a full assessment of the training.

Our last objective is that the application of the IQAS of the University of Barcelona's ICE training programmes, in all dimensions, leads to the accreditation of our training programmes and, as a result, to the accreditation of the teachers who have taken training courses.

## 5. References

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