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Flipped learning and good teaching practices in secondary education

Flipped learning y buenas prácticas docentes en educación secundaria

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ABSTRACT

Flipped learning is a didactic method that requires the teacher to have a series of competences for its application. The aim of this research is to analyse the abilities of Spanish teachers of Compulsory Secondary Education (CSE) to develop good practices in flipped learning and to discover the factors which influence the development of good practices in these teachers. The research method is based on a quantitative methodology with a descriptive and correlational design. A total of 1,743 teachers in Spain participated in the study. The instrument used was the Flipped Classroom Teacher Scale (FCTS) questionnaire. The results show that 758 teachers, less than half the teachers surveyed, show competences to adequately develop a methodology based on flipped learning, where age, use of information and communication technologies (ICTs) in education, time spent using them in the personal sphere, number of devices and teaching experience have an influence on the application of the method. The conclusion reached is that there is a linear relationship between institutional support, technological self-efficacy, teaching beliefs and teaching strategies for the development of good practices in flipped learning in the teachers analysed, so these factors are postulated as conditioning factors.

RESUMEN

El flipped learning se considera un método didáctico en el que el docente requiere de una serie de competencias para su aplicación. El objetivo de esta investigación es analizar las capacidades para desarrollar buenas prácticas sobre flipped learning en docentes españoles de Educación Secundaria Obligatoria (ESO) y descubrir los factores que influyen en el desarrollo de buenas prácticas en dichos docentes. El método de investigación se fundamenta en una metodología cuantitativa, con un diseño de tipo descriptivo y correlacional. En el estudio participaron 1.743 docentes del territorio español. El instrumento usado es el cuestionario Flipped Classroom Teacher Scale (FCTS). Los resultados muestran que menos de la mitad de los docentes encuestados revelan competencias para desarrollar de forma adecuada una metodología fundamentada en el flipped learning, concretamente 758 docentes, donde la edad, el uso de las tecnologías de la información y comunicación (TIC) en el ámbito educativo, el tiempo de uso de las mismas en el ámbito personal, el número de dispositivos y la experiencia docente influyen en la aplicación del método. Se concluye que existe una relación lineal entre el apoyo institucional, la autoeficacia tecnológica, las creencias docentes y las estrategias de enseñanza para el desarrollo de buenas prácticas con flipped learning en el profesorado analizado, por lo que se postulan como factores condicionantes.

KEYWORDS | PALABRAS CLAVE

Flipped learning, ICT, teaching innovation, teaching methods, educational research, quantitative analysis.
Flipped learning, TIC, innovación docente, métodos de enseñanza, investigación educativa, análisis cuantitativo.

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1. Introduction and state of the question

The progression of the 21st century has brought about momentous changes in all social levels, caused by access to information (López & Bernal, 2019) and the impact of COVID-19 (Tang et al., 2020). These changes have had a direct impact on the education sector (Jurado et al., 2020), leading to an evolution in training processes for the integration of information and communication technologies (ICTs) (Starkey, 2020). They have allowed teachers to be more flexible in learning, while providing the opportunity to try new pedagogical approaches (Sargent & Casey, 2020). Accordingly, the educational administration and university sectors have strongly committed to the inclusion of ICTs in educational centres as a complement to innovative learning practices (Cabero et al., 2019, Fernández et al., 2018). Such educational innovation based on technology requires the active involvement of the student for successful learning processes (Jovanovi et al., 2017), as well as teaching staff adopting new roles and professional competences (Zheng et al., 2020).

A methodological approach that has taken centre stage in existing educational processes is flipped learning (Zainuddin et al., 2019). This educational modality of a mixed (Lee et al., 2017) and ubiquitous (Díez-Gutiérrez & Díaz-Nafría, 2018) nature has attracted attention in the educational community for its pedagogical effectiveness and potential by moving away from more traditional academist formulas (He et al., 2016), standing as an adaptation and therefore an evolution of conservative practice (Karabulut-Ilgu et al., 2018). Thus, flipped learning is defined as a pedagogical approach where the traditional classroom roles are reversed (Bergmann & Sams, 2012). This way, the student begins their learning outside the traditional classroom, and continues, reinforces and complements learning in their usual school lessons (Long et al., 2016), encouraging a practical learning supported by technology (Froehlich, 2018).

The effectiveness of flipped learning in relation to traditional learning styles, which do not make use of technology, has been reflected in the scientific literature, with students showing an active attitude before, during and after class, as well as a teaching role which guides the educational process (Santiago & Bergmann, 2018).

Moreover, flipped learning results in high levels of student motivation (Hwang et al., 2020); better use of classroom time (El-Miedany, 2019) so that the students construct their own knowledge in interrelation with a group of equals (MacLeod et al., 2017); a high degree of commitment and willingness to perform metacognitive exercises which involve higher level skills (Cabero & Llorente, 2015); greater student participation in the ordinary classroom due to the high degree of flexibility which online materials provide; as well as encouraging collaborative work between students both inside and outside the traditional classroom (Touron & Santiago, 2015). In addition, research carried out by Thai et al. (2017) confirmed that motivation and performance in students in a flipped learning approach are higher than in other kinds of pedagogical approaches with similar technological characteristics.

For the implementation of this flipped classroom methodology, the study developed by Chou et al. (2019) establishes four fundamental dimensions for preparing and developing the flipped learning pedagogical model. The first refers to the need for institutional support, which Joo et al. (2011) identified as support from superiors, support from colleagues and a positive organisational atmosphere. For the implementation of flipped classrooms, it is necessary for supervisors to value the work of teachers who incorporate technology in their learning practice. In addition, this support should be reciprocated by their colleagues, helping with its design and implementation (Joo et al., 2011). Similarly, teachers need support, including suitable training, tools, guidelines and both online and classroom components for teacher development (Hamdan et al., 2013).

The second dimension refers to technological self-efficacy, understood as "the individual's beliefs regarding their personal abilities to organise and undertake the actions required to produce the expected results" (Bandura, 1997: 3). From this perspective, previous studies have identified technological self-efficacy as a factor with a significant influence on teachers' decisions to integrate technology in their classrooms (Khan et al., 2018; Shaw et al., 2018).

Teachers' beliefs constitute the third dimension which should be considered in the implementation of the flipped learning methodology. This dimension touches upon teachers' beliefs about the epistemological nature of the subject area they teach and the syllabus (Ertmer, 2005). Teachers should focus the teaching

and learning process on the student body and determine the optimum procedures in order to attain meaningful learning. From this perspective, it has been shown that teachers' beliefs affect the practical implementation of the flipped classroom, the relationships between learners and teachers, and student participation (Demanet & Van-Houtte, 2012).

The fourth and final dimension is related to the teaching strategies used by teachers in their classes. The flipped classroom focuses on the active participation of learners through collaboration, problem-solving in the classroom and the implementation of case studies, leaving passive activities such as reading textbooks, watching presentations and videos, and active listening to recordings for home (Thai et al., 2017). These flipped classroom strategies improve learning performance in students as demonstrated by Leo and Puzio (2016), although their implementation by teaching staff in the classroom is not easy to learn or carry out. For this reason, teachers should be able to understand different teaching strategies as a crucial element for their successful application. According to Ekici (2021), teachers should carry out a careful selection of teaching methods and thorough design of strategies for active learning, so they can be combined with traditional teaching instead of spending considerable time and resources in developing online videos and other materials intended to be used outside the classroom.

There is no doubt that several socio-educational variables such as the teaching staff´s gender, age, teaching experience, training and understanding of ICTs influence the successful implementation of active methodologies such as flipped learning. A review of the scientific literature shows few studies in this regard. Accordingly, only studies addressing teacher training in this methodology at the university level, as part of a teaching innovation project (Ojando et al., 2020) or the teaching Master´s training of future teachers (Cid et al., 2018) have been found, where the necessity of space and time for methodological innovation is considered. This requires time, patience, and support of the teaching staff, among other factors (Ojando et al., 2020).

1.1. Objectives and research questions

On the methodological spectrum, flipped learning is increasingly prevalent in learning and teaching processes, being used for different subjects and educational levels (Mengual-Andrés et al., 2020). Accordingly, the scientific literature brings together exploratory studies on the efficacy of this methodology in diverse contexts (Lin et al., 2019). However, little research has been found addressing flipped learning from an evaluative perspective of the skills for good staff teaching practices to materialise. Therefore, the objectives of this study are a) to analyse the ability of Spanish teachers in Compulsory Secondary Education (CSE) to carry out good practice for flipped learning and b) to discover which factors influence the development of good practice in these teachers.

Based on these objectives, the following research questions (RQ) were formulated:

- RQ_1: What is the proportion of teachers trained for the development of good practices in flipped learning at the CSE educational level?
- RQ_2: What are the socio-demographic factors which determine the development of good practices in flipped learning in CSE teaching staff?
- RQ_3: What influence is there between interactions of the conditioning factors in the development of good teaching practices for flipped learning in CSE?

2. Material and methods

This study followed a quantitative research methodology, based on a descriptive and correlational design (Hernández et al., 2014).

2.1. Participants

A total of 1,743 CSE teachers in Spain participated in the study. Participants were selected by convenience sampling from all the educational centres in Spain, consulted at the database of the Ministry of Education and Vocational Training (https://bit.ly/2Zs9ZmX). Integrated in public, private and state-subsidised private centres, 43.3% of the total participants were men and the rest women. Teachers were of different ages (20-35 years old=31.5%; 36-45 years old=45%; 51-65 years old=18.9%; older than 65 years old=4.5%). More than half the participants use ICTs (66.6%) and consider flipped learning to be

a suitable methodology (74.8%). Regarding the number of electronic devices, they own, 1.2% have no devices, 33% have one to four devices, 48.8% have between five and ten devices and 17% own more than ten devices.

Concerning ICT training, 12.9% carry out at least one training course a year, 48% between two or five courses and 39.1% state that they carry out more than five training courses. With regard to use of technology, 40.8% allocate between one and two hours, 32% between three and four hours, 15.7% between five and six hours and 11.5% of teachers more than six hours. Regarding teaching experience, 11.6% of subjects have between one and ten years´experience, 33.2% have eleven to twenty years, 20.3% twenty-one to thirty years and 34.9% have more than thirty years´experience.

2.2. Instrument

The data was collected through the adaptation of the Flipped Classroom Teacher Scale (FCTS) questionnaire (Chou et al., 2019), an instrument designed specifically to determine good practices in CSE teaching staff for the development of flipped training activities. In its original version, the questionnaire consists of 19 items structured in the following dimensions: institutional support (IS-4 items); technological self-efficacy (TSE-6 items); teachers' beliefs (TB-5 items); teaching strategies (TS-4 items). The responses are configured on a five-point Likert scale, with 1 being the lowest rating and 5 the highest.

The FCTS has high reliability (Cronbach´s alpha=0.904). The Kaiser-Meyer-Olkin test was relevant (KMO=0.86) and Bartlett´s test of sphericity delivered suitable figures ($\chi 2=3063.71$; $p<0.001$). Thus, it is an empirically validated instrument through an exploratory and subsequent confirmatory factorial analysis. Likewise, for its adaptation to the Spanish context, it was translated and validated following the same statistical procedures used by the authors.

The tests carried out show a valid and reliable tool for its application to the Spanish population (KMO=0.83; Bartlett=$\chi 2=2951.37$; $p<0.001$; Cronbach´s alpha=0.85). In the adaptation of the questionnaire, 10 socio-demographic variables were added (gender, age, use of ICTs, appropriate use of flipped learning, number of digital devices, ICT training, technology usage time, teaching experience, educational centre and location of the centre). The questionnaire applied had a total of 29 items.

2.3. Procedure and data analysis

The research started at the beginning of the 2019/2020 academic year. A convenience sampling method was applied to select the educational centres from the 17 autonomous communities and the two autonomous cities which make up the Spanish state. The management teams at the educational centres were contacted. The research objectives were explained to those who showed interest and the necessary permission was obtained to carry out the research activity. The researchers distributed the instrument digitally through the Google Forms application. The selection of the instrument was based on being able to use a validated tool both in the Spanish context and in the educational stage under study. Teacher participation was therefore voluntary. Participants were aware of the research objectives and informed consent was obtained from all participants.

The statistical study was performed using the twenty-fourth version of the IBM SPSS and IBM SPSS Amos programmes. Average scores and standard deviations of the sample according to each of the socio-demographic factors were established. Similarly, possibly significant differences between factors were analysed with the *t*-test calculation for independent samples and the ANOVA test.

Two path analyses were also performed in order to determine which factors studied influence the development of good teaching practice, as well as the type of influence produced between dimensions. Prior to its implementation, the multivariate normality hypothesis was tested based on the Mardia coefficient (Mardia, 1970). Similarly, different goodness of fit indices was collected in order to confirm the suitability of the two models (Byrne, 2013).

3. Results

43.48% of teachers (n=758) were quantified as showing optimal skills for implementing the flipped learning method, so just under half the total teachers studied show a suitable profile for its development. For this, scores higher than 71 out of a total of 95 were considered. In Table 1, the mean obtained by

teachers in each of the socio-demographic variables are shown, as well as determining whether there are significant differences in each variable.

Table 1. Descriptive statistics and differences between groups

Variables	n	M	SD	p
Gender				
Male	335	80.80	6.81	0.633
Female	423	80.57	6.28	
Age				
20-35	235	81.17	6.75	0.000
36-50	319	80.07	6.34	
51-65	125	78.04	5.66	
Older than 65	79	85.72	4.69	
Use of ICTs				
Yes	493	81.04	6.46	0.030
No	265	79.97	6.59	
The use of flipped learning is suitable				
Yes	603	80.81	6.51	0.245
No	105	80.12	6.53	
Number of devices				
0	9	79.11	5.39	0.042
1-4	256	81.57	6.45	
5-10	367	80.36	6.66	
+10	126	79.84	6.18	
ICT training				
0-1 courses	291	80.51	3.61	0.558
2-5 courses	376	80.92	6.32	
More than 5 courses	91	80.39	6.4	
Technology use time				
1-2 hours	378	81.78	6.73	0.000
3-4 hours	229	79.78	6.07	
5-6 hours	98	79.22	6.41	
6+ hours	53	79.24	5.80	
Teaching experience				
1-10	102	83.11	7.24	0.000
11-20	285	80.45	6.37	
21-30	153	79.56	5.89	
+31	218	80.59	6.54	

Note. n=sample; M=mean; SD=standard deviation; p=p value.

Regarding gender, men (M=80.8) show a slightly higher mean than women (M=80.57), although this difference does not show significant differences (p=0.633). With respect to age groups, teachers older than 65 years old (M=85.72%) attained higher mean than the rest of the established age groups. Concerning training for developing good practice in flipped learning, there is no upward relationship with respect to the mean, since the group of teachers with the next highest mean corresponds to ages between 20 and 35 years old (M=81.17). In this case, there were significant differences between age groups (p=0.000). In the use of ICTs, a higher mean was observed in teachers who use them (M=81.04) than teachers who do not use them in training processes (M=79.97), with there being significant differences in this respect (p=0.030). Regarding the consideration of whether the use of flipped learning is suitable, a higher mean was observed in those who considered them to be so (M=80.81) than those who did not consider them suitable (M=80.12), despite no significant differences between them being confirmed (p=0.245). Regarding the number of devices, those who had between one and four (M=81.57) show a higher mean than the rest of the groups established. There is no increase or decrease regarding the number of devices, but a significant relationship was observed (p=0.042). Regarding training on the use of ICTs in teaching and learning processes, teachers who carry out between two and five courses a year (M=80.92) show a higher mean than the rest, with there being no significant differences (p=0.558). In terms of technological devices usage time, the highest mean was observed in teachers who used the devices for between one and two hours (M=81.78), with significant differences being observed between the different groups (p=0.000), in addition to an inversely proportional relationship between the mean value and time using the devices. Finally, in relation to teaching experience, the highest mean corresponds to the sample group between one and ten years of professional experience (M=83.11), followed by the group with more than 31 years of experience (M=80.59) and with statistically significant differences being observed

(p=0.000). The various goodness indices of the statistical data have been analysed in order to be able to establish the various structural equation models (SEM) and to apply the two path analysis models. Firstly, Mardia´s coefficient for model 1 (Mardia=1.555) and model 2 (Mardia=3.741) were analysed. In both cases, the values obtained were lower than 288, so they were considered suitable values as established by Bollen (1989). The fit indices, required to determine whether the model applied is suitable or not, were then analysed. In this case, as shown in Table 2, the values fulfilled all the assumptions established by Byrne (2013).

Table 2. Goodness and fit indices of the analysis models

Fit index	Value obtained		Expected value
	Path 1	Path 2	
χ^2	82.16	113.68	
df	24	51	
χ^2/df	2.93	2.22	≤3
GFI	0.918	0.921	0.90–1
AGFI	0.903	0.909	0.90–1
RMR	0.088	0.072	The closest to 0
RMSEA	0.031	0.47	<0.05
CFI	1	1	0.90–1
NFI	0.924	0.951	0.90–1
NNFI	0.913	0.928	0.90–1

Note. GFI=Goodness of Fit Index; AGFI=Adjusted Goodness of Fit Index; RMR=Root Mean Square Residual Index; RMSEA=Root Mean Square Error of Approximation; CFI=Comparative Fit Index; NFI=Normed Fit Index; NNFI=Non-normed Fit Index.

In the first path analysis applied (Table 3), all the socio-demographic variables of the study were taken into consideration, which are directly related to good teaching practice in the use of the flipped learning method. The results obtained show that only ICT usage time (from a personal perspective) shows a significant relation with the development of good practice using the flipped approach. Significant relationships were not observed in the rest of the established links.

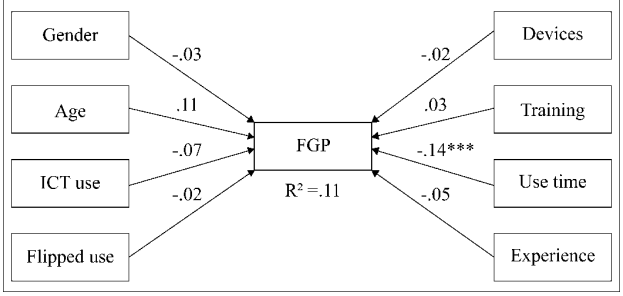
Table 3. Path analysis 1 model parameters

Association between variables	RW	SE	CR	p	SRW
FGP ← Gender	-0.025	0.027	-0.943	0.346	-0.035
FGP ← Age	0.049	0.019	2.617	0.009	0.112
FGP ← ICT_Educational_Use	-0.057	0.031	-1.824	0.068	-0.072
FGP ← Flipped_Use	-0.019	0.035	-0.560	0.575	-0.021
FGP ← ICT_Devices	-0.011	0.024	-0.480	0.631	-0.020
FGP ← ICT_Training	0.016	0.020	0.768	0.442	0.029
FGP ← ICT_Usage_time	-0.060	0.017	-3.461	***	-0.141
FGP ← Teaching experience	-0.017	0.014	-1.220	0.222	-0.047

Note. FGP=Flipped Good Practice; RW=regression weight; SE=standard error; CR=critical ratio; SRW=standardised regression weights; ***p<0.001=significant relation.

The SEM of the path 1 model reflects in graphical form the relationship and connection established between the different variables of the socio-demographic dimension with good practice in the use of flipped learning. In this case, the model placed good teaching practice on the central axis, showing the influence exerted on this by the different socio-demographic variables. Likewise, it is shown how ICT usage time in the personal sphere shows a significant relationship with good practice in flipped learning. In particular, the different socio-demographic variables explain 11% of the established model (Figure 1).

Figure 1. SEM of Path analysis model 1



Note. ***Significant in p>0.001.

The dimensions that make up the FCTS questionnaire and the socio-demographic dimensions were analysed in the SEM of the Path analysis model 2. Of the diverse connections established, the only model which showed suitable goodness index values is that shown in Table 4 and in Figure 2. In this case, the variables pertaining to gender, devices, training and time of use were related with IS and TSE. In turn, these two dimensions together with the variables of use of flipped learning and use of ICTs were related to TB. Finally, this dimension, in addition to the age and experience variables, was related to TS. Of all the established connections, only two proved to be very significant. These were TSE with TB and TB with TS. There is also a significant relationship between gender and IS, time of use and TSE, IS and IB, and age and TS. All these relations influence or show a direct influence on the development of good practice in the use of flipped learning in learning and teaching processes.

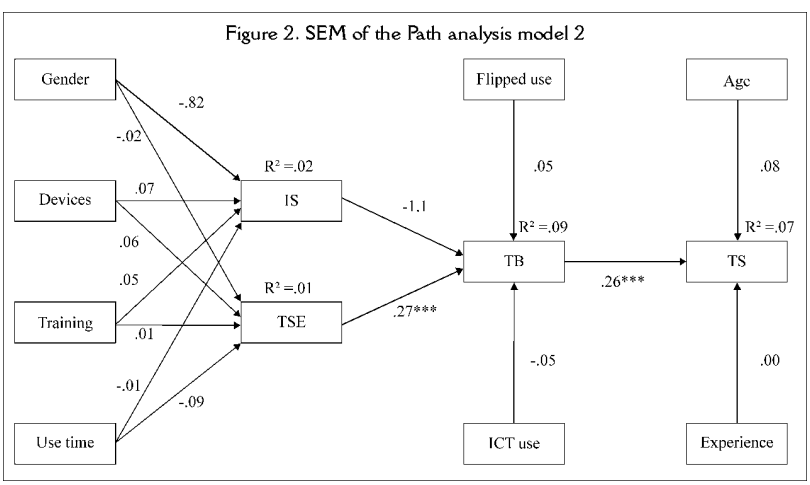
Table 4. Path analysis 2 model parameters

Association between variables	RW	SE	CR	p	SRW
IS ← Gender	-0.140	0.066	-2.140	0.032	-0.083
TSE ← Gender	-0.014	0.032	-0.430	0.667	-0.017
IS ← ICT_Devices	0.095	0.056	1.716	0.086	0.072
TSE ← IC_Devices	0.028	0.027	1.014	0.310	0.043
IS ← ICT_Training	0.070	0.050	1.403	0.161	0.055
TSE ← ICT_Training	0.009	0.025	0.378	0.706	0.015
IS ← ICT_Usage_Time	-0.010	0.042	-0.235	0.815	-0.010
TSE ← ICT_Usage_time	-0.043	0.021	-2.060	0.039	-0.087
TB ← IS	-0.072	0.024	-3.073	0.002	-0.112
TB ← TSE	0.361	0.049	7.323	***	0.274
TB ← Flipped_Use	0.067	0.050	1.347	0.178	0.049
TB ← ICT_Educational_Use	-0.060	0.044	-1.358	0.174	-0.050
TS ← TB	0.270	0.038	7.108	***	0.258
TS ← Age	0.057	0.027	2.088	0.037	0.083
TS ← Teaching_experience	0.002	0.021	0.085	0.932	0.003

Note. RW=regression weight; SE=standard error; CR=critical ratio; SRW=standardised regression weights; ***p<0.001=significant relation.

The SEM of the path analysis model 2 (Figure 2) graphically shows the IS, TSE, TB and TS dimensions as its main construct. In this main construct, the various socio-demographic variables which have an influence on the set of these dimensions are associated. In the same way, the direction of the relations is shown. This model reflects the factors which may have an influence on the development of good practice with flipped learning. In this case, the percentage of variation for each construct, set by the coefficient of determination, was 2% for IS, 1% for TSE, 9% for TB and 7% for TS. In this model it can be observed how TSE has a significant influence on TB, and TB on TS.

Figure 2. SEM of the Path analysis model 2



4. Discussion

The flipped learning method is considered to be an active teaching method, since it promotes active pedagogical activity in students, giving the teacher the role of guide in the educational process (Zainuddin et al., 2019). This method turns the classroom around, with the more theoretical learning being acquired

outside the classroom due to the use of various technological resources, aiming to consolidate them in the classroom with practical activities (Santiago & Bergmann, 2018). Flipped learning leads to improvements in motivation, interaction among students, commitment levels, academic performance and collaborative learning, among many other factors (Cabrero & Llorente, 2015; El-Miedany, 2019).

Thus, it is necessary for the teacher assumes a series of skills which allow them to successfully develop this pedagogical method in learning spaces. In this case, institutional support, technological self-efficacy, teacher beliefs and teaching strategies should be strengthened (Ertmer, 2005; Joo et al., 2011; Khan et al., 2018; Leo & Puzio, 2016).

This study states that only 43.48% of teachers are prepared to undertake –with a minimum of success– a methodology based on flipped learning, in agreement with that established by Cid et al. (2018). Thus, the need to train CSE teachers in the use of flipped learning is demonstrated. This coincides with that established by Ojando et al. (2020), where teachers require time, patience and orientation for this training, regardless of the educational level they teach.

After analysing the differences between groups of socio-educational variables, it has been shown that there are significant differences in age, use of ICTs, number of devices, ICT usage time and teaching experience, regarding good teaching practice in the use of flipped learning. This demonstrates that these variables have an influence on training for developing flipped learning in teaching and learning processes. Regarding the age of teachers, it is noteworthy that the range with the highest rating was those older than 65, which may be determined by the choice of an opinion-based and nonprobablistic study sample. Another noteworthy aspect is the evaluation of the use of ICTs in pedagogical processes, where the fact of normally including them in teaching practice has a direct influence on the application of the aforementioned teaching method. The same happens with the number of devices, where having between one and four shows a direct influence on the use of the flipped learning method. ICT usage time is another aspect which has an influence on training in order to apply the didactic method, especially among teachers who use ICTs weekly for one or two hours. Finally, the last factor analysed which may have an influence on the development of the use of flipped learning is teaching experience, especially in teaching staff who have between one and ten years´experience. Accordingly, all the elements noted reveal significant differences in the training of teachers in order to develop good practice in flipped learning. In contrast, no significant relationship was observed according to gender, valuations on the adequate use of flipped learning or ICT training.

Taking into account the results obtained in path analysis 1, a direct, significant influence between ICT usage time and age on training CSE teachers in order to develop good practice with flipped learning is highlighted. Thus, the amount of time dedicated to ICTs has an influence on this training, proving the need for optimal use of resources, as shown by Ekici (2021).

More specifically, and considering the diverse dimensions studied which make up the instrument used, it has been demonstrated that a significant relationship exists between TSE and TB and TB and TS. There is also a significant relationship between gender and IS, time of use and TSE, IS and TB and age and TS. This shows that the dimensions of the instrument influence each other in the development of good practice in flipped learning. In addition, it is worth highlighting how gender, time of use and age may be factors that specifically affect each of the dimensions in the development of good practice with the flipped approach.

This study is a supporting model for the didactic application of flipped learning as a teaching method. Broadly speaking, the results shown have both theoretical and practical implications. While the knowledge society favours this teaching method, the skills required should be considered in order to promote good practice. Therefore, if we analyse the theoretical level, it is easily observed how this research demonstrates the increase in scientific and educational literature on flipped learning. However, the results shown also indicate new trends which are created for the application of this teaching method, and the consequences this involves. Evidently, this allows the underlying profile of the different studies on the state of this issue to be understood.

Nevertheless, the results obtained contribute to the development and subsequent application of an efficient model which may act as a guide for future research studies, as well as for other professional sectors interested in the application of technology in the educational sector. There is no doubt that flipped

learning is a focus of particular attention in didactic processes and may have great benefits for teaching staff at different educational levels. To date, the research carried out shows the pedagogical prospect this teaching method offers in its area of application in education and specifically in pedagogy. Thus, this study fulfils a double function, since it contributes to the development of future research and to its application in different educational contexts.

Therefore, this research does not only provide a set of theoretical implications, but at a practical level it also encourages the participation of different agents who play a part in educational processes: advisors, legislators, researchers and councillors, as well as teaching staff themselves. The key consideration lies in the integration of educational technology as a teaching method and support tool, taking advantage of the numerous possibilities the creation and consolidation of new inputs may generate.

Lastly, it is essential to offer teaching staff the necessary training so they can make educational technology the best teaching support. This will encourage the development of the required educational and training activities which will contribute to improving didactic processes. Accordingly, this research also helps other educational institutions to develop training processes in accordance with this knowledge and information society.

5. Conclusions

In conclusion, 43.48% of CSE teachers have appropriate training to develop good teaching practice regarding the use of flipped learning in teaching and learning processes. In addition, several factors are seen to influence the development of good practice in staff, such as age, the use of ICTs in the education sector, the number of available devices, ICT usage time and teaching experience. Likewise, a linear relationship was observed between IS, TSE, TB and TS for the development of good practice in flipped learning in CSE teaching staff, which is why they are considered to be conditioning factors for its didactic application.

The prospect of this research focuses on showing the scientific community more data on the application of the flipped learning method in teachers who teach in CSE. In addition, it aims to present the required skills to the educational community and by extension the competent authorities in the education sector, with a view to developing training programmes geared towards the specific training of teaching staff.

Among the limitations of the study are the fact of having applied a nonprobablistic study sample method, which is why the results obtained here should be used with caution, above all if the intention is to generalise them to other contexts. Another limitation was the participation of teaching staff in the research, as it was difficult for the members of this study to manage to get the number of subjects which finally make up this study sample. In addition, in order to be able to access the sample, constant communication with the educational centres and administration was necessary to obtain permissions and collect data. The aim of future research would be to analyse the training of teaching staff at other educational levels, such as Primary Education, Vocational Training or Higher Education, regarding the development and application of the flipped learning method in learning and teaching processes. Likewise, the intention would be to include a qualitative analysis approach in future studies in order to complement the findings presented here.

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