

Socio-familial and technology use profiles of compulsory education students with a high level of digital competence in the area of communication

Perfil sociofamiliar y de uso de tecnología de estudiantes de Educación Obligatoria con nivel alto de competencia digital en el área de comunicación

Perfil sociofamiliar e uso de tecnologia de alunos do ensino obrigatório com alto nível de competência digital na área de comunicação

2

ARTICLE



Marcos Cabezas González

University of Salamanca (Spain)

Professor in the Department of Didactics, Organization and Research Methods of the Faculty of Education of the University of Salamanca

mcabezasgo@usal.es
orcid.org/0000-0002-3743-5839

Sonia Casillas-Martín

University of Salamanca (Spain)

Professor in the Department of Didactics, Organization and Research Methods of the Faculty of Education of the University of Salamanca

scasillasma@usal.es
orcid.org/0000-0001-5304-534X

Ana García-Valcárcel Muñoz-Repiso

University of Salamanca (Spain)

Professor in the Department of Didactics, Organization and Research Methods of the Faculty of Education of the University of Salamanca

anagv@usal.es
orcid.org/0000-0003-0463-0192

RECEIVED: February 11, 2021 / ACCEPTED: May 6, 2021

Abstract

This study aims to evaluate the digital competence in the communication area of Spanish compulsory education students and identify the socio-familial and technology use profiles of those who obtained the best results. The methodology used was quantitative with a sample of 807 students. The instruments used were an objective evaluation test and a Likert scale (ECODIES), based on the DigComp model. The study of the profiles of those with the best competence level in digital communication allowed us to conclude that socio-familial variables and the use of technology positively influence the development of this competence.

KEYWORDS

Digital competence, ICT, Competence assessment, Digital communication, Compulsory Education.

Resumen

Con este estudio se pretende evaluar la competencia digital, en el área de comunicación, de los estudiantes españoles de Educación Obligatoria e identificar el perfil sociofamiliar y de uso de tecnología de los que obtienen los mejores resultados. La metodología empleada fue cuantitativa y se trabajó con una muestra de 807 estudiantes. Los instrumentos utilizados fueron una prueba objetiva de evaluación y una escala Likert (ECODIES), basadas en el modelo DigComp. El estudio del perfil de aquellos

con mejor nivel competencial en comunicación digital permite concluir que las variables sociofamiliares y de uso de la tecnología influyen positivamente en el desarrollo de esta competencia.

PALABRAS CLAVE

Competencia digital, TIC, Evaluación de competencias, Comunicación digital, Educación Obligatoria.

Resumo

Este estudo tem como objetivo avaliar a competência digital, na área da comunicação, dos alunos espanhóis do ensino obrigatório e identificar o perfil sociofamiliar e do uso de tecnologia daqueles que obtêm os melhores resultados. A metodologia utilizada foi quantitativa e trabalhamos com uma amostra de 807 alunos. Os instrumentos utilizados foram um teste de avaliação objetivo e uma escala Likert (ECODIES), baseada no modelo DigComp. O estudo do perfil daqueles com melhor nível de competência em comunicação digital permite concluir que as variáveis sociofamiliares e do uso da tecnologia influenciam positivamente no desenvolvimento desta competência.

PALAVRAS-CHAVE

Competência digital, TIC, Avaliação de competências, Comunicação digital, Educação obrigatória.

1. INTRODUCTION

The Knowledge Society, a concept in which the various transformations that have occurred in today's modern society are justified (Castells, 2004), is characterized by being complex and changing (Farré Riera, 2020) and is the result of profound social, economic and cultural changes

fostered by the rapid development and growth of Information and Communication Technologies (ICT) (Casillas-Martín & Cabezas-González, 2019; Sánchez-Caballé et al., 2020).

Although technology is integrated into the lives of students (Valverde Crespo et al., 2018), they need to acquire knowledge, skills and develop

attitudes that allow them to adapt to a new type of individual-information and individual-knowledge relationships (Casillas- Martín et al., 2020). For this, digital competence becomes one of the most demanded and important because it is key in the treatment of information and academic performance (Pagani et al., 2016; Siddiq et al., 2016). In this sense, European policies promote it as one of the primordial capacities of this century, in addition to considering ICTs as fundamental means to favor learning opportunities and social cohesion (Pérez Martínez & Hernández-Gil, 2020).

Digital competence has become a focus of interest in the educational policies of different countries (Cabero-Almenara & Palacios Rodríguez, 2020). In Europe, it is considered one of the eight key competences for lifelong learning and is defined as:

The safe, critical and responsible use of digital technologies for learning, at work and for participation in society, as well as interaction with them. Includes information and data literacy, communication, media literacy, digital content creation (including programming), security (including digital well-being and cybersecurity-related competencies), intellectual property issues, problem solving and critical thinking. (European Union, 2018, p.9)

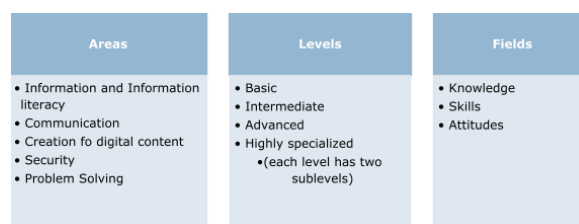
There are different standards, understood as theoretical reference constructs that are useful to carry out actions in a given environment (UNESCO, 2008), for the acquisition, development and evaluation of this competence. At the European level, the DigComp project, aimed at the identification and validation at European level of the key components of digital competence, has become a benchmark for the deve-

lopment of the European framework for digital competence.

In 2013, the European Commission published the Framework for Developing and Understanding Digital Competence in Europe (DigComp 1.0) (Ferrari, 2013). This model structured the dimensions of digital competence in five areas (information, communication, content creation, security, problem solving), three levels (basic, intermediate, advanced) and three fields (knowledge, skills and attitudes). In 2016, it was updated by the European Digital Competence Framework for Citizens (DigComp 2.0) (Vuorikari et al., 2016). The same structure of the previous model was maintained but the denominations, concepts and descriptors of digital competence were updated. In 2017, the latest update occurred and DigComp 2.1 emerged (Carretero et al., 2017). The main change occurred in the difficulty levels that went from three to eight, following Bloom's taxonomy and inspired by the structure and vocabulary of the European Qualifications Framework (EQF, for its acronym in English) (Figure 1).

Figure 1

Digital competence structure of DigComp 2.1.



Source: Carretero et al., 2017.

In the work presented in this article, the DigComp 1.0 Framework (Ferrari, 2013) was followed, as it is the original model and is more suited to the object of study of this research. The study focused on the competence area called communication, which encompasses a total of six digital competences (Figure 2) related to: communicating in digital environments, sharing resources through online tools, linking with others and collaborating through digital tools, interact and participate in communities and networks, and intercultural awareness. This area is transversal in nature and can be applied to any type of activity carried out in digital media.

Figure 2

Digital competences in the communication area of DigComp 1.0.



Source: Ferrari, 2013.

This article presents a work carried out within the framework of an R&D research project financed by the Ministry of Economy and Competitiveness within the State Program for the Promotion of Scientific and Technical Research of Excellence of the government of Spain, whose purpose is the to evaluate the digital competence of Compulsory Education students and analyze the relationships and incidence established between their level of digital competence and some socio-familial characteristics (variables).

2. METHODOLOGY

A quantitative methodology was used with a descriptive and cross-sectional design.

2.1. OBJECTIVES

The objectives to be achieved are:

1. Determine the level of digital competence in the area of communication that Spanish Compulsory Education students (12 to 16 years old) have, considering their knowledge, skills and attitudes.
2. Identify the socio-familial profile and use of technology of those who obtain better results in the evaluation of this area of digital competence.

2.2. SAMPLE

The research was carried out in two provinces of the Autonomous Community of Castile and León (Spain). A type of stratified random sampling was used (Casal & Mateu, 2003), with a margin of error of +4% for a confidence level of 95%, which led to working with a sample of 807 students (668 from the last year of Primary Education and 139 from the first year of Compulsory Secondary Education) between 12 and 16 years old, from 18 educational centers (Table 1). From the gender point of view, there is a balanced sample (415 women and 392 men).

Table 1*Sample distribution*

Total sample	Year				Gender			
	Sixth grade		Seventh grade		Female		Male	
N	N	%	N	%	N	%	N	%
807	668	82.8	139	17.2	415	51.4	392	48.6

2.3 VARIABLES

The study variables are related, on the one hand, to digital competence:

- Interaction through technologies (C1). Valued through 3 items. The range of the variable is 0-3.
- Share information and content (C2). Valued through 3 items. The range of the variable is 0-3.
- Citizen participation online (C3). Valued through 3 items. The range of the variable is 0-3.
- Collaboration through digital channels (C4). Valued through 3 items. The range of the variable is 0-3.
- Netiquette (C5). Valued through 3 items. The range of the variable is 0-3.
- Digital Identity Management (C6). Valued through 3 items. The range of the variable is 0-3.
- Attitudes (AC). Valued with 6 items on a Likert-type attitudinal scale with responses from 1 to 5. For the analyzes, the score has been recoded, transforming it into a 4-point scale so that it can be compared with the dimensions of knowledge and ability.
- Total score for the communication area (PT). It has been calculated by adding the skills of

knowledge and ability (18 items) and attitudes (6 items).

On the other hand, there are variables related to the family and school context of the participants, as well as the number of devices in their homes and the use they make of them:

- Coexistence with classmates at the school.
- Structure of the family nucleus.
- Leisure preferences in their spare time.
- Reading books that are not for homework.
- Digital devices they have in their homes.
- Frequency of use of digital devices at home on weekdays and on weekends.
- Weekly frequency of activities with the digital devices they have at home.
- Frequency of use of digital devices (computer, tablet or mobile) to carry out school activities outside the educational center.

2.4 DATA COLLECTION INSTRUMENT

An item bank was designed for the communication area considering the indicator model to evaluate the digital competence of Basic Education students (INCODIES) previously designed and validated (García Valcárcel et al., 2020), in addition to the criteria for the elaboration of information collection instruments (McMillan & Schumacher, 2005). To assess knowledge and skills, an objective test was used with 18 questions that presented situations in which students had to make decisions by selecting a correct answer from four possible options. To assess attitudes, a 5-point Likert-type scale composed of 6 statements referring to the area of competence was selected. In order to collect information on the socio-familial context and

the use of technology, a questionnaire made up of 17 items was elaborated.

All the evaluation tests were validated by experts (10 members of the research team) and applied to a pilot sample of 288 compulsory education students. To verify the reliability of the competency assessment instrument and internal consistency, Cronbach's α statistic was used for all items (knowledge, skills and attitude), obtaining a score of 0.70, which is appropriate given the broad spectrum of competencies. With the results obtained, the definitive test was designed (can be consulted in García Valcárcel et al., 2019a) (Table 2).

Table 2

Structure of the digital competence assessment test in the area of communication

Area	Number of items per dimension			Number of items per dimension		
	Knowledge	Skill	Attitude	Basic	Intermediate	Advanced
A2. Communication	8	10	6	7	8	3

The test was applied through a website designed to facilitate the collection of information (it can be consulted at <https://www.ecodiv.es/>) and it had the permits of the authorities of the Educational Administration and of the Ethical Committee of the University of Salamanca at all times. All educational centers collaborated voluntarily and were in charge of obtaining the permits of the families and children. Also, they carried out the test during school hours, following the guidelines and protocols prepared by the researchers.

2.5 DATA ANALYSIS

For the analysis of the evaluation of the level of digital competence in the area of communication, the items were grouped into six competences (C1 to C6), created from the sum of the scores of the three items that measure it, in addition to the attitude scale and total score. The statistics of the mean, standard deviation, skewness and kurtosis were calculated.

For the identification of the socio-familial profile and the use of technology, the students who reached a high level in this area of competence were selected. For this, a cut-off score of 14 points was used on a scale of 18 points. If this scale is transformed to a 10-point scale, which is the most used in the student academic evaluation of Compulsory Education in Spain, 14 points correspond to a remarkable high. To identify this profile, basic descriptive statistics were calculated.

The SPSS v.25 program was used for data analysis.

3. RESULTS

The main results obtained are presented below, structured in two sections referring to the level of digital competence and the socio-familial profile and the use of digital devices.

3.1. LEVEL OF DIGITAL COMPETENCE IN THE COMMUNICATION AREA

The results of the mean, standard deviation, skewness and kurtosis of all the students that made up the sample are presented (Table 3). As the knowledge and skills items are dichotomous (correct 1/incorrect 0), the maximum score obtained in the average score of each item will be 1. Regarding the competences

(each one is measured with 3 items), the maximum score will be 3.

Table 3

Descriptive analysis of the test competences in the communication area

Competences in the area of communication	N	DT		Skewness	Kurtosis
C.1. Interaction through technologies	807	2.29	0.79	-0.32	-0.25
C.2. Share information and content	807	1.95	0.78	0.06	-0.40
C.3. Citizen participation online	807	2.09	0.95	-0.07	-0.91
C.4. Collaboration through digital channels	807	1.71	0.93	0.22	-0.83
C.5. Netiquette	807	2.59	0.96	-0.52	-0.72
C.6. Digital Identity Management	807	2.25	0.91	-0.21	-0.77
Total knowledge and skills (max. 18 points)	807	10.23	2.99	-0.35	-0.10
AC. Attitudes (max. 30 points)	807	26.02	4.32	-2.39	9.06

Note: The range of the average score in each competence is from 0 to 3

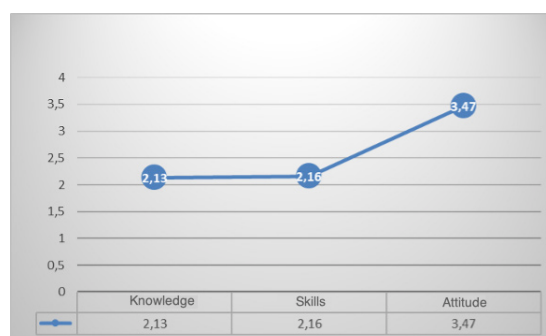
The total average score in the complete knowledge and skills test is 10.23 points out of 18, above the central point (9) of the scale. These students passed the approved in the area of communication. Average scores range from 1.71 (C4) to 2.59 (C5), which indicates that students have greater knowledge and skills, firstly about netiquette and secondly, about interaction through digital technology; followed by digital identity management, citizen participation online, information and content sharing. They show less knowledge and skills about collaboration through digital channels. Regarding kurtosis, all the competences have scores below 3 and, in all cases, negative, so they can be considered platykurtic distributions.

Regarding attitude (AC), the assessment is very positive in the area of communication (= 26.02; out of 30 points). This variable has a high skewness (>-1) and a kurtosis greater than 3 and positive, so it can be considered as leptokurtic (Table 3).

In order to be able to compare the three dimensions, the scores were converted to a 4-point scale. Thus, knowledge and skills are at a central point, both with very similar scores; while attitude presents a much higher score, with an average of 3.47 (Figure 3).

Figure 3

Average score for the dimensions of knowledge, skills and attitude



3.2. SOCIO-FAMILIAL PROFILE AND THE USE OF DIGITAL DEVICES OF STUDENTS WITH A HIGH LEVEL OF DIGITAL COMPETENCE IN THE COMMUNICATION AREA

The results presented below correspond to the 26 selected students who obtained the best results in the evaluation test and who constitute 3% of the total sample (Table 4).

Table 4*Students with the best level of competence by year and gender*

Total sample	Year				Gender			
	Sixth grade		Seventh grade		Female		Male	
	N	%	N	%	N	%	N	%
26	16	61.5	10	38.5	11	42.3	15	57.7

3.2.1. SOCIO-FAMILIAL PROFILE

Regarding coexistence with classmates at school, 22 (84.6%) consider that they have no problems relating to their classmates at school, although 4 (15.4%) state that they have felt, at some point, not having friends to play with at recess (Table 5).

Table 5*Coexistence with classmates at the school*

Total sample	Do you have friends to play at recess?							
	Never		Sometimes		Most of the time		Always	
	N	%	N	%	N	%	N	%
26	0	0	2	7.7	2	7.7	22	84.6

Regarding the structure of the family nucleus, the majority live with their parents and siblings. They all live with the mother; only 4 (15.4%) do not live with the father and 1 (3.8%) also live with the grandmother. In addition, 69.2% have siblings, compared to 30.8% who are only children (Table 6).

Table 6*Structure of the family nucleus*

Sample	Mother	Father	Siblings	Grandmother	Grandfather	Other relatives
N	%	%	%	%	%	%
26	100	84.6	69.2	3.8	0	0

If we take into account their leisure preferences, what they like the most are family activities (53.8%), playing outdoors (34.6%), sports (38.5%) or reading a book (42.3%). They like less to watch television (26.9%), play individually or in groups on the console / computer / tablet (23.05%), and go to the movies (19.2%) (Table 7). It is interesting to note that a very high percentage (84.6%) are reading a book not related to any school task.

Table 7*Leisure preferences in their free time*

Sample	AF	TV	JAL	Dep	L	Jd-Tec	C
N	%	%	%	%	%	%	%
26	53.8	26.9	34.6	38.5	42.3	23.05	19.2

Note: AF (Family Activity). TV (Watch TV). JAL (Play outdoors). Dep (Sport). L (Read books). JdTec (Play individually or in groups with technological devices). C (Go to the cinema).

3.2.2. PROFILE OF USE OF TECHNOLOGICAL DEVICES

The number of digital devices available at home is very high (Table 8). Everyone owns a desktop or laptop computer, many have a music player (96.2%), a game console (88.5%), a tablet (84.6%) and a printer (76.9%).

Table 8

Digital devices they have at home

Sam- ple	O	T	RMP	MCI	Imp	Eb	Vc	TV	CP
N	%	%	%	%	%	%	%	%	%
26	100	84.6	96.2	50	76.9	26.9	88.5	100	50

Note: O (Computer). T (Tablet). RMP (Portable Music Player). MCI (Mobile with Internet connection). Imp (Printer). Eb (Ebook). Vc (Game console). TV (Television). CP (Paid television services).

If we take into account the frequency during the week with which they use the devices they have at home (Table 9), more than half (61.5%) watch television almost every day, 50% never use the tablet, 34.6% use the computer one day, 26.9% use the mobile phone every day, and 19.2% use a game console between two and three days a week.

Table 9

Frequency with which they use digital devices at home on weekdays

Devi- ces	Never		1 day		2-3 days		4-5 days	
	N	%	N	%	N	%	N	%
Mobile phone	8	30.8	2	7.7	5	19.2	7	26.9
Tablet	13	50	6	23.1	2	7.7	5	19.2
Com- puter	2	7.7	9	34.6	8	30.8	5	19.2
Game console	9	34.6	5	19.2	3	19.2	3	11.5
Televi- sion	0	0	1	3.8	5	19.2	16	61.5

Focusing on the frequency with which they use digital devices during the weekend (Table 10), 42.3% watch television between three and four hours. Between one and two hours, 53.8% use the tablet, 46.2% use the computer and 34.6% play with the game console. 34.6% never use the mobile phone during the weekend.

Table 10*Frequency with which they use digital devices at home during the weekend*

Devices	Never		1-2 hours		3-4 hours		5-6 hours		7-8 hours		+ 8 hours	
	N	%	N	%	N	%	N	%	N	%	N	%
Mobile phone	9	34.6	7	26.9	5	19.2	3	11.5	1	3.8	0	0
Tablet	10	38.5	14	53.8	2	7.7	0	0	0	0	0	0
Computer	8	30.8	12	46.2	4	15.4	0	0	0	0	1	3.8
Game console	7	26.9	9	34.6	3	11.5	1	3.8	1	3.8	3	11.5
Television	1	3.8	10	38.5	11	42.3	0	0	1	3.8	3	11.5

Regarding the weekly frequency with which they carry out activities with the digital devices they have at home (Table 11), they never chat online with friends (26.6%) or with strangers (92.3%), nor do they use social networks (57.7%), take photos or record videos to share

(57.7%). Between one and two days they play video games (42.3%) and watch series and movies (34.6%). Between three and four days they look for information on the Internet (42.3%) and every day of the week they watch YouTube videos (38.5%) and listen to music (50%).

Table 11*Weekly frequency with which they carry out activities with the digital devices they have at home*

Activities	Never		1-2 days		3-4 days		5-6 days		Every day	
	N	%	N	%	N	%	N	%	N	%
Chat online with friends	7	26.6	4	15.4	6	23.1	1	3.8	8	30.8
Chat online with strangers	24	92.3	1	3.8	0	0	1	3.8	0	0
Watch videos (Youtube)	1	3.8	6	23.1	5	19.2	4	15.4	10	38.5
Listen to music	2	7.7	5	19.2	1	3.8	5	19.2	13	50
Play video games	5	19.2	11	42.3	5	19.2	1	3.8	3	11.5
Look for information on the Internet	4	15.4	5	19.2	11	42.3	4	15.4	2	7.7
Use social networks	15	57.7	4	15.4	3	11.5	1	3.8	3	11.5
Watch series and movies	4	15.4	9	34.6	5	19.2	4	15.4	4	15.4
Take photos or record videos to share	15	57.7	9	34.6	0	0	2	7.7	0	0

Finally, if we focus on the use of these digital devices to carry out school activities outside of school (Table 12), very few times they look for information on the Internet to do their homework (38.5%), they access information from the classroom or the center and deliver their assignments through blogs, platforms or web pages (46.2% and 50% respectively), use simu-

lations or video games to learn (38.5%), perform exercises (46.2%), create videos (50%), make presentations (42.3 %), and use online messaging to communicate with other classmates or with teachers about schoolwork (30.8% and 42.3% respectively). They frequently carry out evaluations or review exercises on the topics studied (42.3%).

Table 12

Frequency with which they use digital devices to carry out school activities outside the educational center

Activities	Nc		Pv		Fc		Sp	
	N	%	N	%	N	%	N	%
Look for information on the Internet to do their homework	2	7.7	10	38.5	8	30.8	6	23.1
Access information using the platform, blog, website of the center ...	8	30.8	12	46.2	4	15.4	2	7.7
Submit assignments and homeworks using the center's platform, blog, website ...	7	26.9	13	50	5	19.2	1	3.8
Use simulations or video games to learn	8	30.8	10	38.5	6	23.1	2	7.7
Carry out activities (exercises, research, writing ...) to learn different subjects	5	19.2	12	46.2	5	19.2	4	15.4
Make videos, photo compositions ..., with a computer / tablet	11	42.3	13	50	1	3.8	1	3.8
Make presentations with a computer / tablet	7	26.9	11	42.3	4	15.4	3	11.5
Do evaluation or review exercises of the studied topics	7	26.9	7	26.9	11	42.3	1	3.8
Use e-mail, WhatsApp or the school platform to communicate with other students about homework, assignments, questions ...	7	26.9	8	30.8	7	26.9	4	15.4
Use email, WhatsApp or the school platform to communicate with teachers.	13	50	11	42.3	0	0	1	3.8

Note: Nc (Never). Pv (Rarely). Fc (Frequently). Sp (Always)

4. CONCLUSIONS AND DISCUSSION

In this work, the digital competence in the communication area of Spanish Compulsory Education students has been evaluated, taking into account their knowledge, skills and attitudes. The socio-familial and technology user profiles of those who achieved the best results in this evaluation have also been identified.

The level of digital competence in the area of communication demonstrated by the students is a pass (basic) in knowledge and skills. These results coincide with those of other investigations, such as that carried out by Martínez Piñero et al. (2019) or Paredes Labra et al. (2019) in this same area of competences, or that carried out by García Valcárcel et al. (2019b) in the security area; but they contrast with others (Amor Almeida & Serrano Rodríguez, 2019; González García et al., 2019) in which students reach a high level. In the attitude dimension, very positive evaluations are obtained, this data coincided with those of other works (Ausín & Delgado, 2015; Casillas-Martín et al., 2020).

As has been shown in some studies (Almerich et al., 2020; Hatlevik & Christophersen, 2013; Pérez Escoda et al., 2016; Wong & Kemp, 2018), socio-familial variables and those related to the possession of digital devices and their use, influence the acquisition and development of digital competences.

Regarding the socio-familial profile of the students with the best results in the evaluation, most of them do not have problems of coexistence with the rest of their classmates in the school. Regarding the structure of their family nucleus, they belong to nuclear or traditional families, formed by a mother, a father and their children (Martín López, 2000) and a minority to single-mother families, a family nucleus in which the mother faces upbringing of the children alone (Fernández-Martínez & Avilés-Hernández, 2020). Finally, their leisure preferences are focused on carrying out activities with the family, playing outdoors, sports and reading; versus watching television programs and playing video games.

As technology users, their profile is specified in:

They have a high number of digital devices at home and are multi-device users (Cabezas-González & Casillas-Martín, 2019). This fact corroborates that home access to this type of device favors a good level of digital competence, as has already been shown in some research (Aesaert & van Braak, 2014; Ames, 2016; Van Deursen & Van Diepen, 2013).

During the week, the digital device that they use the most is the television and those that use the least, the computer and the tablet. On weekends, the television is still the most widely used device and, what is most striking, is that they do not use a mobile phone. In this regard,

we can find studies that show the positive effect of this variable on digital competence (Almerich et al., 2018; Zhong, 2011), while others show its absence (Van Deursen & Van Diepen, 2013; Ve-kiri & Chronaki, 2008).

Regarding the activities they carry out with technology, they are large consumers of digital content, mainly music and YouTube videos, and they use it quite a bit to search for information on the Internet. On the contrary, they do not use social networks, a fact that contrasts with other investigations such as that carried out by Ballesta Pagán et al. (2021) in which an early start is confirmed in the social networks of third and fourth year Compulsory Secondary Education students in the Murcia region (Spain), who acknowledge using them for some years for personal reasons and social needs of the affective and relational type.

When they use technology to carry out homework outside the school, it is to carry out evaluation exercises or to review the contents studied in the classroom. If we take into account that there is research that concludes that the use of technological tools in the classroom significantly affects the performance of students (García-Martín & Cantón-Mayo, 2019), it could be said that these activities could be related to a good level of digital competence of these students.

Finally, we would like to point out as the main contribution of this work the proposal of a socio-familial and use of technology profile of adolescents who present a good level of digital competence in the area of communication. This can provide useful knowledge when designing training proposals for the development of this competence. We would also like to indicate that the main limitation of this study is in its sample because its size does not allow generalization of the results, but it does serve as a model and orientation for the study of the influence of other types of variables on development and acquisition of digital competences.

ACKNOWLEDGEMENTS

This is an article carried out within the framework of the R&D research project called "Evaluation of the digital competences of Compulsory Education students and study of the incidence of socio-familial variables", developed by the Research and Innovation Group in the Educational Technology program of the University of Salamanca (GITE-USAL) and financed by the Ministry of Economy and Competitiveness within the State Program for the Promotion of Scientific and Technical Research of Excellence of the government of Spain (EVADISO, EDU2015-67975-C3-3-P, MINECO / FEDER).

REFERENCES

- Aesaert, K., & van Braak, J. (2014). Exploring factors related to primary school pupils' ICT self-efficacy: A multilevel approach. *Computers in Human Behavior*, *41*, 327–341. <https://doi.org/10.1016/j.chb.2014.10.006>
- Almerich, G., Díaz-García, I., Cebrián-Cifuentes, S., & Suárez-Rodríguez, J.M. (2018). Estructura dimensional de las competencias del siglo XXI en alumnado universitario de educación. *RELIEVE*, *24*(1), 1-21. <http://doi.org/10.7203/relieve.24.1.12548>
- Almerich, G., Suárez-Rodríguez, J., Díaz-García, I., & Orellana, N. (2020). Estructura de las competencias del siglo XXI en alumnado del ámbito educativo. Factores personales influyentes. *Educación XXI*, *23*(1), 45-74. <https://doi.org/10.5944/educXX1.23853>
- Amor Almeida, M.I., & Serrano Rodríguez, R. (2019). An evaluation of Primary-School pupils' digital competence. *Espacios*, *40*(21), 12-19. <http://www.revistaespacios.com/a19v40n21/a19v40n21p12.pdf>
- Ames, P. (2016). Los niños y sus relaciones con las tecnologías de información y comunicación: un estudio en escuelas peruanas. *DESIDADES, Revista Eletrônica de Divulgação Científica Da Infância E Juventude*, *11*, 11–21. <http://desidades.ufrj.br/wp-content/uploads/v11n1ES.pdf>
- Ausín, V., & Delgado, V. (2015). Aprendizaje percibido y actitud hacia las TIC desde la perspectiva de los PLE. *Opción*, *31*(5), 91-110. <https://produccioncientificaluz.org/index.php/opcion/article/view/20641>
- Ballesta Pagán, F.J., Lozano Martínez, J., Cerezo Máiquez, M.C., & Castillo Reche, I.S. (2021). Participación en las redes sociales del alumnado de educación secundaria. *Educación XXI*, *24*(1), 141-162. <http://doi.org/10.5944/educXX1.26844>
- Cabero-Almenara, J., & Palacios-Rodríguez, A. (2020). Metareflexão na competência de ensino digital: análise de estruturas de competência. *Revista Panorâmica*, *32*, 32-48. <http://revistas.cua.ufmt.br/revista/index.php/revistapanoramica/article/view/1239/19192420>

- Cabezas-González, M., & Casillas-Martín, S. (2019). Las Educadoras y Educadores Sociales ante la Sociedad red. *Ensaio: Avaliação e políticas públicas em educação*, 27(104), 521-542. <https://doi.org/10.1590/S0104-40362019002701360>.
- Carretero, S., Vuorikari, R., & Punie, Y. (2017). *DigComp 2.1. The digital competence framework for citizens*. Publications Office of the European Union. <https://doi.org/10.2760/38842>
- Casal, J., & Mateu, E. (2003). Tipos de muestreo. *Rev. Epidem. Med. Prev*, 1(1), 3-7.
- Casillas-Martín, S., & Cabezas-González, M. (2019). ¿Están preparados los maestros de Infantil para educar en la Sociedad Red? *Opción*, 35(89-2), 1317-1348. <https://bit.ly/3mm0Hmv>
- Casillas-Martín, S., Cabezas-González, M., & García-Peñalvo, F.J. (2020). Digital competence of early childhood education teachers: attitude, knowledge and use of ICT. *European Journal of Teacher Education*, 43(2), 210-223. <https://doi.org/10.1080/02619768.2019.1681393>
- Castells, M. (2004). *La era de la información: Economía, sociedad y cultura*. Siglo XXI.
- Farré Riera, L. (2020). Contextos de aprendizaje participativos en secundaria: de la presencialidad a la virtualidad. *Obra Digital*, 19, 133-148. <https://doi.org/10.25029/od.2020.284.19>
- Fernández-Martínez, C.M., & Avilés-Hernández, M. (2020). Trabajo social con familias monomarentales: valoración profesional de sus necesidades desde los servicios sociales de atención primaria. *Trabajo Social Global*, 10(19), 281-303. <https://doi.org/10.30827/tsg-gsw.v10i19.11523>
- Ferrari, A. (2013). *DigComp: A framework for developing and understanding digital competence in Europe*. Publications Office of the European Union. <https://doi.org/10.2788/52966>

- García-Martín, Sh., & Cantón-Mayo, I. (2019). Uso de tecnologías y rendimiento académico en estudiantes adolescentes. *Comunicar*, 59(27), 73-81. <https://doi.org/10.3916/C59-2019-07>
- García Valcárcel, A., Hernández, A., Basilotta, V., Cabezas-González, M., Casillas-Martín, S., González, L., Iglesias, A., Martín, M., Mena, J.J., & Salvador, L. (2019a). *Prueba para evaluar la competencia digital de los estudiantes tomando como referencia el modelo DigComp (ECODIES)*. <https://gredos.usal.es/bitstream/handle/10366/140240/Prueba%20ECODIES%20Area%202.pdf?sequence=6&isAllowed=y>
- García Valcárcel, A., Salvador Blanco, L., Casillas-Martín, S., & Basilotta, V. (2019b). Evaluación de las competencias digitales sobre seguridad de los estudiantes de Educación Básica. *RED, Revista de Educación a Distancia*, 19(61), art. 05. <http://dx.doi.org/10.6018/red/61/05>
- García Valcárcel, A., Casillas-Martín, S., & Basilotta, V. (2020). Validación de un modelo de indicadores (INCODIES) para evaluar la competencia digital de los estudiantes de Educación Básica. *Journal of New Approaches in Educational Research*, 9(1), 110-125. <https://www.learntechlib.org/p/216732/>
- González García, E., Amaro Agudo, A., & Martínez Heredia, N. (2019). Comparative study of competences 2.0 between young and senior people. Present time and challenges for their inclusion. *Espacios*, 40(5), 15-22. <http://www.revistaespacios.com/a19v40n05/a19v40n05p15.pdf>
- Hatlevik, O.E., & Christophersen, K.A. (2013). Digital competence at the beginning of upper secondary school: Identifying factors explaining digital inclusion. *Computers & Education*, 63, 240-247. <https://doi.org/10.1016/j.compedu.2012.11.015>
- Martín López, E. (2000). *Familia y sociedad*. Ediciones Rialp.
- Martínez-Piñeiro, E., Gewerc, A., & Rodríguez-Gobra, A. (2019). Nivel de competencia digital del alumnado de educación primaria en Galicia. La influencia sociofamiliar. *RED. Revista de Educación a Distancia*, 19(61), art. 01, 1-25. <http://dx.doi.org/10.6018/red/61/01>
- McMillan, J.H., & Schumacher, S. (2005). *Investigación educativa*. Pearson Educación.
- Pagani, L., Argentin, G., Gui, M., & Stanca, L. (2016). The impact of digital skills on educational outcomes: Evidence from performance tests. *Educational Studies*, 42(2), 137-162. <https://doi.org/10.1080/03055698.2016.1148588>
- Paredes-Labra, J., Freitas-Cortina, A., & Sánchez-Antolín, P. (2019). De la iniciación al manejo tolerado de tecnologías. La competencia digital de los estudiantes madrileños antes de la educación secundaria. *RED, Revista de Educación a Distancia*, 19(61), art. 03. <http://dx.doi.org/10.6018/red/61/03>

- Pérez Escoda, A., Castro Zubizarreta, A., & Fandos Igado, M. (2016). Digital Generation vs. Analogic School. Digital Skills in the Compulsory Education Curriculum. *Digital Education Review*, 30, 165-18. <https://doi.org/10.1344/der.2016.30.165-183>
- Pérez Martínez, J., & Hernández-Gil, J.F. (2020). Una mirada sobre los objetivos de desarrollo sostenible. *Telos*, 113, 36-43. <https://www.fundacion-telefonica.com/cultura-digital/publicaciones/telos-113/703/>.
- Sánchez-Caballé, A., Gisbert-Cervera, M., & Esteve-Mon, F. (2020). The digital competence of university students: a systematic literature review. *Aloma, Revista de Psicologia, Ciències de l'Eduació i de l'Esport*, 38(1), 63-74. <http://www.revistaaloma.net/index.php/aloma/article/view/388>
- Siddiq, F., Hatlevik, O.E., Olsen, R.V., Throndsen, I., & Scherer, R. (2016). Taking a future perspective by learning from the past. A systematic review of assessment instruments that aim to measure primary and secondary school students' ICT literacy. *Educational Research Review*, 19, 58-84. <https://doi.org/10.1016/j.edurev.2016.05.002>
- UNESCO (2008). *Estándares de competencia en TIC para docentes. Una propuesta en el contexto chileno*. Centro de Educación y Tecnología del Ministerio de Educación de Chile. <https://unesdoc.unesco.org/ark:/48223/pf0000163149>
- Unión Europea (2018, 22 de mayo). *Recomendación C 189 relativa a las competencias clave para el aprendizaje permanente*. Diario Oficial de la Unión Europea, 4 de junio de 2018. <https://bit.ly/3kfyf7>
- Van Deursen, A., & Van Diepen, S. (2013). Information and Strategic Internet Skills of Secondary Students: A Performance Test. *Computers & Education*, 63, 218-226. <https://doi.org/10.1016/j.compedu.2012.12.007>
- Valverde Crespo, D., De Pro Bueno, A., & González Sánchez, J. (2018). La competencia informacional-digital en la enseñanza y aprendizaje de las ciencias en la educación secundaria obligatoria actual: una revisión teórica. *Revista Eureka sobre Enseñanza y Divulgación de las Ciencias*, 15(2), 1-15. https://doi.org/10.25267/Rev_Eureka_ensen_divulg_cienc.2018.v15.i2.2105
- Vekiri, I., & Chronaki, A. (2008). Gender Issues in Technology Use: Perceived Social Support, Computer Self-efficacy and Value Beliefs, and Computer Use Beyond School. *Computers & Education*, 51, 1392-1404. <https://doi.org/10.1016/j.compedu.2008.01.003>
- Wong B., & Kemp, P. (2018). Technical boys and creative girls: the career aspirations of digitally skilled youths. *Cambridge Journal of Education*, 48(3), 301-316. <https://doi.org/10.1080/0305764X.2017.1325443>

- Vuorikari, R., Punie, Y., Carretero, S., & Van den Brande, L. (2016). *DigComp 2.0: The Digital Competence Framework for Citizens. Update Phase 1: The Conceptual Reference Model*. Publication Office of the European Union. <https://doi.org/10.2791/11517>
- Zhong, Z. (2011). From Access to Usage: The Divide of Self-reported Digital Skills among Adolescents. *Computers & Education*, 56, 736-746. <https://doi.org/10.1016/j.compedu.2010.10.016>