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The new online university education: from the emotional to the spectacular

La nueva educación universitaria en línea: de lo emocional a la espectacularización

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ABSTRACT

Introduction: Educommunication and online education, increase their presence in the university stage, but the risks of digital gaps and failure are significant. Through this study, it is proposed whether virtual education, through screens and technological tools, puts at risk emotional aspects, considered fundamental for students' learning, and a reflection on the use of methodologies linked to edutainment is initiated. **Methodology:** This is an exploratory and descriptive research, after a bibliographic review to know the development of the impact of the generalized use of ICT, online education, questioning which skills have remained undeveloped and a study of the use of new methodologies especially those linked to edutaiment in the development of educommunication. Emotional aspects are analyzed and a validation questionnaire of virtual teaching is generated. **Results:** based on the surveys elaborated in the questionnaires on emotional skills of teachers and students that have been lost and should be developed, satisfaction, evaluation of education on screens, and the incidence of edutainment. Dangers linked to the loss of the emotional sphere and the spectacularization of education are noted. **Discussion:** It has been found that teachers and students, after the evolution of the massive use of screens and new tools, value short-term advantages of ICT, such as the development of new methodologies, but feel the loss of emotions, such as empathy, and the relationship and exchange with others and it is perceived that the risk of spectacularization opens through edutainment with the use and abuse of ICT. **Conclusions:** In order to reduce in the educational field the risks of the spectacularization of communication, interdisciplinary research in education and communication should be encouraged to give rise to a deep and critical debate regarding new tools, technologies and methodologies in the educational field.

Keywords: Education; Entertainment; Educomunication; Edutainment; Communication; TIC; Virtual teaching; Spectacularization; Emotional.

RESUMEN

Introducción: La educomunicación y la educación en línea, aumentan su presencia en la etapa universitaria, pero los riesgos de las brechas digitales y el fracaso son significativos. A través de este estudio se plantea si la educación virtual, a través de pantallas y herramientas tecnológicas, pone en riesgo aspectos emocionales, considerados fundamentales para el aprendizaje de los alumnos y se inicia una reflexión acerca del uso de metodologías ligadas al *edutaiment*. **Metodología:** Se trata de una investigación exploratoria y descriptiva, tras una revisión bibliográfica para conocer el desarrollo del impacto del uso generalizado de las TIC, la educación en línea, cuestionando qué habilidades han quedado sin desarrollarse y un estudio del uso de nuevas metodologías especialmente las ligadas al *edutaiment* en el desarrollo de la educomunicación. Se analizan aspectos emocionales y se genera un cuestionario de validación de la enseñanza virtual. **Resultados:** parten de las encuestas elaboradas en los cuestionarios sobre habilidades emocionales al profesorado y estudiantes que se han perdido y que deberían desarrollarse, satisfacción, evaluación de la educación en pantallas, incidencia del *edutaiment*. Se advierten peligros ligados a la pérdida del ámbito emocional y la espectacularización de la educación. **Discusión:** Se ha comprobado que docentes y alumnos, tras la evolución del uso masivo de pantallas y nuevas herramientas, valoran ventajas a corto plazo de las TIC, como el desarrollo de nuevas metodologías, pero sienten la pérdida de emociones, como la empatía, y la relación e intercambio con los otros y se percibe que se abre el riesgo de espectacularización a través del

edutainment con el uso y abuso de TIC. **Conclusiones:** Para reducir en el ámbito educativo los riesgos de la espectacularización de la comunicación, deberían fomentarse investigaciones interdisciplinares en educación y comunicación para dar origen a un debate profundo y crítico con respecto a las nuevas herramientas, tecnologías y metodologías en el ámbito educativo.

Palabras clave: Educación; Entretenimiento; Educomunicación; *Edutainment*; Comunicación; TIC; Enseñanza virtual; Espectacularización; Emocional.

1. Introduction

The ties between education and communication are becoming stronger. New technologies, tools, and methodologies open up new opportunities (Aguaded et al., 2022). However, the new education on screens also paves the way for edutainment (Mateus et al., 2022) and spectacularization (Luri, 2020). An uncritical adherence to new technologies develops, as a new virtual panacea (Flores and Dominici, 2022). The risks of digital divides and failure are already known, as happens in seemingly positive experiences, such as Massive Open Online Courses (MOOCs), free courses even launched from associated universities, such as Harvard or MIT, with a dropout rate of 90% (Wang et al., 2022). The question raised in this research is whether it is somehow possible in virtual education, through screens and technological tools, in the midst of the chimera of free access to knowledge, to renounce emotional aspects (Vilarinho and Fleith, 2021) linked to the face-to-face, considered fundamental for students' learning (Weisberger et al., 2021). Various authors such as Turkle (2019, p. 259) or Bauman (2005, p. 64) have already warned of the dangers of life on screens and liquid education. These authors study the current phenomenon of a society made into a spectacle, consumed through multiple screens, modern liquid culture of detachment, discontinuity, and forgetfulness, calculated to achieve maximum impact and immediate obsolescence, against the culture of learning, accumulation, and aspiration to eternity (Bauman, 2012); Bauman and Turkle alert and denounce the risks of life transferred to screens. The spectacularization of teaching could partly draw on all this staging, because of the increasingly evident ties between Education and Communication (Lee et al., 2022).

The implementation of education in the immaterial, in the virtual, on the screen (Rospigliosi, 2022), moves away from that necessary human, real, tangible contact, and from that non-corporeal dimension, it also becomes impossible to transcend towards a spiritual dimension, to know and share with the other; in the virtual realm, the relationship becomes one of longing, like that of a child caressing a mother's face on a screen in Persona (Bergman, 1966).

Figure 1: *A child touches a screen with the face of a woman*.

Source: *Persona*, Ingmar Bergman (1966).

Education on the screen approaches a second life and emerges in the metaverse (Martin et al., 2022; Hwang and Chien, 2022), with experiences already underway at the Tecnológico de Monterrey and Esade, or creates new educational spaces towards entertainment. TikTok is used as a network to share readings by students (Guiñez-Cabrera and Mansilla-Obando, 2022), social media becomes part of the academic environment (Williams et al., 2021), and on YouTube (Vizcaino, 2019) there are many courses and private lessons. Learning through play (Soewono et al., 2022), the so-called gamification (Krath et al., 2021) applied to the classroom, already has numerous successful examples (Villa et al., 2022). However, it could be questioned whether participation and motivation have to do with the educational content or with the game itself. Simulations are created, avatars of students and teachers, whose corporeality is virtualized (Bascon-Seda and Ramirez-Macias, 2022). Real life is relegated to outside the screen, to that zone of space and time in which we are not an image (Barthes, 1989, p. 42).

Online education, transferred and mediated, implies the loss of a real, protected and shared educational environment, capable of rescuing people from more difficult external social circumstances; in education on screens, differences and inequalities could increase and thus move education away from the intended sustainability of Sustainable Development Goal 4 on quality, inclusive and equitable education (Flores-Vivar & García-Peñalvo, 2023).

1.1. Educommunication is already a reality

The spectacularization of education and the transfer of the teaching life to multiple monitors, in an educational evolution that increasingly expects more from new technologies and less from others (Turkle, 2011), in which this new educational modernity is exacerbated with 360º classrooms (IE, 2016). Screens make multiple realities available to students and teachers, where they can immediately receive, from anywhere in the world and with just a few clicks, teachers turned into protagonists of spectacular TEDTalks (López-Cantos, 2018). In some way, it seems that technological advancement in education, the path taken in educommunication, in the use of the virtual, with the intention of increasing a new educational approach and a new openness, however, moves away from what is being aimed at through new technologies and methodologies, which is more emotional learning (Franganillo, 2021).

On the one hand, there is the fantasy of an inclusive and comprehensive online education that embraces different realities. On the other hand, canned and distributed online education contradicts the possibility of sharing and communicating. Only those gifted with specific skills could connect with machines and abstract their learning through algorithms. There is no trace of the idea that "science is written in the soul" (Aquinas, 1256, p. 58), proposed in a gnoseology that studies the principles, foundations, extent, and methods of human knowledge, based on the idea of the substantial union of soul and body that gives rise to the person (Cuneo, 2020). There is no trace of inclusive and equitable education (Flores-Vivar and García-Peñalvo, 2023), or emotional learning (Franganillo et al., 2021), which, in order to be put into practice, must necessarily take into account individual differences and the person. In an extreme case of education on the screen, only perfect minds for perfect machines could participate in the new educational goal. Ad hoc programs could alleviate the difficulties of those with different learning abilities and needs, but ultimately the machine would replace humans with AI (Flores-Vivar and García-Peñalvo, 2023). Educommunication (Aguaded, 2011), already in action, made its world debut in the recent lockdown. Teachers and students had to adapt to this major change and temporarily abandon their physical common participation spaces and interactions. During this time, new technologies have played a predominant role in education, and as Turkle (1997, p. 65) already referred to, we must love our technologies in order to understand them accurately and love ourselves to face the effects that technologies have on us. After the lockdown and already having completed the first and second year back in classrooms, a time of analysis, study, and reflection has begun on education

on the screen and educommunication. What has been gained with new technologies and tools, with the intersection of education and communication in action? What happened to education on the screen, teacher spectacularization, and edutainment? (Savolainen, 2021).

2. Objectives

The research objectives are as follows:

1. To understand the evolution of the impact that the use of ICTs in the classroom has on the teaching performance of both teachers and students.

2. To identify emotional skills that are less developed or lost by students and teachers due to the use of screens.

3. To identify the skills that both students and teachers believe should be developed in the context of mixed education.

4. To initiate a critical thinking pathway on the massive adoption of online education, through the use of new tools and technologies, especially in methodologies such as those framed in edutainment, by examining the positive achievements and the risks of falling into the banalization and impoverishment of content through the spectacularization of education.

3. Methodology

To achieve these objectives and verify the initial hypothesis, the following methodology has been employed:

On the one hand, a literature review has been conducted on the intersection of the central categories of education and communication, expanded with a study on the state of the art of the use of ICT in education, the risk of digital divides, the loss of skills linked to face-to-face interaction, the introduction of edutainment, and what could be the entry of spectacularization from communication into education.

On the other hand, all these issues have been verified in the field through the use of a validated questionnaire to first (first stage study) determine the impact of the massive use of ICT on teachers and students, and then (second stage study) the emotional skills that teachers and students recognize as having ceased to cultivate or have lost in online education, on screens, or believe should be developed.

The applied methodology is based on exploratory and descriptive research. Through a bibliographic review in the first stage (2019-2020, 2020-2021), the development of educommunication, the use of ICT in virtual classrooms, and their advantages and limitations were studied (Rangel-Pérez et al., 2021). In a second stage (2021-2022, 2022-2023), emotional aspects were analyzed, as well as the successes and risks of spectacularization and edutainment in education. Through surveys using the validated virtual teaching satisfaction questionnaire (García et al., 2022), a sampling was obtained in different universities, both public and private, in the Mediterranean-Latin area (Spain, Italy, Portugal, Argentina).

The Likert-type questionnaire used measures the degree of satisfaction of students and teachers in the use of virtual teaching. The questionnaire contains 19 questions grouped into six dimensions: (1) ICT management, (2) availability of virtual communication media, (3) evaluation, (4) personal work, (5)

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teaching methodology, and (6) teacher-student relationship. The internal consistency analysis of these dimensions ranges from 0.880 to 0.951, and the ordinal alpha coefficient of the instrument is 0.973. A total sample of 1,738 was obtained.

As a methodological corollary, since the main objective pursued in this study is to examine how university teachers and students are experiencing the intersection between education and communication, with the massive introduction of new technologies and the effects of screen use in online teaching, as well as the successes of new methodologies linked to edutainment and risks of the spectacularization of education, a mixed methodology has been proposed, carried out from different areas of knowledge by the interdisciplinary team of teachers and researchers who make up this study in the areas of education and communication. On the one hand, a literature review has been carried out related to educommunication, education on screens, edutainment, and the spectacularization of education. And on the other hand, it started from the quantitative analysis used in the first stage of the research, a validated questionnaire by Hernández-Ramos et al. (2014), which measures attitudes towards ICT by university teachers to gather new data. This questionnaire consists of 15 Likert-type questions, of which the 7 variables related to education and communication have been selected; on the other hand, in the second stage, the validated questionnaire on virtual teaching satisfaction (García et al., 2022) has been applied.

The starting statistical analysis of this research compares two moments of study: during confinement in the second half of the 2019-2020 academic year (Musicco et al., 2020) and in a semi-face-to-face context in the 2020-2021 academic year (Rangel-Pérez et al., 2021). The sample at the beginning was limited only to the Spanish territory and had the participation of a total of 389 teachers, which was later expanded to 1100 from 26 public and private universities in Spain (figure 2).

Figure 2: *List of participating universities in the first stage.*

1. ESIC University	Privada
2. IE University	Privada
3. Universidad a Distancia de Madrid	Privada
4. Universidad Abat Oliva	Privada
5. Universidad Antonio de Nebrija	Privada
6. Universidad Camilo José Cela	Privada
7. Universidad Carlos III de Madrid	Pública
8. Universidad Castilla y La Mancha	Pública
9. Universidad Complutense Madrid	Pública
10. Universidad de Alicante	Pública
11. Universidad Educación a Distancia	Pública
12. Universidad de Granada	Pública
13. Universidad de León	Pública
14. Universidad de Navarra	Privada
15. Universidad de Sevilla	Pública
16. Universidad de Valladolid	Pública
17. Universidad de Vigo	Pública
18. Universidad de Villanueva	Privada
19. Universidad de Zaragoza	Pública
20. Universidad Francisco de Vitoria	Privada
21. Universidad Internacional La Rioja	Privada
22. Universidad Internacional Valencia	Privada
23. Universidad Loyola Andalucía	Privada
24. Universidad Ramon Llul	Privada
25. Universidad Rey Juan Carlos I	Pública
26. Universidad San Pablo-CEU	Privada

Source: Own elaboration based on Musicco et al. (2020) and Rangel-Pérez et al. (2021).

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The research has now entered a second stage, expanding to other countries and including surveys of both teachers and students using the aforementioned Likert-type questionnaire. In this second stage, a total of 1738 teachers and students were surveyed (see Figure 3).

Figure 3: *List of participating universities in the second stage.*

Argentina
1 Universidad de Buenos Aires Pública
2 Universidad Nacional de las Artes Pública
3 Universidad Austral Privada
4 Universidad Nacional de Luján Pública
5 Universdad Católica Argentina Privada
6 Universidad Argentina de la Empresa Privada
Italia
7 La Sapienza Pública
8 Universitá Cattolica Privada
9 La Statale di Milano Publica
10 Universitá di Perugia Pública
11 Universitá LUMSA Privada
12 Universitá di Napoli Pública
Portugal
13 Universidade de Lisboa Pública
14 Universidade do Porto Pública
15 Universidade Católica Portuguesa Privada
16 Universidade Fernando Pessoa Privada
17 Universidade Nova de Lisboa Pública
18 Universidade New Atlantica Privada

Source: *Author´s own work.*

3.1. Sample data

The data to achieve the stated objectives were collected through a sample of students and professors from different public and private universities.

In the first stage of the study, from 2019 to 2021:

Through the new data collected in the sample taken in the first stage.

3.1.1. The impact of ICT could be known through the new data collected in the sample taken in the first stage.

In the second stage of the study, from 2021 to 2023:

Data was collected through a sample of 1,738 respondents, including students and teachers.

3.1.2. The skills that have been lost have been recognized.

3.1.3. The skills that should be developed have been identified.

3.1.4. A critical thinking approach can be initiated regarding the adoption of online education and the adoption of new methodologies in the edutainment sphere to open a reflection on the successes and advantages, but also dangers such as educational spectacularization.

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4. Results

All the results obtained are based on surveys elaborated to deepen some aspects already studied through the first base of analysis carried out in the first stage (2019-2020, 2020-2021). The sample is expanded to more universities and countries in the second stage of research (2021-2022, 2022-2023).

4.1. Results obtained regarding objective 1 of developing the use of ICT and direct emotional consequences derived from their use

First stage of the study years, 2019-2020-2021:

4.1.1 In both analyzed courses, the highest means showing greater agreement among the sample population are found in the statements "The use of ICT in university education involves the development of new skills in students" and "The use of ICT in teaching implies that teachers constantly train and update themselves".

4.1.2 The lowest means indicate disagreement on the part of university professors in the statements "ICT promotes a higher-level education with a higher degree of interdisciplinarity" and "Thanks to the incorporation of ICT during my classes, students are more motivated in my subject.".

4.1.3 Only the statement "The use of ICT in university education involves the development of new skills in students" experiences an increase in the agreement between the first and second courses analyzed.

4.1.4 The statements that have reduced the level of disagreement from one course to another are "Thanks to the incorporation of ICT during my classes, students are more motivated in my subject" and "The use of ICT in teaching implies that teachers train and update themselves continuously."

4.1.5 In the 2019-2020 course, negative emotions prevailed due to the confinement and the mandatory use of ICT. When measuring negative emotions related to the use of education on the screen and the use of ICT during the confinement period of 2019-2020, a total of 63.2% was obtained on the total emotions experienced by teachers, compared to 39.4% in 2020-2021 course, characterized by hybrid teaching and moderate, mixed, and alternating use of screens as a teaching medium.

4.1.6 If we compare the importance of anxiety related to the use of ICT with the rest of the negative emotions during the 19/20 course, it accounted for 11.0%, compared to 6.3% in the following 20/21 semi-presential course, in which the use of screens is limited.

The second stage of the study, years 2021-2022-2023:

4.1.7 The results of 1.1 are repeated among teachers, with the highest value corresponding to the question about the ability of teachers to guide and support in technical issues, reaching 97.8% which is equivalent to 4.89 (out of a total of 5 points) and shows a very high self-description of skills in techniques already acquired in new technologies and online education through screens.

4.1.8 However, this contradicts the need for greater training in ICT applied to education reflected in Table 6.

4.1.9 Very high values also appear, with 83.4% equivalent to 4.17 (out of a total of 5), such as the integration and relationships that can also be maintained through ICT with other teachers online.

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4.1.10 Similarly to teachers, students also have a high level of positive self-evaluation regarding the use of new online technologies, with 89% equivalent to 4.45 out of a total of 5 points.

4.1.11 Second, with a high score, a positive role is recognized by teachers in education on screens, with 81.4% equivalent to 4.07 out of 5 points.

4.1.12 However, the integration and relational aspect online, through ICT, with peers scores 67.8% or 3.39 out of 5 among students, almost one point lower than the result for teachers.

4.2. Results obtained regarding objective 2, the loss of emotional aspects with online education, the use of screens, and ICT

The first stage of the study, 2019-2020-2021:

Recognition of the main underdeveloped or lost skills

4.2.1 Anxiety was the predominant feeling during the 2019-2020 school year. Isolation and loneliness were the second most common negative feeling among participants in the survey.

4.2.2 The percentages of negative feelings improve in the 2020-2021 school year when screen use is reduced and 50% of the class is alternately present in the classroom, which was more positive and improved motivation.

4.2.3 With the decrease in screen use during the 2020-2021 school year, negative feelings decrease, except for isolation and loneliness as a consequence of confinement and the prolonged situation of non-presential and not fully recovering classroom life.

4.2.4 Emotional ups and downs and fear emerge in the feelings of teachers in the 2019-2020 school year, which continue in 2020-2021.

The second stage of the study, years 2021-2022-2023:

4.2.5 The first noteworthy result among teachers is the percentage corresponding to the loss of empathy, with 16.9%.

4.2.6 In second place, with 12.2%, the loss of opportunities for teamwork.

4.2.7 In third place, the loss of emotional connection with students, shared with the loss of informal learning and communication, both with 11.2%.

4.2.8 The first significant data among students is the 57.1% of responses that show the greatest loss for students in online education is the closeness and depth in interaction with teachers and other students.

4.2.9 The second most significant data is related to the loss of empathy, which rises to 23.2%.

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4.3. Results obtained regarding objective 3: to detect the skills that are considered should be developed in online education, screen-based education, and the use of ICT

Study stage: years 2021-2022-2023:

4.3.1 The highest value among teachers corresponds to the skill that should be developed among teachers to guide and support on technical issues, which reaches 97.8%, equivalent to 4.89 out of 5, and shows a self-description of very high abilities in technologies already acquired in new technologies and online education through screens.

4.3.2 However, this contradicts the need for greater training in ICT applied to education reflected in Table 6.

4.3.3 Values such as integration and relationships with other teachers online also appear very high, at 83.4%, equivalent to 4.17 out of 5 in the table.

4.3.4 The highest value among students is the consideration that document management and interactive activities should be developed, with 32.1%.

4.3.5 The next most significant result is the need to strengthen interpersonal relationships through active methodologies (cooperative work), represented by 16.1%.

4.3.6 Finally, another notable value among student responses, at 14.3%, is the need to develop a greater capacity for adaptation to change.

4.4. Results obtained regarding objective 4 about the possibilities of adopting a critical thinking approach on the adoption of online education, new methodologies and tools, the approach to edutainment, and the possible spectacularization of education

Study stage years 2021-2022-2023:

From the results obtained among teachers and students regarding questions related to the use of ICT-derived tools, edutainment and gamification methodologies, six questions were asked with Likert-type responses (1, strongly disagree; 2, somewhat disagree; 3, disagree; 4, agree; and 5, strongly agree).

4.4.1 The most notable result among teachers is the desire to continue using edutainment methodologies and new participatory and gamification tools in the future, which obtains a 62.12% agreement rating.

4.4.2 The next noteworthy result is the 56.43% agreement rating regarding the recognition of the fun factor related to gamification applications applied to education.

4.4.3 Another significant result among teachers is that 20.44% strongly disagree with the question of whether attention increases using these tools.

4.4.4 On the other hand, it should also be noted that among students, many of them consider that gamification does not increase collaboration among peers (more than 33% give a low score), it does not help them realize their mistakes (more than 15% do not consider it or consider it to a low extent), and it does not help them review (more than 19%).

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4.4.5 There is a high level of positive self-evaluation regarding the use of new online technologies, with 89%, 4.45 out of 5.

4.4.6 On the other hand, positive work is recognized by teachers in online education, with 81.4%, 4.07 out of 5.

4.4.7 However, integration and relational aspects with peers obtain a 67.8%, 3.39 out of 5 in the table among students, almost one point lower than the result among teachers.

4.5. The main results of the first stage of the research

After a year and a half of work, these were the main results:

Table 1. *Summary of main results for the first stage from 2019 to 2021.*

a) In both courses analyzed, the highest means that show a greater agreement among the people in the sample are found in the statements "The use of ICT in university education involves the development of new skills in students" and "The use of ICT in teaching implies that teachers continuously train and update themselves".
b) The lowest means indicate disagreement on the part of university teachers in the statements "ICTs promote higher education with a higher degree of interdisciplinarity" and "Thanks to the incorporation of ICTs during my classes, students are more motivated in my subject."
c) Only the statement "The use of ICT in university education implies the development of new competencies in students" experiences an increase in the degree of agreement between the first and second courses analyzed.
d) The statements that have reduced the level of disagreement from one course to another are "Thanks to the incorporation of ICT during my classes, students are more motivated in my subject" and "The use of ICT in teaching implies that teachers constantly train and update themselves."

Source: Author´s own work.

In addition to the survey, open-ended questions were asked to detect the emotions of teachers regarding the use of new technologies and the transfer of education to screens. This is shown in Table 2 (see section 3.1.1), which reports results from the first two years of the study (from 2019 to 2021).

Table 2. *Emotions of the teaching staff towards the use of ICT and screen-based education. Courses 2019-2020 and 2020-2021.*

Teachers' emotions in front of the use of ICT and screens	Academic year 2019-2020 Education transferred on screens 100%	2020-2021 academic year Semi-transferable education on screens
Concern	,9%	5,4%
Overwork anxiety	28,1%	2,5%
Emotional ups and downs	3,5%	4,1%
Intense overwhelm	1,8%	1,7%
Satisfaction	2,6%	2,1%
Feelings of abandonment by by the Institutions	3,5%	,8%
Extreme fatigue	3,5%	,4%
Anxiety	7%	2,5%
Sadness	3,5%	1,7%
Impotence	,9%	2,5%
Isolation Loneliness	4,4%	10,7%
Intense mental exhaustion	,9%	3,3%
Fear uncertainty	2,6%	1,7%
Motivation	,9%	2,1%

Source: Author´s own work.

In the 2019-2020 academic year, negative emotions prevailed due to the confinement and mandatory use of ICT. When measuring negative emotions related to the use of online education during the confinement period in the 2019-2020 academic year, a total of 63.2% was obtained out of all emotions experienced by the teaching staff, compared to 39.4% in the 2020-2021 academic year, which was characterized by hybrid and alternate use of screens as a teaching medium. If we compare the importance of anxiety compared to other negative emotions during the 2019/20 academic year, it accounted for 11.0%, compared to 6.3% during the hybrid year, where the use of screens was limited. Additionally:

Table 3. *Summary of comparative analysis results from 2019 to 2021.*

a) Anxiety was the predominant feeling during the 2019-2020 academic year. Isolation and loneliness were the second most common negative feelings among survey participants.
b) The percentages of negative emotions improved in the 2020-2021 course when the use of screens is reduced and 50% of the class is present in the classroom alternately, which was more positive and improved motivation.
c) With the decrease in the use of screens during the 2020-2021 school year, negative feelings decreased, except for isolation and loneliness, as a consequence of the confinement and the prolonged situation of non-face-to-face teaching and the lack of full recovery of life in the classroom.
d) Emotional ups and downs and fear break into the teachers' feelings in the 2019-2020 academic year, which remain in 2020-2021.

Source: Author´s own work.

4.6. Main results of the second stage of research

Based on a sample of 1,738 participants (796 teachers and 942 students), the study analyzed the experience of online education. The main results among teachers show that 38% are somewhat satisfied and believe that the use of new technologies and education through screens is only satisfactory with good teacher training. 27% expressed dissatisfaction and considered it only satisfactory in emergency situations, while 21% were satisfied and believed that it would also be useful in the future. Finally, 14% were completely dissatisfied and believed that it should not be adopted in any case. The collected data from open-ended questions in the questionnaires were classified and analyzed (see Tables 4-8). As for the students, 36% were somewhat satisfied, 33% had a good level of satisfaction with the use of new technologies and distance teaching, 14% were very satisfied, and 16% were dissatisfied.

4.6.1. Analysis of results from the questionnaire to teachers in Table 4 about emotional skills that have been lost

Table 4. *Emotional skills lost in online teaching. Sample of 796 teachers (academic years 21-22 and 22-23).*

Emotional skills that have been lost from the teacher's point of view in screen-based teaching	Academic year 2021-2022 Teachers %
Empathy	16,9%
Interest on the part of the pupil	6,1%
Stable communication	6,6%
Security due to group membership group	6,4%
Interpersonal relations general	7,8%
Emotional connection with students	11,2%
Pupil concentration	5,8%
Inspiration	10,9%
Teamwork	12,2%
Spontaneity	4,9%
Communication and informal learning	11,2%

Source: Author´s own work (2022).

The first notable result is the percentage corresponding to the loss of empathy, with 16.9%. In second place, with 12.2%, the loss of opportunities for teamwork. In third place, the loss of emotional connection with students, shared with the loss of informal learning and communication, both with 11.2%. The lack of emotional connection in learning represents the loss of one of the main factors and skills for learning.

4.6.2. Analysis of results from the questionnaire to students in Table 5 about emotional skills that have been lost.

Table 5. *Emotional skills lost in online education according to a sample of 942 students.*

Emotional skills that have been lost from the learner's point of view in screen-based learning	Year 2021-2022 Students %
Close and in-depth interaction with peers and teachers	57,1%
Quick feedback with teacher and colleagues	1,8%
Empathy	23,2%
Motivation	1,8%
Direct verbal communication	1,9%
Skills developed through face-to-face proximity to the other	1,7%

Source: Author's own work (2022).

The first significant data is the 57.1% of responses that show the greatest loss for students in online education is the closeness and depth of interaction with teachers and other students. This data is very significant because it contradicts the belief that young people are more adaptable to the virtual world, new technologies, and screens. It is young people who feel more vulnerable and believe that there is a greater loss in education through screens. This would explain, for example, the very high dropout rates of MOOC courses, with only a 5% continuation rate. The second most significant data refers to the loss of empathy, which rises to 23.2%.

4.6.3. Analysis of results from the questionnaire to teachers in Table 6 about skills that should be developed

Table 6. *Skills that should be developed to educate through screens. Sample of 796 university professors.*

Linked emotional and communication skills, you should develop in order to educate on screens.	Academic year 2021-2022 Teachers %
Seriousness	5,4%
Communication skills adapted to screens	6,3%
The ability to foster the learner's independence of the learner in his or her learning	5,9%

Interactive activity design skills interactive activities measured with ICT	23,5%
Fluent didactic communication with the student	11,8%
Fluent didactic communication with the student	17,6%
Technological skills to to keep the attention of our students our students	11,8%
Use of active methodologies methodologies such as Flipped Classroom so that the student to have a greater participation in the learning	4,9%
Abilities to promote in some way informal learning	6,9%
Motivation among teachers and students	5,9%

Source: Author's own work (2022).

In Table 6, the most significant result is the design of interactive activities measured with new technologies at 23.5%. Therefore, despite some time having passed since the mandatory implementation of new platforms and the experience of massive online education, the adequacy of content delivery through ICT remains a concern. In the second place, with a percentage of 17.6%, it is considered important to develop pedagogical skills adapted to education through screens. Finally, with a significant percentage of 11.8%, both the consideration of the need to enhance technological skills to maintain students' attention through screens and the implementation of fluid didactic communication with students are important.

4.6.4. Analysis of results from the questionnaire to students in Table 7 on skills that should be developed

Table 7. *Emotional skills that should be developed in online education according to a sample of 942 students.*

Linked emotional and communication skills that should be developed in order to should be developed in order to educate on screens according to the opinion of students	**Academic year 2021-2022 Teachers %**
Communication via screens (document management, interactive activities...)	32,1%
Adaptation to change	14,3%
Use of individualised assessment	8,9%

Patience	7,1%
Respect	3,6%
Strengthening interpersonal interpersonal relationships through active methodologies(cooperative cooperative work)	16,1%
Empathy	9,0%
Close and close collaboration with the teacher	8,7%

Source: Author's own work (2022).

Table 7 shows that the first skill that should be developed is document management and interactive activities, with 32.1%. The next most significant result is the need to strengthen interpersonal relationships through active methodologies (cooperative work), represented by 16.1%. The third, with 14.3%, is an adaptation to change.

4.6.5. Analysis of results from the survey to professors in Table 8 about self-evaluation of education through screens

Table 8. *A test given to 796 teachers about education through screens*

SEV Questionnaire Questions (1-7)	Year 2021-2022 Media	Deviation Standard deviation
I can provide guidance and technical technical support to students	4,89	,323
I have adequate technology to easily connect with my students	3,67	,970
I can assess learners well through virtual means	4,17	1,2
I can patiently explain the tasks	4,15	1,1
I have innovative materials adapted online	3,00	1,64
I feel that I am integrating and developing friendships with other teachers	4,17	0,70

Source: Author´s own work (2022).

In Table 8, the highest value corresponds to the question about the teachers' ability to guide and support in technical issues, reaching 4.89%, which shows a self-description of very high skills in techniques already acquired in new technologies and online education through screens. However, it contradicts the need for further training in ICT applied to education reflected in Table 6. Also, values such as integration and relationships with other teachers online appear very high, with 4.17%.

4.6.6. Analysis of results from the test given to students in Table 9 about self-evaluation of education through screens

Table 9. *Test taken by 942 students on learning through screens.*

SEV Questionnaire Questions (1-7)	Year 2021-2022 Media	Deviation Standard deviation
The teacher gives me guidance and technical technical support to receive my classes	3,82	,92
I have adequate technology to connect easily with the teacher and my teacher and my classmates	4,45	,93
I am satisfied with the evaluations that are carried out by virtual means	3,93	1,19
The teacher shows kindness and patience in explaining the tasks	4,07	,89
The subjects used by teachers during teachers use during the lessons facilitate my learning	3,71	,76
I feel that I am integrating and developing friendships with my classmates and teachers	3,39	1,51

Source: Author's own work (2022).

Table 9 shows as the first result, among teachers, a high level of positive self-evaluation regarding the use of new technologies online, with 4.45%. In second place, positive work by the teachers in the education through screens is recognized, with 4.07%. However, integration and relational environment with classmates get a 3.39% among students, almost one point below the result of the teachers.

4.6.7. Analysis of results from Table 10 on the impact of edutainment and spectacularization

Table 10. *Impact of the use of games, edutainment, and spectacularization.*

Spectacularisation edutainment	1 (%)	2 (%)	3% (%)	4 (%)	5 (%)
Is it a fun and enjoyable way to learn using ICT applications (Kahoot, Classdojo, Quizziz...)	1,30	2,18	1,55	38,54	56,43
Do these applications encourage collaboration between classmates?	18,30	15,25	22,31	23,87	20,27
Does it help me (Kahoot, Classdojo...) to realise the concepts I have not understood?	7,52	8,89	7,05	53,85	22,69

Do these tools help me to revise?	6,69	13,35	2,33	57,89	19,74
Would I like to continue using these APPS in the future?	0,42	4,23	5,01	28,2	62,12
Do I pay more attention in class when we use these tools?	20,44	24,55	9,93	26,85	18,23

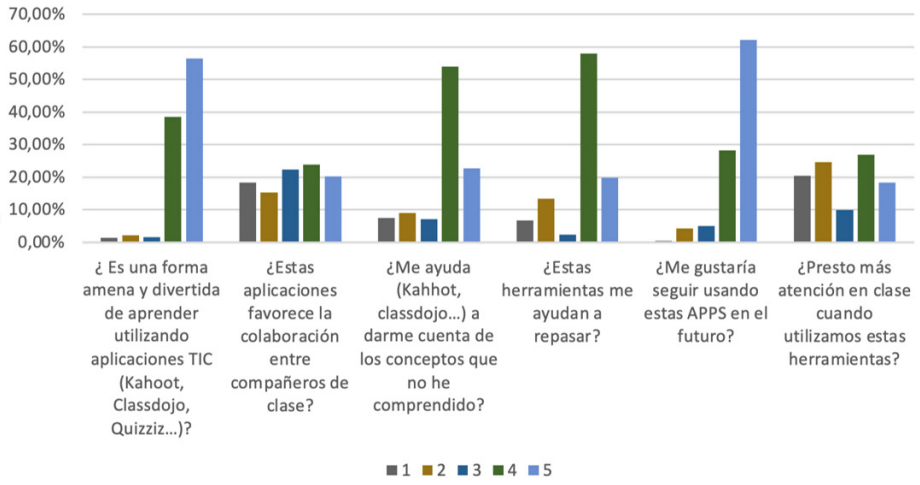
Source: Author´s own work for this study (2022).

Table 10 shows the results obtained from questions related to the use of ICT tools among students. Six Likert-type questions were asked (1, strongly disagree; 2, disagree; 3, somewhat disagree; 4, agree; and 5, strongly agree). The most notable result is the desire to continue using edutainment applications in the future, which scored 62.12%. The next significant result is the recognition of the fun factor related to gamification applications applied to education, with a score of 56.43%.

One of the other significant results is that 20.44% strongly disagree with the statement that using these tools increases attention in class. It is noteworthy that these tools and gamification, in general, are assumed to increase attention, but according to these results, a considerable percentage of students believe otherwise, almost on par with those who think it increases their attention. Additionally, if we add those who somewhat disagree, we reach over 40%, and with those who disagree, we reach 50% of the students.

Furthermore, it should also be noted that many students consider that these tools do not increase collaboration among students (over 33% give a low score), do not help them to realize their mistakes (over 15% do not consider it or only to a small extent), and do not help them with a review (over 19%).

Figure 4: *Edutainment and online education.*



Source: Author's own work.

4.7. Main results: Comparison of evolution and involution of the four courses in teachers and students

One of the most significant comparative variation results of the last two courses compared to the first two is the decrease in the feeling of anxiety and overwhelm and the increase in the acquisition of technological knowledge. It is clear that throughout these four courses, taking Table 2 as a reference, it can be observed that teachers go from emotions of anxiety, stress, and sadness to greater emotional stability and, above all, to learning from the situation experienced.

As observed, teachers believe that there has been a loss of empathy (16.9%), teamwork (12.2%), emotional connection with students (11.2%), and informal communication and learning (11.2%) compared to the previous two years. Generally, skills with ICT have improved: according to surveyed teachers, the opinion that stands out is "I can evaluate my students through virtual means" (M = 4.17; DT = 1.2), "I can guide and provide technical support to my students" (M = 4.89; DT = ,323). Additionally, the level of anxiety and loneliness has also improved in these last two courses compared to the first ones. On the other hand, it is worth mentioning the interest and curiosity that has been awakened towards educational innovation and the use of new tools, both among teachers and students, such as edutainment and spectacularization: interactive activity design skills with ICT (23.5%), pedagogical skills adapted to screens (17.6%), technological skills to maintain the attention of our students (11.8%), and fluid didactic communication with the student (11.8%). However, everything related to emotional development has worsened. If we analyze the data provided by Table 5, we see that teachers consider that the skills of empathy and teamwork, the basis of interpersonal relationships, the emotional connection with students, which makes them develop that important emotion for learning (the Pygmalion effect), and the learning by imitation that students develop when they are in front of their teachers have been lost.

5. Discussion and Conclusions

It has been found that teachers and students, after experiencing the massive evolution of screen use and new tools in the first two academic years marked by the health pandemic and the mandatory use of technology, value the short-term advantages of ICT, such as the development of new methodologies or competencies. On the other hand, in the three years following the confinement, with the return to the classrooms and a use of new technologies no longer necessary and mandatory, certain limits about technology and screens begin to be seen, among which the most significant is the loss of emotions, such as empathy, and the relationship and exchange with others. In this recently experienced case caused by the pandemic, many teachers and students already knew each other beforehand, and the screens prolonged that knowledge for a time that was distanced and mediated by monitors. However, if this education model were to be established, the relationship mechanisms would resemble those that arise on social networks, where things are not said to people you really know and you do not perceive what others really feel. The corporeal dimension emits much more information and knowledge and, therefore, more possibilities for getting to know each other. Finally, it is important to begin to value that, in a possible future of normalization of education on screens, this does not begin when teachers and students turn on and connect, but it is a process that also has to do with the creation of virtual identities.

According to the results obtained, the use of screens, edutainment, and new tools find their limits in collaborative relationships, in all those aspects that allow for emotional development and communication, as well as in the deepening and construction of self-reflective, logical, and critical thinking. Through the concepts that are at play with these tools, the aforementioned factors could be

lost, and the factor of attention during the time of comprehension and assimilation of content is also not seen as highly favored.

5.1. Summary of conclusions regarding the objectives

The main conclusions related to the proposed objectives, the obtained data, and the collected results are the following:

5.1.1. Main conclusions regarding objective 1

5.1.1.1. Teachers recognize that online education requires continuous training and that students need to develop new skills to follow classes and achieve proper learning compared to traditional in-person learning.

5.1.1.2. Teachers also acknowledge that students are more motivated when using screens in the classroom and both teachers and students recognize the development of new skills when using technology in education.

5.1.1.3. After the first stage of total isolation, teachers once again emphasize that students learn and develop new competencies when learning through screens that they may not have developed in traditional in-person learning.

5.1.1.4. Conversely, in the self-evaluation during the semi-virtual stage following the initial isolation period, teachers who had previously claimed that student motivation was higher during the initial isolation period reported a decrease in motivation, perhaps due to the novelty of screen use having worn off.

5.1.2. Main conclusions regarding objective 2

5.1.2.1. In the very first stage of isolation (due to COVID-19), the most important information provided by the teachers is related to anxiety, loneliness, and isolation.

5.1.2.2. When the use of screens began (in the hybrid learning model), these feelings improved and motivation started to increase.

5.1.2.3. and 2.4. These previous feelings leave teachers with lingering consequences and fears.

5.1.2.5. Teachers note the lack of empathy and emotional connection in learning, which represents a loss of one of the main factors and skills for learning, and also note the loss of informal communication in learning.

5.1.2.6 From the students' perspective of online education, they share that they have lost depth in their relationships with their teachers and peers, as well as a significant loss of empathy towards others. This provides a very significant data point, as it contradicts the belief in the greater adaptability of young people to the virtual world, new technologies, and screens. It is the young people who feel more vulnerable and believe that there is a greater loss in education through screens. This may explain, for example, the extremely high dropout rates in MOOC courses, with only a 5% continuation rate.

5.1.3. Main conclusions regarding objective 3

5.1.3.1. Teachers recognize the need for training to develop greater technical skills that will help them support students in their online learning.

5.1.3.2. On the other hand, students think that teachers should develop more gamification skills in the classroom and a greater ability to carry out interactive activities. They also believe that cooperative work should be another skill to be developed, as well as their adaptation to change.

5.1.4. Main conclusions regarding objective 4

5.1.4.1. Regarding participation and enjoyment in class with the application of edutainment, it is concluded that gamification does not presuppose cognitive participation that involves a deeper understanding and assimilation, and this is associated with the lack of conceptual relationship in the abstract, as well as the absence of development of the ability to organically order ideas and mental connections and create a critical spirit.

5.1.4.2 As a significant finding, teachers would like to continue using edutainment applications in the future, despite the inconveniences that they and the students indicate.

5.1.4.3 They also recognize the factor of greater fun related to gamification applications.

5.1.4.4 However, they note that attention is dispersed, meaning that attention does not increase in classrooms with gamified online education.

5.1.4.5 On the other hand, students are more critical of methodologies related to edutainment and gamification, and they believe that collaboration with other classmates does not increase with edutainment. They do not realize their mistakes (lack of feedback from teachers), and it does not help them review the content of the subjects.

5.1.4.6 Above all, result 4.3 is noteworthy. It is usually assumed that these tools and gamification, in general, increase attention. However, according to these results, a considerable percentage of students think otherwise, almost on par with those who do think that it increases their attention. Furthermore, if we add those who strongly disagree, we reach more than 40%, and with those who disagree, we reach 50% of the students.

5.1.4.7 As a final conclusion, it can be highlighted that, even in online education, there is a trend towards the increased use of educational methodologies related to edutainment and gamification (Fombona et al., 2017; Limaymantha et al., 2020; Cuevas et al., 2022; Magadán and Rivas, 2022; Solís-Castillo and Marquina-Lujan, 2022). These entail an approach to strategies inherent in communication and its spectacularization.

What is defined as the spectacularization of education, specially developed in edu-communication, is closely related to what in other communication fields is identified as representation to attract attention (spectaculum, spectare, to look at) and exhibition, taken to the extreme in the omnipresent mass or social media (degenerating into the society of the spectacle), in a utilitarian economy, sacrificing knowledge in favor of entertainment to ensure control and social persuasion. Falling into these economies is precisely one of the great risks of the educational trends proposed in the hypothesis of this work, and it is worth initiating a deeper reflection on them.

The discussion about the risks of spectacularization and edutainment, and the use and abuse of new technologies and tools, demands reflection so as not to fall into technological conformity (Eco, 1964, p. 122). A critical approach would be to rebut the benefits and, in a critical sense, remedy the shortcomings of this new educational model that is on the verge of becoming worldwide, and which, in our humble opinion, must be weighed, studied, analyzed, and perhaps transformed in some aspects. Innovating just for the sake of innovation is not the way. Communication, which is the basis of all educational exchange, has already suffered the ravages of spectacularization. For example, news broadcasts are increasingly filled with augmented reality and increasingly empty of pure information and truthful reality. Twitter or Instagram can be observed to see how much true communication there is, and to evaluate whether the most spectacular content is the most valuable and whether all these examples are proof of progress towards a more authentic and sustainable human reality and dimension.

While it could be argued that the use of new technological tools such as augmented reality in news broadcasts (Pérez-Seijo and Vizoso, 2022) would bring the audience closer to the scene of the news and improve assimilation of the information (Gaztaka et al., 2020), it is also important to consider that an increase in spectacularization decreases the time for explanation and deepening, in favor of simplification and staging that leads, as has been seen, to an inevitable trivialization and banalization of the information (Labio-Bernal, 2008). This is also true on social media, where even interactivity is in question and the supposed citizen participation in news reporting has been questioned for years (Arrabal-Sánchez and de-Aguilera-Moyano, 2016), and where calling attention, brevity, and immediacy increasingly take precedence over contrasted information, truthfulness, and depth (Bazaco et al., 2019).

The spectacularization of education seems to follow a facilitative and massive orientation of technological contemporaneity (Irwanto et al., 2022). But paradoxically, this contradicts another orientation of the same contemporaneity, namely, the lucidity of current neuroscience, warning us of the three-dimensional power of human communication, as effective as it is genuine. Thus, while robotics and artificial intelligence strive to conquer the sensory, affective, emotional world, that is, the closest and most real possible to human relationships in their synapses, humans surprisingly want to share knowledge in a one-dimensional way: a screen or viewer, where the theatricality of characters dilutes (probably prevents) the intimacy of the deep cognitive process.

To prevent education from following the wrong paths of the spectacularization of communication, with edutainment and the use and abuse of ICT and screens, we must promote interdisciplinary research in education and communication, as initiated in this research group, to give rise to a profound and critical debate regarding new tools, technologies, and methodologies in the educational field.

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