

AULAS VIRTUALES EN LA EDUCACIÓN SECUNDARIA. PROPUESTAS PARA LA INSPECCIÓN EDUCATIVA

VIRTUAL CLASSROOMS IN SECONDARY EDUCATION. PROPOSALS FOR EDUCATION INSPECTORATE

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Resumen

El presente estudio tiene como objetivo evaluar la eficacia de las aulas virtuales en el aprendizaje de los estudiantes de secundaria en España, desde la perspectiva de la inspección educativa. Utilizando un enfoque cualitativo basado en el análisis documental, se revisó informes de inspección, políticas educativas y estudios previos, para valorar el rol de la inspección educativa en la supervisión de las aulas virtuales, la calidad pedagógica, y los deberes y derechos del profesorado. Los hallazgos revelaron que, aunque las aulas virtuales ofrecen flexibilidad y acceso a recursos educativos, su efectividad depende en gran medida de la calidad de la implementación pedagógica y el acceso a las tecnologías adecuadas. Además, se destacó el papel crucial de la inspección educativa en la supervisión y mejora de estas plataformas. Las recomendaciones incluyen mejorar la formación docente, fortalecer la infraestructura tecnológica y promover la equidad educativa. Para futuros estudios se podría explorar las experiencias directas de docentes y estudiantes, así como el impacto a largo plazo de las aulas virtuales en la educación secundaria, tanto en España como en diversas partes del mundo.

Palabras clave: *Aulas virtuales, educación secundaria, inspección educativa, calidad pedagógica.*

Abstract

The present study aims to evaluate the effectiveness of virtual classrooms in the learning of secondary education students in Spain, from the perspective of education inspectorate. Using a qualitative approach based on documentary analysis, inspection reports, educational policies, and previous studies were reviewed to assess the role of education inspectorate in the supervision of virtual classrooms, pedagogical quality, and teachers' duties and rights. The findings revealed that, although virtual classrooms offer flexibility and access to educational resources, their effectiveness depends largely on the quality of pedagogical implementation and access to appropriate technologies. In addition, the crucial role of education inspectorate in monitoring and improving these platforms was highlighted. Recommendations include improving teacher training, strengthening technological infrastructure and promoting educational equity. Future studies could explore the direct experiences of teachers and students, as well as the long-term impact of virtual classrooms in secondary education, both in Spain and in various parts of the world.

Keywords: *Virtual classrooms, secondary education, education inspectorate, pedagogical quality.*

1. INTRODUCTION

In recent decades, the integration of information and communication technologies (ICT) in education has significantly transformed teaching and learning processes. Virtual classrooms, in particular, have emerged as a crucial tool in secondary education, especially in the wake of the COVID-19 pandemic that forced educational institutions around the world to rapidly adapt to distance learning models (De Luca, 2020). This abrupt change not only highlighted the need for digital resources and technological skills for both teachers and students, but also highlighted the importance of assessing and monitoring these new teaching modalities to ensure educational quality (Fernández-Batanero et al., 2021).

In the current context, virtual classrooms have been consolidated as an essential component of the educational process. These platforms not only facilitate the continuity of learning in emergency situations, but also offer flexibility and personalisation in the teaching process, allowing students to learn at their own pace and according to their individual needs (Salinas, 2021). In addition, virtual classrooms enhance access to a wide range of educational resources and foster collaboration among students through interactive tools (Moreno-Guerrero et al., 2020).

As the world begins to recover from the pandemic, it is clear that the role of ICT in education will never be the same again. Many experts agree that the experiences and learning gained during the pandemic will have a lasting impact on the way education is conceived and practised (Dhawan, 2020). The combination of face-to-face and digital learning, known as hybrid learning, is positioning itself as a preferred model for the future, offering the best of both worlds: the interaction and socialisation of the traditional classroom and the flexibility and personalisation of digital technologies (Graham, 2019).

This has highlighted the importance of addressing inequalities in access to technology. The digital divide, once considered a minor problem in many contexts, has emerged as a critical challenge that needs to be addressed to ensure equity in education (Pietro et al., 2020). This has led to a widespread call for education administrations and institutions to invest in technological infrastructure and digital inclusion programmes that ensure that all students, regardless of their socio-economic background, have access to the tools and resources necessary for their education.

The literature also notes that while virtual classrooms have been crucial for educational continuity during the pandemic, they are not a complete substitute for face-to-face teaching (Area et al., 2018; Villacis et al., 2021). Several authors have highlighted the challenges associated with online teaching, such as the lack of face-to-face interaction, the difficulty in maintaining student motivation and the impact on the mental health of students and teachers (Bao, 2020). This has led to widespread recognition that the future of education is likely to be hybrid, combining the benefits of online teaching with the advantages of face-to-face education (Graham, 2019).

In this order of ideas, the general objective of the study is to evaluate the effectiveness of virtual classrooms in the learning of secondary education students from the perspective of education inspectorate. In order to achieve this objective, the following specific objectives have been set out: (a) To analyse the role of the education inspectorate in the supervision and evaluation of virtual classrooms at levels such as secondary education, based on Organic Law 3/2020, amending the LOE (LOMLOE) and other relevant regulations such as Organic Law 3/2018 on Personal Data Protection and the General Data Protection Regulation (GDPR), (b) To assess how the implementation of virtual classrooms affects pedagogical quality, and (c) To explore the rights and duties of teachers in virtual classrooms in compulsory secondary education.

It is worth noting that the study of virtual classrooms from the perspective of education inspectorate is crucial for several reasons. First, because the

effective implementation of virtual classrooms depends not only on the technology used, but also on the pedagogy applied and the institutional support available (Reimers & Schleicher, 2020). Education inspectorate has a key role in ensuring that these elements are aligned to provide quality education. Second, the evaluation of virtual classrooms for education inspectorate allows for the identification of good practices and areas for improvement, thus contributing to the development of more effective educational policies. Furthermore, in a context of increasing reliance on digital technologies in education, it is essential to ensure that virtual classrooms do not exacerbate existing inequalities, but rather promote equity and inclusive access to education.

To guide this study, the following research questions are proposed:

- a) How can education inspectorate contribute to improving the implementation and effectiveness of virtual classrooms in secondary education?
- b) How does the implementation of virtual classrooms influence the pedagogical quality and academic performance of secondary education students?
- c) What are the main benefits and challenges of virtual classrooms in secondary education from the perspective of students and teachers?

2. THEORETICAL FRAMEWORK

2.1. Definition of virtual classrooms

Virtual classrooms are defined as digital environments where teaching and learning processes take place through the use of online platforms that allow synchronous and asynchronous interaction between teachers and students (Bates, 2019). The evolution of virtual classrooms has been marked by the development of increasingly advanced and accessible technologies, as well as by the growing demand for flexible teaching methods that enable anytime, anywhere learning (Garrison & Vaughan, 2018).

In their early days, virtual classrooms were primarily spaces for the storage and distribution of educational resources. However, with the emergence of more interactive and collaborative platforms, such as Moodle and Google Classroom, the focus has shifted from being a repository of content to becoming a dynamic space that facilitates active learning and social interaction (Dabbagh & Kitsantas, 2012). This evolution has been driven not only by technological advances, but also by changes in educational theories that promote student-centred learning and the development of 21st century skills.

2.2. Historical development of virtual classrooms

The first generation of virtual classrooms consisted of platforms known as Learning Management Systems (LMS), which were developed in the late 1990s and early 2000s. These platforms were primarily designed to manage courses, distribute educational materials and conduct assessment activities (Alavi & Leidner, 2001). LMSs, such as Blackboard and Moodle, allowed teachers to upload content, assign homework and keep track of student grades.

During this initial stage, virtual classroom platforms focused mainly on course management and content delivery. However, they offered limited interaction and lacked advanced features to personalise learning or foster collaboration among students (Siemens, 2004). Online education, at this stage, often relied on the one-way transfer of information, reflecting a traditional teacher-centred approach to teaching.

As technologies advanced, virtual classroom platforms began to incorporate tools that facilitated greater interactivity and collaboration. The second generation LMS included features such as discussion forums, chat rooms and real-time collaboration tools (Dabbagh & Kitsantas, 2012). These enhancements allowed students to interact with each other and with their teachers in a more dynamic way, promoting a more student-centred approach and collaborative learning.

At this stage, technologies such as videoconferencing and online collaborative workspaces began to be explored, allowing for more synchronous and social learning. The rise of Web 2.0 tools, such as blogs, wikis and social networks, also influenced the development of virtual classroom platforms, allowing students to create, share and co-construct knowledge more effectively (Falcón Villaverde, 2013).

The third generation of virtual classroom platforms has seen the integration of advanced technologies that allow for a more personalised and adaptive learning experience. Adaptive learning uses algorithms and data analytics to adjust content and activities based on the individual needs of each learner (Brusilovsky & Millán, 2007). Platforms such as Knewton and Smart Sparrow excel in this aspect, providing personalised learning experiences based on the student's performance and learning style.

In addition, there has been a growth in the integration of artificial intelligence (AI) technologies into virtual classroom platforms. AI can be used to provide instant feedback, identify areas where students may need additional support and predict future academic performance (Baker & Inventado, 2014). For example, intelligent tutoring systems (ITS) use AI to simulate human tutor support, adapting teaching strategies in real time to student responses and needs (VanLehn, 2011).

The fourth generation of virtual classroom platforms is marked by the integration of immersive technologies such as virtual reality (VR) and augmented reality (AR). These technologies offer highly interactive and immersive learning experiences that can significantly improve knowledge comprehension and retention (Dede, 2009).

VR allows students to interact with three-dimensional environments in a virtual space, providing an immersive learning experience that would not be possible in a traditional classroom. For example, the VR Classroom platform allows students to explore historical sites, conduct science experiments and

participate in simulations of real-world situations without leaving their home (Freina & Ott, 2015).

On the other hand, AR superimposes digital information on the real world, enriching the learning experience by allowing students to interact with virtual objects in their physical environment. Tools such as Google Expeditions and Augmented Class have integrated AR into virtual classrooms, allowing students to visualise 3D models, explore complex environments and perform interactive tasks that enhance their understanding of abstract concepts (Billinghurst & Dünser, 2012).

2.3.- Benefits and challenges of virtual classrooms

The use of virtual classrooms in secondary education has several benefits. Firstly, it allows for personalised learning, as students can access resources at any time and learn at their own pace (Means et al., 2014). In addition, virtual classrooms foster collaboration and communication by providing tools that facilitate interaction between students and teachers (Hrastinski, 2008).

However, virtual classrooms also present significant challenges. One of the main problems is the lack of equitable access to technology and connectivity, which can exacerbate existing educational inequalities (Hodges et al., 2020). In addition, online teaching requires specific pedagogical skills that many teachers do not yet possess, which may affect the quality of learning (Rapanta et al., 2020). Finally, the lack of face-to-face interaction and direct supervision may decrease the engagement and motivation of some students (Stone & Springer, 2019).

2.4.- The role of the education inspectorate

Education inspectorate can play a key role in the implementation and evaluation of virtual classrooms. Their role would focus on ensuring that online

educational practices meet both curriculum and regulatory quality standards, and that effective pedagogical methods are used (OECD, 2019). The monitoring and evaluation of virtual classrooms by educational inspectors would not only focus on the quality of educational content, but also on the interaction and engagement between teachers and students. It should be noted that this is very difficult for inspectors to evaluate because they do not have access to school platforms, and it requires human and technical resources that the inspectorate currently lacks.

Educational inspectors can provide constructive feedback to teachers on how to improve their teaching in virtual environments, as well as identify training and professional development needs (Cordingley *et al.*, 2020). The identification of training and professional development needs is another key area where educational inspectors can have a significant influence. By providing detailed and specific feedback, inspectors can help teachers to improve their digital and pedagogical skills. This can include recommendations for in-service training courses, workshops and seminars that address the latest trends and best practices in online education.

In addition, the education inspectorate can play a crucial role in promoting equity in virtual classrooms by ensuring that all students have access to the necessary resources and that inclusive strategies are implemented (Ainscow, 2020). Equity in virtual classrooms is an ongoing challenge, and educational inspectors play a crucial role in promoting it. This involves ensuring that all students, regardless of their socio-economic background, have access to appropriate devices and internet connectivity. However, this is not only a matter for the inspectorate, but also for education administrations and family characteristics. In addition, inspectors should check that inclusive strategies are in place that address the needs of students with disabilities and those who require additional support.

The education inspectorate should also encourage innovation and continuous improvement in virtual classrooms. This can be achieved by

identifying and disseminating best practices and promoting a research-based approach to learning. Inspectors can collaborate with educational institutions and research organisations to develop and test new educational methodologies and technologies

Collaboration between educational inspectors with training advisors and management teams is essential for the success of virtual classrooms. Inspectors should work closely with all stakeholders to ensure effective implementation of education policies and continuous improvement of educational quality. This includes building support networks and facilitating communities of practice where teachers can share experiences and resources. A proactive approach by the education inspectorate is therefore vital to maximise the benefits of virtual classrooms and minimise their challenges.

3. METHODOLOGY

3.1. Type of study

The present study is a documentary, qualitative and reflexive analytical study. This approach has been chosen because of the exploratory nature of the topic and the need for an in-depth and contextualised understanding of perceptions and experiences related to the use of virtual classrooms in secondary education from the perspective of education inspectorate. A qualitative study allows for the detailed exploration of complex phenomena, capturing the subtleties and variations in participants' experiences and opinions (Merriam & Tisdell, 2016).

3.2. Data collection instruments

Data collection has been carried out through documentary analysis, which involves a thorough and systematic review of documents relevant to the study. These documents include:

- Education inspectorate's reports: official reports issued by education inspectorate bodies in Spain, which address the implementation, use and effectiveness of virtual classrooms in secondary schools, have been analysed.

- Educational policies and guidelines: current educational legislation and the guidelines issued by the Ministry of Education and the regional education departments on the use of ICT and virtual classrooms in secondary education have been reviewed.

- Previous studies and academic literature: we reviewed academic studies, journal articles and existing literature analysing the use of virtual classrooms in secondary education, their benefits, challenges and the role of education inspectorate in their implementation and evaluation.

Documentary analysis allows for an in-depth understanding of the regulatory and practical context in which virtual classrooms operate and facilitates the identification of trends, patterns and areas for improvement from an education inspectorate's perspective (Bowen, 2009).

3.3. Sample

The population studied in this documentary analysis are secondary schools in Spain. Although a numerical sample has not been defined in traditional terms, the documentary analysis has focused on documents that represent a significant sample of schools in different regions of Spain. Documents from some autonomous communities have been selected and relevant regulations on the subject have been considered, such as Organic Law 3/2020 of 29 December amending Organic Law 2/2003 of 3 May on Education (LOMLOE); Organic Law 3/2018 on Personal Data Protection; and the General Data Protection Regulation (GDPR), officially known as Regulation (EU) 2016/679 of the European Parliament and of the Council, which allows for a broad and representative view of the implementation of virtual classrooms at national level. The selection of this reference regulation and other scientific dissemination documents seeks to ensure the inclusion of a diversity of educational contexts and practices,

reflecting variations in the adoption and use of virtual classrooms in different settings.

3.4. Analysis procedure

The analysis procedure of the collected data has been carried out using a qualitative approach of content analysis, which allows for the identification of significant patterns, themes and categories within the reviewed documents (Elo & Kyngäs, 2008). The content analysis has been developed in several phases:

a) Familiarisation with the data: a preliminary reading of all the selected documents was carried out to obtain a general understanding of the contents and contexts addressed.

b) Initial coding: during the second reading, relevant sentences, paragraphs and sections referring to key aspects related to virtual classrooms, such as their implementation, benefits, challenges, pedagogical practices and the role of education inspectorate, were identified and marked.

c) Category development: from the initial coding, data were grouped into broader thematic categories, such as "supervision of virtual classrooms", "pedagogical quality" and "teachers' rights and duties".

d) Analysis and interpretation: each category was analysed in depth to identify patterns and relationships between them, and the findings were interpreted in the context of the study's objectives and research questions.

4. RESULTS

The documentary analysis carried out has revealed several important findings in relation to the use of virtual classrooms in secondary education in Spain from the perspective of the education inspectorate. The most relevant ones are shown below.

4.1. Monitoring of virtual classrooms

In the current context, the adoption of e-learning technologies has grown exponentially, especially in the wake of the COVID-19 pandemic. This has generated the need for education authorities and, in particular, educational inspectors to play an active role in monitoring the quality of these digital environments. The incorporation of technological tools should not compromise educational standards, but should complement face-to-face teaching and ensure inclusion and equity.

The current state of supervision of virtual classrooms by education inspectorate is an underdeveloped area in Spain. Academic sources point out that, although educational regulations state that inspectors must supervise all activities carried out in schools, access to and supervision of virtual classrooms still lacks a clear regulatory framework and regulated procedures (Campos, 2024).

There are significant differences between autonomous communities in terms of the regulation of access to platforms and the management of data protection in these environments (Cotino, 2023). In some of them, for example, inspectors cannot freely access the virtual classrooms of their assigned schools and can only do so upon complaint and after receiving authorisation from the competent management body (González, 2023).

The Framework for Good Performance of Education Inspection (2021) published by USIE suggests that a more integrated approach to monitoring virtual platforms is needed to ensure both pedagogical quality and the protection of digital rights. In addition, it is recommended that specific rules be established for the inspection of virtual classrooms, regulating the access of inspectors and their participation in the evaluation of the use of these platforms.

Article 153 of the Organic Law 2/2006 of 3 May on Education (LOE) establishes the right of inspectors to free access to all the activities of educational centres, which must obviously include virtual classrooms. This access is essential for inspectors to be able to observe and evaluate the

pedagogical activities that take place online. However, their presence must be discreet, so as not to disrupt the normal classroom dynamics. In other words, inspectors must be able to evaluate the digital environment as it is experienced by students and teachers, thus ensuring an authentic and realistic evaluation. To this end, platforms should allow access to inspectors anonymously or with an observer profile, without disrupting the natural interaction.

Supervision of virtual classrooms is essential to ensure that digital environments meet the pedagogical and organisational objectives established by educational regulations. Article 151 of the Organic Law on Education (LOE), as amended by the LOMLOE, gives the education inspectorate responsibility for supervising, evaluating and monitoring educational centres and their projects. In the context of virtual classrooms, this means reviewing the quality of the content and teaching methodologies used on digital platforms.

Of course, this access represents an additional challenge in terms of privacy and data protection, as sensitive data of both students and teachers is handled.

Access to virtual classrooms poses challenges related to the protection of personal data. Organic Law 3/2018 on Personal Data Protection and the General Data Protection Regulation (GDPR) state that data processing in the educational environment must be appropriate, limited to strictly educational purposes, and protect the privacy of students and teachers. The 23rd additional provision of the LOE regulates the processing of students' personal data and underlines that schools may only collect the data necessary to fulfil their educational functions.

The education inspectorate has a responsibility to ensure that schools implement adequate measures to protect personal data on digital platforms. This should include reviewing the data protection policies and security protocols established by schools to ensure that they comply with applicable regulations. Inspectors should ensure that they only access data that is absolutely necessary to fulfil their oversight functions, while respecting the principle of data minimisation.

Likewise, the education inspectorate should have access to virtual classrooms through transparent and standardised protocols and procedures, in a manner similar to all actions carried out within the framework of its functions and powers.

4.2.- Evaluation of the pedagogical quality of virtual classrooms

The evaluation of virtual classrooms should focus on the pedagogical quality of the content and methodology used in these digital environments. Inspectors should ensure that the resources used on the platforms, such as digital textbooks, videos, and interactive activities, are aligned with the established curricular objectives. They should also ensure that virtual platforms facilitate interaction between students and teachers and promote active learning.

The use of innovative methodologies in the digital environment is crucial to promote active student participation. Particularly relevant, however, is the monitoring of student assessment methods. Inspectors should ensure that online assignments and examinations are appropriate and fair, and that assessment criteria are clearly defined. It is essential to ensure that students receive constructive and personalised feedback on their performance.

In any case, it is necessary for education administrations to clearly define the role of virtual classrooms and how they fit in with face-to-face education.

4.3.- Teachers' rights and duties in virtual classrooms

In this sense, one of the most sensitive issues in relation to virtual classrooms is the impact of their implementation on teachers' working conditions. The integration of virtual platforms is not clearly regulated in the regulations, which has generated uncertainty about the time dedicated by teachers to the management of these environments. Although it can be understood that teachers can manage virtual classrooms during their free time

or, in any case, during non-teaching hours, there is no specific regulation that delimits the time and resources required for this purpose.

Working in virtual classrooms also requires advanced digital skills and continuous adaptation to new tools and methodologies. Many teachers face overloaded workloads in managing both face-to-face and virtual classrooms, which can affect the quality of teaching. In this sense, inspectors need to be aware of how these conditions are impacting on teacher performance and work with management teams to find solutions to alleviate the workload by providing appropriate training and technical support.

5. DISCUSSION

The results of this study are in line with previous research on the use of virtual classrooms in secondary education in various contexts and places around the world. Following this analysis of the current situation in Spain, it seems appropriate to list a number of areas in which, from the perspective of education inspectorate, significant progress can be made towards improvement. These will be developed below

a) Professional development and lifelong learning

From the point of view of the education inspectorate, it is essential that teachers and management teams receive continuous training to keep them up to date with digital skills and the pedagogical use of technology. The inspectorate should ensure that schools provide training programmes that not only teach the technical use of platforms, but also promote the development of specific pedagogical strategies for the digital environment. This is vital to ensure that teachers correctly integrate tools such as learning management systems (LMS), video conferencing and interactive applications into their virtual classrooms, promoting active teaching.

The education inspectorate should evaluate the effectiveness of these training programmes and make recommendations to improve access and flexibility. It should also ensure that these programmes reflect the latest

technological developments, enabling teachers to keep up to date with educational innovations.

b) Establishing clear rules for working in virtual classrooms

For the education inspectorate, one of the main concerns is the lack of clear regulation of teaching work in virtual classrooms, as mentioned above. At present, many teachers manage these platforms outside their working hours due to the absence of rules that precisely define the time needed to carry out tasks such as content creation, forum management and online assessment.

From this perspective, the education inspectorate should promote the creation of specific regulations governing the workload of teachers in the digital environment. The regulations should set clear limits and distribute responsibilities fairly between teachers and management teams, so as to avoid overloading workloads. The education inspectorate should also ensure that teachers receive the necessary technical and pedagogical support to perform their duties efficiently.

c) Improving data protection protocols

Inspectors must verify that educational institutions comply with current regulations, such as Organic Law 3/2018 on Personal Data Protection and the General Data Protection Regulation (GDPR). In addition, inspectors must identify vulnerabilities and ensure that the principles of data minimisation and purpose limitation are complied with. This ensures that students' and teachers' personal data are used only for the intended educational purposes and that measures are taken to prevent potential security breaches.

d) Comprehensive and participatory monitoring

Effective supervision of virtual classrooms must be comprehensive and collaborative. Education inspectorate should not be limited to simple observation, but should encourage continuous improvement of pedagogical practices. To this end, it is necessary to work closely with management and teaching teams to identify areas for improvement and propose joint solutions that are realistic and in line with the needs of the school.

Inspectors must ensure that the quality of pedagogy in virtual environments remains aligned with curriculum standards and promotes active and meaningful learning. Part of this work includes ongoing assessment of students' academic outcomes on digital platforms, identifying both successes and areas in need of adjustment.

Supervision should also focus on fostering pedagogical innovation, encouraging teachers to experiment with new technologies and methodologies. It is crucial that inspectors promote the creative and effective use of digital tools to complement face-to-face teaching, encouraging the implementation of hybrid teaching models that enrich the student experience.

5.1.- Limitations of the study:

It should be noted that this study, as well as its contributions, has several limitations that should be taken into account when interpreting the results and considering future research. These will be mentioned below.

a) Documentary data unit

Being based on documentary analysis, the study may be limited by the quality and nature of the documents available. Education inspectorate's reports, policies and guidelines may not fully capture the experiences and perceptions of teachers and students in the use of virtual classrooms. Future studies could benefit from additional methods, such as interviews and surveys, to gain a more complete understanding.

b) Variability in the implementation of virtual classrooms

The implementation of virtual classrooms can vary significantly between different schools and autonomous communities. This variability may influence the results obtained, limiting the study's ability to generalise its findings to a national level. Future studies could address this limitation by conducting comparative studies that examine how different contexts affect the effectiveness of virtual classrooms.

c) Focus on the education inspectorate's perspective

While this approach is relevant to understanding the role of inspectorate in the implementation of virtual classrooms, it may not fully take into account other influential factors, such as educational policies at the government level, technological infrastructure and school culture. Incorporating these perspectives in future research could provide a more holistic view of the factors affecting the implementation and success of virtual classrooms.

d) Limited impact of the socio-economic context

The analysis is mainly focused on education inspectorate and less on how technological and socio-economic inequalities directly affect students and their families. Future studies could further explore these dimensions in order to develop effective strategies to address educational inequalities in virtual environments.

6. CONCLUSIONS

This study has provided a different view of virtual classrooms in secondary education in Spain and the role that education inspectorate can play in their proper development. Several key findings were identified, for example, the necessary intervention of the education inspectorate in the improvement of virtual classrooms is fundamental to guarantee quality and equitable education in the digital environment.

Through active and collaborative supervision, inspectors can help schools to implement continuous training, develop clear rules on working on digital platforms and improve data protection protocols based on the regulations to be established by each education administration. In addition, supervision should be comprehensive and participatory, involving teachers in the improvement process and promoting pedagogical innovation.

These measures not only guarantee compliance with current regulations, but also ensure that virtual classrooms become an effective complement to

face-to-face teaching, promoting inclusive learning adapted to the needs of the 21st century. The education inspectorate plays a key role in this process, guiding and supporting schools in adapting to new technological and pedagogical demands.

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