

Hybrid Models in Teleworking and Online Education: Exploring Theoretical Perspectives and Digital Divide. A Systematic Literature Review and a Bibliometric Analysis

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Abstract. *This article explores the manner in which teleworking and online education interact, outlining the challenges and opportunities spawned by these phenomena between years 2019 and 2023. The digitalisation processes have experienced an intense acceleration across various sectors during the Covid-19 pandemic, which compelled companies to adopt large-scale teleworking and educational institutions to transition to online schooling. Teleworking brought benefits such as increased flexibility and has reduced or eliminated commuting time, however research shows that unclear boundaries between professional and personal life can lead to stress and burnout. Moreover, online education has facilitated access to digital resources and enabled individualised learning paces, but it has also exposed major difficulties, among which unequal access to technology, limited in-person interaction and a decrease in student motivation. Families in which parents work from home while children take online classes illustrate this overlap of roles and the concurrent use of the same technological resources, generating time management challenges and productivity issues. This article employs a systematic literature review and a bibliometric analysis to emphasize the exponential increase of this topic in research since 2020. The key findings underline the importance of investing in digital infrastructure and IT competencies, as well as the need for clear public and organisational policies to protect employees' rights and to promote equity in access to education. Recommendations target policymakers, managers, educators and also parents, with an emphasis on the need for cooperation to promote a supportive environment for both remote work and online education. Ultimately, the paper proposes future research directions, including international comparative and qualitative investigations, as well as prospecting the emerging technologies.*

Keywords: work from home, teleworking, online education, Covid-19 pandemic, e-learning, bibliometric analysis.

Introduction

The Covid-19 pandemic has accelerated the digitalisation processes in most socioeconomic sectors at an unprecedented rate, as both education and workplaces were affected. Teleworking and e-learning initiatives existed before 2020, but the scope and speed of adopting them during the pandemic precipitated structural changes in the labour market, in the education systems and in daily life (European Commission, 2021).

Teleworking, in particular, defined as carrying out professional activities from home by means of technology – emerged as a rapid solution to mobility restrictions, reshaping the interaction between employers and employees and calling into question the traditional paradigms regarding workplace location and practices (Gould et al, 2023). At the same time, online education became inevitable for many educational institutions, from primary schools to universities and lifelong learning centres (Allen & Seaman, 2013). There were both advantages – access to digital resources, flexibility, personalised learning – and challenges (Florian & Toc, 2020) – unequal access to technology, limited face-to-face interactions, motivation issues, plus a sense of isolation among students and teachers (Bao, 2020) – during this swift transition.

Furthermore, parents working from home and, at the same time, having to care for their children or teenagers engaged in online education highlighted the overlapping of roles and the challenging management of resources (IRES, 2020). Although the schedules of the parents allowed a higher flexibility, favouring a better work-family balance, there was a lack of clear boundaries between the professional tasks and supervising the educational activities of their children, which often led to exhaustion and additional stress (Wang et al., 2021).

Employing a systematic literature review and a bibliometric analysis to explore the interaction between teleworking and online education, this article underscores the challenges and opportunities emerged from 2019 to 2023. We propose, in the end, future research directions and we also provide practical recommendations for a better management of work and education simultaneously in virtual environments.

Literature Review

Working from home: evolution and impact

Definitions and historical context

In terms of history, working from home existed since ancient times, when craftspeople and artisans worked in their own dwellings and households were production centres for different economic activities. Before factories and office buildings were invented, weaving, sewing, woodworking, blacksmithing and other crafts were mainly performed in domestic settings (Hotca, 2020). It not only provided flexibility, but it also integrated work into the daily lives of the families – a key aspect of the preindustrial economies (Duncan & O'Reilly, 2020).

The concept of teleworking, defined as practicing professional activities remotely, was introduced by the American researcher Jack Nilles during the 1970's oil crisis. Credited for the development of the concepts of telecommuting and telework centre, Nilles published in 1973 *The Telecommunications-Transportation Tradeoff*, in which he contended that information technology could replace the need for physical commuting, improving economic efficiency and reducing traffic congestion, therefore protecting the environment (Archives of IT, n.d.). For these innovative contributions, Nilles is considered to be the "father of telework", promoting the implementation of remote work in organisations and governmental agencies worldwide.

In Europe this type of work is supported by initiatives focused on labour dynamica and economic growth (Popescu, 2008). Also the International Labour Organisation (ILO) has emphasized the need to recognize independent work, home-based work, part-time work, and other forms of employment that define a modern, knowledge-based society (ILO, 1996). Such initiatives reinforce the importance of adapting to new economic and social realities, where remote work is becoming progressively significant.

The definition of working from home has evolved based on legislative contexts and expert perspectives. Various interpretations highlight different aspects of this concept. From a legal standpoint, Romania's Labour Code defines home-based workers as employees who perform their specific duties from their own homes (Labour Code, 2024). A technological perspective, as pointed by Peter Johnston, a member of the European Community, considers remote work to be dependent on electronic equipment for processing and exchanging information and documents (Sulă & Chiriac, 2017). In terms of sociology, work is grasped as a social construct whose meaning has changed over time. While people have engaged in work since the beginning of times, the definition of what "work" means varies across different historical periods, societies and cultures (Silion, 2022).

Accordingly, working from home, also known as telework, means carrying out professional activities away from the employer's premises, communicating and achieving tasks by technological means. It has significantly developed during the recent years, mostly due to the Covid-19 pandemic, which forced many organisations to adopt remote work models (Eurofound, 2020). This swift adaptation has revealed both advantages and disadvantages in home-based work, including how to manage the balance between professional and personal life (Barrero et al., 2021).

The Evolution of Working from Home

Before the Covid-19 pandemic, telework would occur mostly in sectors such as information technology, consulting, education, financial services, with low adoption rates in industries that would require physical presence (e.g., manufacturing and retail). The implementation of remote work was limited and many companies hesitated to adopt it. But the global health crisis prompted many organisations and institutions to implement flexible and remote work policies, including hybrid work models (OECD, 2020).

In this transition, technological developments were crucial, supporting remote collaboration and communication via videoconferencing platforms, online collaboration tools and project management systems. These technologies enabled companies to maintain productivity and to continue operations without the need of their employees' physical presence. As a result, more flexible policies were introduced by many employers and some of them eliminated physical offices entirely, opting for fully remote work (Savić, 2020).

Gould et al. (2023) examined the transition to remote work during the Covid-19 pandemic and its implications in measuring and evaluating work through digital technologies. According to this study, before the pandemic, remote work often benefited higher-paid employees, while employers were reluctant to allow certain staff categories to work from home. The restrictions imposed during the pandemic triggered a forced adoption of telework, leading many organisations to implement digital monitoring tools for the activities of the employees. However, these technologies failed to overcome the conceptual barriers to understanding how employees truly perform their work. The study also points out that, in the United Kingdom, a considerable part of the population did not transferred to remote work during the pandemic. To maximise the effect of future research in human-centered computing, a more inclusive and representative approach is recommended – one that goes beyond focusing solely on intellectual workers and embraces various job types (Gould et al., 2023).

Another study by Bartik et al. (2023) analysed the impact of the sudden and extensive shift to telework during the pandemic, concentrating on productivity perceptions and employee preferences. Drawing on national surveys of small business owners and employees in the United States, the study brings out three key findings:

1. **Adoption and Persistence of Remote Work:** During the first months of the pandemic, nearly half of small business owners reported shifting employees to remote work. This change was especially evident in sectors where tasks were compatible with teleworking, measured according to task-based definitions by Dingel and Neiman (2020). Initial adoption led to a sustained change in work arrangements, with companies and employees expecting remote work to continue (Bartik et al., 2023).
2. **Evolving Perceptions of Productivity:** At the beginning of 2020, 70% of small business owners saw a decrease in productivity due to remote work. But by 2021, the perception has shifted, with the median owner reporting a positive effect of telework on productivity. This evolution suggests a higher adaptation and efficiency as companies and workers became familiar with new methods of working (Bartik et al., 2023).
3. **Employee Preferences for Remote Work:** Approximately 21% of employees indicated they would accept a pay cut of more than 10% to continue working from home. Nonetheless, the median employee in a remote-compatible role would not give up any salary to retain remote work. This brings out differences in individual preferences, although remote flexibility remains valued by a substantial part of the workforce (Bartik et al., 2023).

The conclusion is that the Covid-19 pandemic has accelerated a significant transformation in the manner of perceiving and implementing telework. Even though the initial shift to remote work was driven by public health constraints, it has evolved into a sustainable, long-term practice for many organisations. Technological advances and changes in the attitudes of the employers have cemented telework as a central component of future work models, influencing productivity, work-life balance and office space design.

The impact of Working from Home

Working from home can be explored from various perspectives: productivity, work-life balance, mental health and economic implications.

Productivity: Research indicates mixed results on productivity when working from home. By eliminating commuting and having the prospect of creating a personalised environment, efficiency might receive a boost (Barrero et al., 2021). However, the absence of face-to-face interaction may impede collaboration, potentially hindering innovation and creativity (Barrero et al., 2021). Recent studies emphasize the need to adopt advanced collaboration technologies and managerial strategies suited to remote environments to optimise productivity (Choudhury et al., 2020). Work efficiency can also vary greatly according to the nature of the task and the degree of employee autonomy (Golden, 2006).

Work-life balance: Telework has enhanced flexibility, allowing employees to schedule their time more effectively and devote more time to family, thus improving work-life balance (Eurofound, 2021). Yet, it also brings significant hurdles, as blurred boundaries between work and personal life can cause work overload, difficulty disconnecting and increased burnout risk. Recent studies reinforce the importance of an effective time management besides organisational policies promoting actual downtime at the end of the workday (Allen et al., 2021).

Mental health: The effects that working from home has on mental health have been widely studied, especially in terms of social isolation and reduced face-to-face interaction with colleagues. Although remote work provides flexibility and autonomy, it can lead to a greater social isolation and stress due to limited in-person contact (Wang et al., 2021). In addition, an ill-defined workspace can exacerbate feelings of loneliness and enhance emotional exhaustion. One study advocates for regular communication and proactive managerial support to counter these effects (Wang et al., 2021). Recent research also shows that overwork and unclear boundaries between professional and private life can amplify the anxiety of the employees (Kniffin et al., 2021). Consequently, psychological support programs and virtual interaction initiatives can mitigate negative mental health effects.

Economic impact: On the macroeconomic level, working from home has triggered major changes in market dynamics. Two such shifts were reduced office space demand and boosted investment in the digital infrastructure (Bloom, 2021). These changes have lowered operational costs for employers, but they also reshaped the real estate market, requiring adjustments in urban development. Furthermore, growing reliance on information technology has underscored the need for cybersecurity investment – an important concern in telework settings (OECD, 2021).

Challenges and future perspectives: While the advantages of telework are clear, there are also considerable challenges. The lack of specific regulations concerning the rights of the employees in home-based work can create legal uncertainties (Eurofound, 2021). Cybersecurity becomes increasingly critical given the greater volume of data handled online (OECD, 2021). Furthermore, preserving organisational culture without face-to-face interaction is complicated, affecting team cohesion (Savić, 2020). Looking ahead, hybrid models that blend remote work with office presence are expected to expand, catering to each sector's unique requirements (Barrero et al., 2021). Continuous development of collaboration technologies and flexible policies will be crucial for a smooth transition to these work arrangements, thereby enhancing productivity and employee well-being (Choudhury et al., 2020).

Online Education in the Context of Working from Home

This section explores the evolution of online education in relation to home-based work, examining the scenario prior to the Covid-19 pandemic and the significant changes brought by the crisis.

The Situation before Covid-19

Before the pandemic, online education was more common in higher education and professional development fields, offering a complementary alternative in pre-university education. Platforms like Moodle or Coursera supported specialised courses that supplemented traditional teaching methods (World Economic Forum,

2020). In this environment, technology access and digital skills were selective advantages, especially for well-resourced institutions and digitally experienced students (Allen & Seaman, 2013).

Another key aspect resides in how online education was seen as a chance for pedagogical innovation from its early stages. Picciano (2002) emphasizes that, even before the pandemic, online technologies were not only content delivery tools but also means of supporting interactive, collaborative learning. This mindset spurred the rise of hybrid learning models that combine traditional teaching with digital advantages, paving the way for future developments in educational methods.

Moreover, initial research on educational technologies highlighted the importance of institutional investment in digital infrastructure and the creation of effective pedagogical strategies. Johnson et al. (2014) found that institutions pioneering online education benefited from robust technological bases and innovative teaching, enabling personalised, scalable learning. These institutions laid a solid foundation for the later growth of distance learning, illustrating the transformative potential of the technology in education.

Changes Brought by the Covid-19 pandemic

The pandemic quickened the shift to online education, coercing an abrupt and at times improvised readjustment of the teaching methods. In countries like Romania, for instance, inadequate devices and inconsistent Internet connectivity introduced significant obstacles for both students and teachers (Florian & Țoc, 2020). Additionally, parents working from home had a direct impact on children's learning by sharing equipment and juggling complex schedules, underscoring the value of digital skills at home (Botnariuc et al., 2020). The rapid shift to online classes affected the quality of education, exposing the need for more teacher training and for adapting the curricula to online requirements (Hodges et al., 2020).

Research also shows that minimal in-person interaction online can hamper learning, posing challenges in maintaining attention and fostering collaboration among students (Bao, 2020). Accordingly, innovative pedagogical strategies – encompassing both synchronous and asynchronous teaching – are essential for optimising learning outcomes. The shift to online learning involves not simply the adoption of digital tools, but also a broader cultural change in educational institutions, wherein flexibility and adaptability gain paramount importance.

The Challenges of Online Education in the Context of Working from Home

The sudden transition to telework and, consequently, to online education has generated a range of significant challenges affecting both students and parents. A primary concern is role overlap. In a home-based work environment, parents must concurrently meet professional obligations and support their children's education. This dual role, often executed without a clear boundary separating work and family time, can create stress and harm both professional productivity and student performance (IRES, 2020). Studies suggest that a poorly defined schedule separating these spheres can escalate burnout and reduce family well-being.

A second critical factor is access to technological resources. Not all families have the necessary devices to support both telework and online education. Connectivity problems and insufficient or outdated equipment erode the quality of education, widening gaps in academic access and performance. Florian and Țoc (2020) stress that such shortcomings deepen the already existing student inequalities, potentially affecting academic success in the long run.

Furthermore, the lack of social interaction stands out as a major problem. For children, limited direct contact with teachers and peers may lower motivation and concentration, undermining the learning process. Meanwhile, parents working from home can experience professional isolation, reducing chances for networking and knowledge-sharing (Dobre, 2010). In combination, these factors can erode social connections and spark emotional difficulties for adults and children.

Regional and socioeconomic disparities in digital access also remain a critical issue. Differences in digital infrastructure, economic resources and educational policies across regions significantly affect the quality and accessibility of online education. This analysis emphasizes the need for targeted investments

and policy interventions aimed at mitigating these inequalities, ensuring that underprivileged communities are not left behind in the digital transformation process (OECD, 2020).

Opportunities Offered by Online Education in the Context of Working from Home

Yet, despite these issues, the shift to online education also presents key opportunities that can reshape the educational experience in a home-based work setting. Increased flexibility is an important benefit. Students can access materials at their own pace and adopt schedules that suit their unique needs. Meanwhile, parents may adjust their work to offer support, creating an educational space that is more personalised and adjustable to each family's reality (Bodnariuc et al., 2020). This approach can also alleviate the stress of rigid routines, fostering a more harmonious blend of professional and educational responsibilities.

Atti et al. (2022) mention that the adoption of remote-first environments boosted flexibility, lowered operational costs and promoted the development of digital competencies in online education.

Another clear advantage is developing digital competencies. Leveraging online platforms fortifies the learning process but also strengthens the digital skills of students and parents alike. Through sustained interaction with collaboration tools and digital resources, students gain comfort and autonomy in navigating virtual tools, while parents can build new proficiencies to enhance their involvement in their children's education (Aprosoaie-Iftimi, 2014). This digital literacy aspect is fundamental to a society undergoing a rapid technological transformation.

Non-Pandemic Interactions and Hybrid Models

Outside the context of the pandemic, the interaction between teleworking and online education has evolved significantly with the widespread adoption of hybrid work and learning models. These hybrid models combine the benefits of remote work with the advantages of face-to-face interactions, offering a balance that meets both professional and educational needs.

Educational institutions are adopting strategies that combine physical presence with digital technology to create flexible and personalised learning environments. Thus, courses may be partially delivered in classrooms while being complemented by online platforms, enabling access to digital resources and furthering asynchronous learning. This model not only lessens reliance on fixed locations, but also allows the adjustment of the teaching methods to students' individual learning styles (OECD, 2020).

In the workplace, companies are implementing hybrid policies that allow employees to alternate between working from home and being present in the office. This approach supports a better balance between professional and personal life, contributing to reduced stress and preventing burnout. Hybrid policies also facilitate cooperation and innovation by mixing technological flexibility with the advantages of direct human interaction (Eurofound, 2021).

Furthermore, trends in digital transformation reveal that hybrid models are an integral part of long-term evolution and regulations and policies are increasingly being adapted to support these changes. Governments and international organisations are placing greater emphasis on developing digital infrastructure and on continuous professional training, to ensure that the transition to hybrid models is sustainable and equitable (Choudhury et al., 2020).

Therefore, hybrid models are not only a temporary solution in the post-pandemic world but also a strategic direction for modernising and enhancing both work and educational environments.

Methodology

The purpose of this study is to highlight the impact of working from home on online education by applying two complementary methods: (1) a systematic literature review and (2) a bibliometric analysis.

Source Search and Selection Procedure

The literature selection process focused on ensuring that the studies included were both relevant and are based on reliable methodology. Researchers specifically targeted works that directly addressed themes connected to remote work, teleworking practices, online education and digital teaching environments, especially those shaped by the Covid-19 pandemic. The search strategy was based on creditable databases such as Web of Science, Scopus and Google Scholar, using an array of keywords including “work from home”, “teleworking”, “remote work”, “online education”, “online learning”, “distance learning”, “Covid-19 pandemic”, “e-learning pandemic” and “digital teaching”. By focusing on publications from 2019 to 2023, the review endeavoured to capture the rapid and significant changes triggered by the pandemic.

The inclusion criteria guaranteed that the selected studies were not only relevant to the topic but also met a high standard of methodological rigour. Each work needed to display clear and well-documented research designs, whether they were quantitative, qualitative or based on meta-analytical approaches. Moreover, full-text availability was a crucial benchmark, with the requisite that the studies can be accessed in Romanian, English or another internationally recognised language, thus enabling an accurate interpretation and a reliable comparison of findings. In contrast, the exclusion criteria helped maintain focus on the core topics. Studies were excluded if they did not directly address teleworking or online education, if they lacked a clear and transparent methodological foundation or if they were not accessible in the designated languages. This approach helped ensure that only high-quality relevant research was included in the analysis.

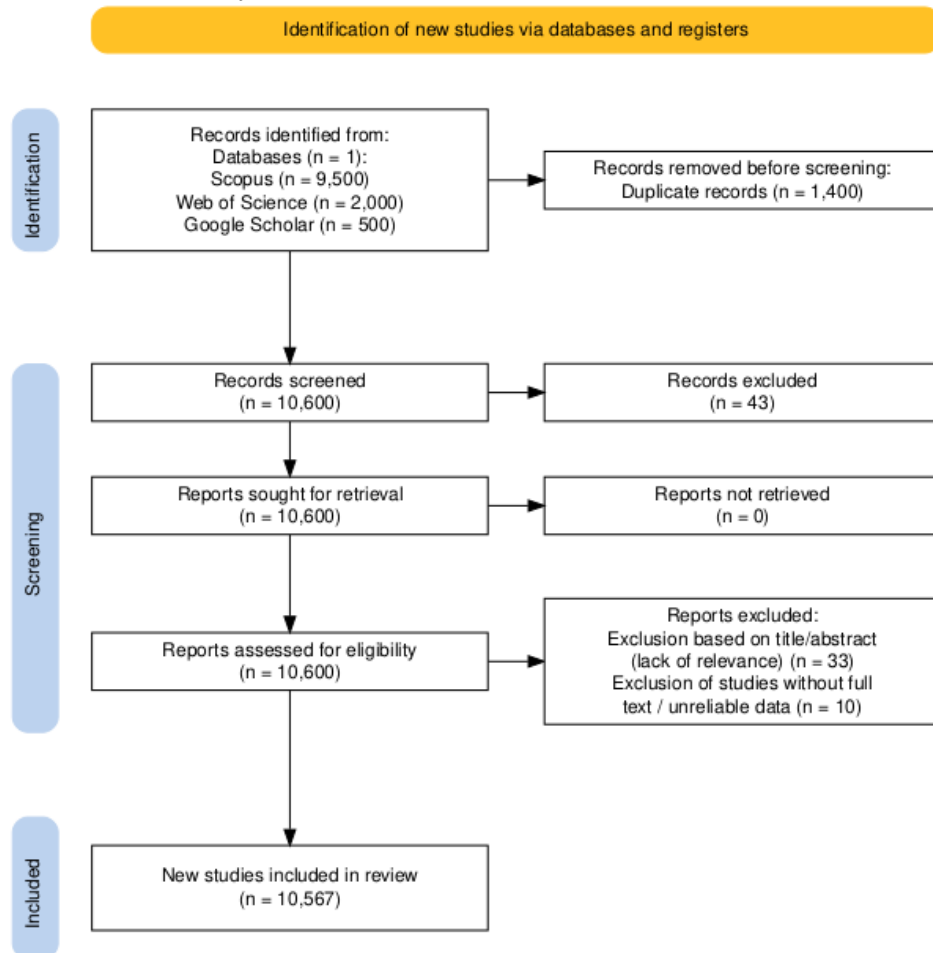


Figure 1. PRISMA Flow Diagram for Study Identification and Selection

Source: Author’s own research results.

Bibliometric Analysis

For the bibliometric analysis, the software tools VOSviewer and CiteSpace were used to examine: Publication trends by year (2019-2023). Authors and works most frequently cited regarding telework and online education; Co-occurrence of keywords.

Core VOSviewer settings included a minimum of five citations per source and normalisation to exclude excessive self-citations. With CiteSpace, „burst” periods (rapid increase in scholarly interest) for keywords such as „blended learning” and „work-life balance” were also examined.

Bibliometric analysis provides valuable quantitative insights but comes with limitations. Its outcomes depend heavily on the databases employed, which may not capture all relevant studies, particularly those from less prominent journals or in other languages than English. The criteria set in tools like VOSviewer and CiteSpace, such as the requirement of a minimum of five citations per source, may exclude emerging studies that have not yet had time to accumulate citations, potentially biasing the results. Furthermore, while efforts to normalise self-citations help mitigate bias, differences in citation practices across fields can still distort the perceived impact of certain works. The focus on quantitative measures such as citation counts and keyword co-occurrence may overlook the qualitative nuances and contextual insights that define the true contribution of a study. Lastly, relying on specific keywords might inadvertently exclude relevant research that employs alternative terminology, thereby limiting the comprehensiveness of the analysis.

Objectives and Research Questions

This study aims to explore various aspects of online education in the context of remote work. One key objective is to identify the challenges and opportunities that online education involves in the context of working from home. Another focus is analysing the impact of telework on families, particularly how parents allocate resources and time to support their children in online schooling. Additionally, the study seeks to reveal bibliometric trends and emerging topics within the academic literature on this subject.

The research investigates several key questions related to online education and telework. It examines how working from home has influenced the quality and effectiveness of online learning. Another area of investigation involves identifying the main technological socio-emotional and managerial challenges highlighted in studies concerning online education during the pandemic. Ultimately, the study explores bibliometric findings to determine new research directions regarding the connection between telework and distance learning.

Results and discussions

To answer the research questions, we discuss below the results derived from the literature review and bibliometric analysis.

Technological and Socio-Emotional Challenges (Research Questions 1 and 2)

Most research (Eurofound, 2020; Bartik et al., 2023) points to **technological resources** and **digital skills** as essential for implementing telework and online learning effectively. Households with limited means have faced major challenges (Florian and Toc, 2020), whereas reduced face-to-face contact led to lower motivation and isolation (Kniffin et al., 2021).

Socio-emotional challenges particularly affect parents working from home who must manage professional responsibilities while mentoring children online (IRES, 2020; Wang et al., 2021). Literature underscores the heightened risk of burnout when there is no distinct boundary between work time and personal/family time.

Time Management and Role Overlap (Research Questions 1 and 2)

The overlap of professional and family duties has had measurable effects on both productivity and educational quality. Studies reveal a diminished focus in employees and students alike (Botnariuc et. al.,

2020). Moreover, an unregulated remote schedule can cause volatility in family routines and intense pressure (Wang et al., 2021).

Incorporating boundary theory and digital transformation theories, the revised discussion clarifies how blurred boundaries between work and personal life contribute to stress and burnout. These frameworks also help shed light on how digital inequities shape the experiences of both teleworking and online education, offering a more solid theoretical foundation for the empirical findings.

Bibliometric Trends (Research Question 3)

A bibliometric analysis (VOSviewer and CiteSpace) reveals a sharp increase in research published after 2020, featuring keywords like „teleworking”, „remote work”, „online learning” and „Covid-19”. This confirms a growing interest in the relationship between working from home and online education, particularly in the context of the pandemic.

Consequently, VOSviewer charts unveil major subthemes and connections in recent academic literature (especially for 2020-2022) regarding working from home and online education – heavily shaped by the Covid-19 crisis.

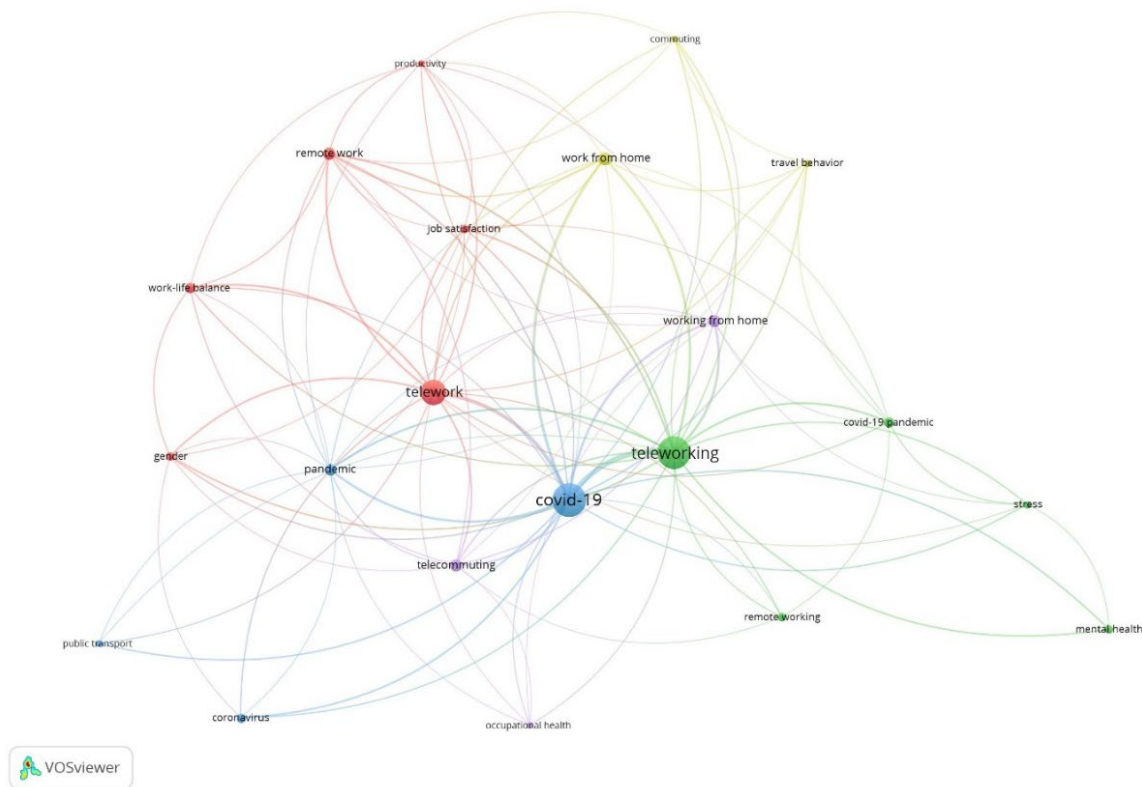


Figure 2. Co-occurrence map of keywords teleworking, work from home, remote work from publications extracted from the Scopus database

Source: Author’s own research results.

The visualisation highlights key elements related to telework and its associated themes. The central nodes, including „teleworking”, „telework” and „Covid-19” appear larger, reflecting their high frequency in the dataset. The central nodes (teleworking, telework, covid-19) are larger, indicating high frequency. Distinct clusters (red, green, blue) underscore topics such as work-life balance, pandemic impact and less commuting. In addition, links between nodes show correlations between „teleworking” and issues like stress, mental health and productivity.

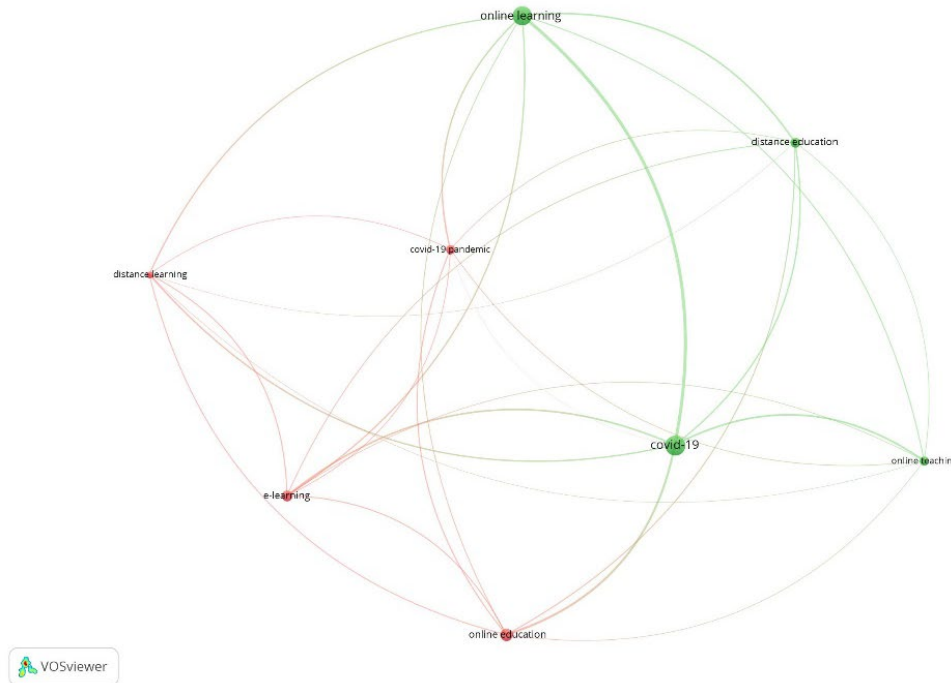


Figure 3. Co-occurrence map of keywords online education, online learning, distance education from publications extracted from the Scopus database

Source: Author's own research results.

The visualisation highlights key themes related to online education and its adaptation to digital environments. The main nodes including „online learning”, „Covid-19”, „distance learning” and „online education” reflect the central focus on the pandemic-driven transition to digital learning. Two major clusters thematically group „online teaching” and „e-learning” under the Covid-19 umbrella, indicating an interest in new educational models for teaching and learning. Additionally, the connections between „Covid-19” and „e-learning” suggest that many studies analyse the rapid implementation of online education as a response to health-related restrictions.

Overall, these bibliometric maps confirm the interdisciplinary development of this field, encompassing both productivity and occupational health (teleworking) along with the quality of the educational process (online education), in close connection to the Covid-29 pandemic.

Original Contribution of the Study

Unlike other post-2020 reviews that concentrate solely on telework or exclusively on online education, this article simultaneously explores both phenomena and emphasizes how they interact in the lives of families with children. Synthesizing literature from two fields (work-from-home policies and e-learning) offers an interdisciplinary perspective useful for: understanding the multiple challenges (technological, managerial, pedagogical) and formulate integrated recommendations, not just for policymakers, but also for the educational institutions, the business sector, teachers and parents.

Study Limitations

The selection of the sources was based on relevance and accessibility criteria. However, there is a possibility of excluding relevant studies published in other languages or local venues, potentially affecting the generalisability of the findings.

The time interval (2019-2023) provides detailed insights into the pandemic's effect on the studied phenomena, giving an up-to-date portrayal of changes. Nevertheless, older studies could offer a deeper historical background, enabling comparisons between pre-pandemic and post-pandemic evolutions.

This research relies mainly on quantitative methods, such as bibliometric studies and systematic reviews, which spotlight broad trends but do not delve into personal experiences. Thus, subjective dimensions of the analysed topics may be overlooked.

Another key factor is national and cultural disparities. Distinct legislative, economic and social settings can produce variations in results, limiting the universality of the study's conclusions.

Finally, the absence of qualitative case studies is a noteworthy restriction. Integrating interviews or focus groups could have yielded a more nuanced insight into family life and the circumstances that shape behaviours. Consequently, mixed methods could provide a more balanced and in-depth view of the issues at hand.

While the bibliometric analysis gives valuable insights, it is inherently limited by its reliance on citation metrics, which may favour older or more established works. Additionally, there is a potential bias in the databases (such as language or regional bias) that could affect the comprehensiveness of the review. Moreover, quantitative citation data may not fully capture qualitative nuances, such as personal experiences or contextual factors.

Conclusion

Main Conclusions

The integration of telework and online education underscores the urgent need for investment in digital infrastructure and for cultivating IT expertise at all age levels. Role overlap remains a significant challenge, highlighting the importance of establishing clear boundaries between professional duties and family care. The role of technology is crucial, as robust infrastructure and digital proficiency foster both learning and productivity, whereas their absence exacerbates existing inequalities. From a bibliometric standpoint, this topic has drawn heightened interdisciplinary and scientific interest, magnified by the pandemic context.

By synthesizing findings from a systematic literature review and bibliometric analysis, this study contributes with a comprehensive perspective on digital transformation in work and education. The incorporation of established theoretical framework helps clarify the complex interactions between technology, work-life boundaries and digital inequities. My findings underline the importance of addressing regional and socioeconomic disparities, in order to promote equitable access to digital education. Ultimately, the paper outlines practical recommendations for policymakers, employers, educators and families while suggesting future research directions, including qualitative studies and international comparisons, to further explore these dynamics.

Recommendations

For Policymakers

Investment in digital infrastructure should be directed toward IT equipment and connectivity, particularly in underprivileged regions. Establishing transparent telework regulations is essential to protect the rights of the employees, including the right to disconnect.

For Managers and Employers

Flexible work policies should be implemented by adapting schedules and offering hybrid options, with additional support for employees with children. Psychological support programs, such as counseling or emotional assistance, can help reduce stress and prevent burnout. It is crucial to clearly define the working hours in order to uphold the respect for breaks and personal time, thereby minimising fatigue.

For Educational Institutions and Teachers

Continuous training is required for the enhancing of skills in using online platforms and distance-teaching strategies. Innovative pedagogy should incorporate both synchronous and asynchronous teaching, while applying interactive methods such as group projects and individualised feedback. Vulnerable students need to receive targeted support, whether in terms of technology access or mental health challenges, to ensure equitable learning opportunities.

For Parents

A well-organised schedule helps separate work periods from children's study times. Expanding digital literacy is essential and training resources should be employed to navigate educational platforms more effectively. Maintaining open communication with teachers and other parents fosters the exchange of strategies and solutions to frequent challenges.

Future Research Directions

Further qualitative explorations through interviews and focus groups can provide insights into personal and family experiences across different cultural contexts. International comparisons are needed to examine how various regions implement telework and online education. In addition, emerging technologies, such as virtual reality and artificial intelligence, should be explored to assess their role in enhancing online learning and remote collaboration.

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