



The Scholarly Sources on Virtual Classroom Management: A Systematic Review¹

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Abstract

Management of virtual classrooms is significantly more critical now because the usage of online learning has increased due to the COVID-19 pandemic. However, distractions are more prevalent, making it challenging for students to engage and focus. Effective virtual classroom management could lead to the establishment of explicit norms and expectations as well as the provision of assistance for students in an online environment. This study aims to explore and analyse the scholarly peer-reviewed articles on virtual classroom management indexed in the Web of Science (WoS) database. A systematic review is done to explore and analyse academic, peer-reviewed papers for the study, which uses a qualitative research approach. According to some key findings, studies have increased in number with the COVID-19 pandemic; the studies are conducted in Asian countries at most, collections of similar or related works are about self-regulated learning (SRL), and the method of the studies is diverse. The outcomes of the studies are gathered under the themes of virtual classroom management strategies and professional development from scholarly sources. Both the scope and the number of studies on virtual classroom management should rise over time as virtual education becomes more commonplace and academics address these issues. It is crucial to monitor how this topic develops by examining academic databases. The management of virtual classrooms differs from classical classrooms in certain aspects, and these differences lead to the need for new management approaches and models. Besides, training sessions and seminars that are expressly focused on managing virtual classrooms could be available to teachers.

Keywords: Virtual classroom management, online education, digital learning

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Introduction

Digital transformation in education and the creation of digital learning ecosystems in line with the requirements of the age now stand before us as a severe need. Currently, there are many efforts, funding, and attempts to support the continuing digitization in education (Adedoyin & Soykan, 2023; Li & Lalani, 2020) as well as making full use of digital education, hybrid education, and virtual classrooms (Future Learn, 2022).

One of the essential digital learning components is virtual classrooms. The term "virtual classroom management" is about the methods and procedures of teachers to provide a positive and efficient atmosphere for learning in a digital or online classroom (Can, 2020). It has a few e-learning pedagogy models, such as the Community of Inquiry Online Learning Model (Garrison et al., 2000), the Cognitive Theory of Multimedia Learning (Mayer, 2014), and the Five Stage Model (Salmon, 2013).

Because of the rise in online learning owing to the COVID-19 epidemic, managing virtual classrooms has never been more crucial. Distractions are increasingly common, making it difficult for pupils to pay attention and stay engaged. Effective virtual classroom management could set up clear rules and expectations for student behavior, promoting a pleasant and active learning environment. It could guarantee interesting, exciting, and valuable learning opportunities. The management of a virtual classroom might solve technological issues as well. Additionally, it could encourage students' well-being and foster an inclusive society.

A virtual classroom is a learning system that offers the same chances for the teaching and learning process beyond the boundaries of the actual classroom walls (Hsu et al., 1999, as cited in Rufai et al., 2015). A virtual classroom could also be defined as a setting generated via the implementation of a learning platform that allows pupils and educators to communicate both simultaneously (real-time, in which the teacher and students meet at an identical period) or offline (where the teacher and students interact only on occasion in a time delay). In a virtual classroom, the instructor and pupils are usually separated by location (Estes, 2016).

A separate strategy known as online pedagogy is needed for a virtual classroom. Students who successfully employ online instructional structures improve higher-order cognitive skills and critical thinking. These qualities may be attained via reflection, group work, and investigations using online resources like chat rooms, discussion boards, virtual classrooms, and conference rooms (Rufai et al., 2015). As can be inferred from this statement, virtual classroom and virtual classroom management is an area that requires special attention from teachers and educational administrators.

The primary concern of this attention could be technology integration, Technological Pedagogical Content Knowledge (TPACK) of teachers, and online classroom management competencies. To support learning, teachers need to be adept at using online resources, learning management systems, and other technologies. The types of knowledge teachers need for successful technology integration in the classroom are outlined in the TPACK framework. It implies that educators must be cognizant of the relationship between pedagogy, technology, and course content (Mishra & Koehler, 2006) Administrators must ensure that teachers have been guided compatible with the TPACK framework and adequately trained and assisted in using technologies and managing the online classrooms.

This study aims to explore and analyse the scholarly peer-reviewed articles on virtual classroom management indexed in the Web of Science (WoS) database. Examining the studies focused on virtual classroom management, reaching the results of these studies, and noticing what implications and recommendations are made in the field would provide us with more profound information about virtual classroom management and help us make inferences from a broad perspective for policy development and practice. The following research questions guided the study:

RQ1. What are the descriptive characteristics of the scholarly sources on virtual classroom management?

- RQ1.1. What is the distribution of the scholarly sources on virtual classroom management by year?
- RQ1.2. What is the distribution of the scholarly sources on virtual classroom management by country?
- RQ1.3. What are the citation topics in the scholarly sources on virtual classroom management?
- RQ1.4. Which journals contributed to the scholarly sources on virtual classroom management?
- RQ2. What are the methods of the scholarly sources on virtual classroom management?
- RQ3. What are the outcomes of the scholarly sources on virtual classroom management?

Methodology

A systematic review is done to explore and analyse academic, peer-reviewed papers for the study, which uses a qualitative research approach to identify the knowledge structure of the scholarly peer-reviewed articles indexed in the Web of Science (WoS) on virtual classroom management. There are several reasons for choosing WoS databases for the study. WoS, developed by Clarivate Analytics, stands out as the foremost scientific citation search and analytical information platform globally. It serves not only as a versatile research tool aiding a wide range of scientific endeavours across different knowledge domains but also as a dataset for extensive, data-intensive studies. Over the last two decades, WoS has been utilized in numerous published academic studies, highlighting its established reputation and widespread application in scholarly research (Li, et al., 2018).

Four phases directed the process in order to respond to the research questions: (1) the definition of the inclusion and exclusion criteria, (2) the choice of the publications' search technique, (3) the screening and selection processes, and (4) the analysis. The inclusion and exclusion criteria are listed in Table 1.

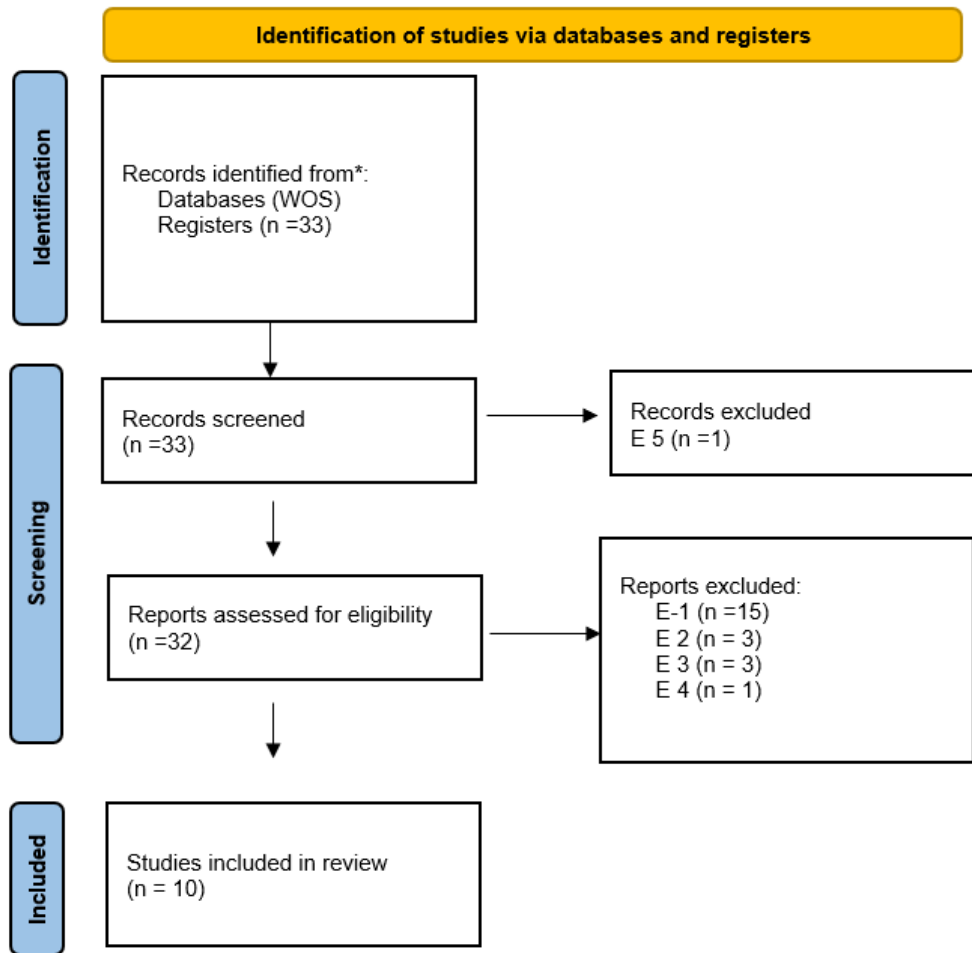
Table 1
Systematic review inclusion and exclusion criteria

Inclusion Criteria	
I-1	WoS Category: Educational Research and Education Scientific Disciplines
I-2	Citation Topics Meso: 6.11-Education & Educational Research
I-3	Document type: Article
I-4	Language is English
I-5	Publication context is within the scope of RQs
Exclusion Criteria	
E-1	The publication is not in the education-specific disciplines.
E-2	The publication is not under Citation Topics Meso: 6.11 Education & Educational Research.
E-3	The publications such as book chapters, reviews, editorials, and conference papers are excluded.
E-4	English is not the language of the publication.
E-5	Publication context is out of the scope of RQs.

In Step 2, the search string was "Online class* manage*" OR "digital class* manage*" OR "remote class* manage*" OR "virtual class* manage*" OR "cyber class* manage*" OR "online learn* environment manage*" OR "digital learn* environment manage*" OR "remote learn* environment manage*" OR "virtual learn* environment manage*" OR "cyber learn* environment manage*" OR "manage* of online class*" OR "manage* of digital class*" OR "manage of remote class*" OR "manage of virtual class*" OR "manage of cyber class*" for the WoS. In the search field "Title" was chosen. WoS Categories refined the publications: 1) Education & Educational Research, and 2) Education Scientific Disciplines. Citation Topics Meso criteria were Education & Educational Research, and the document types were only journal articles. The publication language was English.

In Step 3, publications were screened according to the PRISMA flow chart (Page et al., 2021). Suitable studies were determined per the research questions and the selection criteria. One article was found out of scope; therefore, it was eliminated. The phases of selection are depicted in Figure 1.

Figure 1
PRISMA flow chart



Findings

According to the analysis results, ten (n=10) publications were reached at the end of the PRISMA guidelines. Table 2 plots the number of publications on virtual classroom management per year.

Table 2
The number of publications per year

Publication Years	Publications	%
2022	4	40
2021	2	20
2023	2	20
2011	1	10
2018	1	10
TOTAL	10	100

According to Table 2, the highest number of studies (n=4) was published in 2022. In 2021 and 2023, the number of studies was two (n=2), and in 2011 and 2018, there was only one (n=1) publication. The number of countries where the research was conducted was nine (n=9). Some studies were conducted in more than one country. Table 3 shows the geographical distribution of studies.

Table 3
Geographical distribution of publications

Asia			Europe			Africa		
Countries/Regions	f	%	Countries/Regions	f	%	Countries/Regions	f	%
Iran	3	30	Turkey	1	100	South Africa	1	100
Thailand	2	30						
Bangladesh	1	10						
Malaysia	1	10						
Pakistan	1	10						
Peoples Republic of China	1	10						
United Arab Emirates	1	10						
TOTAL	10	100	TOTAL	1	100	TOTAL	1	100

As seen in Table 3, the publications were distributed to countries in Asia (n=10), Europe (n=1), and Africa (n=1). Most of the (n=3) publications were conducted in Iran. Two studies were in Thailand.

The citation topics are a method for citation-based categorization that aids in locating collections of similar or related works based on citations from authors. WoS analysis provides algorithmically derived citation clusters. According to this cluster analysis, five different citation topics micro were reached. Table 4 lists these citation topics micro and the number of related studies.

Table 4
Citation topics micro of publications

Citation Topics Micro	Record Count	%
6.11.31 Self-regulated Learning	5	50
6.11.333 Digital Learning	2	20
6.11.1544 Academic Development	1	10
6.11.190 Teacher Education	1	10
6.11.345 School Leadership	1	10
TOTAL	10	100

As seen in Table 4, five (n=5) studies addressed SRL, two (n=2) were cited in studies about digital learning, and the rest of the studies were cited in works about academic development (n=1), teacher education (n=1), and school leadership (n=1). The journals that contributed to the scholarly sources on virtual classroom management are listed in Table 5.

Table 5
The journals that contributed the scholarly sources on virtual classroom management

Journal Title	Record Count	%
Frontiers in Education	2	20
Asia Pacific Education Review	1	10
BMC Medical Education	1	10
Educational Technology Society	1	10
International Journal of Instruction	1	10
International Review of Research in Open and Distributed Learning	1	10
Journal of University Teaching and Learning Practice	1	10
Malaysian Journal of Learning Instruction	1	10
Turkish Online Journal of Distance Education	1	10
TOTAL	10	100

As seen in Table 5, the maximum number of publications (n=2) were published in the journal Frontiers in Education. The other studies were published in different journals, and the total number of journals is nine (n=9). The research methodologies of the studies were analysed, and the results were summarised in Table 6.

Table 6

Methodologies of the publications on virtual classroom management

Publications	Research design	Participants
Das & Meredith, 2021	Quantitative design	Teachers (n=68)
Doroh et al., 2023	Quantitative design (experimental)	The faculty of the basic sciences department of medical school (n=7)
Kavrayici et al., 2021	Quantitative design (a correlational survey)	Graduate students (n= 224)
Keshavarz et al., 2022	Qualitative design	Professors and students in e-learning (n=200)
Hojeij et al., 2023	Qualitative design	Emirati female preservice teachers (n = 18)
Homer et al., 2018	Quantitative design (experimental)	Elementary school ESL students (n=120)
Hosseini, 2011	Qualitative design (researcher's observation and semi-structured interviews)	Researcher and professional facilitators/instructors (n=not indicated)
Ng, et al., 2022	Quantitative design (a pre-test and post-test quasi-experimental)	Students (n=30)
Sahito et al., 2022	Qualitative design (a case study approach)	Higher education instructors (n=11)
Wannapiroon et al., 2022	Quantitative design (descriptive)	Vocational instructors (n=2,233)

Four of the studies were conducted as a qualitative research design (Hojeij et al., 2023; Hosseini, 2011; Keshavarz et al., 2022; Sahito et al., 2022), six studies were reported as a quantitative research design (Das & Meredith, 2021; Doroh et al., 2023; Homer et al., 2018; Kavrayici et al., 2021; Ng, et al., 2022; Wannapiroon et al., 2022), and three of them were conducted as experimental design (Doroh et al., 2023; Homer et al., 2018; Ng, et al., 2022). As for the participants of the studies, in six studies (Das & Meredith, 2021; Doroh et al., 2023; Hosseini, 2011; Keshavarz et al., 2022; Sahito et al., 2022; Wannapiroon et al., 2022) instructors, teachers, professionals, and faculty were selected as research participants. Students were research participants in four publications (Homer et al., 2018; Kavrayici et al., 2021; Keshavarz et al., 2022; Ng, et al., 2022). Only in one research, we see preservice teachers as research participants (Hojeij et al., 2023). The reviewed studies were additionally categorized under specific themes according to their outcomes. Table 7 exhibits the themes of outcomes and the related publications.

Table 7

The outcomes of the publications on virtual classroom management

Themes	Publications
Virtual classroom management model and strategies	Das & Meredith, 2021; Kavrayici et al., 2021; Keshavarz et al., 2022; Homer et al., 2018; Hosseini, 2011; Ng, et al., 2022; Sahito et al., 2022
Professional development of teachers for virtual classroom management	Doroh et al., 2023; Hojeij et al., 2023; Sahito et al., 2022; Wannapiroon et al., 2022

According to content analysis of the outcomes of the studies, two themes appeared. Regarding the virtual classroom management model and strategies, Keshavarz (et al., 2022) proposed a tool to measure the effective management of the virtual classroom. Hosseini (2011) introduced the SECI model of knowledge creation as a framework of virtual classroom management for better online teaching–learning mechanisms. Homer and colleagues (2018) indicated that digital badges and points have a positive and engaging effect on students compared to non-digital classroom token points. Sahito et al. (2022) gathered factors for successfully implementing the e-learning system in higher education. Kavrayici et al. (2021) provided valuable information on designing virtual classrooms and increasing student satisfaction. Ng et al. (2022) provided educators and instructional designers with information to consider whether gamification applications could be used as an effective teaching tool or virtual class management tool to enhance pupils' engagement and improve learning outcomes. Finally, Das and Meredith (2021) explored the sources of success in online teaching and recommended redesign in teaching methods.

In the matter of professional development of teachers for virtual classroom management, Hojeij et al. (2023) highlighted the importance of training on the technology used for virtual learning; Doroh et al. (2023) indicated that virtual learning could serve as an appropriate setting for the deployment of a peer observation model for teacher performance and can be viewed as a chance to strengthen and elevate faculty performance in virtual learning. Wannapiroon et al. (2022)'s research demonstrated the digital proficiency of vocational educators and highlighted that the vocational teachers were pleased with their level of digital proficiency in managing online courses. Sahito et al. (2022) revealed that the instructors' ICT literacy is insufficient. The study's findings recommend setting up some seminars or training sessions for teacher educators to increase their output and effectiveness when teaching online. To sum up, the outcomes of studies on virtual classroom management are primarily discussed in the context of management strategies and professional development. The results offer implications for these two themes.

Discussion, Conclusion, and Recommendations

When we look at the scholarly peer-reviewed articles on virtual classroom management indexed in the WoS database, the studies are limited in number. Studies have naturally increased in number with the Covid-19 pandemic. The studies are conducted in Asian countries at most. Collections of similar or related works are about SRL. The method of the studies is diverse, both qualitatively and quantitatively. The outcomes of the studies are gathered under the themes of virtual classroom management strategies and professional development.

Compared to conventional classroom management, virtual classroom management is a relatively recent field of study. Consequently, an observable trend indicates a notable surge in studies, particularly in recent years. The absence of any research articles pertaining to virtual classroom management prior to 2018 underscores a discernible shift in scholarly attention towards this domain during subsequent years.

The paucity of research articles on virtual classroom management can be ascribed to various factors. Managing virtual classrooms encompasses many different aspects, such as the use of technology, engagement, evaluation, etc. (Can, 2020; Harleem et al., 2022; Willermark & Island, 2022). Rigorous research projects may be more challenging to plan and carry out, given how complicated this subject is. Besides, researching the management of virtual classrooms involves knowledge of both education and technology. It may be hard to find researchers who have a thorough grasp of both fields. The number of academic papers on virtual classroom management may rise over time as virtual education becomes more commonplace and academics address some of these issues. It's crucial to monitor how this topic develops by examining academic databases like WoS.

The concentration of publications on virtual classroom management in specific regions, particularly in Asia, is likely influenced by a combination of research interests, cultural and educational contexts, expertise in educational technology or funding opportunities. The investigations manifested a utilization of both qualitative and quantitative methodological frameworks; however, the absence of mixed-methods and meta-analytic studies is noteworthy. The choice of these methodological approaches by researchers appears to have been contingent upon considerations such as the inherent attributes of the research inquiries, resource constraints, or the distinctive characteristics inherent in the subjects under scrutiny. The omission of meta-analysis or synthesis methods within the studies may stem from the relative scarcity of extant research concerning virtual classroom management.

The association between SRL (Zimmerman, 1989) and online learning could be mainly about the alignment of SRL principles with the features of digital learning environments, where self-observation, self-evaluation, self-reactions, autonomy, flexibility, technology integration, and metacognitive skills play crucial roles in fostering effective and meaningful learning experiences. For this reason, the citation topics (micro) of research articles in virtual classroom management could mainly focus on SRL. This thematic concentration underscores the critical role that self-regulated learning plays in shaping the discourse and scholarship within the realm of virtual education.

As a result of the content analysis of the outcomes of the studies, it is understood that the management of virtual classrooms differs from classical classrooms in certain aspects, and these differences lead to the need for new management approaches and models. Educational administrators and policymakers could introduce regulations by considering the data-based classroom management models and strategies from the scholarly sources analysed in this research. This might include policies for dealing with disturbances in virtual classrooms, rules for online conduct, internet safety, and data privacy. Educational administrators and policymakers could set aside resources for programs that concentrate on managing virtual classrooms. Promoting a seamless transition to online learning needs to involve training for teachers, technological improvements, and assistance professionals (Coman et al., 2020). It's critical to set up support networks for teachers, pupils, and parents navigating online learning environments. To aid stakeholders in navigating virtual learning environments, educational administrators could set up helplines, online resources, and professional development opportunities (Barot et al., 2021). In the context of online learning, as an essential feature of virtual classroom management, effective communication should also be considered. Education administrators should develop plans for timely and effective communication with teachers, parents, and students to resolve issues, give updates, and help.

Professional development of teachers for virtual classroom management was the other theme that the studies emphasized most. Training sessions and seminars that are expressly focused on managing virtual classrooms could be available to teachers (Hojeij, et al., 2023; Uçar & Acar, 2022). The topics discussed might be using online learning platforms, keeping students engaged, or overcoming typical difficulties in online instruction. Another method of professional development might be giving teachers positive feedback and evaluation of their virtual teaching methods. Teachers could be inspired to think and self-evaluate. The other options could be cooperation among peers and professional learning communities.

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