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Teaching and Learning in Hospital-Based Schools: A systematic literature review of models, needs and challenges

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Abstract

This systematic review aims to identify the curriculum models, needs and challenges of School in Hospital (SiH) programmes. SiH provides continuous education for students receiving long-term treatment, but its implementation faces unique problems that require flexible and student-centred approaches. Using the PRISMA protocol, 129 articles were screened from five major databases, and 11 studies were included for thematic analysis. Results show that SiH requires flexible and structured curriculum models, individual learning paths and emotional support. Key challenges include treatment interruptions, limited resources, emotional stress and social isolation. The review highlights the need for a holistic SiH teaching model.

Keywords: Curriculum Model; Sih Challenges; School in Hospital (SiH); Education

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1.0 Introduction

Education is a systematic and continuous process aimed at developing individual potential through formal schooling and lifelong learning. In educational research, constructivist theory emphasises self-directed learning, active knowledge construction and the use of digital technologies to support meaningful learning experiences. In addition, the concept of temporality highlights the importance of time, continuity and gradual development, particularly in educational settings that require long-term planning and sustained engagement (Mohammed & Kinyó, 2020; Brandi et al., 2024).

In Malaysia, the School in Hospital (SiH) programme was introduced in 2011 through a collaboration between the Ministry of Education, the Ministry of Health and Yayasan Nurul Yaqeen. The programme aims to ensure that students undergoing long-term medical treatment can continue their formal education without disruption (Buyong & Othman, 2018; Ajmain et al., 2025). Adapted from the Australian hospital schooling model, SiH in Malaysia focuses not only on academic continuity but also on students' emotional and

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psychosocial well-being within the hospital environment (Phin & Yasin, 2019). To date, the programme has been implemented in more than 15 public hospitals across Malaysia, including Sabah and Sarawak.

Despite its importance, existing studies indicate that teaching and learning in SiH settings face multiple challenges related to curriculum adaptation, pedagogical practices, resource limitations and alignment with educational theories. However, these issues are often discussed separately and there remains a lack of a systematic synthesis that integrates teaching models, identified needs and implementation challenges within hospital-based education. In particular, the linkage between educational theories and the practical realities of SiH implementation has not been sufficiently articulated.

Therefore, this study aims to systematically review existing literature on teaching and learning in School in Hospital settings, with a specific focus on models, needs and challenges. The objectives of this review are to (i) identify existing teaching and learning models used in SiH contexts, (ii) examine the key needs of students and teachers in hospital-based education, and (iii) analyse the challenges associated with the implementation of SiH programmes. By addressing these objectives, this review seeks to provide a clearer theoretical and practical foundation for improving SiH curriculum and pedagogical practices in the future.

2.0 Literature Review

2.1 Teaching and Learning in School in Hospital Settings

School in Hospital (SiH) ensures that children with long-term health issues continue to receive education (Caggiano et al., 2021). These schools face unique challenges such as meeting diverse learning needs, collaborating with healthcare professionals and managing limited resources (Jiliberto & Zárate Alva, 2025). Teachers need specific skills to support students' emotional and educational needs while acting as a bridge between the hospital and the outside world. Models like Edu-Med Care which combine educational technology and healthcare technology have been suggested to improve learning for hospital students (Almazroui, 2023). This study aims to identify the needs and challenges to improve the SiH curriculum in the future.

2.2 Teaching Strategies and Pedagogical Approaches in SiH

Various teaching strategies are used to enhance learning quality. Project-based learning, online team-based teaching, Higher Order Thinking Skills (HOTS) and the PQ4R strategy have been shown to improve students' skills and teaching effectiveness. In SiH, teaching approaches need to be adaptive and creative to meet the needs of students with special needs such as dyslexia focusing on 21st century skills, higher order thinking and social and emotional development (K. Kadir, 2020).

2.3 Challenges in Curriculum and Teacher Roles

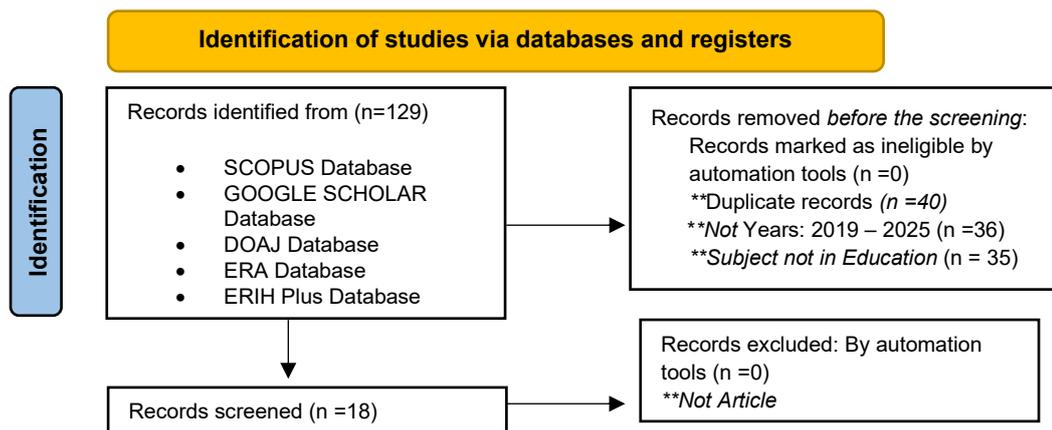
Teaching in SiH faces challenges such as the unique hospital environment, limited time, scarce resources and the effects of the COVID-19 pandemic (K. A. Jamaludin, 2021). Teachers act not only as educators but also as emotional supporters and therapeutic partners using flexible, adaptive and therapeutic approaches to ensure learning continuity. Effective curriculum design and teaching strategies are essential to protect the learning rights of students regardless of their health condition.

3.0 Methodology

This study uses a methodology known as PRISMA which is suitable for research using systematic review methods. It sets eligibility and exclusion criteria through review steps including identification, screening, inclusion, and data extraction and analysis. The study uses DOAJ, ERA and ARIH PLUS as databases because they cover relevant and high-quality journals in the field of curriculum models and teaching approaches in School in Hospital (SiH) education. In addition, methodologies such as search strings and PRISMA-based reporting are applied to enhance transparency and comprehensiveness of the findings. This method is based on the latest PRISMA Statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) according to Page et al. (2021).

PRISMA has three main advantages:

1. It clearly defines research questions to allow studies to be conducted systematically
2. It identifies inclusion and exclusion criteria in detail
3. It enables the assessment of many scientific literatures within a set timeframe



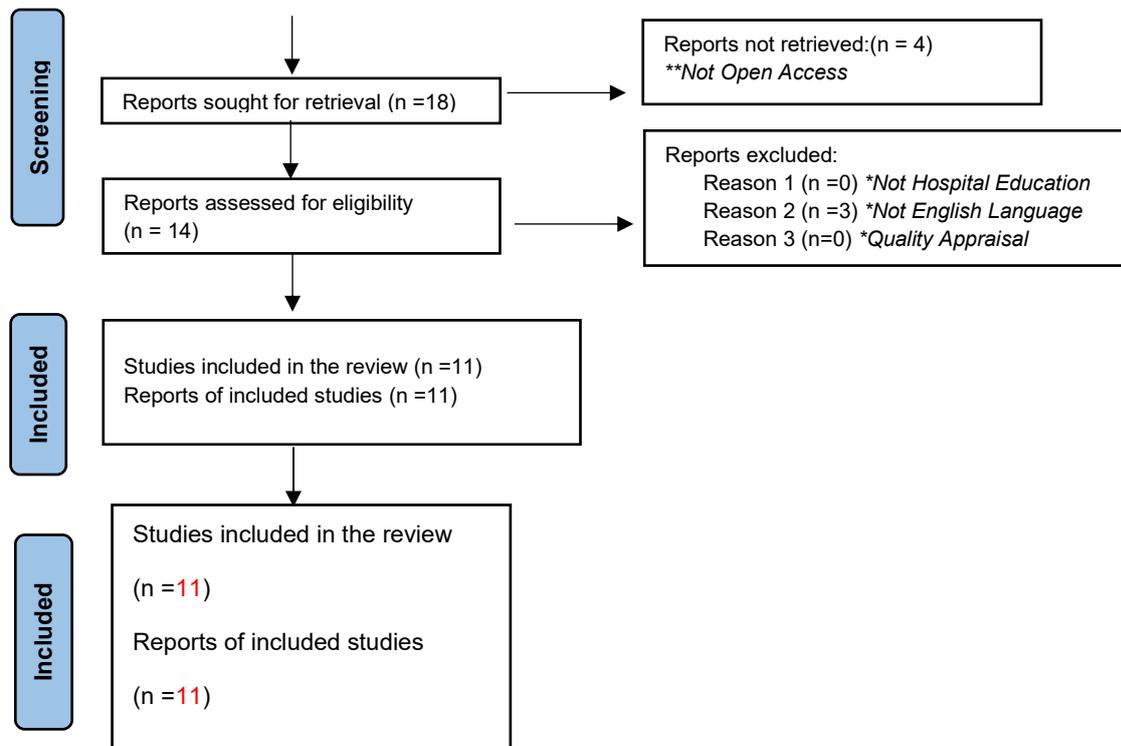


Figure 1: Study flow diagram (Adapted from Page et al. (2021))

3.1 Identification

The identification process was conducted systematically using five recognized databases: SCOPUS, Google Scholar, DOAJ, ERA and ERIH Plus, resulting in 129 initial records. From these, 40 duplicate records were removed. An additional 36 articles outside the publication range of 2019–2025 and 35 articles unrelated to education were also excluded. After this initial screening, 18 articles remained for further assessment. This careful process ensured that only relevant and contemporary studies were considered as

3.2 Screening

In the screening phase, 18 articles were assessed for suitability against the study criteria. No articles were removed automatically by software because all retrieved articles were full-text and not just abstracts. Four articles could not be accessed as they were not open access, leaving 14 articles for eligibility assessment. This process follows PRISMA guidelines which encourage transparency and open access in the evaluation of studies (Page et al., 2021).

3.3 Included

Out of 14 articles assessed, 3 were excluded because they did not use English as the writing medium (n=3) or did not meet quality requirements (n=0). Therefore, 11 studies were finally included in this systematic literature review. These studies met the criteria for publication year, scope (hospital education), and study design.

Data extraction was conducted by transferring information from each eligible article into a data extraction form developed by the researchers. The form included author, year, study design, country context, curriculum model, pedagogical strategy, implementation challenges and key findings. The collected data were analyzed manually using thematic analysis based on the six-phase approach of Braun and Clarke (2006): familiarization with data, initial coding, searching for themes, reviewing themes, defining and naming themes, and producing the final report. Analysis was conducted collaboratively by all researchers to enhance reliability and validity of the findings.

4.0 Findings

The data analysis process in this study was conducted systematically based on the systematic literature review (SLR) approach. The data were obtained through the extraction of information from articles that met the screening criteria. In total, 11 articles were analyzed to address the research objectives and questions using both inductive and deductive thematic analysis methods.

Table 1: Summary of Curriculum Models, Teaching Approaches, Needs and Challenges in School in Hospital (SiH) Programs

AUTHOR	CURRICULUM MODEL	TEACHING AND LEARNING DESIGN / APPROACH	THEORETICAL FRAMEWORK	NEEDS	SIH CHALLENGES
DI PADOVA ET AL. (2024)	individualized curriculum, flexible learning pathways, focus on learning continuity	collaboration of multiple parties, student-centered approach, teacher training in psychology and medical aspects	hospital pedagogy and community education	- need for stable routines and structured learning - involvement of family and educational community	- disrupted routines and student isolation - cultural resistance, operational constraints and family pressure
CAGGIANO ET AL. (2021)	flexible curriculum, adapted to cognitive and affective needs	individual planning, self-directed learning, srl strategies	holistic approach: psychosocial and educational support	- right to education and learning continuity for long-term sick students - parental support and dropout prevention	- treatment disruptions, emotional problems and limited teaching space - clinical disruptions and pandemic impact
ASIM ARI (2025)	special education curriculum: integrated schools, special classes, language and psychomotor therapy	individualized teaching based on student needs	special education theory and holistic development	- individualized education for students with special needs - focus on autonomy, self-development and social integration	- support for various types of disabilities - resource constraints and challenges in improving social skills
JONG YII PHIN ET AL. (2019)	mainstream curriculum adapted to students' health needs	edutainment approach, interactive, sedaap, teacher as facilitator	social cognitive theory (bandura)	- student-centered and enjoyable teaching - need to address student emotions and low motivation	- limited teaching time - students of different ages and levels - emotional and attention issues
MALKOWSKA-SZKUTNIK ET AL. (2021)	mainstream curriculum adapted to student health	focus on emotional support, teacher-student-parent relationships, flexible teaching	grounded theory	- recognition of hospital teacher roles - need for mental health support	- marginalization of hospital school - work pressure, limited facilities and lack of emotional support
SANDRA KEEHAN (2021)	ncca curriculum (ireland), including aistear and special needs guidelines	multi-level teaching, cpd, collaboration with parents and medical staff	thematic analysis	- individual and collaborative teaching practices - need for cpd and knowledge on treatment effects	- emotional issues, time constraints and bureaucracy - teaching multiple levels simultaneously
JILIBERTO & ZÁRATE (2025)	daily individualized learning plan adapted to student level and needs	innovative methods, positive classroom environment, multi-level teaching	not specified	- teaching adapted to student levels and subjects - need for collaboration with multidisciplinary professionals	- budget and resource limitations - lack of specialized training - emotional pressure from critical patient situations
FERGAL MCNAMARA (2024)	not specified, focus on training content and teacher competencies	training in communication, self-management, sen, emotional management	interpretivist / constructivist	- specialized professional training for hospital teachers - knowledge of hospital and health context	- lack of specialized training - need for emotional, communication and resilience skills
ALMAZROUI (2023)	edu-med care model, individualized learning plan, smart technology integration	virtual classes, interactive apps, social and emotional support, parental collaboration	combination of education and health theories	- alternative education program for chronically ill students - need for smart model coordinating education and treatment	- student social isolation - learning delays and emotional stress - high cost and complex communication
RUIZ ET AL. (2016)	music curriculum: spain (1 hour/week), sweden (1 hour/week plus music therapy)	play therapy, music teacher role, family collaboration	educational governance perspective	- recognition of music as an important component in hospital teaching	- arts subjects marginalized; core subjects prioritized - time constraints and limited curriculum support
MITCHEM ET AL. (2020)	tpack and samr models. use of applications: e-book, imovie, garageband	mobile technology-based pedagogy individual and small group guidance sessions goal setting and reflection	tpack (technology and content) samr (substitution to redefinition)	- need for training and pedagogical support for sih teachers - mobile technology integration in teaching and learning - adaptation of teaching to hospital context	- diverse student needs - planning difficulties due to treatment uncertainty - infrastructure problems and data security issues

4.1 Curriculum Models in School in Hospital

The findings indicate that curriculum models implemented in SiH programmes are mostly flexible and individualised. Most programmes adapt mainstream or special education curricula to accommodate students' cognitive, emotional and health-related conditions (Di Padova et al., 2024). Several studies highlight the integration of therapeutic components, such as psychomotor activities and music therapy to support students' holistic development (Ruiz et al., 2016; Asim Ari, 2025). Other models emphasise the use of digital and SMART technologies, including virtual learning environments to improve accessibility and engagement for hospitalised students (Almazroui, 2023). These findings suggest that curriculum flexibility is a defining feature of effective SiH programmes.

4.2 Teaching and Learning Approaches and Programme Needs

Across the reviewed studies, student-centred teaching and learning approaches were consistently emphasised. Teachers were reported to collaborate closely with healthcare professionals, parents and other stakeholders to provide integrated educational and emotional

support (Sandra Keehan, 2021). Common pedagogical strategies included interactive and edutainment-based learning (Jong Yii Phin et al., 2019), self-directed learning approaches (Caggiano et al., 2021), small-group guidance (Mitchem et al., 2020) and technology-assisted instruction (Almazroui, 2023). Beyond academic learning, the findings reveal that SiH programmes place strong emphasis on maintaining stable routines, supporting social and emotional development, helping students learn on their own and sustaining engagement throughout treatment periods (Di Padova et al., 2024; Małkowska-Szkutnik et al., 2021). These needs highlight the importance of specialised teacher competencies and cross-disciplinary collaboration.

4.3 Implementation Challenges in School in Hospital

Despite the availability of adaptive curriculum models and teaching strategies, the reviewed studies consistently report significant implementation challenges. Common issues include disrupted routines due to medical procedures, student isolation, limited teaching spaces and operational constraints within hospital environments (Asim Ari, 2025). Additional challenges involve emotional and behavioural difficulties among students, diverse age and ability levels, insufficient specialised training for teachers and the high cost of integrating educational technologies (Mitchem et al., 2020; Almazroui, 2023). External crises, such as pandemics, make these challenges even worse by necessitating rapid transitions to virtual or hybrid learning modes (Caggiano et al., 2021; Jong Yii Phin et al., 2019). Collectively, these findings underscore the complexity of implementing effective teaching and learning in SiH settings.

Table 2: Main Theme

AUTHOR & YEAR	FOCUS / COUNTRY CONTEXT	CURRICULUM MODEL	NEEDS	IMPLEMENTATION CHALLENGES
RUIZ ET AL. (2016)	Spain – Music education in hospitals as therapy	/	/	/
MCMNAMARA (2025)	Ireland – Needs for hospital teacher training	/	/	/
ALMAZROUI (2023)	Global – Technology-based hospital school model	/	/	/
JONG YII PHIN ET AL. (2019)	Malaysia – Issues and challenges in implementing SiH	/	/	/
CAGGIANO ET AL. (2021)	Italy – Right to education for hospital students	/	/	/
MITCHEM (2020)	USA – Pedagogical guidance for hospital teachers	/	/	/
MARILENA DI PADOVA ET AL. (2024)	Italy – Role of community in hospital education	/	/	/
SANDRA KEEHAN (2021)	Ireland – Teacher and student reflections in hospital	/	/	/
JILIBERTO & ZÁRATE (2025)	Global – Factors influencing success of hospital education	/	/	/
ASIM ARI (2025)	Switzerland – Special education ordinance in hospitals	/	/	/
MAŁKOWSKA-SZKUTNIK ET AL. (2021)	Poland – Needs of hospital teachers	/	/	/

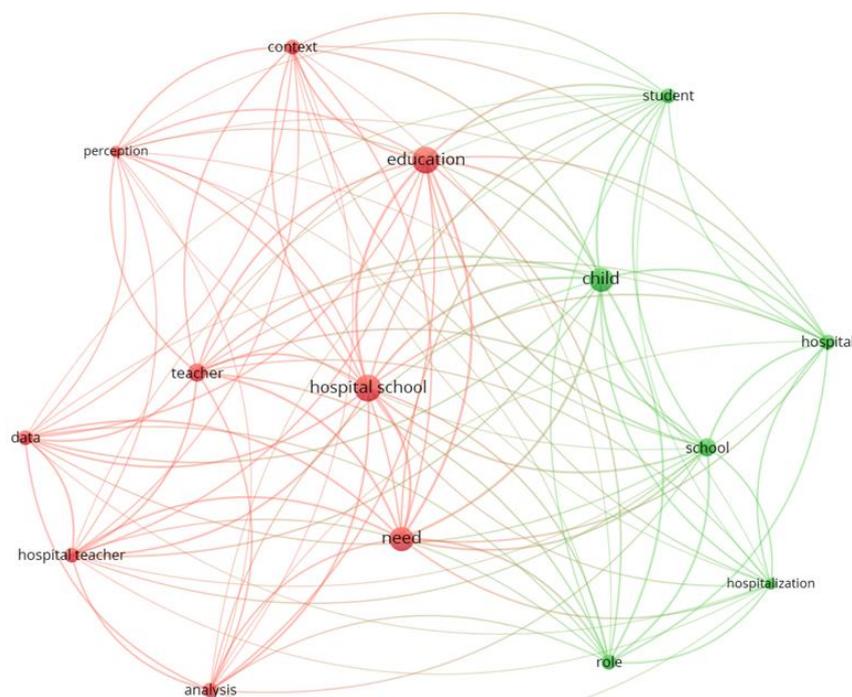


Figure 2: Concept Network Analysis of School in Hospital: Findings from the Literature Review

Based on the analysis of 11 reviewed articles, three main themes were identified: Curriculum Model, SiH Needs, and SiH Implementation Challenges. The Curriculum Model theme refers to the learning content that is suitable for teachers and students in SiH.

The Needs theme explains the aspects that require improvement within SiH pedagogy and the necessity of having SiH as a learning center for students who are unwell. Finally, the Implementation Challenges theme refers to issues occurring in SiH, such as lack of teacher skills, unconducive learning environments and students' emotional instability. Overall, these findings aim to examine the extent to which SiH contributes to the national education system and the improvements needed to ensure a flexible curriculum for all parties, especially teachers and students in SiH.

The network map generated using VOSviewer illustrates the relationships between frequently occurring terms in SiH-related studies. Two main concept clusters were identified: an educational-focused cluster and a medical-social-focused cluster. The educational cluster highlights key terms such as education, teacher, hospital teacher, analysis and context, reflecting the central role of teachers and pedagogical practices in hospital schooling. In contrast, the medical-social cluster emphasises terms such as child, student, hospital, role and hospitalization, indicating a strong concern for students' well-being during medical treatment. The overlap between clusters demonstrates the literature's emphasis on integrated, student-centred and therapeutic approaches that bridge educational and healthcare contexts. This reinforces the need for holistic models in hospital-based education.

5.0 Discussion

The findings of this review highlight curriculum flexibility as a fundamental component of effective School in Hospital (SiH) programmes. Flexible and adapted curricula enable students to continue learning according to their health conditions, treatment schedules and cognitive readiness, thereby reducing academic stress during long-term hospitalisation (Karima, 2023). International evidence, such as hospital-based special education practices in Switzerland, demonstrates the importance of aligning curriculum delivery with students' recovery pace (Asim Ari, 2025). Similarly, in Malaysia, SiH curricula are designed to prioritise core learning outcomes while remaining adaptable to medical constraints (Jong & Mohd Hanafi, 2019).

Beyond academic considerations, the findings emphasise the importance of addressing students' emotional, social and therapeutic needs. Stable routines and structured learning environments provide a sense of normalcy and continuity for hospitalised students, which is consistent with constructivist learning principles that value meaningful and supportive learning contexts (Di Padova et al., 2024; Caggiano et al., 2021). Teachers play a critical role in this process and therefore require specialised training to manage diverse learning needs, deliver therapeutic support and collaborate effectively with healthcare professionals (Malkowska-Szkutnik et al., 2021). Active engagement with families and medical staff further strengthens holistic care and ensures alignment between educational and treatment goals (Sandra Keehan, 2021).

Nevertheless, the review also reveals persistent challenges that hinder effective implementation of SiH programmes. Disrupted routines, limited instructional spaces and frequent interruptions due to medical procedures pose significant barriers to consistent teaching and learning (Di Padova et al., 2024). Teachers are additionally required to manage diverse student abilities and emotional challenges while coping with limited resources, insufficient professional preparation and the financial burden associated with educational technology integration (Mitchem et al., 2020; Almazroui, 2023). External crises, such as pandemics, further highlight the need for resilient and adaptable educational models capable of transitioning to online or hybrid delivery modes (Jong Yii Phin et al., 2019). Addressing these challenges requires systematic planning, institutional support and sustained collaboration between educational and healthcare stakeholders.

6.0 Conclusion and Recommendations

This systematic literature review examined curriculum models, needs and implementation challenges associated with School in Hospital (SiH) programmes across different national contexts. Analysis of 11 selected studies indicates that effective hospital-based education requires flexible, holistic and student-centred approaches that respond to both academic and health-related demands.

The findings demonstrate that adaptive curriculum models, creative teaching strategies and technology-assisted learning play a vital role in maintaining educational continuity for students undergoing long-term medical treatment. Importantly, SiH programmes extend beyond academic instruction by addressing students' emotional, social and therapeutic needs through stable routines, specialised teacher support and close collaboration with healthcare professionals and families.

Despite these strengths, this study has several limitations. The review focused only on articles published between 2019 and 2025 and written in English, which may limit the inclusion of relevant studies published in other languages or time periods. Additionally, reliance on selected databases (SCOPUS, Google Scholar, DOAJ, ERA and ERIH Plus) may have excluded pertinent studies indexed elsewhere. The findings are also dependent on the quality and depth of reporting in the reviewed articles.

Based on the reviewed literature, future research should explore empirically grounded teaching models tailored specifically to hospital-based education contexts, particularly through qualitative and mixed-methods studies. Further investigation into teacher professional development, curriculum design and technology integration within SiH settings is also recommended. Strengthening these areas will support the development of resilient and inclusive hospital education systems that promote both learning continuity and student well-being.

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Paper Contribution to Related Field of Study

This study advances the field of hospital-based education by summarizing flexible curriculum models, teaching strategies and key needs and challenges in School in Hospital (SiH) programs. It highlights the integration of academic, social and therapeutic support and provides practical insights for educators and policymakers to improve the quality and sustainability of education for students with complex health needs.

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