



Teachers' Professional Knowledge and Social-Emotional Competence: A Perspective on the Key Requirements for Designing and Facilitating Learning of Hospitalised Children

**Roxana TIMOFTE^{1*}, Codruța-Maria CORMOȘ², Ștefan OPRIȘANU³, Cristiana-
Ioana GAFENCU⁴**

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Abstract

Interest in improving the education of hospitalised children has increased in recent years. Individualised learning tasks, use of technology and involvement in playful activities are among the important approaches regarding children's education in hospitals. Herein, a perspective was presented regarding the teachers' professional knowledge and social-emotional competence necessary for teaching hospitalised children. It is expected that teachers exhibit high proficiency levels of pedagogical content knowledge, topic-specific pedagogical content knowledge, and technological pedagogical content knowledge, and have social-emotional competence. Furthermore, teachers should permanently reflect on their own teaching activities.

Keywords: Education of hospitalised children; TSPCK; TPACK; teachers' social-emotional competence; teachers as reflective practitioners; SEL

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¹ Lecturer PhD, Babeș-Bolyai University, Cluj-Napoca, Romania, E-mail address: roxana.timofte@ubbcluj.ro

² Master student, Babeș-Bolyai University, Cluj-Napoca, Romania, E-mail address: cormoscodruta@yahoo.com

³ Master student, Babeș-Bolyai University, Cluj-Napoca, Romania, Email address: soprisanu8@gmail.com

⁴ Master student, Babeș-Bolyai University, Cluj-Napoca, Romania, Email address: cristianagafencu@yahoo.com

* Corresponding author

1. Education of hospitalised children

1.1. Introduction

The right to education is a fundamental right (United Nations, 1948). Every year, millions of children require hospitalization (Ivanova et al., 2021) and intensive treatment and thus, their educational process is disrupted. The hospitalised children are deprived of contact with family and peers, which affects their mental and emotional health, generating feelings of loneliness and abandonment. Pain, fatigue and anxiety are distracting; the absence of a dedicated educational space and interactions with teachers or peers weakens children's motivation for learning (Ivanova et al., 2021; Ciucci et al., 2024). Empathetic and creative teachers could play an important role in the mitigation of these shortcomings (Almazroui, 2023). Studies have shown that the length of hospitalization significantly impacts the learning progress of children (Hu et al., 2022). Certain health problems are associated with lower academic performance (Hopkins, 2016). Of all hospitalised children, those with mental health and behavioural problems are most likely to have poor grades, followed by children with cardiovascular or neurological problems. Staying engaged in learning activities may prevent early school dropout (Caggiano et al., 2021). The differences in the management of the education of hospitalized children are directly determined by the level of economic and social development of a country. For example, in England or in the United Arab Emirates, technology and innovative teaching methods are implemented to improve the learning progress of hospitalized children (Hopkins, 2016). In less developed countries, organizations (e.g., World Health Organization) are struggling to implement projects for the improvement of the learning of children who require medical treatment (Almazroui, 2023; World Health Organization, 2021).

1.2. Approaches for the education of hospitalised children

Regarding the strategies for education in hospital-based schools, of pivotal importance is the individualised curriculum, adapted to the children's learning level and health needs (Amiruddin et.al., 2025). Teachers must take into consideration collaboration with all stakeholders and must provide emotional support and facilitate self-regulated learning for hospitalised children (Amiruddin et.al., 2025; Di Padova et al., 2024). Learning could be facilitated by involving the hospitalised children in virtual classes or by the utilisation of interactive apps (Amiruddin et.al., 2025). In hospitals where SMART technology was applied, such as the Samsung Smart School in Taiwan, children were given individual tablets from which they had access to various virtual laboratories and received interactive support (Almazroui, 2023). Other learning approaches could include Moodle platforms (Berizzi et al., 2016), gamification of lessons (Manzano-León et al., 2021; Fernández Batanero et al., 2019; Nurmi et al., 2020), augmented reality (Vidal-Balea et al., 2021), and adaptive learning through AI (Strielkowski et al., 2024). Robots could be used as learning tools (for example, Bee-Bot and LEGO Mindstorms), motivators, facilitators, or entertainers (game-based learning) (Pelizzari et al., 2025). Engaging the hospitalised children in artistic activities [e.g., theatre (Amiruddin et.al., 2025) and music therapy (Amiruddin et.al., 2025)] could play an important role in coping (Robb, 2003). Individualised tasks and playful activities could also be listed among practices for education in the hospital (Ludgério et al., 2023).

1.3. The reintegration process and remedial activities

The process of reintegration of hospitalised children is one of the most challenging issues and most schools do not provide a solution for these situations. However, the use of the following methods could facilitate the returning of children: easy and unlimited access to school counsellors, adaptation of school tasks, extended deadlines for homework and projects, adjustment of the timetable and requirements according to the specific needs of the student (Gittens, 2023). Furthermore, children could be involved in remedial programmes. Remedial

programmes “are defined as specific educational interventions aimed at addressing the learning needs of children who are lagging academically or not mastering specific core competencies. [...]. Remedial programmes take many forms and may include after-hours catch-up learning, non-formal education, equivalency programmes, and selected remedial subjects.” (Upadhyay et al., 2021, p. 6)

2. Teachers’ professional knowledge models

2.1. Pedagogical content knowledge and topic-specific pedagogical content knowledge models

Pedagogical content knowledge (PCK) was introduced by Shulman (1986, 1987) and plays a key role in the design of didactic activities (Schiering et al., 2023). In the Schulman model (1986, 1987), the key components of teachers’ professional knowledge were content knowledge (CT), pedagogical knowledge (PK) and pedagogical content knowledge (PCK). CT, PK, and PCK are defined in Table 1. PCK emerges not only from the overlap between the PK and CT, but also from the interaction between the PK and CT (Ciascai, 2018). PCK includes the representation and formulation of the subject knowledge in a way that could be understood by students (Schiering et al., 2023; Zeller & Riese, 2025).

Table 1: Definitions of PK, CK, PCK

Definitions
Pedagogical knowledge (PK): “knowledge about the process and practices or methods of teaching and learning and how it encompasses educational purposes, values, and aims (e.g., student learning, classroom management, lesson plan management and implementation).” (Koehler and Mishra, 2008, as cited in Schmid et al., 2020, p. 2).
Content knowledge (CK): “knowledge about the actual subject matter that is to be taught (e.g., central facts, concepts, theories, procedures).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p. 2].
Pedagogical content knowledge (PCK): “knowledge of pedagogy that applies to the specific teaching content (e.g., knowing what teaching approaches fit the content, knowing how elements of content can be arranged for better teaching).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p. 2].

Topic-specific pedagogical content knowledge (TSPCK) refers to the teachers’ pedagogical content knowledge necessary to teach a specific topic (Mavhunga, 2012; Mavhunga & Rollnick, 2013). The components of TSPCK are learner prior knowledge or misconceptions, curricular saliency, topic-specific difficulty, representations (analogies/models), and conceptual teaching strategies (Mavhunga, 2014; O’Brien, 2017). Curricular saliency of a topic refers to the prominence of that topic in the context of the whole curriculum (Geddis et al., 1993). More precisely, knowing the big ideas and the peripheral subordinate concepts in a topic and knowing the adequate sequencing of the big ideas for scaffolding (Mavhunga, 2020). Transformation of scientific knowledge into teachable knowledge (Figure 1) emerges from the TSPCK components (Mavhunga, 2014).

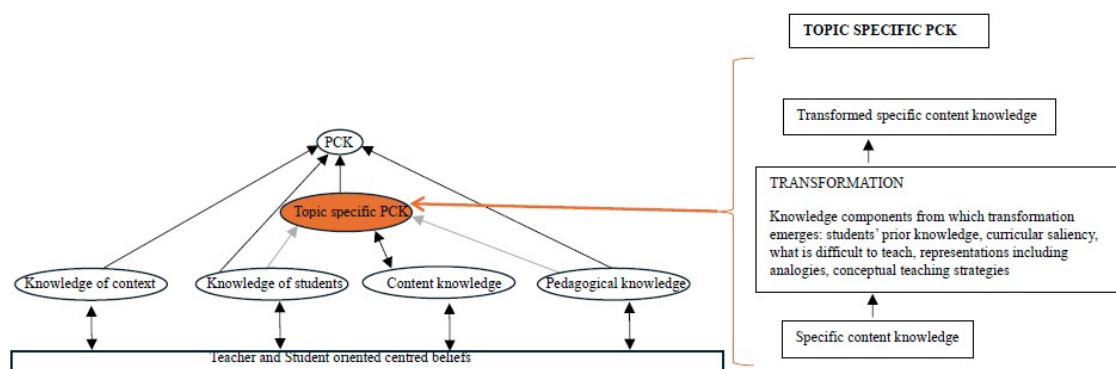


Figure 1: Transformation of scientific knowledge into teachable knowledge (Mavhunga, 2014)

In Table 2, the components of TSPCK are related to chemical equilibrium in Chemistry (Mavhunga, 2014, p. 36).

Table 2: The components of TSPCK related to chemical equilibrium in Chemistry (adapted from Mavhunga, 2014, p. 36).

Components of Topic-Specific PCK discussed
<i>Students' Prior Knowledge</i> Common misconceptions in Chemical equilibrium
<i>Curricular Saliency</i> · Big ideas of Chemical Equilibrium. · Sequence the order of teaching · Identification of topics needed before teaching Chemical Equilibrium · Topics to avoid
<i>Representations</i> · Macroscopic · Symbolic · Microscopic
<i>What is difficult and/or easy?</i> · Concepts difficult to teach · What makes them difficult · Strategies to handle them
<i>Teaching Strategies</i> · Recommended strategies for misconceptions · Use of more than one theory/principle to confirm prediction · Use of representations

2.2. Technological pedagogical content knowledge model and related models

The **technological pedagogical content knowledge (TPACK)** model was founded on the PCK model (Schmid et al., 2020). The core components of the model are technology, pedagogy, and content (subject knowledge) (Mishra & Koehler, 2008 as cited in Schmid et al., 2020) (Figure 2). From the overlap of the core components and the interaction between the core components emerged the TPK, TCK, PCK, and TPACK (definitions of terms are provided in Table 3). The study of Irmak & Tüzün (2018) revealed that for the development of teachers' TPACK, the TPACK should not be situated in a general domain but in a particular subject matter area.

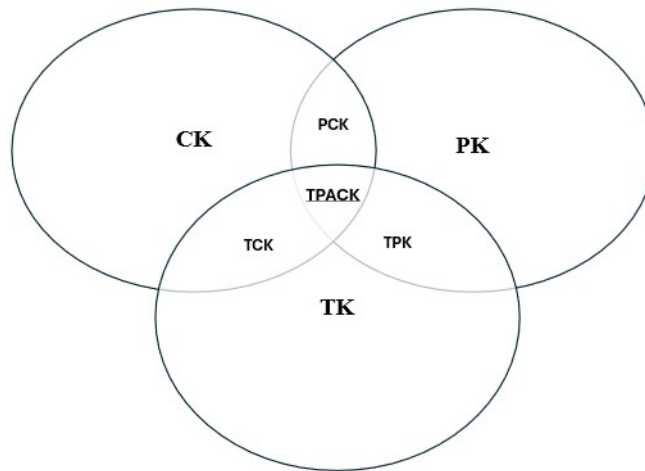


Figure 2: TPACK model (adapted from Mishra & Koehler, 2008 as cited in Schmid et al., 2020, p. 2)

In 2023, Celik proposed the **intelligent-TPACK** model, a model that includes aspects regarding the utilisation of AI tools by teachers and the related ethics. **Technological Pedagogical Content Ethical Knowledge (TPCEK)** is another model that emerged from the TPACK model (Mohammadpour & Maroofi, 2024), addressing the necessity of an ethical component in the professional knowledge models of teachers. In Table 3, the definitions of TPACK, intelligent-TPACK, and TPCEK are presented.

Table 3: Definitions of TK, TPK, TCK, TPACK, Intelligent-TPACK, and TPCEK

Definitions
Technological knowledge (TK): “knowledge about standard technologies and how to operate them (e.g., from books and chalkboard to the internet and digital video).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p. 2].
Technological pedagogical knowledge (TPK): “knowledge of how teaching may be changed as the result of using particular technologies (e.g., knowing that a range of tools exist, ability to select based on fitness and knowledge of affordances of these tools for pedagogical practice).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p. 2].
Technological Content Knowledge (TCK): “knowledge about how technology and content are reciprocally related (e.g., knowing how subject matter can be changed by the application of technology).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p. 2].
Technological pedagogical content knowledge (TPACK, initially abbreviated TPCK) was defined as “knowledge for good teaching with technology which requires understanding how technologies can support teaching subject matter (e.g., knowing how technologies can help overcome problems in the process of teaching and learning, and how they can be used for constructively content and pedagogy).” [Koehler and Mishra (2008) as cited in Schmid et al., 2020, p.2].
Intelligent-TPACK “is regarded as the core knowledge domain. It measures teachers’ professional knowledge to select and use suitable AI-based tools (e.g., intelligent tutoring systems) for performing a teaching strategy (e.g., monitoring and timely feedback) to accomplish the instructional goals in a particular domain.” Celik (2023, p. 4).
Technological Pedagogical Content Ethical Knowledge (TPCEK) “is the understanding of how teacher ethics guide the selection of teaching methods and technologies for specific content. Teachers can deliver content effectively [...] by aligning teaching methods with the content's nature [...]. Using educational technologies [...] can promote fairness, maintain student motivation, and enhance learning and growth [...]” (Mohammadpour & Maroofi, 2024, p. 7)

The DPACK (Digitally-Related Pedagogical and Content Knowledge) model was proposed as an expansion of the TPACK model, considering that digitalisation has influences on the social, societal and cultural aspects of life, as well as on communication and ethics (Huyer et al., 2019) and does not resume only to the utilisation of technology. While the TPACK employs the knowledge developed from the complex relationships between content, pedagogy and technology for planning suitable lessons, the DPACK includes the sociocultural knowledge for planning lessons (Thyssen et al., 2023).

2.3. The teacher as a reflective practitioner

When planning, teaching and reflecting on a teaching activity, a teacher employs the *enacted PCK*. “When engaging in the practice of science teaching—whether planning instruction, carrying out that plan, or reflecting on instruction and student outcomes—a teacher utilises *enacted PCK (ePCK)* [...]. This ePCK is the specific knowledge and skills utilised by an individual teacher in a particular setting, with a particular student or group of students, with a goal for those students to learn a particular concept, collection of concepts, or a particular aspect of the discipline.” (Carlson & Daehler, 2019, pp. 83-84). At the core of the ePCK are the pedagogical reasoning and the plan-teach-reflect process (Carlson & Daehler, 2019). John Dewey (1933) emphasised the importance of reflective teaching, while Donald Schön (1983) proposed the reflection-in-action (reflection during the teaching activity, deciding how to act and acting immediately) and the reflection-on-action (reflection after the teaching activity, thinking on what might be done differently next time a similar event occurs). Kolb’s experiential learning model (1984) is valuable for pre-service teachers’ education, as it could constitute a framework for the connection between theory and teaching experiences (Setiono et al., 2026). Kolb’s model (1984) consists of a cycle of concrete experience, reflective observation (reflecting on the event), abstract conceptualization (learning from that specific event), and active experimentation (applying in practice what was learnt). Studies have shown that experiential learning improves the competencies related to classroom management and lesson planning (Setiono et al., 2026). The Gibbs reflective learning cycle (1998) could be used as a scaffolding strategy to promote reflective practice (Machost & Stains, 2023). The reflective learning cycle proposed by Gibbs (1988) consists of six stages: description (of the situation), feelings (regarding that particular situation), evaluation (the teacher evaluates what went well and what went wrong), analysis (the teacher evaluates what went well and explores why other things went wrong and makes sense of the event), conclusions (what was learnt), personal action plans (plans regarding the integration of what was learnt) (Machost & Stains, 2023).

3. Teachers’ social-emotional competence

“Teachers with high social-emotional competence [can] recognize the emotions of their students [...] can perceive and regulate their own emotions [...], have a variety of strategies for shaping interpersonal relationships [...] (Leibniz Institute for Science and Mathematics Education, n. d.). In 2025, Savina et al. proposed a model consisting of emotional competencies of teachers: understanding teachers’ own emotions, effective emotion regulation, effective emotional communication, maintaining teachers’ emotional well-being, understanding and responding to students’ emotions, utilizing emotions to promote learning, utilizing emotions to foster positive relationships and emotional climate in the classroom. Another model was proposed by Rodriguez (2018) (as cited in Rodriguez Hernandez et al., 2025) consisting of the following components: emotional awareness, emotional change, emotional bonding, and emotional creativity. Pitman (2025) proposed five ways to model emotional regulation: naming one’s emotions out loud, using coping strategies in real time, sharing age-appropriate personal stories,

modelling positive self-talk, creation of a culture of emotional safety. Among the strategies used for the creation of a culture of emotional safety, fostering social and emotional learning could be listed (Opre, 2025). UNESCO (2025) defined **social and emotional learning** (SEL) as being “the process of acquiring the competencies to recognize and manage emotions, develop care and concern for others, establish positive relationships, make responsible decisions and handle challenging situations effectively. In other words, it is the holistic process of learning grounded in the ethics of care. It combines cognitive, social, emotional, and relational aspects of learning to enhance learners’ well-being, academic success, and active global citizenship, promoting positive social change.” Furthermore, SEL improves academic accomplishments (UNESCO, 2025). Teachers can assist students in attaining effective SEL (Zieher et al., 2024). In Table 4 are presented five pedagogies of social and emotional learning (Zieher et al., 2024).

Table 4: Five pedagogies of social and emotional learning (Zieher et al., 2024, p. 5)

Pedagogy
Modelling: Enacting SEL behaviours that demonstrate effective interactions, learning, engagement, or responses, including those that are internal (e.g., thoughts).
Practice promotion: Providing opportunities for students to repeatedly engage in SEL behaviours.
Transfer promotion: Supporting or providing opportunities for students to consider and apply SEL with multiple people, across multiple contexts, and in different emotional states.
Elaboration: Providing, or eliciting from students, meaningful and nuanced information about the social and emotional context, concepts, or content.
Validation: Engaging in behaviours that make space for, demonstrate interest in, or legitimize diverse preferences, perspectives, emotions, ideas, and opinions.

4. Conclusion

The education of hospitalized children is a complex challenge for the contemporary education system, and its management is necessary to ensure academic continuity, to support the harmonious development of this vulnerable group, and to mitigate the possibility of school dropout. Teachers’ PCK, TSPCK, TPACK, DPACK, Intelligent-TPACK and TPCEK play a key role in the design of educational activities for both hospitalised children and children in the process of reintegration. Teachers’ TSPCK (knowing the common misconceptions in a discipline, the correct sequencing of topics to be taught, the different modes of representation, the strategies to teach difficult concepts and choosing suitable teaching strategies) is essential for designing individualised learning activities, while the TPACK, the DPACK, the intelligent-TPACK and the TPCEK provide the knowledge necessary for the optimal utilisation of technology and AI in lesson planning. Teachers should master social-emotional competencies, manage their own professional well-being, and be able to support the engagement of hospitalised children in SEL behaviours. Teachers’ reflective practice could be beneficial for the continuous adjustment of teaching-learning-evaluation strategies, as necessary for the individualised education of hospitalised children.

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