Ethical Considerations for Children Undergoing Surgery: Evaluation of Graduate Nursing Students' Learning

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Abstract: Background: To challenge dominant conceptions of children and innovate nursing education, our team created an open-access training module (https://childsxethics.net/) addressing ethical considerations for children undergoing surgery. Objective: To evaluate the level of Bloom's Taxonomy cognitive and affective learning reached by graduate nursing students after completing the training module. Methods: A qualitative descriptive study was conducted using Bloom's Taxonomy. Data sources comprised of participants' course assignments. Results: Participants (n=19) wrote 19 online reflections, 43 peer responses and completed two group assignments. The module and associated class assignments promoted high levels of cognitive and affective learning. The type of assignment influenced participants' levels of learning. Cognitive and affective learning processes were enhanced when integrating reflections and fostering interactions among learners. Implications: Study findings will inform future iterations of the training module. Our innovative educational resource will facilitate the recognition of children as active moral agents and improve their surgical experiences.

Surgery can significantly reduce the impact of injuries, congenital anomalies, and malignancies. However, children experience significant perioperative distress stemming from marginalization in care and unaddressed fears, leading to negative health outcomes including pain, trauma, and maladaptive behaviours (Fortier & Kain, 2015; Wang et al., 2022b). Children have identified several factors alleviating anxiety, including good communication with healthcare providers (Gabriel et al., 2018, 2019); child-centric surgical resources and information provision (Bray et al., 2019); and involvement in care decisions (Wang et al., 2022a). However, substantial barriers continue to limit children's involvement in their care, including inconsistent clinician understanding of child-centered care practices and how to implement them in clinical settings, as well as a lack of adequate educational resources on pediatric surgical ethics (Cook & Ross, 2013; Martakis et al., 2016).

To address these gaps, our interdisciplinary team developed an open-access online training module called *Ethical Considerations for Children Undergoing Surgery* (ChildSxEthics; Figure 1). The module contents were derived from the team's collective expertise in childhood ethics and healthcare (VOICE: Views on Interdisciplinary Childhood

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Ethics) and guided by the Childhood Ethics Framework, which recognizes children as *active moral agents* with interests and capacities for participating in decisions about their health (Carnevale, 2020; Carnevale et al., 2021). Montreuil and Carnevale (2016) define children's moral agency as "children's capacity to act deliberately, speak for oneself, and actively reflect on their social worlds, shaping their lives and the lives of others" (p. 510). The framework proposed by Carnevale et al. (2021) emphasizes that enabling children to exercise

their agency and express their voices both verbally and non-verbally is crucial for supporting children's best interests. The training module aims to teach clinicians to authentically elicit, listen to, and interpret children's voice to help inform their understanding of a child's best interests. It includes four case scenarios, each with a specific learning objective; offers a framework for attending to children's voices in healthcare (Wang et al., 2022a); and a resource inventory for child-oriented education.

Figure 1

Screenshot of Online Module available at https://childsxethics.net
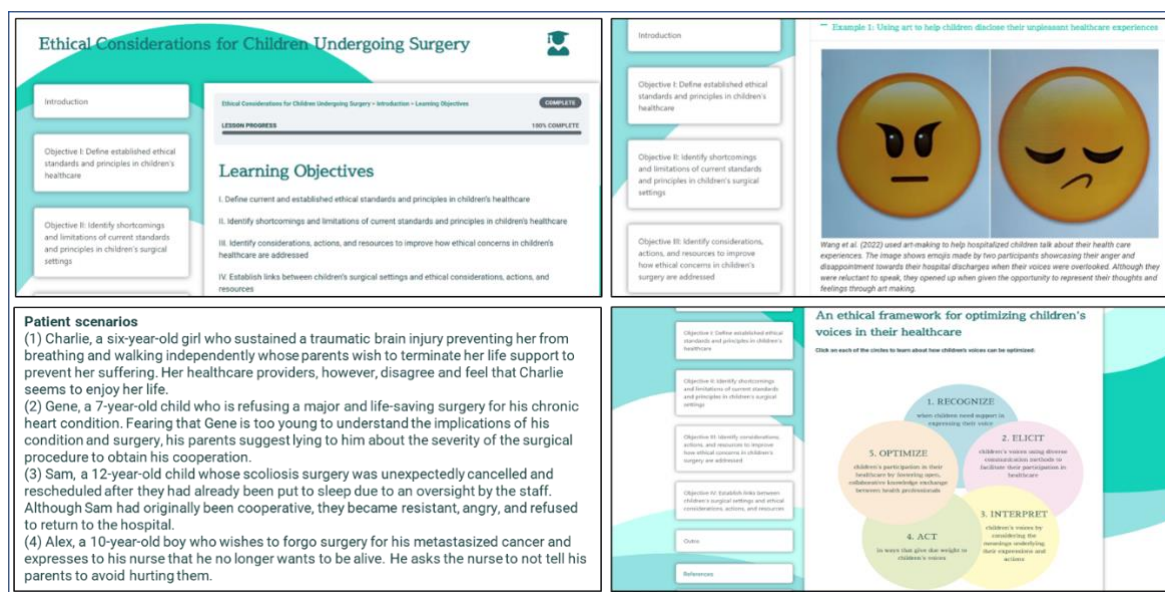
The training module is intended to support the pedagogical transition from dominant—and often paternalistic—pediatric nursing approaches to one that is rooted in childhood ethics and children's agency and voices. Presently, dominant approaches are largely based on a medical model focused on symptom management, clinical procedures, and broad applications of ethical, legal, and developmental frameworks that may not fully address the ethically and morally nuanced situations encountered in children's healthcare. For example, medical discussions and questions of consent are often largely directed towards parents and caregivers, leaving many children reporting afterwards that they did not understand

what was happening to them or why (Wang et al., 2022b; Behan et al., 2021; Heath et al., 2023). Children's "capacities" to be involved in care are often still assessed using developmental, age-based models, such as Piaget's stages of cognitive development. Such models have faced criticisms for being Eurocentric, ableist, and overlooking the varied ways children can demonstrate capacity and understanding across different contexts (Carnevale, 2020; Esser et al., 2016; Hogan, 2005). Dominant approaches can therefore have significant limitations in children's healthcare where psychosocial elements, family-centered care, and childhood agency are crucial. In contrast, the present training module emphasizes the relational and

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contextual consideration that inform children's best interests. The module situates learning in real-life examples, highlights "grey" areas and ethical dilemmas, presents novel child-centric frameworks, and offers concrete ways to move beyond the representation of children as "passive moral agents" towards a more comprehensive, nuanced and informed recognition of their voice and agency.

Research Questions

This study aimed to assess graduate nursing students' cognitive and affective learning after completing the ChildSxEthics module integrated into their children's nursing course. A preliminary evaluation is needed to inform future design, development, and implementation of the module. The research questions were:

(a) What are the levels of learning demonstrated by graduate nursing students after completing the training module over a three-week period?

(b) Did students meet the learning objectives identified in the training module?

(c) How do interactions between participants and assignments influence learning?

Methods

Design and Setting

Following ethical approval (A06-E23-22B), a qualitative descriptive design study was conducted at McGill University in Montreal (Canada), a research-intensive nursing school. Participants included graduate nursing students enrolled in a children's nursing course. The course drew from the Childhood Ethics

Framework (Carnevale et al., 2021) emphasizing the biological, psychological, and sociocultural dimensions of health among children and their families. Four patient case scenarios including a surgical case are explored in the course, each associated with several assignments outlined below.

Sample and Recruitment

Convenience sampling was used to approach, recruit, and consent all students (n=19) enrolled in the course from course onset. The course coordinator, a co-investigator in the study, was not part of recruitment process and did not have access to the raw data or knowledge of students' decisions to participate to avoid potential bias in grading.

Data Collection

Data included four types of assignments collected during the course (Table 1), participant observations, and a sociodemographic questionnaire. Participants were observed in-person during the delivery of the course and field notes were taken to contextualize previously collected data and gain a deeper understanding of participants' learning processes (Polit & Beck, 2017).

Data Analysis

Data were analyzed deductively and inductively using a directed content analysis approach (Sandelowski, 1995) and Bloom's Taxonomy Framework, which entails two domains of learning: cognitive and affective (Krathwohl, 2002; Krathwohl et al., 1964) (Figures 2 and 3).

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Table 1

Description of the Four Types of Assignments Collected and Time of Completion

Type of Assignment	Description	Time of Completion
Individual		
• **3-2-1 Reflection**	Participants shared on an online discussion board three learned things, sought clarity for two concepts, and posed one question for the developers of ChildSxEthics	Within seven days of having completed ChildSxEthics
• **Peer-Responses**	Participants reviewed and responded to at least one of their peers' 3-2-1 reflections	Within two weeks after posting the 3-2-1 reflections
Group		
• **Concept Map (Group 1)**	A subgroup of six participants created a concept map that illustrated the different elements of the surgical patient scenario, and the link between data and research.	Three weeks after posting the 3-2-1 reflections
• **Patient Educational Material (Group 2)**	A subgroup of six participants created a patient educational material designed to inform a child about their upcoming procedure using a Children's Nursing approach to care. They also evaluated current educational resources available for children.	Three weeks after posting the 3-2-1 reflections

Figure 2

Cognitive Levels of Learning Pyramid

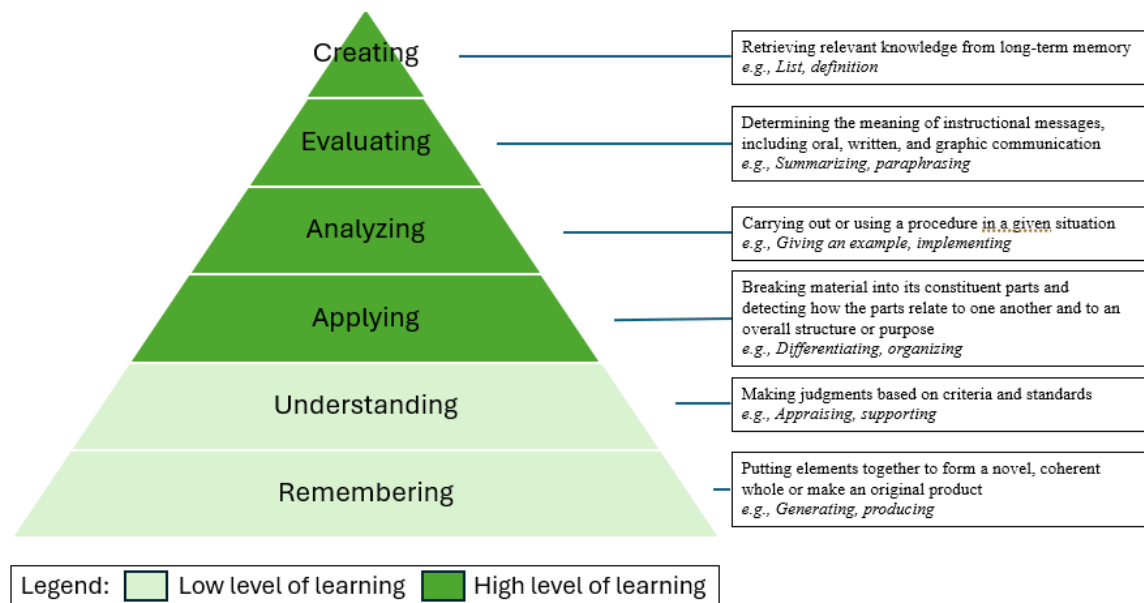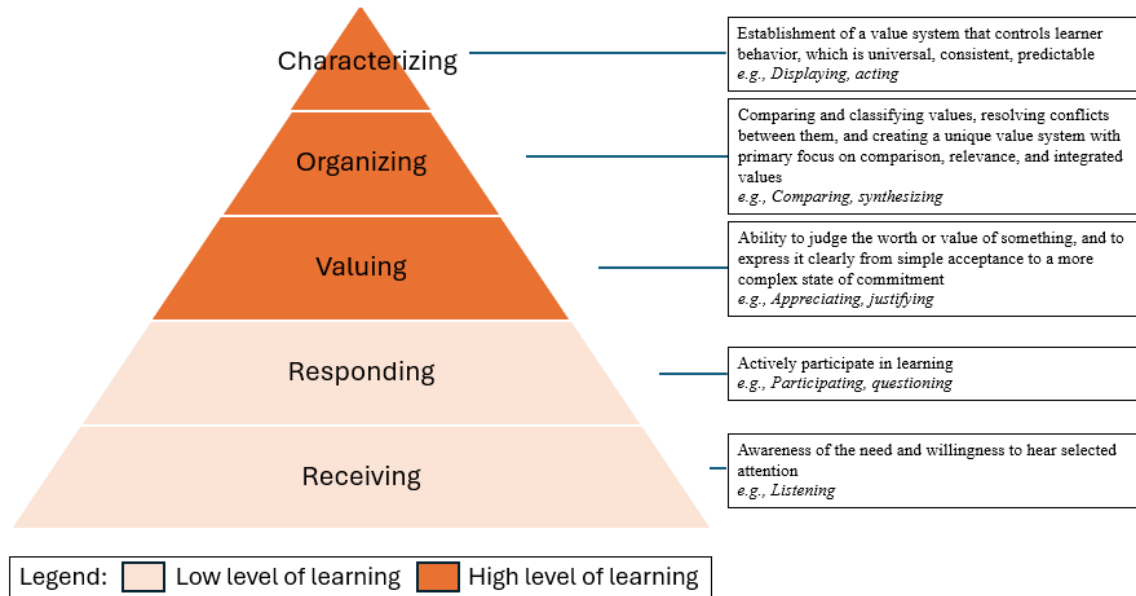**Cognitive levels of learning (Krathwohl, 2002)**

Creating — Retrieving relevant knowledge from long-term memory
e.g., List, definition

Evaluating — Determining the meaning of instructional messages, including oral, written, and graphic communication
e.g., Summarizing, paraphrasing

Analyzing — Carrying out or using a procedure in a given situation
e.g., Giving an example, implementing

Applying — Breaking material into its constituent parts and detecting how the parts relate to one another and to an overall structure or purpose
e.g., Differentiating, organizing

Understanding — Making judgments based on criteria and standards
e.g., Appraising, supporting

Remembering — Putting elements together to form a novel, coherent whole or make an original product
e.g., Generating, producing

Legend: ☐ Low level of learning ■ High level of learning

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Figure 3

Affective Levels of Learning Pyramid Used

Affective levels of learning (Krathwohl et al, 1964)

Characterizing — Establishment of a value system that controls learner behavior, which is universal, consistent, predictable
e.g., Displaying, acting

Organizing — Comparing and classifying values, resolving conflicts between them, and creating a unique value system with primary focus on comparison, relevance, and integrated values
e.g., Comparing, synthesizing

Valuing — Ability to judge the worth or value of something, and to express it clearly from simple acceptance to a more complex state of commitment
e.g., Appreciating, justifying

Responding — Actively participate in learning
e.g., Participating, questioning

Receiving — Awareness of the need and willingness to hear selected attention
e.g., Listening

Legend: ☐ Low level of learning ■ High level of learning

Predetermined codes were created based on the levels of the cognitive and affective learning of the original and revised Bloom's Taxonomy (Krathwohl, 2002; Krathwohl et al., 1964) (Figures 2 and 3). The data were read, and texts related to the cognitive and affective learning of ethical considerations for children undergoing surgery were highlighted. The highlighted texts were labeled with the predetermined codes (Hsieh & Shannon, 2005). If texts could not be coded according to the predetermined codes, new coding labels were created inductively (Hsieh & Shannon, 2005). All codes were described and recorded in a codebook. After initial coding, data were categorized and compared across participants and assignments. Data were also compared with the learning objectives of ChildSxEthics. Member checking was conducted with participants during a 30-minute focus group.

Results

Data sources consisted of 19 "3-2-1" reflections, 43 peer responses, one concept map, and one patient educational material derived from 19 participants (Table 2). The findings were presented according to learning domains, showcasing the different levels of learning reflected in each assignment (Table 3). Lastly, we presented participants' feedback about ChildSxEthics, offering opportunities for improvements.

Table 2

Participant Demographic Information

Characteristics	Participants (n=19)
Age (years)	
• <25	15
• >25	4
Highest level of education attained previously	
• Bachelor	19
Area of previous education	
• Health and sciences (e.g.,	19

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neurosciences, biology, biomedical sciences)		
Previous work experience with children (e.g., babysitting, camp counselling, volunteering)		
• Yes	17	
• No	2	
Years of experience working with children		
• None	2	
• <2	2	
• 2-3	4	
• 4-5	5	
• 6+	6	
Have a sibling <17 years old		
• Yes	3	
• No	16	
Are a caregiver to a child	1	
Have had previous experience with surgery or illness as a child	9	

Cognitive Learning Processes Associated with Completing ChildSxEthics

Participants' cognitive learning processes were facilitated by the completion of the assignments and in-class discussions. Peer interactions via in-class and online discussions and the creation of the patient educational material cultivated higher levels of learning compared to the individual "3-2-1" reflection and the concept map. Further, by completing the "3-2-1" reflection, the peer responses, and the patient educational material, participants met the learning objectives specific to ChildSxEthics (Table 3). During their class interactions, participants began to show understanding of the uniqueness of children's needs and surgical experiences. They initiated the processes of analyzing and evaluating by discussing strategies to improve children's experience in the hospital with their classmates. This allowed participants to build on each other's ideas and challenge one another, supporting their cognitive learning of the content of ChildSxEthics.

Table 3

Summary of Assignments Analysed to Evaluate the Levels of Learning Attained by 19 Nursing Students After Completing ChildSxEthics

Assignment Type	Levels of Cognitive Learning Attained	Levels of Affective Learning Attained	Learning Objectives from ChildSxEthics Achieved	Number of Assignments Analyzed
In-class Observation	Remembering Understanding Analyzing Evaluating	Receiving Responding Valuing		
Individual				
• **"3-2-1" Reflection**	Remembering Understanding Analyzing Evaluating	Receiving Responding Valuing Organizing Promise of Characterizing	I to IV	n=19
• **Peer responses**	Remembering Understanding	Receiving Responding Valuing	I to IV	n=43

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		Analyzing Evaluating	Organizing Promise of Characterizing		
Group					
	• **Concept Map (Group1)**	Remembering Understanding	Receiving Responding	-	n=1
	• **Patient Education al Material (Group 2)**	Understanding Applying Analyzing Evaluating Creating	Receiving Responding Valuing Characterizing	I to IV	n=1

"3-2-1" Reflections and Peer Responses

In the "3-2-1" reflection, participants showcased a wide range of cognitive processes from remembering to evaluating. In the peer responses, participants predominantly demonstrated levels of understanding, analyzing, and evaluating.

Remembering and Understanding. In all reflections, evidence of remembering was noted, as participants defined the ethical standards presented in ChildSxEthics and/or recalled children's means of expressing their voices. Illustrating this level of cognition, Participant #7 wrote: "There are many ways that children may communicate if not through standard verbal means, [including] drawings, art, applications, sign language, body expression, play and puppets". All participants attained the cognitive level of understanding in their reflections and their peer responses by summarizing concepts presented in ChildSxEthics, which facilitated meeting its' learning objectives (Table 3). Recurrent topics in all reflections consisted of clinicians' roles in optimizing children's expression and agency and recognizing the conflicts of interests that may influence the perception of children's best interests. Participant #1 wrote that, "children are unique, and decisions made in one's best interest may not be applicable to another child, even if their diagnosis and illness trajectories are the same". This reflection illustrated how participants understood the uniqueness of children's experiences. Further, all reflections illustrated participants' understanding of the consequences of denying children's agency.

Finally, in the peer responses, participants complemented and consolidated each other's understanding of the concepts presented in ChildSxEthics. A poignant example of such interaction was when Participant #7 responded to Participant #13's unclear point about evaluating children's capacity for consent by sharing their knowledge: "For the question about consent, in other provinces from what I understand […] it is up to the [healthcare professional] that is doing the procedure or is involved in the interaction to determine if the child is able to consent".

Analyzing and evaluating. Evidence of analyzing was found in 17 reflections and in all peer responses. Participants explained how factors such as lack of information, excluding children from decision-making processes, and misleading children in discussions about their health may increase children's distress and lead to long lasting trauma or distrust of the healthcare system. In response, participants identified strategies to improve children's experience and respect their agency, such as creating safe environments and trusting relationships: "Surgery is often a very foreign experience for people of all ages, so we [clinicians] […] should leave adequate time for questions, and space for the patient/family to express their thoughts and feelings pre-surgery" Participant #12).

The "3-2-1" reflection and the peer responses encouraged all participants to attain the level of evaluating. They agreed with clinicians' role in implementing child-centred care in their workplaces, as described in ChildSxEthics. All participants also defended the

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importance of promoting children's expression by eliciting their voices and being attuned to the different meanings they may carry:

> A major take home point […] is the importance of allowing children to participate in their care […]. In solely engaging with the parents […], we [clinicians] are removing any kind of agency that the child could have and with that, making them a background character in their own health." (Participant #6)

Additionally, participants' interactions in the peer responses promoted reflection on their own learning processes and experiences. Four participants suggested integrating legal/ethics courses in nursing curricula based on the importance of these subjects. Many participants also uncovered new concepts or considerations by reading their peers' responses. An example of participants' reciprocal interactions promoting learning was when Participants #6 and #10 discussed the analysis and evaluation of the two legal approaches of determining capacity for informed consent (in Quebec versus the other provinces in Canada):

> Participant #6: "This [the concept of mature minor] to me seems like a subjective way to define the age of consent and would seem to add challenges when determining if a child is able to legally consent to treatment."
> Participant #10: "I think that if social attitudes towards children's rights and healthcare education surrounding children's consent and assent was better, then it would benefit children more to have laws similar to those outside of QC [Quebec]. But without that strong foundation of support for children's rights, I worry that a law like that may not protect them super well or super consistently."
> Participant #6: "I appreciate the way you tied in social attitudes towards children's right and healthcare because it was a point I had not at all thought about!"

Concept Map

By creating the concept map, Group 1 (participants #1-4-11-15-16-17) demonstrated remembering of some content of ChildSxEthics, as two concepts linked with the bubble "Ethical
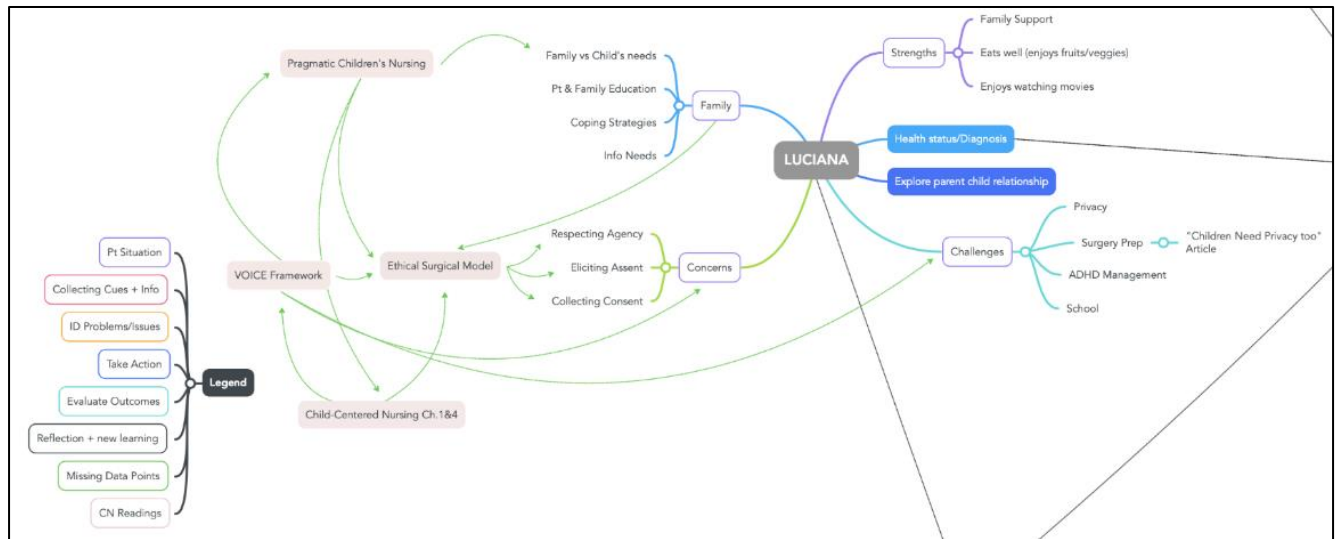
Surgical Module" read "Eliciting Assent" and "Respecting Agency" (Figure 4). Participants confirmed during member checking that the format of this assignment made it difficult to show higher levels of cognitive learning of ChidSxEthics' content. Given the format of the concept map, we were also unable to ascertain that Group 1 participants met the learning objectives of ChildSxEthics (Figure 4 and Table 3).

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Figure 4

A Section of Group 1's Concept Map

*Note. This s*ection of the map incorporated concepts from the online module and linked them with the practice scenario. Due to missing information on the map explaining the links between concepts and their meaning, it was difficult to evaluate Group 1's cognitive processes.

Patient Educational Material

Group 2 (participants #2-5-9-10-12-18) illustrated cognitive levels from understanding to creating by producing an educational booklet for children undergoing surgery and describing their creative process in a written presentation. Through this assignment, participants attained all learning objectives of ChildSxEthics (Table 3) and displayed higher learning compared to other assignments (Figures 5 and 6).

Understanding, Applying, Analyzing, and Evaluating. In the written presentation, Group 2 shared their understanding of the concepts of children's uniqueness and agency. They described the application of these concepts in their creation of a booklet they envisioned as, "personal to each child, since each child is unique," and "engaging in various ways, encouraging the child to absorb the information and become an active agent in their care." Participants also showcased the cognitive level of analyzing by explaining how the booklet was intended to be "a potential extension of the child's voice," that clinicians could use to make decisions centered on the child's best interests. Moreover, they described how the booklet could

also serve as an intervention to decrease anxiety and pain levels (analyzing). Further, the participants attained the level of evaluation by using the Patient Education Materials Assessment Tool to critique other patient resources (Shoemaker et al., 2014), arguing that they "often did not incorporate opportunities for the child's self-expression."

Creating. Building upon their understanding and analysis of the content of ChildSxEthics and their evaluation of already available resources, Group 2 reached the cognitive level of creating. They produced their own booklet, with the intention of promoting children's voices and improving their experience, evidenced by the many pages dedicated to children's expression of their feelings and concerns (Figure 5 and 6). The participants also included prompts for children to write/draw their goals (Figure 6), acknowledging children's interests and various means of communication. Furthermore, the participants addressed children's informational needs by including procedural, sensory, and self-regulating explanations of the perioperative trajectory (Figure 6).
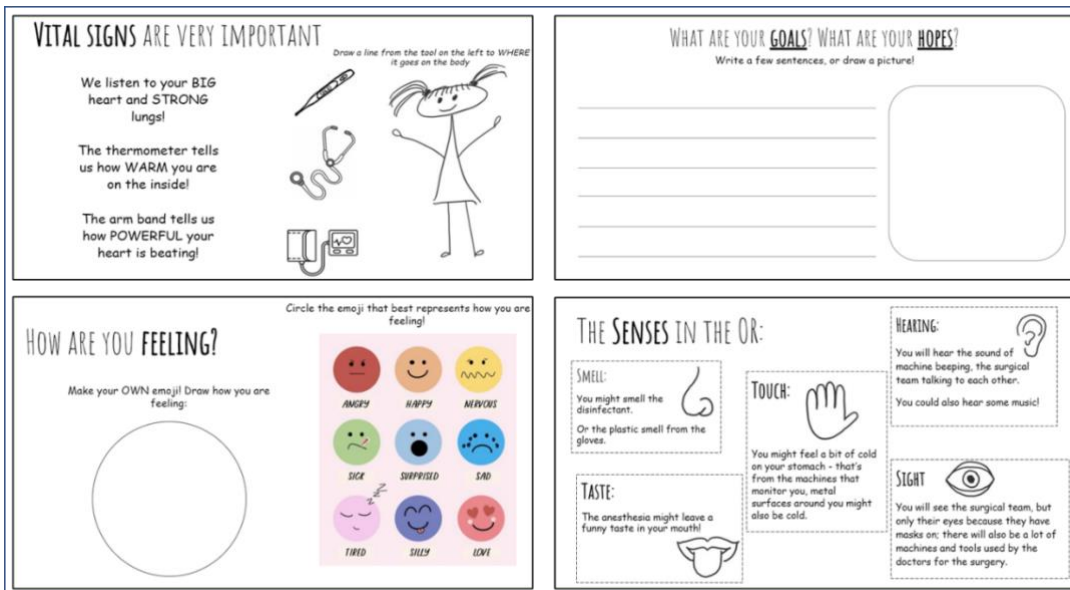
Figure 5

Group 2's Educational Colouring Booklet, Page 21

Notes. Example of a page of the booklet incorporating different methods of communication, where children are encouraged to share their concerns and be active members of their care.

Figure 6

Group 2's Educational Colouring Booklet

Notes. This is an example of how participants illustrated their internalized values about the importance of providing adapted information for children and space for children's feelings and experiences.

Affective Learning Processes Associated with Completing ChildSxEthics

Participants reached different levels of affective processes across the assignments and during in-class observation. This type of learning was achieved without any explicit affective learning objectives communicated in the assignment guidelines or in the ChildSxEthics training module. Interactions between participants via the discussion board promoted slightly higher levels of affective learning than the individual "3-2-1" reflective assignment. Finally, the format of the educational material assignment permitted participants to showcase the highest level of affective learning (characterizing), as opposed to all the other assignments. During in-class observations, we identified affective processes of receiving and responding as participants listened to one another while discussing about the module and its relation to the surgical patient scenario and participating actively to the conversations. Some participants also began communicating their appreciation (valuing) of the importance of improving children's experience by providing them information and being attuned to their voice. Interactions between participants allowed them to exchange opinions and debate on their views regarding honesty and information-sharing related to painful procedures.

"3-2-1" Reflections and Peer Responses

In these assignments, participants demonstrated a similar range of affective processes, going from receiving to promise of characterization (participants writing about how they would incorporate their values into practice). The two first levels of affective learning (receiving and responding) were implied by participants having read through ChildSxEthics and completed their assignments.

Valuing, Organizing, and Promise of Characterization. All participants illustrated in both assignments the level of valuing by appreciating the importance of respecting children's agency through collaboration and inclusive decision-making. Further, participants communicated their sensitivity towards children's uniqueness and clinicians' role in promoting children's expression and being advocates for their best interests. For example, Participant #14 appreciated clinicians' duty to promote children's expression by sharing in their reflection, "children's voices should always be given an opportunity to be heard by healthcare professionals, who must strive to understand how a child communicates." While only one participant displayed the level of organization in their reflection, seven participants attained that level in their peer responses. Similarly to the findings for cognitive learning, interactions between participants seemed to allow them to complement each other's learning by answering their peers' questions about organizing values, sharing their own view on value prioritization. A poignant example is when Participant #7 responded to a question written by Participant #13 about organizing the values of advocating for children's agency and respecting parents' cultural norms that may deny their child's agency:

> Participant #13: "In a family where their culture dictates that decisions must be taken by the parents/adults/men, how should we approach the situation in which the adults in the family might ask us to not reveal details of a procedure to their child?"
> Participant #7: "I am biased towards ignoring any oppressive cultural norms and trying to hear what the child wants as much as possible but that may be totally inappropriate. What are your thoughts on this?"
> Participant #13: "For what you say regarding ignoring any oppressive cultural norms, I have a tendency to do that too. (…) I think I would try to explain my point of view to the parents."

Then, nine participants shared in their reflections, and eleven in the peer responses, their promise of characterization by writing how they would incorporate concepts presented in ChildSxEthics in their nursing practice. An example of promise of characterization about promoting children's voice in practice appeared in Participant #13's reflection where they wrote: "We should seek more information from the patient if they are silent and offer them an environment in which they can express

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themselves freely and without judgment." Further, interactions between participants in the peer responses also encouraged them to navigate how they would approach ethically challenging situations while respecting children's agency. An example was observed in the exchange between Participants #15 and #17 about ways to approach a child who is "actively refusing" or "screaming no" to treatment. They both mentioned the importance of "taking a step back" to communicate with the child and eliminate "triggers of anxiety" to improve the child's comfort and desire to collaborate.

Concept Map

Group 1 illustrated the levels of receiving and responding by including some content from ChildSxEthics in two concept bubbles named "Eliciting Assent" and "Respecting Agency" on their concept map. Due to the format of this assignment, it was difficult to ascertain if Group 1 displayed the levels of valuing, organizing, or characterizing in their concept map (Figure 4).

Educational Material

In Group 2's written presentation and booklet, participants showcased the levels of valuing and characterizing.

Valuing. Appreciating (valuing) the importance of including children in their care (e.g., providing adapted information [Figure 6], considering children as active agents [Figure 5], and giving them opportunities to express their voice [Figure 6] were foundational to the creation of the booklet). Group 2 also attributed importance to improving children's surgical experience. These values were communicated in the booklet aim, found in the group's written presentation of their work, which was "to improve and center the child's experience in the perioperative period by reducing fear and anxiety and fostering communication and self-expression that will guide and improve care for the patient."

Characterizing. The process of creating resources promoted characterization since unlike other assignments, the educational assignment offered the opportunity to act according to internalized values. For example, the participants explained in their written presentation how they

dedicated space for children to write/draw their feelings, so they may be communicated with the healthcare team to inform their care, showing respect for children's various ways of expressing their voice and sensitivity towards their experiences (Figure 6). They also cared to meet children's informational needs by giving them procedural and sensorial information and coping strategies (Figure 6). Finally, they enacted their respect for children's agency by creating prompts for children to share their concerns or symptoms with the team (Figure 5).

Opportunities for Refinement and New Development Identified by Participants

In the "3-2-1" reflections and peer responses, participants included various questions pertaining to the cognitive and affective domains of learning. Seven participants requested more explanation regarding the concept of assent, its distinction from consent, and how to incorporate the consent/assess processes into their practice. Participants also desired more information about the concept of a mature minor and the criteria used to determine children's capacity for decision making. Additionally, three participants requested more information on dissent and the weight that ought to be given to children's voices in situations of disagreement. Questions pertaining to the affective domain of learning were most frequently encountered when expressing challenges regarding organizing values arising with conflicting interests between parents and children. Participants #15 and #16 discussed their challenges regarding ways to solve issues of disclosure when children communicate important information to the team but desire to withhold from their parents. Both participants were questioning whether to prioritize the child's right to privacy or to encourage the child to share their concerns and desires with the team.

Twelve participants identified various limitations with ChildSxEthics, illustrating the cognitive level of evaluation. Seven participants desired greater development of the patient scenarios presented in ChildSxEthics. They felt uncertain about how the scenarios would "unfold in real life" and desired more guidance to resolve the ethical issues at play. Ten participants expressed wanting more strategies to help

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clinicians implement child-centered care in their practices and how to encourage coworkers to change their views on children. Finally, three participants appreciated the usefulness of the framework for optimizing children's voices presented in ChildSxEthics (Wang et al., 2022). They valued the explanation of the different influences and interests that may impact the perception of the child's best interests and the role of self-reflection in reducing biases.

Discussion

Our findings showed that the training module and most of its related assignments were successful in promoting high levels of cognitive and affective learning amongst graduate nursing students. Learning levels and the achievement of the learning objectives varied depending on the type of assignment (e.g., the patient educational material promoted higher learning than the concept map) and were enhanced when integrating reflections, social interactions, and dialogue. Our findings suggested that ChildSxEthics may be an effective resource to (i) fulfill the educational gap reported by clinicians regarding ethical considerations for children's surgery and (ii) propel the shift away from dominant understandings of pediatric bioethics and children's voices towards one that is socially and contextually informed (Boer et al., 2022; Wang et al., 2022a).

Findings from the peer responses and group assignment supported the positive influence of collaboration and social interactions on learning, which allow students to discover gaps in knowledge, conceptual understanding, and new perspectives (Plantz et al., 2014; Vlachopoulos & Makri, 2019). According to the *Community of Inquiry* framework, a validated tool used to structure learning in online environments (Heilporn & Lakhal, 2020), social presence between learners is essential to create meaningful learning experiences and improves students' perceived learning and satisfaction (Stenbom, 2018). Qureshi et al. (2021) surveyed 398 university students to model the relationship between active collaborative learning, student engagement, and learning performance. They found that peer interactions positively correlated with active collaborative learning ($\beta = 0.287$, $p < 0.01$), which positively correlated with student engagement ($\beta = 0.655$, $p < 0.01$); finally, student engagement positively correlated with student's learning performance ($\beta = 0.660$, $p < 0.01$). Similarly, Pavin Ivanec (2022) examined university students' perceptions of academic social interactions, self-regulation, and online learning during the Covid-19 pandemic. They found that "students who perceive a greater lack of academic social interactions also report more learning and self-regulation difficulties during online studying."

Although the *Concept Map* assignment was presented at the end of the course with the purpose of stimulating critical thinking, its' analysis did not reveal high levels of learning. Given that most research on concept maps as a learning tool in healthcare fields for pathophysiological or pharmacological content (Chabeli, 2010; Kaddoura et al., 2016), our finding may be explained by the philosophical nature of the module's material. Notably, the module and course focused on *building* students' learning and moving beyond rote memorization and recitation of information (as is common in dominant lecture styles of teaching) by encouraging abstract thinking, engagement with philosophical frameworks on child health, integration of prior experiences and knowledge, and the creation of new connections beyond the basic course content. Thus, the *Concept Map* assignment might not have been effective in showcasing the complexities of participants' learning after completing ChildSxEthics. In contrast, interactions between participants during the concept map's creation may have reflected higher levels of learning, but the research team evaluated the finished product only.

The *Patient Educational Material* assignment encouraged the highest levels of cognitive and affective learning. This finding was in line with research on project-based learning, "a student-centred form of instruction which is based on three constructivist principles: learning is context-specific, learners are involved actively in the learning process, and they achieve their goals through social interactions and the sharing of knowledge and understanding" (Kokotsaki et al., 2016, p.8). In the *Patient Educational Material* assignment, which involved adapting health information for

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children, students had the opportunity to explore, integrate, and apply their learning while engaging in co-construction and exchange with peers. In turn, they transformed newly acquired knowledge into a unique and meaningful educational artifact. These processes underpin seminal learning theories including: *cognitivism* (reflection on learning or "thinking about thinking") and ongoing integration/reorganization of knowledge into one's previous mental frameworks (Khalil & Elkhider, 2016); *humanism*, which places self-actualization as the primary motivator for learning (Mukhalalati & Taylor, 2019); and *social constructivism*, which posits that learning is a socially-embedded process involving co-construction of knowledge. In the classroom context, assignments that integrate multiple well-established learning theories, such as the *Patient Educational Material*, may therefore be more effective in promoting higher levels of learning.

Strengths and Limitations

To the researchers' knowledge, this study is one of the few descriptive qualitative studies in nursing evaluating participants' cognitive and affective learning according to Bloom's Taxonomy (Krathwohl, 2002; Krathwohl et al., 1964). This innovative methodology yielded novel understanding regarding participants' learning and future improvements/ recommendations for ChildSxEthics. The sample size and the richness of data sources (observations, class assignments, fieldnotes) enhanced the study's validity and allowed for greater confirmability and credibility of the data and their interpretations (Polit & Beck, 2017). By moving away from quantitatively graded tests as measures of learning (e.g., multiple choice quizzes and exams), the researchers were able to challenge dominant pedagogical practices in clinician and healthcare provider training to obtain an understanding of how students' learning evolves and how their knowledge was internalized, integrated, and actualized in the context of different assignments. This method of teaching and evaluation may better equip students to apply their knowledge as it touches upon the cognitive and affective influences and precursors of learning.

Although psychomotor learning (i.e., physical skills; Dave, 1970) is necessary in healthcare practice, the course did not target psychomotor learning. Thus, we were unable to observe if participants incorporated the module contents into their clinical practice. This missing dimension highlights the need to include educational content and evaluation methods targeting psychomotor learning (Chao et al., 2017). Finally, this study was conducted with a group of graduate students enrolled in a children's nursing course where childhood ethics is an integral part of the curriculum. Our results may have been skewed towards higher learning processes due to the nature of the course and graduate school.

Future Directions

The findings informed areas of further development for ChildSxEthics. Given the benefits of learner interactions on learning (Stenbom, 2018; Vlachopoulos & Makri, 2019), the next iteration will include an online discussion board. According to inquiry-based learning, inviting learners to create and analyse their own patient scenarios may also help to develop their capacity to make ethical decisions (Zhang et al., 2019). These patient scenarios can be hosted on the online discussion board, which supports asynchronous collaboration between learners across different healthcare disciplines and increases exposure to diverse case scenarios (Zhang et al., 2019). Currently, our module features text and picture-based content only, but utilizing multiple formats to deliver information (e.g., pictures, audio, text, videos) can improve learners' abilities to integrate knowledge (Sorden, 2013). Thus, future iterations will incorporate diverse forms of media. Finally, future studies should evaluate ChildSxEthics with other pediatric surgical healthcare professionals/trainees and utilize mixed methods to obtain comprehensive understanding of learners' learning, such as self-report surveys, observations of learners in the healthcare environment, and their interactions with children.

Conclusion

This descriptive study showed that the training module ChildSxEthics and some

subsequent assignments ("3-2-1" reflections, peer responses, and patient educational material) were successful at promoting high levels of cognitive and affective learning. By departing from dominant notions of childhood ethics and pediatric bioethics, the module encouraged students to think beyond the ways that consent, assent, agency, and young voices are currently conceptualized and addressed in healthcare systems using the exemplar dilemmas offered in the module. The various assignments provided diverse and creative ways to showcase their thinking which, based on the observations and fieldnotes, were a welcome change to test-based curriculums. Our findings suggest that ChildSxEthics could effectively address the educational gap reported by clinicians and support the shift towards a child-centered approach in nursing education (Boer et al., 2022; Wang et al., 2022a). The importance of the new pedagogical resource lays in its potential impact on the creation of a new generation of nurses that will be better equipped to implement child-centred practices in their care, acknowledge and challenge paternalistic practices, and foster children's diverse voices and expressions of agency. The study findings will also inform notable improvements and opportunities for ChildSxEthics to benefit the greater children's surgical and nursing community, possibly by creating a tailored platform for continuing studies and professional development.

Data Availability Statement

Data available on request from the authors.

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