

Rethinking clinical instruction through the zone of proximal development

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ABSTRACT

Background: The complexity of the learning environment and intricacy of nursing tasks make it difficult for students to learn without the assistance of an expert. Teaching in the zone of proximal development (ZPD) aims at positioning learners in the zone of what they can do and develop with assistance to reach full potential and independence. ZPD is deemed essential to understand how teaching and learning take place; however, its implications for clinical educators are limited and need further exploration.

Objectives: This research study aimed at exploring the instructional strategies that preceptors use to guide and support the development of undergraduate nursing students, from what they are capable of doing with assistance to what they can become and do independently.

Design: The qualitative multiple case study research design was used to gain insights into the teaching experiences of 18 nurse preceptors situated in three recognized hospitals in Lebanon.

Methods: Each preceptor was interviewed face-to-face using questions that were developed from a three-hour observation. Vygotsky's learning principles formed the reference point for this study. Analytic induction and constant comparison of preceptors' responses were applied throughout the study to unravel assisted strategies that target the potential learning zones of the student.

Results: Three assumptions emerged from the data to underpin the preceptors' assistive strategies that help move learners from a cannot-do-level to can do independently. The assumptions are: (1) learning from clinical experience, (2) teaching beyond student ability, and (3) teaching for autonomy. In-depth analysis of both assumptions and strategies that focus instruction within each student's ZPD converged on a framework of three constructs: differentiated instruction, instructional scaffolding, and influencing a positive learning environment.

Conclusion: It is imperative that clinical educators be most receptive to instruction that targets the student's ZPD, as the zone represents a potential phase in student learning. This study provides a ZPD framework for intensifying learning gains from clinical practice.

1. Background

Nursing students learn about practice in a complex, ever-changing clinical environment, dominated by standards and accountability measures; all represent major challenges of clinical instruction. Amid these challenges and the relentless calls for linking theory with practice (McCarthy and Murphy, 2010; Paton, 2010; Sroczyński et al., 2012), optimizing learning remains the chief outcome of a nursing curriculum and a major expectation of clinical teaching (Oermann, 2016, 2018). Clinical instruction is addressed in a number of empirical studies, yet hardly explore how clinical educators focus instruction within the student's potential development zone (Pront et al., 2016; Sroczyński et al., 2012; Wass and Golding, 2014).

This research study aimed at exploring clinical instruction of nurse preceptors to help move students along the learning continuum: from

potential development zone through assistance and guidance to current development zone where they are able to do the tasks independently. Results from this study will contribute to the advancement of new concepts and insights regarding clinical instruction. The emergent constructs will guide both academia and service in the development of a curriculum that influences learning in practice.

1.1. Review of literature

Vygotsky (1978) provided us with the Zone of Proximal Development (ZPD) as the means to understand the teaching learning process. ZPD is grounded in sociocultural learning; its major tenet is learning with the assistance of an expert. Although ZPD was developed as a teaching tool in Kindergarten through 12th grade, the tool is gaining acceptance in higher education to provide an essential understanding of

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learning (Wass and Golding, 2014).

According to Vygotsky, learning is developmental in nature and constitutes two zones: actual (current) and potential (proximal). Actual development is determined by one's prior knowledge and experience, which, for the constructivist educator, is considered the starting point to advance knowledge and thinking skills. The proximal zone, an extension of the actual zone, marks the space between what students are capable of doing with assistance and what they can do independently (Dunphy and Dunphy, 2003). Students are most receptive to instruction that targets their ZPD, as it represents a potential phase for learning (Wass and Golding, 2014).

Inherent in the ZPD model is the social context of learning, in which interaction enables more learning than when students learn on their own. Interaction influences academic progression (Moll, 2013), and promotes seminal higher mental processes of memory, perception, and problem-solving (Tryphon and Vonèche, 2013). Owing to the complexity of clinical environments and intricacy of nursing tasks that are difficult for students to perform independently (Brandon and All, 2010), teaching in the ZPD stands out as a promising clinical instructional model.

The advent of the preceptorship model in clinical teaching (Bott et al., 2011) led to the recruitment of preceptors in this study. Clinical instruction takes place through small groups. Working with a small group of students allows better assessment of the current knowledge and skills, and helps to identify what has not yet developed, what is in the process of developing, or what can be developed with assistance. Accessing the preceptor's teaching experience would provide a better understanding of how do they diagnose the learning needs of the individual student and plan the instruction accordingly.

There is limited work in undergraduate nursing education that addresses teaching in the ZPD, while studies in other disciplines have demonstrated its effectiveness in mastering professional skills (Dunphy and Dunphy, 2003; Harland, 2003; Wass and Golding, 2014). To this end, ZPD is useful to understand how instruction and learning take place; however, little is known as to the strategies that focus clinical instruction by nurse preceptors within each student's ZPD.

2. Methods

2.1. Design

This qualitative multiple case study design allowed access into the teaching experiences of nurse preceptors. Understanding clinical instruction cannot be directly measured using quantitative data, since the construct embodies processes that affect behaviors and decisions of participants (Hartman, 2011). The research question that guided this study was: What assistive strategies do nurse preceptors employ in the clinical teaching of undergraduate nursing students to help focus instruction within each student's ZPD? Preceptors' perceptions were categorized using Vygotsky's (1978) three principles of learning: social interaction, learner characteristics, and cognitive development.

2.2. Setting

The desire to understand the phenomenon under study led to the selection of three homogeneous hospitals of similar defining characteristics, such as having a developed preceptorship model. Each hospital affiliates with a nursing program that uses its facility as a clinical placement for its students.

2.3. Preceptor selection process

Data were obtained from 18 nurse preceptors, six from each hospital, based on a selection criteria that was developed to help control external variables and define boundaries for finding generalization (Huberman and Miles, 2002). The criteria included that each

participant: (a) had a minimum experience of two years as a registered nurse, (b) acted as a preceptor at least twice, (c) accepted to be recorded during the interview, and (d) expressed willingness to contribute to the findings.

2.4. Ethical considerations

Prior to commencing with the data collection, the approval of the Institutional Review Board for each of the participating hospitals was secured. This was followed by inviting preceptors at each hospital to a meeting to introduce the study aims and process, inform them about the use of an audio-recorder during the interview, and sign the consent form. They were assured that their names and audiotaped interviews would be confidentially managed throughout the study and all identifiers would be removed and replaced by letters and numbers. Letters signify the hospital of the participating preceptors (A, B, C), whereas numbers indicate the preceptors' sequence in data collection.

2.5. Data collection and analysis process

Interviews proceeded from a three-hour observation of each preceptor while conducting the teaching. Interview questions were based on documented observations, yet aimed at exploring perceptions of preceptors regarding the learning activities and assisted strategies used in instruction. Interviews were conducted face-to-face, tape-recorded, and completed in 45 to 90 min. For analysis and insight, data were analyzed by hand.

Analysis commenced by reading through the data to make a general sense of the information. In this respect, the primary investigator and the two co-investigators, who have developed expertise in qualitative research informed by the writings of Yin (2003), analyzed the data to highlight distinct categories related to preceptors' activities. Analytic induction and constant comparison helped to recognize learning activities and instructional strategies that emerged from the analysis process (Yin, 2003). This was expanded into cross analysis to determine the distinctive features of teaching within each student's learning zones.

Vygotsky's (1978) learning principles, namely social interaction, learner characteristics, and cognitive development, formed the reference point for this study. Each principle represented a category of instructional activities, and the defining characteristics of each was developed from Vygotsky's elaborations and views. Accordingly, strategies and assistive activities that helped students do or problem-solve what would not have been possible to achieve or do without assistance, were categorized based on the defining characteristics of the principle.

In this study, Vygotsky's social learning principle leans on the interaction between the educator and learner and between learner's prior knowledge and clinical encounter (1978). Interaction enhances knowledge acquisition and capacity development; however, its effectiveness is governed by the learning experience (Vygotsky, 1978). All instructional activities that reflect social interaction were enlisted under this category.

Vygotsky's (1978) emphasis on the learner entails readiness, interest, and potentials, as well as individual differences for making use of one's capacity in the educational process. Assistive activities indicating emphasis on the learner were categorized under this principle.

As for cognitive development, this principle encompasses development of problem-solving skills, generalization, and transfer of knowledge to real practice (Gredler, 2005). Immersion of students in matters of practice is believed to yield independence. Accordingly, assistive learning activities reflecting development of the learner into an independent nurse are categorized under Vygotsky's cognitive development principle.

The preceptors' activities enlisted under each principle were grouped, tallied, and tabulated. After completing the tables, the frequency of each category was completed, together with the frequency of occurrence of words and phrases which, eventually, formed the

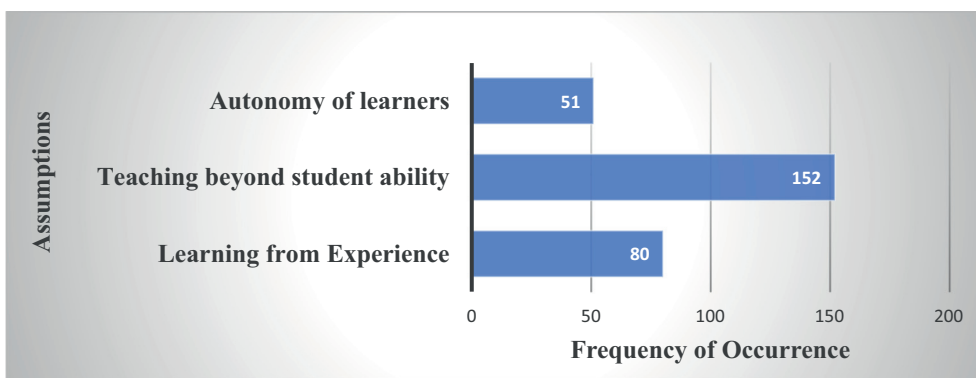


Fig. 1. Assumptions underpinning the preceptors' clinical instruction.

This figure illustrates the three assumptions that surmised from the data to reflect the underlying reasons for the various assistive learning strategies that the preceptors provided in their clinical instruction.

underlying features of the category.

3. Findings

The three developed categories of the preceptors' teaching and assistive learning activities, originating in Vygotsky's learning principles, provided the foundation for inferring assumptions about clinical instruction rendered to nursing students. Three assumptions surmised from the data to reflect the underlying reasons for the various assistive learning strategies that the preceptors provided in their clinical instruction. The assumptions include: (1) learning from clinical experience, (2) teaching beyond student ability, and (3) teaching for autonomy. The frequency of occurrence of each assumption was calculated to infer the level of emphasis by the study participants (see Fig. 1).

3.1. Assumption 1

All learning must be fundamentally conditioned by social context, mediated by interaction between members of the educational process (Vygotsky, 1978). Initially, interaction takes place between prior knowledge and current experiences, which must be meaningful to students. Three characteristics of a meaningful clinical experience emerged from the data: 'must be challenging', 'reflects problems of practice', and 'cannot be done independently' (see Fig. 2).

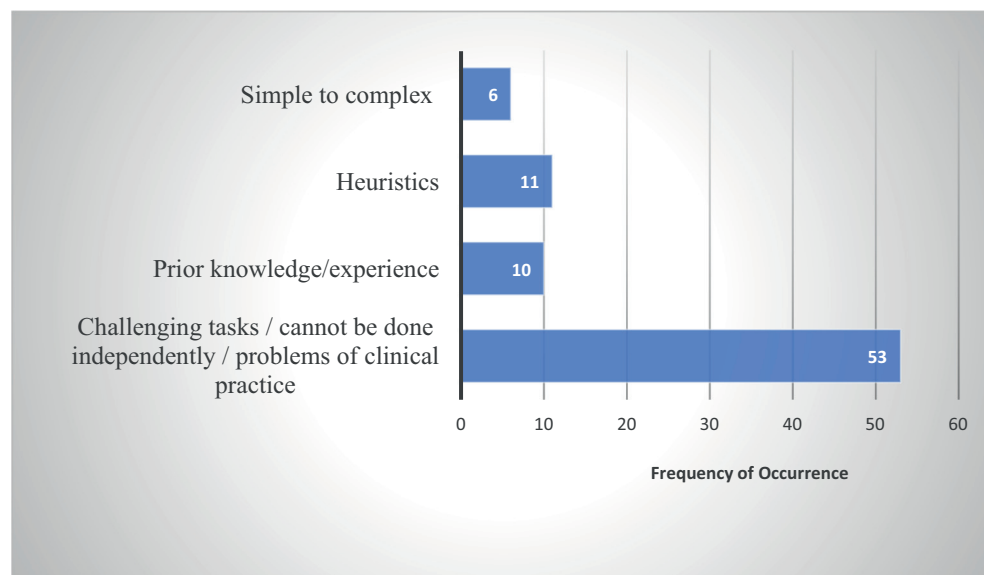


Fig. 2. Preceptors' emphasis on learning from experience.

Fig. 2 illustrates emphasis of the preceptors on the nature of the learning experiences that teach professional competencies. As gleaned from the data, the characteristic features of the clinical experience ranged from being challenging and reflective of problems of practice, to building new knowledge, to using heuristics, to considering complexity of the learning activity.

A 1: "Students should be challenged with all dimensions of care, among which is medication administration. In the nursing school they learn the basics, but in practice they have to go far beyond the basics."

According to preceptors, students commence practice with basic knowledge and skills, such as assessing patients and measuring vital signs. They believe that knowing the steps of a nursing procedure is not enough to develop competencies of practice, autonomy, and confidence. Instead, students must be engaged in the care.

A 2: "At least one out of three clinical rotations, students will encounter chemotherapy administration. They have to know how and why to administer chemotherapy, engage in the care, and communicate with patients. This is a new learning experience for them."

To decide on the learning experience, prior knowledge and complexity level were considered by some preceptors (see Fig. 2). Giving attention to the complexity of the task is based on the belief that an activity that is too difficult to complete can frustrate learners and turn off their interest and motivation.

M 3: "I depend on the information they have ...this is what concerns me most when assigning tasks. If students do not have the basis or prior exposure, the activity could frustrate them and jeopardize their desire to learn."

3.2. Assumption 2

The goal of teaching is ultimately to benefit students, yet it is

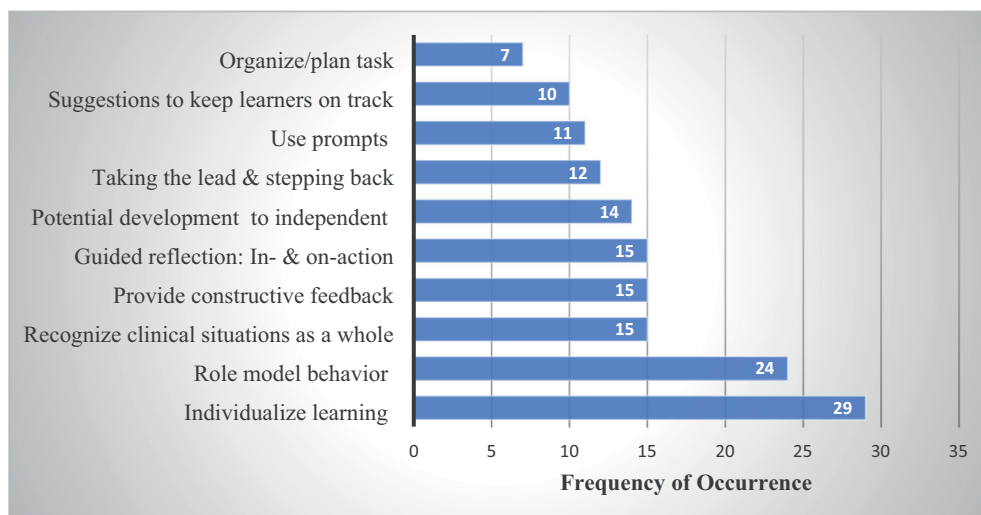


Fig. 3. Teaching beyond student ability.

Fig. 3 illustrates the various assistive strategies that the preceptors employed in their clinical instruction to move the individual learner along the knowledge hierarchy. The strategies focus on the potential zones for learning, to assist the learner in what cannot be done individually to completing the activity independently.

deemed essential to know the learner's ability, to perform a learning activity either independently or with assistance. To fit the individual learner, instruction must commence with assigning activities that fall within the learner's potential, followed by determining the kind of assistance required to complete the activity independently. Focusing instruction on the individual learner was a common assistive strategy, as it helps to advance competencies of practice.

A 3: "I believe that everyone has a different potential. I cannot apply the same strategy on five students; may be this student needs repetition like two or three times to grasp the concept."

Role modeling emerged as a common assisted strategy by preceptors, and was expressed by: 'interfering in the activity, 'teaching how to do things', 'helping retain procedure', 'demonstrating task accurately', and 'doing everything step by step' (see Fig. 3). The preceptors were mindful of teaching beyond student ability by 'moving learners to independence'; accordingly, they were prompted to 'organize and plan learning' (see Fig. 3). With assistance and guidance, students can learn to do an activity that is beyond their actual abilities. The preceptors extended this simple conception of teaching by providing 'prompts', 'guidance to recognize clinical situation as a whole', and 'suggestions about what they could try to do or do to stay on track' (see Fig. 3). This strategy was influenced by the preceptors' expectations. When students failed to meet preset expectations, the preceptor became more demanding and less tolerant of errors, to the extent of even taking over the task. At times, the learner was asked to step aside, to observe the preceptor perform the task, or to join in for assistance. Alternating between taking the lead and stepping back turned out to be a common practice among preceptors.

G 1: "I watch ... If they need my help, I jump in. If the activity is taking too long or the patient is starting to be agitated or nervous, I take the lead."

Another strong motive to employ assistive strategies in clinical instruction and that surfaced from the data was the learning outcomes of the course. Nursing activities that reflect the designated course outcomes were perceived as mandatory. In this respect, the preceptors expressed the need to be more understanding and tolerant for learning to happen.

Providing 'constructive feedback' was a prominent assistive strategy in this study, since feedback is believed to help students make sense of the activity. Two features characterized preceptors' feedback: (a) relating feedback to unit or hospital policy and (b) timeliness and continuity. The preceptors were observed coupling every activity with feedback prior, during, or after performance. Another captured assistive strategy was guided reflection. Preceptors believed that through guided-reflection, students will learn how to evaluate their actions and

find means to improve their practice.

M 1: "The good thing about reflection is that when we go outside and review what happened this will give them opportunity to re-think the procedure and see what they can make and how to make it better, especially when it is their first exposure".

The preceptors employed a number of assistive strategies that help to focus instruction on the individual learner. The aim behind these strategies is focusing attention on the potential learning zones, to assist the learner in completing the task independently.

3.3. Assumption 3

Assisted performance becomes less frequent or reduced upon learner progression in the program. Mastering activities of practice indicates ability to complete tasks independently. Preceptors advocated opportunities where learners are prompted to apply experientially learned knowledge and to grapple with issues of practice without assistance. The preceptors promoted independence of students in practice by 'allowing them to take over' the activity, 'emulating the behavior', and 'advancing the way of knowing'. On a similar note, preceptors ensured that learners are given 'space to learn' and 'a free zone', and are 'left on their own'. (See Fig. 4.)

4. Discussion

Clinical instruction involves not only competence development, but goes beyond to include knowledge transfer. The complexity of the clinical environment mandates instructional modes different from classroom instruction. This could be quite challenging, especially for preceptors who, although are experts in their field of practice, have limited teaching foundations. Reflecting on this seeming paradox would leave preceptors perplexed regarding how, when, and what to teach in clinical (Kantar, 2012).

In-depth analysis of the preceptors' assumptions and assistive instructional strategies converged on three constructs that characterize teaching in the ZPD. The constructs and their related assumptions are tabulated, to include: (1) differentiated instruction, which emerged from 'teaching beyond student ability'; (2) instructional scaffolding from 'teaching for autonomy'; and (3) influencing a positive learning environment from 'learning from clinical experience' (Table 1).

4.1. Differentiated instruction

The preceptors were mindful of their teaching role and of positioning learners in the zone of what they can do and develop with

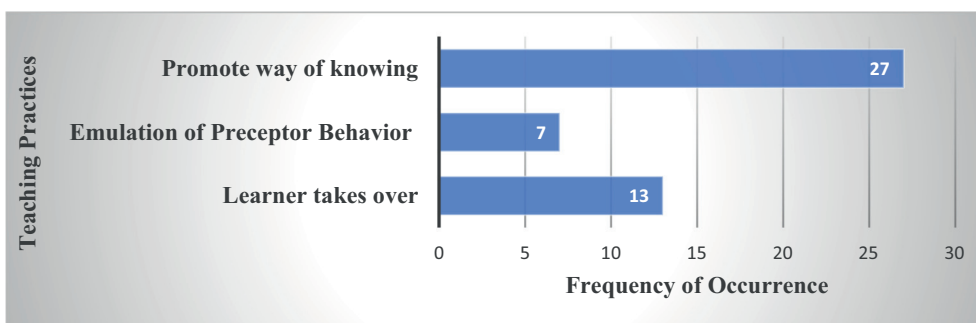


Fig. 4. Teaching for autonomy.

This figure illustrates opportunities for students to apply experientially learned knowledge to grapple with issues of practice. The preceptors promoted independence in practice by ‘allowing students to take over’, by ‘emulating the behavior’, and by ‘advancing the way of knowing’.

assistance. This was brought into focus when assigning learning activities that are challenging in nature and reflect problems of practice. It is strongly believed that such activities can persuade learners to link theory with practice, develop skills and attitudes of the discipline, and maximize student learning (Sanders and Welk, 2005; Wass and Golding, 2014). However, the benefits from the learning encounters may not apply to all students, since what is challenging for one student may not be challenging for others.

Every learner learns differently, and the preceptors were aware of the diverse student population regarding learning needs and capabilities, thus sought to design instruction to fit the individual learner (see Fig. 3). Tomlinson (2008) defined this design as differentiated instruction and outlined several principles for its implementation, three of which are most relevant to instruction in clinical settings: curriculum, continuous assessment, and flexible grouping.

In this study, the curriculum is reflected in the structure of the practicum course and clinical placement; it is also seen in how the preceptors aligned activities of practice with learners’ academic level. Taking into account the role of curriculum to promote learning, the preceptors besought differentiated instruction through ‘individualizing learning’, ‘providing constructive feedback’, ‘using prompts’, ‘providing suggestions to keep learner on track’, and ‘organizing and planning activities’ (see Fig. 3).

Associated with direct instruction is assessment (Tomlinson, 2008), which guides educators on how to differentiate instruction and advise on approach effectiveness. The preceptors used assessment as the means to determine student advancement after the implementation of some strategies in accordance with assessed learning needs. This finding concurs with Wilson and Devereux’s (2014) belief that assessment is deemed essential to detect progress to autonomy.

Table 1
Constructs and practices for teaching in the ZPD.

Preceptors' assumptions	ZPD teaching practices	ZPD constructs
Teaching Beyond Student's Ability	<ul style="list-style-type: none"> ● Assess students' prior knowledge & past experiences. ● Align activities with learning outcomes and needs ● Learning activities: <ul style="list-style-type: none"> - Must be challenging - cannot be done independently - reflect problems of clinical practice - promote to independence 	Differentiated instruction
Teaching for Autonomy	<ul style="list-style-type: none"> ● Assess performance after instruction ● Assess learner's needs and capabilities ● Use a variety of scaffolded supports: <ul style="list-style-type: none"> - Prompts - Questions - Suggestions - Guidance to recognize situations as a whole - Role Modeling - Solving problems of practice - Guided reflection ● Allow students to take over ● Provide space or a free zone to learn ● Use heuristics ● Promote way of knowing: <ul style="list-style-type: none"> - Try to perform or perform to stay on track - Solve problems of clinical practice - Engage in nursing activities in different contexts ● Monitor progress through: <ul style="list-style-type: none"> - feedback - self-evaluation - critical evaluation of performance 	Instructional scaffolding
Authenticity of the learning Experience	<ul style="list-style-type: none"> ● A safe, supportive learning environment ● Partnership ● Environment of trust and ethics ● Larger ZPD through discussion 	Creating a positive learning environment

This table illustrates the constructs that characterize teaching in the ZPD based on content analysis of the preceptors’ assumptions and assistive instructional strategies. The constructs are: (1) differentiated instruction, which emerged from ‘teaching beyond student ability’; (2) instructional scaffolding from ‘teaching for autonomy’; and (3) creating a positive learning environment from ‘learning from clinical experience’.

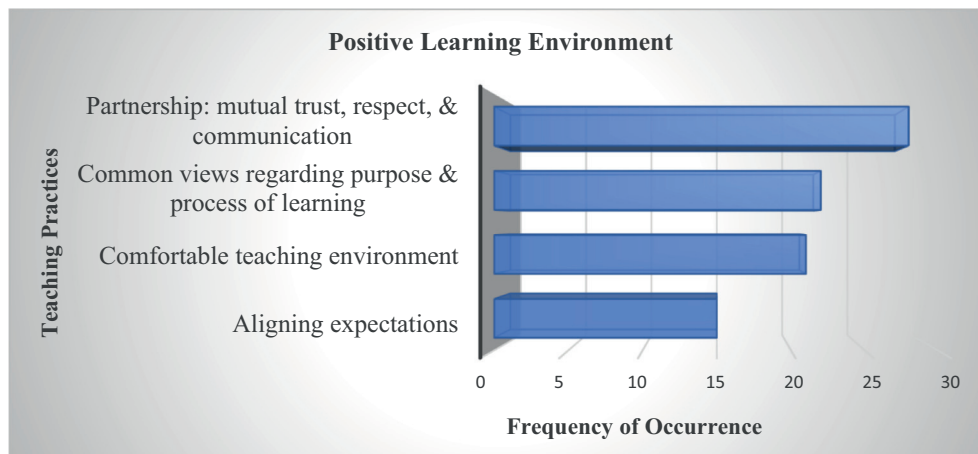


Fig. 5. Teaching practices to influence a positive learning environment.

This figure illustrates the various teaching practices that motivate a ZPD environment. The captured practices create a positive learning environment that fosters access into the student's learning zones, thus enabling progression from one learning level to complex ones.

Vygotsky envisions learning as a social endeavor. The principle of flexible grouping originates in social learning (Rasheed and Wahid, 2018). In nursing education, practice settings provide an exceptional medium for social interaction between learners and among all those participating in the care delivery process. The preceptors were cognizant of the outcomes of flexible grouping on learning, thus integrated case discussions and post clinical conferences in their clinical teaching.

4.2. Instructional scaffolding

Clinical settings are often always loaded with situations that vary in complexity, yet provide the best medium to apply classroom knowledge. Early in the program, nursing students exhibit limited understanding of practice, thus require considerable assistance. Only gradually does the student draw the link between the multiple holistic dimensions of nursing to conceptualize the essence of care. However, the process mandates scaffolded support to make learning more accessible and task-focused (Wilson and Devereux, 2014).

The finding on 'teaching beyond student ability' reflect the efforts preceptors executed to make learning happen. In this regard, a number of scaffolds were integrated in the preceptors' instruction to include role modeling, guidance, prompts, and guided reflection. Scaffolded support was highly devoted to activities that are beyond students' knowledge and skills, to help them 'recognize clinical situations as a whole'.

According to Dunphy and Dunphy (2003), optimal learning must be coupled with assistance by an expert. Assistance is best implemented using scaffolding, as it stirs learning functions (Vygotsky, 1978). It is through scaffolding that students move from one level to another, with the expert facilitating the transition process. Initially, the process leans on support and guidance of the educator complemented by a follow up on achievement, shared understanding, and a gradual waning of the support as the student reaches autonomy (Benko, 2012). Through scaffolded support, learners can successfully complete tasks, which, individually, would have been impossible to complete. This level of assistance forms the essence of ZPD.

Preceptors teaching in the ZPD are expected first, to diagnose the zone of current development (ZCD), followed by scaffolding. In this study, the preceptors diagnosed the ZCD by assessing student's proximity to a learning activity, questioning, and observing performance.

"What is the zone of proximal development today will be the actual development level tomorrow" (Vygotsky, 1978, p. 87). Initially, educators provide the scaffold, which has to gradually fade when students demonstrate responsibility for learning and develop full potential (Coombs, 2018; Harland, 2003; Sanders and Welk, 2005). This leaves scaffolding with two major aims: developing confidence and encouraging students to assume greater responsibility. As gleaned from the findings, the element of confidence underpinned the preceptors' use of

heuristics and autonomy (see Fig. 2), yet were stringent when it comes to jeopardizing standards of care. Similar findings emerged from Coombs' (2018) integration of deliberate scaffolding in didactic learning with the aim of improving student's confidence and autonomy in constructing new knowledge.

Preceptors' selection of scaffolds was based on the assessed learning needs and student capabilities, followed by monitoring progress through feedback, evaluation, and self-evaluation. Preceptors believed in the instructional scaffolds as the means to move students through their ZPD, while assuming a pivotal role in shaping a learning environment governed by mutual trust and respect.

4.3. Influencing a positive learning environment

In a positive learning environment, students will not only be motivated to learn, they will take charge of their learning. Creating such environments is the result of deliberative, thoughtful efforts of the clinical educator to provide trust, partnership, and respect (Day and Benner, 2018; Tomlinson, 2008).

The clinical context and interactive aspect of nursing care interfaces with the ZPD learning perspectives. By partnering with learners in the care delivery process, preceptors can optimize development and movement of learners across the ZPD zones. Wass and Golding (2014) capitalized on the influence of the teaching environment and its relatedness to the size of ZPD, when Tomlinson (2008) encouraged an environment of trust and partnership to effectively implement instructional scaffolding and differentiation.

The preceptors noted the role of interaction with students in stimulating partnership, a key tenet of Vygotsky's ZPD. Partnership is key to effective practice, since all members of the health team interact and communicate over the care delivery process. The pedagogical implication of partnership goes beyond learning to include an environment of trust and respect that values students as health care members (see Fig. 5). Emphasis on partnership resonates with Day and Benner's (2018) recommendation for integrating trust and respect in clinical preceptorship.

It is believed that nursing activities prepare learners to accommodate multiple clinical mishaps and solve issues of practice (Benner, 2019). That is why the clinical setting provokes a larger ZPD, where discussion over practice, feedback, and engagement in the reflective process take precedence. The preceptors were mindful of the richness of practice. They deliberately endeavored at engaging learners in the care delivery process and at continuously involving them in discussing the management and overall plan of care, promoted by a 'safe and supportive learning environment'.

The ZPD environment enhances access into the student's learning zones, thus enabling progression to complex ones. The preceptors were

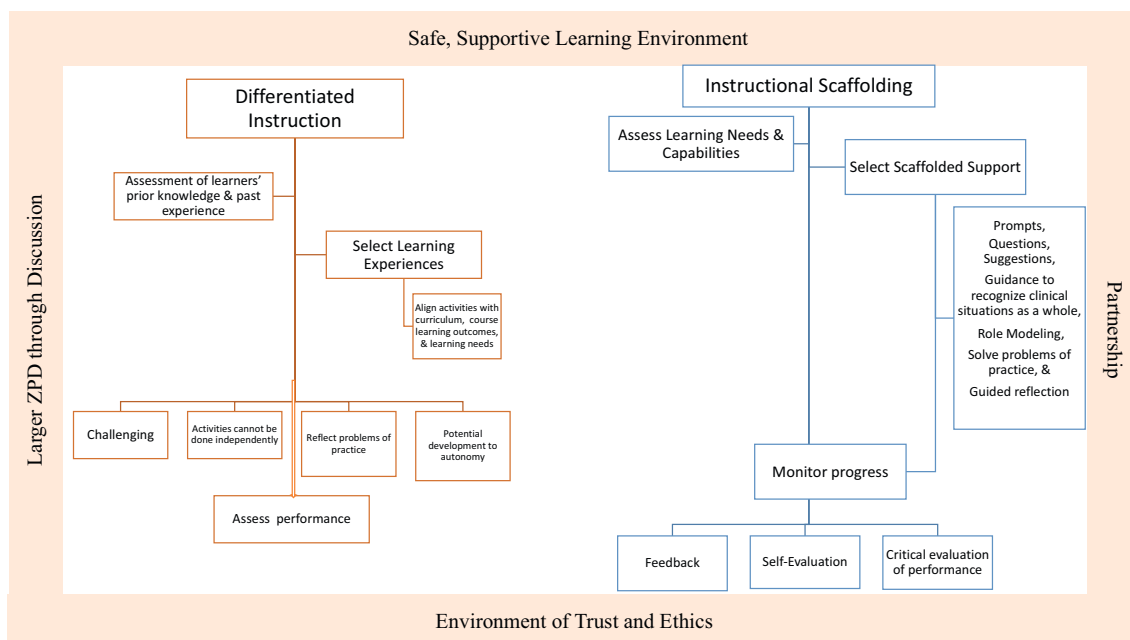


Fig. 6. The ZPD clinical instruction framework.

Fig. 6 presents a framework that incorporates the ZPD constructs and various assistive and performance strategies that the preceptors demonstrated in this study.

perceptive regarding the environment and its influence on learning, thus employed strategies to motivate a ZPD environment, such as: 'aligning preceptor and learner's expectations', 'developing common views about purpose and process of learning', and 'ensuring a comfortable learning environment' (see Fig. 5).

4.4. The ZPD framework in clinical instruction

Differentiated instruction, instructional scaffolding, and influencing a positive learning environment are envisioned the foundations for teaching in the ZPD. A framework was developed to incorporate the ZPD constructs and various assisted teaching strategies that the preceptors demonstrated in this study (see Fig. 6). The framework will guide clinical educators on how to assess and plan instruction, and decide on when and what can intensify learning gains from a ZPD perspective.

5. Conclusion

The sociocultural context characterizing practice settings intersects with Vygotsky's ZPD perspectives of learning. It is imperative that clinical educators be most receptive to instruction that targets the student's zone of proximal development, as the zone represents a potential phase in student learning. Clinical educators can optimize learning in complex nursing environments through the instructional integration of three ZPD strategies: differentiated instruction, instructional scaffolding, and influencing a positive learning environment. ZPD can be serviceable to clinical educators by: (1) assigning learning experiences that are challenging for learners to do on their own, but which they can do with assistance; (2) providing assistance to help learners complete tasks independently; and (3) increasing learning gains by securing a supportive learning environment.

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CRedit authorship contribution statement

Kantar Lina: Conceptualization, Methodology, Visualization, Data curation, Formal Analysis, Writing- Original draft preparation, Project Administration, Funding Acquisition.

Ezzeddine Sawan: Supervision, Investigation, Validation, Writing- Reviewing and Editing.

Rizk Ursula: Supervision, Validation, Writing- Reviewing and Editing.

Declaration of competing interest

The author declares the absence of any conflict of interest. Ethical Approval to conduct the study was obtained from the IRB office at the American University of Beirut, University of Balamand, and the Makassed General Hospital.

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