Development of the Clinical Learning Environment Inventory: Using the Theoretical Framework of Learning Environment Studies to Assess Nursing Students' Perceptions of the Hospital as a Learning Environment

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ABSTRACT

Clinical learning is an integral part of nursing education; yet, clinical education has been problematic. Why are some clinical experiences better than others? Various studies have indicated that not all practice settings are able to provide student nurses with a positive learning environment. The clinical learning environment is a multidimensional entity with a complex social context. Classroom learning environment research based on psychosocial educational conceptual frameworks has been well established in the past 30 years, with evidential benefits. Previous research on clinical learning environment was examined. However, minimal studies have been conducted on hospital learning environments from the psychosocial educational perspective. To maximize nursing students' clinical learning experiences, the author developed the Clinical Learning Environment Inventory based on the theoretical framework in psychosocial education.

Clinical education is a vital component in the curricula of nursing programs because it provides student nurses with opportunities to develop competencies in nursing practice. The clinical learning environment is a multidimensional entity with a complex social context. Classroom learning environment research based on psychosocial educational conceptual frameworks has been well established in the past 30 years, with evidential benefits. However, minimal studies have been conducted on clinical learning environments from the psychosocial educational perspective. Moos (1987) asserted that an understanding of social climate can provide insight into people's actions and feelings and can be a resource for helping people improve their lives. Identification of factors of the social climate that characterize a clinical learning environment could lead to strategies that foster those factors most predictive of student learning outcomes.

This article highlights some important issues of the clinical learning environment and describes the development of an instrument (i.e., the Clinical Learning Environment Inventory), based on the theoretical framework in psychosocial education, to assess nursing students' perceptions of the clinical learning environment. A detailed description of the theoretical concepts underpinning the development of the instrument are provided.

CLINICAL LEARNING ENVIRONMENT

Nursing education occurs in many different settings and formats. As in most other tertiary disciplines, lecture, tutorial, workshop, seminar, and laboratory are the most common variations of classroom environments student nurses encounter. Clinical field placement is another essential part of the nursing curriculum because clinical education is vital to the curriculum of preregistration nursing courses. Clinical practice is a period of transition, which allows students to consolidate knowledge and practice skills acquired during fieldwork practice in a working situation. During clinical field placement, students are expected to develop competencies in the application of knowledge, skills, attitudes, and values inherent in the nursing profession.
Massarweh (1999) described the clinical setting as the clinical classroom. In contrast to classroom teaching, clinical education occurs in a complex social context where a teacher monitors clients', students', and clinicians' needs. Unlike classroom learning in which student activities are structured, students in clinical classrooms frequently find themselves involved in unplanned activities with patients and other health care providers.

It is not surprising that learning in the clinical area presents a bigger threat to students than learning in the classroom. Many nursing students perceive the clinical experience as anxiety provoking (Kushnir, 1986). Windsor (1987) suggested that student anxiety in the clinical setting is an area of concern for nurse educators. She argued that students' relationship with the instructor, staff nurses, other students, and patients is important in their clinical experience, and asserted that these people help provide a pleasant working environment, as well as help students learn (Windsor, 1987).

Nursing students frequently feel vulnerable in the clinical environment (Campbell, Larrivee, Field, Day, & Reutter, 1994). This may be because they are learning to provide care, but they also may be concerned with the reaction of nursing staff to their efforts. Melia (1987) suggested that student nurses have difficulty differentiating their roles of learner and worker. Inevitably, student nurses are thrust into the clinical area as short-term members of the patient care team. Therefore, their position is anomalous, and their motive for involvement in patient care usually is different from that of permanent employees (Ashworth & Morrison, 1989). Clinical experiences require difficult adjustments for students as they move from an environment that encourages thinking to an environment that encourages doing.

Knowles (1990) indicated that a supportive learning climate is a critical element of human resource development. He asserted that there is a need for both direct and indirect facilitation of the development of individuals through improving the educative quality of their environments. Similarly, Betz (1985) stated that supportive aspects, in an optimum clinical placement, would include experiences to strengthen students' independent professional growth and encourage peer-level interactions with other health care professionals. Hart and Rotem (1995) further substantiated Betz's (1985) suggestions and identified six independent variables that characterize clinical learning environments. These independent variables are autonomy and recognition, role clarity, job satisfaction, quality of supervision, peer support, and opportunity for learning.

Nursing students perceive the practice setting as the most influential context for acquiring nursing skills and knowledge. Clinical placement provides students with optimal opportunities to observe role models, practice by oneself, and reflect on what is seen, heard, sensed, and done (Thorell-Ekstrand & Bjorvell, 1995). Furthermore, the professional socialization of nurse learners occurs largely in the practice setting (Lee & French, 1997; Windsor, 1987). Overall, the clinical learning environment is a multidimensional entity that directly affects the outcomes of students' clinical placement.

**RESEARCH INVOLVING THE HOSPITAL LEARNING ENVIRONMENT**

The evaluation of clinical teaching and learning has been of interest for many years. Of particular concern is the perceived demand for high-quality, cost-effective clinical education experiences that facilitate student learning in the clinical environment. The clinical learning environment is the interactive network of forces within the clinical setting that influence students' learning outcomes. Central to many studies of nursing in the clinical setting is the concept of ward learning environments. The related concept of learning climate also emphasizes the importance of the physical, human, interpersonal, and organizational properties and mutual respect and trust among teachers and students (Knowles, 1990).

Of the 15 highest priorities for nursing research identified by Tanner and Lindeman (1987), 10 focused on clinical education. Previous studies suggest the nurse manager of a clinical unit plays a key role in establishing and maintaining an atmosphere conducive to learning. Nursing students perceived that the management style and interpersonal skills, including approachability, of clinicians are of prime importance and that the provision of learning opportunities is more important than formal teaching (Ogier, 1981; Sellek, 1982; Smith, 1988).

It is apparent that highly structured clinical settings with rigid task allocation and strict hierarchical systems are unlikely to meet the learning needs of students (Fretwell, 1980; Pembrey, 1980). Students prefer clinical settings with a high degree of staff support and morale (Orton, 1981). Moreover, students see interpersonal relationships and evaluation processes as significant sources of both satisfaction and anxiety, depending on whether these elements are positive or negative (Sellek, 1982).

In a qualitative study, Hart and Rotem (1994) found that students valued positive relationships with clinicians and appreciated recognition for their contribution to patient care. Students' need to belong and be accepted by the clinicians was a common theme. Students enjoyed being busy and having an appropriate level of autonomy but found this difficult to achieve unless their role as student was clear to members of the clinical staff.

In a survey study to identify nurses' perceptions of professional development in clinical settings, Hart and Rotem (1995) identified a significant positive correlation between professional development and six independent variables (i.e., autonomy and recognition, role clarity, job satisfaction, quality of supervision, peer support, opportunities for learning). Although Hart and Rotem's (1995) study targeted RNs, the conceptual framework may have broad application within nursing practice as a means of predicting professional development. Most important, the study offers a perspective that supports close cooperation.
between educational and clinical facilities in the planning and evaluation of clinical learning experiences at the undergraduate level.

A survey, which assessed undergraduate nursing students' perceptions of clinical learning environment concluded that interpersonal relationships among participants in the clinical learning environment were crucial to the development of a positive learning environment (Dunn & Hansford, 1997). Student satisfaction with the clinical learning environment was both a result of and influential in creating a positive learning environment (Dunn & Hansford, 1997).

Despite all the past research examined, the author did not find specific studies on hospital learning environments from the psychosocial educational perspective. Although there are numerous instruments available for assessing classroom learning environments at various levels, there is not one instrument specifically designed to measure the psychosocial educational perspective of the hospital learning environment, while students are in clinical field placement.

THEORETICAL FRAMEWORK TO LEARNING ENVIRONMENT STUDIES

From the students' perspective, all educational environments provide important opportunities for learning. On the other hand, the educational environment can be a powerful teaching instrument at the disposal of the teacher. Fraser (1994) suggested that educational environments can be considered the social-psychological contexts or determinants of learning. Therefore, in the process of teaching and learning, the classroom environment has two functions. It provides the setting for learning and at the same time acts as a part of the teaching-learning process.

Fraser and Fisher (1983a) stated that the strongest tradition in past classroom environment research has involved investigation into the predictability of students' cognitive and attitudinal outcomes, based on their perceptions of the classroom learning environment. Student learning was found to be positively related to levels of cohesiveness, satisfaction, and task orientation in the classroom, and negatively related to levels of friction and disorganization (Fraser & Fisher, 1983a). This suggests that student outcomes may be improved by adjusting classroom environments. This is supported by Byrne, Hattie, and Fraser (1986) who indicated that the ideal classroom or school environment is one that is conducive to maximum learning and achievement. Furthermore, past research into classroom environments has shown that student perception accounts for appreciable amounts of variance in learning outcomes (Fraser & Walberg, 1991).

In addition to the time spent in the formal classroom, student nurses spend a great deal of time in clinical practice. Arguably, the clinical environment is equivalent to a classroom for student nurses during their clinical field placement. In accordance with Fraser and Fisher's (1983b) suggestions, student outcomes during their clinical field experience may be improved by adjusting the clinical environment. Therefore, there is a need to assess students' perceptions of the clinical learning environment to facilitate and maximize their field placement.

The question then becomes one of how to assess this learning environment. Fraser (1982) identified three distinct methods for assessing and studying classroom environments. First is the use of case studies, involving ethnography, participant observation, and application of techniques of naturalistic inquiry. The second method is interaction analysis, which involves observation and systematic coding of classroom communication. However, this approach includes the expense of trained observers and extensive coding. The third method for studying a classroom environment, which is growing quickly in popularity, focuses on students' and/or teachers' perceptions of the psychosocial characteristics of the classroom.

Paper-and-pencil perceptual measures clearly are more economical than classroom interaction analysis. Furthermore, these perceptual measures are based on experiences over time and usually involve the pooled judgments of all students in a class. Fraser (1994) suggested that students have a good vantage point from which to make judgments about classrooms because they have encountered many different learning environments and have spent enough time in a class to form accurate impressions.

Fraser, Treagust, and Dennis (1986) indicated that classroom environment instruments would be useful for research involving the effects of the classroom psychosocial environment on students' cognitive and affective outcomes. Other areas for research could include:

- Determinants of classroom environment.
- Differences between students' and teachers' perceptions of actual and preferred classroom environment.
- Person-environment fit studies of whether students achieve better in their preferred classroom environment.

Fraser (1994) pointed out that past research has concentrated on investigating associations between student outcomes and the nature of the actual environment. He suggested the use of actual and preferred forms, which can be used to measure both actual and preferred educational environment to explore whether students achieve better when there is a close correlation between the actual and preferred classroom environment. The preferred forms are concerned with goals and value orientations and measure perceptions of the preferred classroom environment. Moos (1987) asserted that the preferred form provides the opportunity to describe what individuals consider an ideal setting. Furthermore, by comparing the actual and preferred forms, which provides a more complete picture of a setting and better insight into problem areas, one can interpret how well the current environment matches the preferred one.
HISTORICAL PERSPECTIVES AND CONCEPTUAL FRAMEWORK OF LEARNING ENVIRONMENT RESEARCH

Classroom environment studies originated 3 decades ago with the work of Herbert Walberg and Rudolf Moos. Walberg began developing earlier versions of the widely used Learning Environment Inventory as part of the research and evaluation activities of Harvard Project Physics (Anderson & Walberg, 1968; Walberg, 1968; Walberg & Anderson, 1968a, 1968b). Almost at the same time, Moos began developing the first of his social climate scales, including those for use in psychiatric hospitals (Moos & Houts, 1968) and correctional institutions (Moos, 1968), which resulted in the development of the widely known Classroom Environment Scale (Moos & Trickett, 1974, 1987).

Classroom environment research builds on and has been influenced by two areas of earlier work:

- The theoretical, conceptual, and measurement foundations laid half a century ago by pioneers such as Lewin and Murray and their followers (e.g., Pace and Stern) (Fraser, 1994).
- Prior work involving low-inference, direct observational methods of measuring classroom climate (Chavez, 1984).

Lewin recognized that both the environment and its interaction with the personal characteristics of the individual are potent determinants of human behavior (von Salder, 1954). Lewin proposed a formula, the familiar Lewinian formula, to stimulate new human behavior research strategies. He suggested that human behavior (B) was a function of both the person (P) and the environment (E) (i.e., B = f(P,E)) (Lewin, 1936).

Murray (1938) followed Lewin's approach by proposing a "needs-press" model, which allows the analogous representation of person and environment in common terms. He defined needs as those specific innate personal requirements of an individual, as well the individual's desire to achieve these, as being determinants of an individual's personality. He defined press as those factors outside the individual (i.e., the environment) that either facilitated or impeded the individual's attainment of their personal needs. Furthermore, Murray (1938) suggested that the environment could be perceived by an external observer or by those inhabiting the environment. He used "alpha press" to describe the environment as perceived by an external observer and "beta press" to describe the environment as perceived by its milieu inhabitants.

Pace and Stern (1958) applied Murray's needs-press theory in their studies of college environments and provided the first examples of rigorous high-inference measures of educational environments. The difference between low-inference and high-inference measures was highlighted by Rosenshine (1970). Rosenshine recognized that low-inference measures involved an observer in a classroom, recognizing and recording the occurrence of a set of predetermined events, actions, and behaviors, while high-inference measures involved a judgment or interpretation about the extent or degree to which certain events, actions, and behaviors occurred. Naturally, an environment's milieu inhabitants could best describe the high-inference measures.

Murray's distinction between alpha press and beta press was extended by Stern, Stein, and Bloom (1956), who distinguished between the idiosyncratic view that each person has of the environment (i.e., private beta press) and the shared view members of a group hold about the environment (i.e., consensual beta press). Private and consensual beta press could differ from each other, and both could differ from the detached view of alpha press of a trained nonparticipant observer. It is important that researchers, in designing classroom environment studies, decide whether the analyses will involve perception scores from individual students (i.e., private press) or will be combined to obtain the average of the environment scores of all students in the same class (i.e., consensual press).

The work of Moos (1974) in conceptualizing the environment in an organizational framework provides a means of putting the classroom environment within context. Like people, environments have unique personalities. For example, just as some people are supportive, some environments are supportive; just as some individuals feel the need to control others, some environments are extremely controlling; and just as order and structure are important to many people, many environments emphasize regularity, system, and order. Accordingly, Moos (1974) identified three basic dimensions characteristic of all human environments:

- The relationship dimension identifies the nature and intensity of personal relationships within the environment. This includes such aspects as involvement, student cohesion, supervision support, peer cohesion, and expressiveness. This dimension assesses the extent to which people are involved in the environment, the extent to which they support and help each other, the amount of friendship and loyalty within the environment, and the extent to which there is spontaneity and free, open expression among them.
- The personal development (goal orientation) dimension indicates opportunities for self-enhancement and development of self-esteem. This includes characteristics such as task orientation and competition. Within this domain the basic directions along which personal growth and self-enhancement tend to occur in the particular environment are assessed.
- The system maintenance and system change dimension assesses the extent to which the environment is orderly, clear in its expectations, maintains control, and is responsive to change. These elements are relatively similar across all environments. The basic factors are order and organization, clarity, control, and innovation.

Moos (1974) suggested that the three dimensions all must be assessed to provide an adequate and reasonably complete picture of an environment. These dimensions...
were found to effectively characterize environments across a wide variety of human activities, including psychiatric wards, military basic training companies, and family environments (Moos, 1974). Specific reference to the three dimensions in a classroom environment instrument first was made in the Classroom Environment Scale (Trickett & Moos, 1973).

All scales in the Clinical Learning Environment Inventory developed to assess learning environments can be classified into one of Moos’ three dimensions, and this provides a convenient framework for the comparison of perceptions of learning environments assessed using different questionnaires.

Moos began developing the first of his social climate scales, The Ward Atmosphere Scale, for use in psychiatric hospitals to assess ward treatment environments (Moos & Houts, 1968). The Ward Atmosphere Scale was developed to measure the social climates of hospital-based programs by asking patients and staff individually about the usual patterns of behavior in their program. Moos (1974) asserted that human behavior is shaped and directed by the environment as perceived subjectively by the people in it and that patients and staff members often perceived the same environment quite differently. He suggested that an individual who needed a high degree of support would function better in a highly supportive environment and an individual who needed little support would find such an environment overly controlling and stifling.

Based on Moos’ theoretical perspectives, a number of questionnaires have been developed for assessing classroom learning environments. Examples include:
- My Class Inventory (Fisher & Fraser, 1981).
- Classroom Environment Scale (Moos & Trickett, 1974).
- Individualized Classroom Environment Questionnaire (Rentoul & Fraser, 1979).
- College and University Classroom Environment Inventory (Fraser et al., 1986).

**DEVELOPMENT OF THE CLINICAL LEARNING ENVIRONMENT INVENTORY**

The Clinical Learning Environment Inventory (CLEI) was developed as a survey instrument following an in-depth literature review on classroom learning environments and clinical learning environments and discussions with experts in the field of nurse education and clinical nursing. Of the classroom environment instruments examined, the College and University Classroom Environment Inventory (CUCEI), which was designed for use in tertiary settings, seemed to be the instrument most suitable for use in tertiary nursing. However, it appeared that none of the classroom environment instruments available for research would, if used in their original form, provide the data necessary to evaluate the clinical setting. The construction of the CLEI, using only scales perceived to be appropriate to the clinical learning environment, was developed by modifying the CUCEI. Development was guided by the following four criteria:

- Consistency with tertiary instruments. Development of the CLEI was based on the existing scales of the CUCEI. However, some modifications and additions both in the scales and items were necessary to modify the new inventory and make it specific to the unique hospital environment.

- Coverage of Moos’ general categories. The CLEI provides coverage of the three dimensions identified by Moos (1974) for conceptualizing all human environments.

- Salience to nurse educators, nurse clinicians, and nursing students. An attempt was made to ensure that the contents of the CLEI were considered salient by members of the nursing profession. Numerous nurse educators, clinicians, and student nurses were interviewed for comments on draft versions of the CLEI during development.

- Economy. To achieve economy in answering and processing, the CLEI is designed to have a relatively small number of reliable scales, each containing a fairly small number of items. The final version of the instrument contains 42 items, with 7 items assessing each of 6 scales (i.e., personalization, student involvement, task orientation, innovation, satisfaction, individualization). Description of each scale is detailed in the Table.

The instrument has been designed so students answer the questions directly on the questionnaire. A response to each item in the CLEI is marked on a 4-point, Likert-type scale, ranging between the alternatives of strongly agree, agree, disagree, and strongly disagree. The instrument can be readily scored by hand. Underlining an item number and writing the letter “R” in the researcher use only column identifies items that are reverse scored. Items not underlined or without the letter “R” are scored by indicating the corresponding number (i.e., 5 = strongly agree, 4 = agree, 2 = disagree, 1 = strongly disagree). The scoring direction is reversed for approximately half the items. Omitted or invalidly answered items are scored as 3.

**VALIDATION OF THE CLEI**

The author intends to test and validate the CLEI with nursing students during their clinical placement. To allow adequate time for students to gain insight into their clinical experience before the survey, data will be collected just prior to the conclusion of their clinical placement. Scale reliability reflects the extent to which items in the same scale measure the same dimension. Estimates of the scale reliability of the CLEI can be computed readily from the collected data, using Cronbach’s alpha. A Cronbach alpha of .6 is considered an acceptable level in questionnaires like these (Nunnally, 1978). The discriminant validity of the CLEI can be assessed by computing the mean correlation of a scale with the other scales. All these can be processed and analyzed readily with the Statistical
TABLE

Descriptive Information for Each Scale in the Clinical Learning Environment Inventory

<table>
<thead>
<tr>
<th>Scale Name</th>
<th>Moos' Category*</th>
<th>Description</th>
<th>Sample Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualization</td>
<td>S</td>
<td>Extent to which students are allowed to make decisions and are treated differently according to ability or interest.</td>
<td>Students generally are allowed to work at their own pace (+)†</td>
</tr>
<tr>
<td>Innovation</td>
<td>S</td>
<td>Extent to which clinical teacher/clinician plans new, interesting, and productive ward experiences, teaching techniques, learning activities, and patient allocations.</td>
<td>New ideas are seldom tried out in this ward (−).</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>R</td>
<td>Extent of enjoyment of clinical placement.</td>
<td>After the shift, the students have a sense of satisfaction (+).</td>
</tr>
<tr>
<td>Involvement</td>
<td>R</td>
<td>Extent to which students participate actively and attentively in hospital ward activities.</td>
<td>There are opportunities for students to express opinions in this ward (+).</td>
</tr>
<tr>
<td>Personalization</td>
<td>R</td>
<td>Emphasis on opportunities for individual student to interact with clinical teacher/clinician and on concern for student's personal welfare.</td>
<td>The preceptor/clinician considers students' feelings (+).</td>
</tr>
<tr>
<td>Task Orientation</td>
<td>P</td>
<td>Extent to which ward activities are clear and well organized.</td>
<td>Ward assignments are clear so students know what to do (+).</td>
</tr>
</tbody>
</table>

* S = system maintenance and system change dimension; R = relationship dimension; P = personal development dimension.
† Items designated (+) are scored 5 = strongly agree, 4 = agree, 2 = disagree, and 1 = strongly disagree. Items designated (−) are scored in the reverse manner. Omitted or invalid responses are scored as 3.

Package for the Social Sciences (SPSS) program (Coakes & Steed, 1997).

SUMMARY

This article discussed the historical and conceptual framework of classroom learning environment research; the development and validation of the various classroom environment questionnaires; studies involving educational environment instruments; and past research associated with the hospital as a learning environment. The development of the Clinical Learning Environment Inventory, which applies the conceptual framework of classroom learning environment, was described.

The literature suggests that a supportive learning climate is a critical element of human resource development. There is a need for both direct and indirect facilitation of this development by improving the educative quality of the environment. A supportive clinical learning environment is vital to the success of the teaching-learning process. Many aspects of the clinical environment affect the quality of student nurses' learning, including the quality of students' preparation, characteristics of the instructor and ward staff, peer support, and the variety of clinical opportunities to which students have been exposed.

Various studies have indicated that not all practice settings are able to provide student nurses with a positive learning environment. Other studies have shown clearly that student nurses perceive the practice setting as the most influential context for acquiring nursing knowledge and skills. Clinical education is a vital component in the curricula of preregistration nursing courses, providing student nurses with the opportunity to combine cognitive, psychomotor, and affective skills. Clinical field experiences enable students to develop competencies in the application of knowledge, skills, and attitudes to clinical situations. Because time for the clinical component of preregistration nurse education is limited, it is important that the scarce but valuable time be used effectively.

Despite the past research examined, there is a lack of specific studies on clinical learning environment from the psychosocial educational perspective. Although there are numerous instruments available for assessing classroom learning environments at various levels, no one instrument was available for assessing the clinical learning environment from the psychosocial educational perspective. The CUCEI seems to be the most suitable for use in assessing tertiary nursing students' perceptions of the classroom environment in tutorial settings. Subsequently, the construction of the CLEI, using only scales appropriate to the clinical learning environment, was developed by modifying the CUCEI. It is hoped that the development of the CLEI will provide one missing link in the study of the clinical learning environment.

REFERENCES


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