

Assessing Learning Environments: Context Matters

Lynne Robins, PhD

University of Washington
School of Medicine

Overview

- Definition
 - ♦ *What is the "learning environment?"*
- Significance
 - ♦ *Why is it of concern?*
- Case study
 - ♦ *How can you assess it?*
- Assessment Tools
 - ♦ *Examples/strategies*

Definition

- What is the learning environment?
 - ♦ *Context for informal and formal curricula*
 - ♦ *Matrix that nurtures or inhibits learner growth*

Learning Environment Components

- School size
- Quality of students and faculty
- Infrastructure
- Educational mission

PERCEPTION of the Learning Environment is what Matters

- Learning **climate** = environment as **perceived** by those who function within it (Genn)
 - ♦ *How stressful?*
 - ♦ *How competitive?*
 - ♦ *How supportive?*

What is it REALLY like?

- Climate at the University of Michigan Medical School (UMMS)
- Climate in biochemistry classrooms at the University of Rochester School of Medicine

Why is the Climate for Basic Science Learning of Concern?

- UNM concurrent pre-clinical curricula
 1. *PBL-based*
 - ♦ learner-centered
 - ♦ learning grows from patient problems
 - ♦ small group tutorials, no lectures
 2. Conventional
 - ♦ teacher-centered
 - ♦ lecture-based

Students Surveyed

- Basic Sciences
 - ♦ *How important to clinical medicine?*
 - ♦ *How relevant to clinical medicine?*
- How effective was basic science education?

Results: PBL vs. Conventional

- Students in problem-based curriculum
 - ♦ *greater value on learning basic sciences*
 - ♦ *more relevance*
- Students in conventional curriculum
 - ♦ *increasingly cynical*
 - ♦ *educational experiences less stimulating and less relevant over time*

Interpretation

- Better to contextualize basic science learning
- Small group formats beneficial
 - ♦ *close, personal, supportive environment*
 - ♦ *fosters positive attitude toward teachers and basic science*
 - ♦ *helps students handle stress of mastering large body of information*

Follow-up study at Dalhousie

- Conventional curriculum replaced by PBL
 - ♦ *cases stimulate required basic science learning*
 - ♦ *increased independent study time*

Cohort attitudes assessed with UNM instrument

- Students in PBL curriculum more positive
 - ♦ *"faculty members excite students' curiosity through the teaching of basic sciences" (p<.01)*
 - ♦ *"the information and experiences I have received to date are fundamental to my future role as a doctor" (p<.05)*

Recap

- Challenge
 - ♦ *Basic sciences perceived as hurdle, not foundation*
 - ♦ *Rote learning leads to cynicism*
- Address Climate of Basic Science Learning
 - ♦ *Context of learning provides relevance*
 - ♦ *Increased faculty contact*
 - ♦ *Students inspired to learn*

Case study: Action oriented assessment

- Faculty/student goals for UMMS curriculum
 - ♦ *Improve climate*
 - ♦ *Increase feedback*
 - ♦ *Accommodate diversity of entering class*

Proposed Curricular Reforms

- Pass/fail grading
- Weekly quizzes
- Active learning formats

Assessment Plan

- Baseline survey
 - ♦ *global assessment*
- Follow-up survey
 - ♦ *global assessment*
 - ♦ *written commentary*

Intentional Subgroup Analysis

- **Women**
 - ♦ *sexual harassment*
- **African Americans**
 - ♦ *poor interactions with faculty and peers*
 - ♦ *lack of role models*
 - ♦ *environment insensitive to backgrounds*
 - ♦ *real and perceived racism*

Global Environment Ratings Improve with New Curriculum

	Satisfaction <i>Former</i> Curriculum Mean (SD)	Satisfaction <i>New</i> Curriculum Mean (SD)	d
Men	2.70 (1.07)	3.62 (0.94)	.9
Women	2.46 (1.05)	3.02 (0.93)	.6
African Americans	2.25 (0.97)	2.85 (0.81)	.8

Areas of Concern

Scale: 1-4, with 1= Strongly Disagree, 4= Strongly Agree

	Wo Mn (SD)	Men Mn (SD)	d	Af Am Mn (SD)	Non- Af Am Mn (SD)	d
Environment facilitates learning	2.87 (.68)	3.23 (.60)	0.5	2.80 (.52)	3.11 (.65)	0.7
Comfortable all races and ethnicities to learn	2.96 (.74)	3.38 (.62)	0.6	2.55 (.61)	3.30 (.62)	1.2
Students receive constructive feedback	2.40 (.87)	2.71 (.77)	0.4	2.32 (.75)	2.61 (.83)	0.3

What predicts student satisfaction?

- **Subgroups** differ on “comfort” items
- **All students’** satisfaction predicted by
 - ♦ *perceived faculty interest in education*
 - ♦ *perception of feedback, critical thinking*

Lessons learned

- Climate data needed for quality improvement
 - ♦ *Local instruments, focus groups*
- Curriculum changes improve climate
 - ♦ *Component analysis*
- Group membership can affect perceptions
 - ♦ *What groups are salient?*
- Student perceptions of faculty are paramount

Michigan Assessment Items

(Robins et al, 1996)

1. UMMS comfortable place for men and women to learn
2. UMMS comfortable place for people of all races and ethnicities to learn
3. Timely evaluation of students’ performances
4. Students receive an appropriate amount of constructive feedback
5. Medical student education is high priority for faculty
6. Faculty are responsive to students’ concerns.
7. Environment facilitates learning
8. I would recommend the UMMS program to pre-meds
9. Overall educational program promotes critical thinking

Attitudes toward basic sciences

(West et al, 1982; Kaufman & Mann, 1997)

1. Can treat medical problems without knowing details of biological processes
2. Most basic science research only slightly useful to practicing doctor
3. Physician knowledge of biological mechanisms is most important
4. Applying basic science to clinical practice should be reinforced early
5. Psychological and physical factors equally important for healing*
6. Must first learn basic science facts, then learn clinical application
7. Students should learn general basic science concepts
8. Faculty excite students’ curiosity through teaching basic sciences
9. The information and experiences I have received to date are fundamental to my future role as a physician

*(Item not included in Kaufman & Mann)

Medical School Learning Environment Survey (MSLES)

1. **Flexibility:** *degree control imposed on students?*
2. **Student-student interaction:** *closeness?*
3. **Emotional climate:** *affective response to medical education?*
4. **Nurturance:** *supportiveness of faculty/staff?*
5. **Meaningful learning experience:** *what is perceived relevance of courses to medical practice?*
6. **Organization:** *how coherent are learning activities?*
7. **Breadth of interest:** *does school foster broad range of medically relevant activities?*

Learning Environment Questionnaire (LEQ)

1. **Meaningful learning experience:** *what is perceived relevance of courses to medical practice?*
2. **Nurturance:** *supportiveness of faculty/staff?*
3. **Flexibility:** *open flexible vs. closed rigid environment?*
4. **Emotional climate:** *affective response to medical education?*
5. **Student-student interaction:** *closeness among students?*

Dundee Ready Education Environment Measure (Roff et al, 1997)

1. Students' perception of learning
2. Students' perceptions of teachers
3. Students' academic self-perception
4. Students' perceptions of atmosphere
5. Students' social self-perception

Conclusions and Discussion

- Learner-centered environments enhance basic science learning
- Assessment guides us in building them

