

## **The Creation of the Comfortability in Learning Scale**

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### **Abstract:**

*This article documents the initial attempts to establish reliability and validity coefficients for the Comfortability in Learning Scale (CLS). To meet the needs of institutions of Higher Education that students achieve and demonstrate specific educational outcomes, it is conceived that the students must be actively involved in their learning and with the faculty. To achieve this, the authors believe that an environment where students, even those with differing viewpoints, feel supported and comfortable is a critical component. To understand this dimension, the authors have developed an instrument to measure CLS and analyzed the data acquired.*

### **Key Words:**

Educational Outcomes, Comfortability in Learning, Active Engagement, Constructivist Learning, Reflective Practice, Safe Learning Environment, Positive Learning.

## **Introduction**

Higher education institutions are increasingly emphasizing the demonstration of educational outcomes (Arum & Roska, 2011). One argument is that more actively engagement of students in the teaching and learning process (Kiener & Weaver, 2011; Werder & Otis, 2010) will produce better educational outcomes. Examples of active student involvement include student and faculty research, student and faculty curriculum design, and the creation of a positive learning environment. Active student involvement follows the principles of constructivist learning and reflective practice, where learning is facilitated by a safe learning environment co-created by all involved (Riley & Roach, 2006). Schrader (2004) described a safe learning environment as intellectual safety, an environment where students, even those with differing viewpoints, feel supported and comfortable. A safe learning environment can provide opportunity for students to receive new knowledge that was previously perceived as contrary to their worldview. This is also similar to Paul and Elder's (2001) habit of mind called intellectual humility, where people step outside of their limited perspectives to see the world from another standpoint.

Light (2001) and a team of researchers interviewed 16,000 undergraduate students to better understand how they perceived their college career. A central idea in this investigation was that students had multiple perspectives on how to make the most out of college. Of the themes that emerged, the ones that were most germane to the benefits of creating a comfortable learning environment centered on engagement. Students noted positive learning occurred when they were engaged with advisors, mentors, study groups, as well as when they were involved in independent learning.

Instructional communication theorists have also examined classroom environments by extensively researching teacher behaviors that influence learning processes (King & Witt, 2009; McCroskey, Richmond, & Bennett, 2006). Teacher immediacy (Witt, Wheelless, & Allen, 2004), instructor/ student rapport (Frisby & Martin, 2010), and teacher confirmation (Ellis, 2004) are all constructs that specifically relate to the interaction between teachers and students in creating positive learning environments. Instructional communication research has demonstrated increases in both affective and cognitive learning when instructors exhibit supportive communication characteristics (Ellis, 2004; Witt et al., 2004).

In addition to creating supportive learning environments, when students are encouraged to take a more active role in their learning, they can move from being passive recipients to becoming co-inquirers of their learning. Tinnesz, Ahuna, and Kiener (2006) found students who were explicitly taught practical learning strategies such as note-taking, reading, and comprehension monitoring skills were better able to develop self-regulated learning skills than those who were not. Students who are self-regulated have ability to assess their strengths and weaknesses and implement strategies to improve learning. In addition, students can also develop internal learning skills such as persistence, curiosity, enthusiasm, and enjoyment of the learning process (Ahuna & Tinnesz, 2003). Iran-Nejad and Chissom (1992) found that these internal skills have a greater impact on achievement scores for undergraduates than the use of concrete learning strategies alone. Thus e more research that emphasizes student connectedness to their learning environment (e.g., instructor, classmates, profession)

and exploring ways to actively incorporate students in their learning could lead to better evidence for students demonstrating successful learning outcomes.

Capitalizing on the importance of supportive learning environments and student/instructor interaction as a foundation of learning, the pedagogical theory of mutual engagement (ME) was created (Kiener, 2007, 2008a, 2008b, 2008c, 2009a, 2009b). ME emerged out of a grounded theory study designed to better understand how graduate rehabilitation counseling students learned beginning counseling skills. Core categories of mutual engagement and comfortability were found as contributors to a safe learning environment. Mutual engagement views the class as a group and uses pedagogy as a means to facilitate group formation; whereas, comfortability describes how students become more easy and comfortable with their classmates, instructor, and their learning.

A central component of ME, which encourages students to become active participants in their learning, perhaps, for example, students and instructor co-creating assignments and assessment procedures, should affect the teaching and learning process in positive ways. . Another aspect of ME is the emphasis on a safe learning environment. When a class has established a safe learning environment, students are more willing to receive challenging information and provide constructive feedback (Kiener, 2007). To better develop a safe learning environment, the Comfortability in Learning Scale (CLS) was created by the first author to measure the amount of classroom comfortability.

Therefore the purpose of this article is to establish reliability and validity coefficients for the CLS and to assess if there was a change in comfortability throughout the four administrations. In addition, this research has value in its ability to conceptualize factors such as the learning environments and student involvement that affect, while also introducing the possibility of using the CLS as a procedure to document outcomes. Finally, further establishing ME as a pedagogical theory would allow for ME to help explain the connection between comfortability and outcomes.

## **Methodology**

A study was conducted to establish reliability and validity for the CLS. A description of the item creation, participants, and procedures is provided. The CLS was administered four times throughout one semester and the CLS was correlated with the Affective Learning Measure to establish criterion validity (McCroskey, 1994).

### ***Item Development***

The first author developed questions to correspond with principles of ME and the construct of comfortability. The second author reviewed the items for clarity and fit with ME. In addition, the survey was given to two groups of students and to an expert in the field of scholarship of teaching and learning for review. At this stage of CLS creation, students were not given IRB consent forms because results were not being collected or disseminated. All feedback was assessed and needed changes were incorporated into the CLS.

The CLS asks participants to indicate their degree of comfort with factors (i.e., classmates, instructor, content) influencing course learning environments. The CLS is a

20-item survey using a 5-point Likert scale ranging from totally disagree (1) to totally agree (5). Questions include: "Students have not created a respectful environment in this class to share ideas"; "I feel comfortable communicating with the professor regarding problems I might be having with this class"; "In this class I do not have opportunities to provide feedback to benefit my learning"; and "In this class there is not a clear connection between assignments and important class concepts" (See appendix for the complete CLS).

### ***Participants and Procedure***

A purposeful sampling method at a small mid-western university produced a mix of courses and instructors involved in the study. Six of the courses were first year experience courses with a theme of building community. The remaining two courses were in a professional program (rehabilitation counseling and services). Seven of the courses were undergraduate and one was graduate. All students signed a consent form to participate in the study. The two student groups used in the initial review of the survey were similar in demographic makeup to the participating students. Three instructors were full-time; four were staff members, and one full-time instructor taught two courses. In total 122 students participated in the study. There were 85 females, 36 males, and one individual did not indicate gender. The individuals ranged in age from 17 to 53 and the average age was 19. One hundred and six individuals identified as Caucasian, five as African American, two as Asian, seven as other. Two did not indicate their ethnicity.

In order to answer the research questions Cronbach's Alpha, split half reliability, and test-retest analyses were performed to establish reliability coefficients. The CLS was administered at the beginning of each class in the first, third, eighth, and thirteenth week of the semester.

The Affective Learning Measure (McCroskey, 1994) was also administered in the thirteenth week and correlated with the CLS for criterion validity data. A factor analysis was also performed to analyze the underlying structure of the CLS. In addition, data were examined to determine if there was an overall change in comfortability.

### **Results**

The four Cronbach's alpha coefficients for the 20-item CLS ranged from .863 to .933; whereas, the four split half coefficients ranged from .811 to .908. Test retest coefficients were .649 (2wk), .609 (7wk), and .511 (12wk). If comfortability develops over time, eliminating the first administration of the CLS may reveal more accurate test-retest coefficients. Table 1 provides complete reliability data for the four administrations. Criterion validity was assessed by correlating the final assessment of the CLS with the Affective Learning Measure, given in the thirteen week. The correlation coefficient was .737.

Table 1 Reliability Coefficients

Administration of the CLS				
	1	2	3	4
Cronbach's Alpha	.863	.891	.910	.933
Guttman Split Half	.811	.818	.877	.908
Test Retest Coefficients	X	2wk .649	7wk .609	12wk .511
	X	5wk .804	10wk .794	
	X	5wk .847		

To examine the factor structure of the CLS, the first week CLS data were subjected to a principle components analysis with varimax rotation. Although there were 5 factors with eigenvalues above 1.0, a visual analysis of the scree plot indicated the presence of two dominant factors, accounting for a total of 40.5% of the variance. The rotated factor loadings indicated that four items split across the two factors. After eliminating these items, the principle components analysis was run again on the resulting 16 item scale. The two factor solution was maintained, accounting for 44.2% of the variance. Cronbach's alpha coefficients were calculated to determine the reliability of the entire scale and each factor. The total scale was highly reliable (.832), as was the first factor (.867). The second factor was not reliable (.633). Given the low reliability of the second factor and the difficulty in determining why the specific items loaded on a particular factor, a decision was made to treat CLS as unidimensional. This decision was supported by the reliability of the 20-item scale (.863).

Because classroom comfortability in a learning environment may take time to develop, the CLS was reanalyzed in the same manner after the final administration. Results indicated three factors with eigenvalues over 1.0, but the scree plot strongly suggested a single underlying factor, supporting the idea the scale was unidimensional after the first administration. The single factor now accounted for 47.2% of the variability. The reliability of the entire scale, including all 20 items, also increased (Cronbach's alpha = .933).

To further analyze the change in the CLS over time, a repeated measures ANOVA was conducted comparing each of the four administrations. One of the assumptions underlying a repeated measures ANOVA is that the variances of the differences between the administrations of the CLS are equal, an assumption known as sphericity. An analysis of Mauchly's sphericity test indicated a violation of this assumption (Mauchly's  $W = .575$ ,  $\chi^2(5) = 49.11$ ,  $p < .001$ ). Although sphericity looks at the differences in variance comparing all groups, our data likely violate this assumption due to increasing variance over the 4 administrations. For example, the variance between time 1 and 2 is likely not equal to the variance between times 1 and 4. When sphericity is violated, there are statistical corrections that can be used to avoid inflating the F-ratio and making a statistical error in interpretation. According to Girden (1992), if the Greenhouse-Geisser estimate of epsilon is less than .75, in this case it is .722, one should use the Greenhouse-Geisser correction which adjusts the degrees of freedom used to test the significance of the F-ratio, making it a more conservative test. Even with

this correction, results indicated a significant difference among the 4 scores,  $F(2.167, 195.022) = 17.393$ ,  $p < .001$ , partial  $\eta^2 = .162$ . Pairwise comparisons, Bonferroni adjusted, indicated a significant difference among all administrations except three and four which were statistically equivalent. Comfortability increased over time, see Table 2 for detailed means.

**Table 2. Descriptive Statistics for the CLS**

Administration	Mean	SD
1 <sup>st</sup> Week	4.185 <sup>a</sup>	.449
3 <sup>rd</sup> Week	4.312 <sup>b</sup>	.485
8 <sup>th</sup> Week	4.435 <sup>c</sup>	.505
13 <sup>th</sup> Week	4.435 <sup>c</sup>	.536

Note: N = 91. Means not sharing a superscript differ significantly at  $p < .05$ .

## Discussion

This article documented the initial attempts to establish reliability and validity coefficients for the CLS. The scale measures the degree to which students perceive a sense of comfortability in their learning environment. The CLS has value in producing evidence of factors likely to increase comfortability and student learning (Booker, 2008). It is suggested the CLS can be used to develop and assess classroom learning environments. When a class establishes comfortability (a safe classroom environment), students may be more likely to persist when struggling and to take educational risks for the betterment of their learning.

Results indicated strong reliability. Cronbach's Alpha coefficients ranged from .863-.933 and split half coefficients ranged from .811 - .908. In addition, the CLS had moderate test retest reliability. This result is not surprising because the CLS measures a developing construct. If students are increasing in comfortability, then their scores would change with each administration, as was demonstrated through the ANOVA. The correlation coefficient between test administrations three and four was strong (.847) although, which may indicate as the classes progressed student comfortability became more consistent.

In addition, Cronbach's alphas and the split-half coefficients suggest the CLS is assessing a common underlying factor. The factor analysis of the final administration confirmed this and also suggested the developmental nature of the construct. The data from the first week indicated a probable two-factor solution, but one in which the factors could not be named. It was unclear why the items loaded in the manner they did. The two factors initially accounted for just over 40% of the variability in the CLS scores. By the final administration, 12 weeks later, the factor analysis unambiguously showed a single factor underlying the CLS, accounting for approximately 47% of the variability.

Criterion validity was assessed by correlating the CLS with the Affective Learning Measure (McCroskey, 1994). The criterion validity coefficient was .737. It is feasible to believe there is overlap between the Affective Learning Measure and the CLS as each measures aspects of engagement in learning; however, the CLS has a greater

emphasis on perceptions of student learning and class structure (e.g., class routine, assessment procedures, and providing feedback to the instructor). To add to the CLS validity data, future studies could examine the CLS with other established classroom community and affective learning assessments. In total these results point to continued use and development of the CLS.

Although there were promising results, it is also important to acknowledge limitations in the studies. The majority of the participants were completing a course where community was a theme. It is unclear if emphasizing community skewed the results. Additional studies using larger participant pools and multiple disciplines would increase the utility of the CLS. Future studies might benefit from further disaggregating the data to examine differences. For example, examining differences between full-time and adjunct instructors, programs, students who had experience with instructors to those without prior experience, and perhaps between students just entering a program with graduating students would enhance results. It could also be helpful to identify questions that could indicate positive or negative changes in classroom comfortability. Early identification of student perceptions of comfortability may allow a teacher to avert a potential conflict or strengthen a functioning class. If building community is important in learning, comfortability is certainly an important aspect. It would be difficult for an individual to have a sense of community if they did not perceive they were in a “safe” class. It would be interesting to investigate how individual personality differences in optimism, pessimism, introversion, and extroversion affect comfortability.

### **Applications to a Broader Audience**

Perhaps the strongest avenue for future research is using the CLS as an outcome measure and ongoing feedback (for students and instructors). By continuing to collect and assess data on student perceptions of comfortability, instructors can adjust pedagogy to maximize student learning. Including a few open-ended questions on students’ perceptions of comfortability or on how they contribute to a respectful environment may add additional context to student learning. Moreover, instructors could use individual results of the CLS during advising to help students become more aware of factors that contribute to their learning. Arguably, comfortability has a connection to affective learning and increasing a student’s ability to receive and value new information. Higher levels of comfortability and affective learning may help students persist when struggling and thus increase their comprehension monitoring skills.

### **Conclusion**

The creation of the CLS was an attempt to continue to establish Mutual Engagement and the construct of comfortability as an important pedagogical tool to facilitate student learning. Initial results indicate more than adequate psychometric data. Moreover, it poses the idea of using the CLS as an outcome measure and as a means of providing evidence of documenting student learning outcomes. In the ongoing endeavor of colleges and universities to increase student engagement with coursework and subsequent retention in school, these measures can be highly valuable.

## References

- Ahuna, K. H. and C. G. Tinnesz. (2006). *Methods of inquiry applied critical thinking* (2<sup>nd</sup> ed). Dubuque, Iowa: Kendall/Hunt.
- Arum, R., & Roksa, J. (2011). *Academically adrift: Limited learning on college campuses*. Chicago: University of Chicago Press.
- Booker, K. C. (2008). The role of instruction and peers in establishing classroom community. *Journal of Instructional Psychology*, 35, 12-16.
- Edwards, K. E., & McKelfresh, D. A. (2002). The impact of a living learning center on students' academic success and persistence. *Journal of College Student Development*, 43, 395-402.
- Ellis, K. (2004). The impact of perceived teacher confirmation on receiver apprehension, motivation, and learning. *Communication Education*, 53, 1-20.
- Frisby, B. N., & Martin, M. M. (2010). Instructor-student and student-student rapport in the classroom. *Communication Education*, 59, 146-164.
- Girden, E. R. (1992). ANOVA: Repeated Measures. *Sage University Paper Series on Quantitative Applications in the Social Sciences*, 84. Thousand Oaks, CA: Sage.
- Iran-Nejad, A. & Chissom, B.S. (1992). Contributions of active and dynamic self-regulation to learning. *Innovative Higher Education*, 17, 125-136.
- Kiener, M. S. (2007). Scholarship of teaching in rehabilitation counseling practicum. *Rehabilitation Education*, 21, 169-178.
- Kiener, M. S. (2008a). Teaching service learning to enhance reflective practice and research skills. *Rehabilitation Counselors and Educators Journal*, 2, (2), 50-59.
- Kiener, M. S. (2008b). Engaging conversationally: A method for engaging students in their learning and examining instruction. *Insight*, 3, 23-30.
- Kiener, M. S. (2008c). The use of pre and post quizzes to increase student engagement in their learning. In Blythe, H., & Sweet, C. (Eds.), *It works for me in scholarship shared tips for the classroom* (pp. 79-80). Stillwater, OK: New Forums.
- Kiener, M. S. (2009a). Contextualizing engagement: Building the middle range theory of mutual engagement and gaining context on how students learn. *Rehabilitation Counselors and Educators Journal*, 3(2), 55-62.
- Kiener, M. S. (2009b). Application of the scholarship of teaching and learning: The emergence of a deeper understanding of how students learn. *Insight*, 4, 21-27.
- Kiener, M. S., & Weaver, C. (2011). Examining how cognitive and affective learning strategies change as students complete coursework. *Transformative Dialogue: Teaching and Learning Journal*. [Online] 5(1). Available: [http://www.kwantlen.ca/TD/Current\\_Issue.html](http://www.kwantlen.ca/TD/Current_Issue.html).
- King, P. & Witt, P. (2009). Teacher immediacy, confidence testing, and measurement of cognitive learning. *Communication Education*, 58, 110-123.
- Light, R.J. (2001) *Making the most of college students speak their minds*. Cambridge, MA: Harvard university Press.
- McCroskey, J.C. (1994). Assessment of affect towards communication and affect toward instruction in communication. In S. Morreale & M. Brooks (Eds.), *1994 SCA summer conference proceedings and prepared remarks: Assessing college students' competence in speech communication*. Annandale, VA: Speech Communication Association.

- McCroskey, J. C., Richmond, V. R., & Bennett, V. E. (2006). The relationship of student end-of-class motivation with teacher communication behaviors and instructional outcomes. *Communication Education*, 4, 403-414.
- Paul, R., & Elder, L. (2001). *Critical thinking: Tools for taking charge of your learning & your life*, 1<sup>st</sup> ed. Boston, MA: Pearson.
- Riley, D. A., & Roach, M. A. (2006). Helping teachers grow: Toward theory and practice of an emergent curriculum model of staff development. *Early Childhood Education Journal*, 33, 363-370.
- Schrader, D. E. (2004). Intellectual safety, moral atmosphere and epistemology in college classrooms. *Journal of Adult Development*, 11, 87-101.
- Tinnesz, C. G., Ahuna, K. H., & Kiener, M. (2006). Toward college success: Internalizing active and dynamic strategies. *College Teaching*, 54, 302-306.
- Wawrzynski, M. R., & Jessup-Anger, J. E. (2010). From expectations to experiences: Using a structural typology to understand first-year student outcomes in academically based living-learning communities. *Journal of College Student Development*, 51, 201-217.
- Werder, C., & Ottis, M. M. (Eds). (2010). *Engaging student voices in the study of teaching and learning*. Sterling, VA: Stylus
- Witt, P. L., Wheelless, L. R., & Allen, M. (2004). A meta-analytical review of the relationship between teacher immediacy and student learning. *Communication Education*, 71, 184-207.