The Impact of Relevance and Teacher Immediacy on Cognitive and Affective Learning

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This study was an experimental investigation into the impact of lecture topic relevancy and teacher immediacy on students' cognitive and affective learning. Students at Illinois State University (ISU) were recruited from multiple sections of Communication 110, a course required of all first-year students. Therefore, a variety of majors were included. The results revealed that students learned more with a highly relevant lecture topic. Students also learned more with a highly immediate instructor. There was no interaction between immediacy and relevance, contradicting previous research that suggested an overlap between the two. Pedagogical implications of the findings are discussed.

Gone are the days when students were viewed as a vessel to be filled with knowledge that an instructor could pour into them. In an increasingly faster paced and socially networked society, students are used to expressing their voice more frequently and with more people than ever before, and that expression extends into the classroom. If students do not perceive that their instructor is trying to convey their voice back to them through the presentation of content, they have many other communication outlets to turn to, even during class, with laptop computers, iPads, and cell phones that are purportedly being used to take notes. Teachers have used multiple strategies in order to engage students and attempt to make connections between the course material and students' lives. Two methods that have been previously researched but are still not fully understood are the use of immediacy and relevancy in an attempt to increase student learning. Immediacy can be defined as the physical and psychological distance between communicators and relevancy can be defined as value seen in a topic by a receiver of communication. The current study is an attempt to shed new light on how these techniques may or may not help students learn by engaging them in the course.

Review of Literature

Learning

Effective teachers are most easily identified by the amount of cognitive learning they produce in students, according to Bloom (1956). Cognitive learning covers a breadth of knowledge acquisition including memorization of facts as well as applying those facts in problem-solving and higher order thinking (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956). While cognitive learning deals largely with logic, Bloom (1956) also identified a type of learning more related to pathos, affective learning.

Students' emotional approach to the learning process includes their feelings, values, attitudes, and motivations (Bloom, 1956). Whereas cognitive learning can be evaluated objectively through identification of correct or incorrect answers, affective learning has no similar low-inference, demonstrative response indicating increase in ability. Obviously, cognitive learning deals with acquisition of knowledge that is then demonstrated in some fashion; affective learning is not gauged in the same way and, in order to measure it performatively, it would require a number of high-inference items such as quality of work and demonstration of valuing work done in class by extending it outside of class. In the current study, affective learning is operationalized through a self-report of attitudes about students' own emotional approaches to learning.

Relevance

In past research, course content that is communicated by instructors to be relevant to students has been shown to lead to higher motivation for the course (Frymier & Shulman, 1995; Frymier, Shulman, & Houser, 1996). Relevance has been previously designated as whether students perceive that course content can satisfy personal needs, personal goals, and/or career goals (Keller, 1983). Previous research attempts at examining a link between relevance and learning have been problematic in terms of determining the relationship between relevance and immediacy. Frymier and Shulman (1995) surveyed 470 undergraduate students to examine relevance and immediacy as predictors of motivation using a multiple regression model. They found that relevance predicted 3% unique variance, while nonverbal immediacy did not account for a significant amount of unique variance. The researchers explained that this might be the case because relevance and immediacy overlap empirically even though they are conceptually different. They posited that instructors might first have to use immediacy to gain students' attention prior to enacting effective relevance strategies.

Frymier and Houser (1998) later examined immediacy and relevance experimentally in a 2x2 design with high and low levels of nonverbal immediacy and relevance. Motivation, affective learning, and cognitive learning were the dependent variables measured. A 15-minute presentation was delivered to 190 students across the four conditions. High immediacy was communicated through the use of traditional nonverbal immediacy-producing behaviors while the instructor in the low immediacy condition minimized or eliminated them. Relevance was manipulated by using strategies to link course concepts to students' goals, needs, and lives in the high condition and by using general examples that were more abstract. Results indicated that students in highly nonverbally immediate conditions exhibited significantly higher levels of motivation and cognitive and affective learning regardless of relevance. However, the researchers questioned the manipulation of relevance in the study as being too subtle, calling into question the findings.

The current study addressed the murkiness surrounding the relationship between relevance and immediacy and their influence on student learning. Instead of subtle example cues within the same course content, relevance was operationalized by overall lecture topic. This is an attempt to reconceptualize relevance as a constant throughout a lesson more deliberately in order to measure the impact of cognitive and affective learning, rather than simply using cues that, in past scholarship of teaching and learning research, have proven problematic in their operationalization. Research questions were asked to explore the role of topic relevance as follows:

RQ 1: Is there a difference in cognitive learning in students who witness a highly relevant lecture versus those who watch a lecture with low relevance?

RQ 2: Is there a difference in affective learning in students who witness a highly relevant lecture versus those who watch a lecture with low relevance?

Immediacy

There have been many studies with varying results that have attempted to explicate the relationship between immediacy and learning in model form: Kelley and Gorham's (1988) four-step model; Christophel's (1990) motivation model; Frymier's (1994) learning model; and Rodriguez, Plax, and Kearney's (1996) affective learning model. In addition to these models, meta-analyses have been performed to determine the relationship between immediacy and learning. Witt, Wheeless, and Allen (2004) concluded that the results of their meta-analysis showed that as immediacy increases, so too does learning. However, a subsequent meta-analysis examining the affective learning model showed a statistically significant path coefficient of p = .51 between teacher immediacy and affective learning and a statistically significant (though small) path coefficient of p = .08 between affective learning and cognitive learning (Allen, Witt, & Wheeless, 2006).

Previous research on the relationship between immediacy and cognitive learning has been lacking in a number of ways. First, most has been correlational rather than truly experimental, which limits the ability of the researchers to make causal claims. Second, contradictions exist in the literature as to whether immediacy is directly related to cognitive learning or whether it operates to influence cognitive learning through other variables such as affective learning or motivation. The current study approached the problem as an experiment and, rather than relying on correlational analysis, used researcher manipulation of nonverbal immediacy by training a confederate to exhibit either a large number of immediacy-producing behaviors (high immediacy) or very few immediacy-producing behaviors (low immediacy). So, to summarize, immediacy is correlated with affective learning, which should not be discounted in higher education. Retention rates for individual courses frequently are below 90% (Allen, Mabry, Mattrey, Bourhis, Titsworth, & Burrell, 2004), and only half of undergraduates graduate (Ehrenberg & Zhang, 2004). As the affective learning model states, no motivation to engage academically (affective learning) lessens cognitive learning knowledge.

Based on these contradictions, the following RQs are asked:

RQ 3: Students in the high immediacy condition will experience significantly greater amounts of cognitive learning than students in the low immediacy condition.

RQ 4: Students in the high immediacy condition will experience significantly greater amounts of affective learning than students in the low immediacy condition.

To build upon previous findings, due to the inconclusive findings by Frymier and Shulman (1995) that suggest that immediacy and relevance may overlap in influencing motivation (which is conceptually similar to affective learning) and the problems with manipulating relevance while looking at cognitive and affective learning and motivation in Frymier and Houser (1998), it is necessary to examine whether these concepts interact in their influence.

RQ 5: Does immediacy (high versus low) and relevancy (note-taking method versus ancient history) interact in their impact on student cognitive learning?

RQ 6: Does immediacy (high versus low) and relevancy (note-taking method versus ancient history) interact in their impact on student affective learning?

Methods

Participants

Prior to recruitment for the study, it received approval from ISU's Institutional Review Board. One hundred seventy-six students from a large-sized Midwestern university comprised the sample. This sample size was chosen to achieve the desired power level of .80 for detection of an effect of medium size at $p = .05$ (Keppel, 1991). Participants were first-year students taking a basic communication course that is required for all incoming freshmen at the university; this allowed for a diversity of majors in the sample. Females made up 69.9% of the participants, while 26.4% of the participants indicated they were male. The remaining 3.7% of participants did not indicate a gender. The racial breakdown of the sample was as follows: white, 82.7%; African-American, 5.1%; Asian/Asian-American, 2.3%; Multiracial, 2.3%; Native Hawaiian or Pacific Islander, .3%; Other, 4.2%; not indicated, 3.1%. The researcher avoided using intact groups by recruiting participants after class sessions had ended and having students choose to sign up for one of the research sessions that were offered outside of class times. Participation was voluntary and participants were allowed to discontinue the study at any time. Participants signed in on a sheet at the beginning of the experiment but their names were not associated with their responses. They signed in so their participation could be reported to their individual instructors, as some received a small amount of extra credit.

Research Design

The design of the study was a 2x2 factorial. The first independent variable was relevance. In order to address issues in past research, relevance was established through overall lecture topic selection rather than smaller cues embedded within a lecture. A note-taking method (Cornell Notes) was chosen as the highly relevant topic because it targeted an action that students use every day in their collegiate careers. A lecture on ancient history that was not connected to anything the students would typically encounter was chosen as the topic exemplifying low relevance. Participants saw one of the two lectures.

The second independent variable was immediacy. A confederate was trained to exhibit high immediacy by using many nonverbal immediacy-producing behaviors and low immediacy by using as few as possible. A manipulation check was performed to ascertain that participants would in fact notice a difference between the high and low immediacy conditions. Thirty-two respondents were randomly assigned to view a video recording of either the high or low immediacy note-taking lecture; subsequently, they completed the nonverbal immediacy scale based on the video they had watched. An independent-samples t-test revealed a significant difference between the high ($M = 82$, $SD = 8.32$) and low ($M = 50.75$, $SD = 12.32$) immediacy conditions, $t(30) = -.841$, $p < .001$. This demonstrated that the manipulation check was successful.

The first dependent variable targeted was cognitive learning, which was measured with two 10-item multiple-choice quizzes, one for each lecture created by the researcher, an experienced teacher. These measured students' ability to recall facts from the lectures. The second dependent variable evaluated was affective learning and was measured with McCroskey's (1994) 7-point semantic difference scale. This semantic differential-type scale was derived from those developed by Andersen (1979) and Scott and Wheeless (1975). Reliability of this scale has ranged from .86 to .98 (Gorham, 1988; Kearney & McCroskey, 1980; Kearney, Plax, & Wendt-Wasco, 1985; Plax, Kearney, McCroskey, & Richmond, 1986).

Procedures

Participants reported to a traditional classroom containing 40 desks. A treatment condition was randomly selected during each session after participants had arrived. There were four conditions possible: (a) low immediacy, ancient

history topic; (b) low immediacy, Cornell Notes topic; (c) high immediacy, ancient history topic; (d) high immediacy, Cornell Notes topic.

Once the lecture condition was determined, the researcher left the room to inform the confederate which condition should be presented and then returned and introduced the confederate as a university instructor who would be presenting a lecture. Following the instructor's presentation, which lasted approximately 10 minutes, participants were asked to fill out the questionnaire based on the lecture they had just witnessed. To measure cognitive learning, students answered 10 multiple-choice questions relevant to the lecture they saw. Affective learning was assessed through the use of McCroskey's (1994) measure.

Results

This study had a 2x2 design in which the independent variables were immediacy (high levels or low levels) and relevance of subject (note-taking method or ancient history). The dependent variables analyzed were cognitive and affective learning. In Appendix A, inferential statistical results from the analysis for the effects of the independent variables individually can be found in Table A1, inferential statistical results for interaction effects between the independent variables can be found in Table A2, descriptive statistics for cognitive learning can be found in Table A3, and descriptive statistics for affective learning can be found in Table A4. Advanced inferential statistics were used to analyze the data; for details, see Appendix B.

Research question 1 evaluated whether there was a difference in student cognitive learning based on relevance of subject (note-taking method versus ancient history). There was a significant difference in cognitive learning between groups, $F(1, 172) = 82.58$, $p < .001$. Students scored higher in the relevant (note-taking) condition ($M = 6.70$, $SD = 1.96$) than in the ancient history condition ($M = 3.95$, $SD = 2.15$).

The second research question targeted whether there was a difference in student affective learning based on relevance of subject (note-taking method versus ancient history). There was a significant difference in affective learning between groups, $F(1, 172) = 29.95$, $p < .001$. Students scored higher in the relevant (note-taking) condition ($M = 73.59$, $SD = 14.90$) than in the ancient history condition ($M = 61.39$, $SD = 19.00$).

The third research question predicted that students in the high immediacy condition would experience significantly greater amounts of cognitive learning than students in the low immediacy condition. Students in the high immediacy condition scored higher $F(1, 172) = 9.81$, $p = .002$, ($M = 5.31$, $SD = 2.17$) than those in the low immediacy condition ($M = 4.72$, $SD = 2.19$).

Research question 4 predicted that students in the high immediacy condition would experience significantly greater amounts of affective learning than students in the low immediacy condition regardless of instructional delivery method. Students in the high immediacy condition scored higher $F(1, 172) = 45.47$, $p < .001$, with ($M = 66.11$, $SD = 18.64$) than those students in the low immediacy condition ($M = 55.46$, $SD = 15.69$).

Research question 5 questioned whether there was an interaction between level of immediacy (high versus low) and relevance of subject matter (note-taking method versus ancient history) in terms of impact on student cognitive learning. Analysis revealed no interaction, $F(1, 172) = .276$, $p = .600$.

The sixth research question asked whether there was an interaction between level of immediacy (high versus low) and relevance of subject matter (note-taking method versus ancient history) in terms of impact on student affective learning. The results showed no interaction, $F(1, 172) = 3.516$, $p = .062$.

Discussion

Findings indicate that students learn more cognitively and affectively when they perceive the subject of the lecture to be relevant. A previous study in this area indicated problems in creating a difference between high and low relevancy in lectures in terms of using lecture examples (Frymier & Houser, 1998). The current study attempted to address this by creating a wider gap in relevance by using entire lecture topics. Due to differences in student interests and general education requirements, it is impossible to teach students only subjects they perceive as relevant. However, since there is a difference in student learning based on perceptions of relevancy, it would seem to behoove instructors to explicitly address the relevance of any given lecture to the students, whether it be simply to complete an assignment for class or to be further-reaching in terms of career or life applications, as suggested by Keller (1983).

Another focus of the study was to shed further light on the previous findings by Frymier and Shulman (1995) that immediacy and relevance overlap even though they are conceptually different. The current study found no interaction between these two variables. Therefore, teachers should not assume that addressing just immediacy or just relevance would be sufficient for students; instead, incorporating elements of both will have significant and different impacts on increasing student learning.

Implications

The findings of this study suggest a number of things. First, immediacy and relevance are two separate constructs. It is possible to be seen as approachable by students without having them think they are learning anything they can use later in life. Secondly, this study shows the importance of demonstrating to students why what they are learning will be applicable to their lives and/or careers in the future. Finally, there is importance in connecting with students both through content and through interpersonal relationships. Therefore, teachers should strive to both encourage students (by promoting affective learning) and conveying information in an intriguing fashion (to promote cognitive learning).

While it is important for teachers to develop their own voice when they are teaching, they must remember that students too have a voice and, by echoing that, teachers can increase both students' passion for learning as well as their actual knowledge. Teachers who can reduce physical and psychological difference between themselves and their students and also demonstrate the relevance of the material to the students' lives are likely to be most effective in increasing multiple types of learning.

Strategies for increasing affective learning are prevalent in education literature. However, enhancing relevance is an area in which much heurism is still lacking.

Limitations

One limitation deals with the experimental nature of the study. The researcher chose to sacrifice some external validity in order to maximize internal validity. Intact classes were not used, and participants witnessed a lecture from an unfamiliar teacher and filled out the performative learning measure without the motivation of performing for the grade. This may have caused the mean scores on the performative measure to be lower than they may have been when students had the incentive of performing for a grade in an actual class. Future studies may benefit from providing more incentive for participants to perform well on the learning measures through actual grades or other incentives.

Also, it is possible that the items measuring cognitive learning were more difficult in the low relevancy condition (ancient history) quiz than those in the high relevancy condition (Cornell Notes). This may have been a threat to internal validity and could have added to the disparity in mean scores between the two groups on cognitive learning.

Suggestions for Future Research

The current study sampled freshman students from all majors on campus. It could be argued that relevance may be operationalized differently for upper-level students taking major classes and preparing to enter the working world than for freshman students still adjusting to the college experience. Research should be undertaken across college students at different points in their matriculation and could potentially address their motivation and correlations with affective learning.

Finally, students were not asked to rate the perceived relevance of each lecture for comparison as one was chosen (Cornell Notes) to provide them with a skill they could immediately apply while the other (ancient history) had no such relevant application. Future studies should employ a manipulation check to ascertain that there is in fact a difference in relevance between topics. The current study was conducted to contrast topics (building on gaps in past research) and their relevance rather than just subtle lecture cues. Future research in the area should address this issue.

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Appendix A

Table A1: *Univariate ANOVA Statistics for Main Effects*

Variable	$F_{(1, 172)}$	p	Partial *Eta*^{2}	Observed Power
Immediacy (High Versus Low)				
Cognitive Learning	10.43	.001	.057	.895
Affective Learning	56.25	.000	.246	1.000
Subject (Note-taking Method Versus Ancient History				
Cognitive Learning	82.58	.000	.324	1.000
Affective Learning	29.946	.000	.148	1.000

Table A2: *Univariate ANOVA Statistics for Interaction Effects*

Variable	$F_{(1, 172)}$	p	Partial *Eta*^{2}	Observed Power
Subject X Immediacy				
Cognitive Learning	.276	.600	.002	.082
Affective Learning	3.516	.062	.020	.462

Table A3: *Descriptive Statistics for Cognitive Learning by Condition*

	Mean	SD	N
High relevancy condition (Cornell Notes)	6.70	1.96	88
High Immediacy	7.11	1.543	44
Low Immediacy	6.30	2.247	44
Low relevancy condition (Ancient History)	3.95	2.15	88
High Immediacy	4.52	2.267	44
Low Immediacy	3.39	1.883	44
Note. Scores for each condition could range from 0–10, with higher scores meaning greater learning.			

Table A4: *Descriptive Statistics for Affective Learning by Condition*

	Mean	SD	N
Note-taking Method	73.59	14.90	88
High Immediacy	79.87	11.94	44
Low Immediacy	67.32	15.05	44
Ancient History	61.39	19.00	88
High Immediacy	71.84	17.78	44
Low Immediacy	50.93	13.80	44
Note. Scores for each condition could range from 16–112, with higher scores meaning greater learning.			

Appendix B

Advanced Inferential Statistical Analysis

In order to guard against Type I error, an omnibus MANOVA was conducted. Box's M was used to test for homoscedasticity at p = .05. The Box's test (Box's M = 15.05) indicated that equal variances can be assumed: $F(9, 339026.932)$ = 1.637, p = .099. Therefore, Wilks' lambda was used as the test statistic and indicated significant group differences among the independent variables in the omnibus analysis: l= .039, $F(2, 171)$ = .039, p < .001, multivariate partial η2 = .961. Following the significant omnibus test, univariate ANOVA results were analyzed using p = .05. Levene's test of equality of error variances revealed no significant difference for cognitive learning, $F(3, 172)$ = 2.62, p = .052, or affective learning, $F(3, 172)$ = 1.79 p = .150.

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