The Effect of Interest on Recall: An Experiment

Keith Weber
West Virginia University

Bennie Fornash
West Virginia University

Michael Corrigan
West Virginia University

Nicholas C. Neupauer
Butler Community College

An experiment was conducted in an attempt to test the relationship between teacher lecture material, student interest and cognitive learning. Interest was manipulated in two videotapes through character identification. Character identification is one of the attributes suggested by Anderson, Shirey, Wilson and Fielding (1987) that could serve to increase student interest. Analyses indicate that the group viewing the video with easily identifiable characters scored higher on recall tests of lecture material. Additionally, it appears as if this increase was also related to an increase in the competence and meaningfulness dimensions of student interest.

Much of the research conducted in the instructional realm has dealt with the effect of affective variables on cognitive learning (Wanzer & Frymier, 1999). As a result, it is assumed that affective variables have an energizing effect on learning by acting on cognitive processes (Tobias, 1994). Deci (1992) and Hidi (1990) argued that one of these affective variables is interest. Interest is seen as being central in determining how students select and persist in processing certain types of information in preference to others.

The role of interest in learning has been a topic of discussion for over the past hundred years. According to Schiefele (1991), interest can be traced back to Johann Friedrich Herbart in the 19th century, who was one of the earliest educators to look at education from a psychological standpoint. Herbart saw the development of multi-

Keith Weber (Ed.D. West Virginia University, 1998) is an assistant professor in the Department of Communication Studies at West Virginia University, Morgantown, WV, 26506. **Bennie Fornash** (M.A. West Virginia University, 2001). **Michael Corrigan** (M.A. West Virginia University, 2001) is a doctoral student in the Department of Communication Studies at West Virginia University. **Nicholas Neupauer** (Ed.D. West Virginia University, 1996) is the Assistant Dean of Humanities and Social Sciences at Butler County Community College, Butler, PA 16003.

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faceted interest as a primary goal to education. He believed that the development of interest in a subject matter was just as important as learning the content itself. Herbart viewed interest as a necessary factor for the correct and complete recognition of an object and asserted that interest promotes motivation for learning.

Later, Dewey brought the idea of interest to the United States. Dewey (1916) distinguished between what he called interest based learning and learning based on coercion. He viewed the later type of learning as mechanical, resulting in learners who process information superficially. This surface oriented learning deals with the mere memorization of information. On the other hand, interest based learning is an active state that has personal meaning to the learner. The vital aspect of this approach is the idea of meaning as a critical component to interest. Interest is the result of the interaction of the learner and his/her surroundings.

Interest is viewed by many contemporary researchers as a three dimensional construct consisting of a superordinate factor structure. These three dimensions are meaningfulness, impact, and competence (Mitchell, 1993; Schiefele, 1991; Tobias, 1994; Weber, Martin & Patterson, 2001; Weber & Patterson, 2000). Meaningfulness relates to the perceived value of a task. The more a task has meaning to an individual, the harder that person will work to complete that task. Competence refers to one's feelings about their abilities and previous knowledge. Interest is diminished when individuals feel they are ill prepared to complete a certain task. Conversely, individuals tend to be more interested in topics that they feel competent discussing. Finally, impact signifies that the source is important to the completion of a task, and that the task makes a difference. The more impact individuals believe they have, the more interested they feel.

The majority of the research generated in the area of interest can be found under the heading of text-based interest in the realm of reading. Investigations of text-based interest are concerned with the ability to manipulate interest within written text and the effects that these manipulations have on interest, recall and learning (Anderson, Mason, & Shirey, 1984; Hidi & Baird, 1988). Anderson et al. (1987) suggested four attributes that may contribute to text-based interest. These attributes are novelty (how unique and innovative is the presented material), character identification (does the reader know the characters in the material), life themes (can the reader relate the material to their own life), and activity level (are the readers expected to do something with the material presented).

Hidi and Baird (1988) manipulated the interestingness of textbook passages based on these suggestions. Results of their experiment revealed that when compared to readers of the original textbook passages, readers in the experimental groups recalled a greater amount of information. These findings are significant because they indicate that manipulations of interest variables through message characteristics can enhance learning and recall.

While much of the study concerning interest has focused on text-based material, there is also a small but emerging body of literature that supports examining interest from an ecological perspective. Hidi and Baird (1988) addressed this issue when they asserted that interest is the result of how one reacts to a situation. The study of interest from an ecological perspective is consistent with the conceptualization of Dewey (1916), who believed that the study of interest cannot separate learner from environment. While

message characteristics are important to understand, there is also a need to investigate how the interaction between the learner, instructional activities, and teacher behavior affects interest and learning.

As stated previously, affective variables are presumed to have a positive effect on cognitive learning. The relationship between affective variables, such as motivation and teacher immediacy, and affective learning has been substantiated in more research studies than can be cited here. What is lacking are experimental manipulations of message characteristics by teachers and measurement of their relative effects on student interest and cognitive learning. The closest we have come to this is in studies such as Frymier (1994) and Christophel and Gorham (1995) which indicate that teacher immediacy is related to scores on the Richmond, Gorham and McCroskey (1987) learning loss scale. And while it is true that Chesebro and McCroskey (2000) found a .50 correlation between the learning loss scale and recall, there is still a lack of experimental evidence for the existence of a relationship between teacher behavior, student interest and actual cognitive learning scores of students.

Based on what is known about the relationship between affective variables and cognitive learning (Chesebro & McCroskey, 2000; Christophel & Gorham, 1995; Frymier, 1994; Rodriquez, Plax & Kearney, 1996; Titsworth, 2001; Witt & Wheeless, 2001) coupled with the literature on text-based interest (Hidi, 1990; Hidi & Baird, 1988) we could expect that interest would be positively related to recall of lecture material. Anderson et al. (1987) suggested four ways in which to increase interest. If teachers were able to follow these suggestions into their lectures we would expect that their lectures would generate a greater amount of interest in their students. Moreover, based on the relationship between text-based interest variables and recall, we would assume that students of these teachers would recall a greater amount material. This reasoning provided us with the two hypotheses for this investigation.

H1: Lectures utilizing interest-based examples should result in more interested participants

H2: Lectures utilizing interest-based examples should result in participants with higher scores on subsequent tests of cognitive recall.

METHOD

Participants

The participants for this study were 122 college students from a large mid-Atlantic university. The average age was 20.1 with a range of 18-36. There were 47 males and 70 females with 5 non-reports. There were 38 freshman, 39 sophomores, 34 juniors, 6 seniors, and 5 non-reports in the sample.

Procedures

A post-test control group design was used in this experiment. Subjects were asked to sign up to take part in an experiment and were promised extra credit in return. Individuals were then randomly assigned to either a control group condition or an experimental group condition. Participants, in groups of 10-15, viewed one of two videotapes that were made solely for the use of this project.

Prior to viewing the videos, participants were told they were to view 10 minutes of

a video submitted by a candidate for an instructor position in the department of communication at their current institution. They were then given a seven-question quiz over the material covered in the video and asked to rate the instructor on a number of short scales. Participants were told that their feedback would be considered in the hiring process.

Both videos covered information about the history of public relations taken from a basic public relations text that was not in use at the current institution. Information concerning public relations was chosen since there were no classes on this topic taught in the communication department at this institution. This ensured that all covered material would be new to the participants, thereby avoiding the problem of prior knowledge of lecture material. Participants in each group were shown a 10-minute video. The lecturer on the two videos was also the same in an attempt to avoid any stylistic confounds. The lecturer was a man in his mid-30's who was not an instructor at the university. Both videos were recorded in the same room from the same angle and in neither video was the audience visible.

The only difference between the two videos was the examples used. The control group video used the standard examples taken from the textbook relating to P.T. Barnum, Edward Bernays, and Ivy Ledbetter Lee. The experimental group video replaced these examples with ones relating to contemporary personalities such as Vince McMahon (wrestling promoter), Ray Lewis (football player) and Sean Combs (musician/entertainer). This was done based on the attributes suggested by Anderson et al (1987) that can serve to increase interest. The changing of the examples to contemporary personalities that students could better relate to, was an attempt at character identification. Since the students were more familiar with the current day characters, they might be more interested in the information. Furthermore, we would expect that this could serve a schema activation role for the students. Since they already have a schema for these different personalities, the new incoming information can be attached to previously existing schema, thereby increasing recall. It is important to note that the actual number of examples remained constant in both videos.

After watching the video, questionnaire packets were distributed. Participants were told not to put any identifying marks on their packets and to place them in a box upon completion.

Measures

Recall was assessed through a 7-item multiple choice "quiz". All seven items were the same for both groups and reflected information covered in both lectures. Additionally, all seven items had four answer categories. Participants scored one point for each correct answer. The correct number of answers was then summed to give each participant a "quiz score". The average quiz score was 3.8 (55%) with a standard deviation of 1.4. This measure achieved an alpha of .73 as a measure of internal reliability.

A short version of the Frymier, Shulman and Houser (1996) Learner Empowerment Scale (LES) was also included in the questionnaire packet to serve as a measure of interest. Previous research has shown this to be an accurate and reliable way to measure interest (Weber et al, 2001; Weber & Patterson, 2000). The LES is a three-dimensional scale with a superordinate factor structure. Summative scores on the LES have been found to have significant and positive relationships with measures of imme-

diacy, relevance, self-esteem, affective learning, behavioral learning, and state motivation. All three subscales (meaningfulness, impact, and competence) have exhibited the same pattern of results as the summative scale (Frymier et al., 1996). In addition, Frymier et al. reported adequate internal reliabilities for the LES and its subscales. The shortened version of the LES consisted of 6-items for each of the three subscales. This 18-item short version was suggested by Martin and Weber (2002) after 11-items were deleted based on factor analyses. The authors then validated this scale by indicating that there was no significant difference between the relationships achieved with the 29-item scale and the 18-item scale with variables such as motivation, teacher clarity and affective learning. For the purposes of the current project, the short form of the LES achieved an alpha of .80 while the three sub-scales, impact, competence, and meaningfulness, achieved alphas of .71, .85, and .85.

The 14-item (Richmond et al, 1987) Nonverbal Immediacy measure was also included in the questionnaire packet. This was done to ensure that the only difference between the two videos was the interestingness of the examples provided. The speaker was instructed not to use any different nonverbal behaviors in delivering the lectures. Results of a t-test were non-significant ($t(119)=-1.1$, $p>.05$) indicating that participants did not find one lecture more immediate than the other.

Immediately following the Immediacy scale were a number of demographic questions relating to gender, age, class rank and major. Analyses revealed no significant differences in interest scores or quiz scores for any of these demographics. The last question in this packet asked the subjects if they knew the lecturer. One person responded that they had seen the lecturer around town and that packet was excluded from any analyses.

RESULTS

Hypothesis 1 argued that, lectures utilizing interest-based examples should result in more interested participants. To test this hypothesis participants' interest scores from the control group (standard examples) were compared to participants' interest scores from the experimental group (contemporary examples). Results of a t-test revealed significant differences between the two groups ($t(115)=3.7$, $p<.0001$) with the experimental group reporting being more interested ($M=89.3$) then the control group ($M=82.4$). The manipulation accounted for 9% of the variance in the two groups scores.

Hypothesis 2 asserted that lectures utilizing interest-based examples should result in participants with higher scores on subsequent tests of cognitive recall. To test this hypothesis participants' scores from the control group (standard examples) were compared to participants' scores from the experimental group (contemporary examples). Results of a *t*-test revealed significant differences between the two groups ($t(115)=4.8$, $p<.0001$) with the experimental group scoring higher on recall ($M=4.6$) then the control group ($M=3.1$). The manipulation accounted for 17% of the variance in the two groups scores.

Post hoc analyses

The interest scores of the two groups were separated into the three dimensions to check for significant differences between each dimension. Further analyses revealed that of the three dimensions of interest it was the competence ($t(118)=2.55$, $p<.01$) and

the meaningfulness ($t(119)=2.02$, $p<.05$) dimensions that were significantly different between the two groups with the group exposed to the interest-based lectures scoring significantly higher than the control group. Differences between the impact subscale failed to reach significance ($t(119)=1.56$, $p>.05$).

DISCUSSION

The results of the present investigation are important because they indicate that teachers can influence student interest and learning through message characteristics. These findings fall in-line with the research conducted by Hidi and Baird (1988) on text-based interest and message characteristics. Hidi and Baird utilized the four attributes put forth by Anderson et al. (1987) to create an experimental condition with reading texts. Their experiment indicated that passages containing these attributes resulted in a greater amount of recall than passages that lacked these attributes. These authors then questioned whether these results could be replicated using instructor lectures. The current investigation supports that at least one of these suggestions, character identification, is applicable in lecture material. Additionally, the inclusion of the interest measure also serves as a manipulation check for the examples used. Since the lecture in the experimental group was rated as being more interesting, it is apparent that the attempt to manipulate the interestingness of the lecture material was successful.

These results are also of significance because they were reached through experimental means. Previously, Frymier et al. (1996) and Weber et al. (2001) found significant relationships between teacher behaviors, interest and learning. The findings reported in both of these studies were correlational in nature. The results of this present investigation lend additional support to this relationship by providing experimental data. Lastly, these results are important because there is an actual cognitive outcome measure through which to compare students. As such it is possible to show that students do retain and recall more information when instructors make use of the attributes suggested by Anderson et al. (1987).

Of the three dimensions of interest the only one that was not significantly different between the two groups was the impact subscale. While this was not originally predicted, this result should be expected. In the initial instructions to the participants both groups were told that their feedback would be taken into account in the hiring process. In other words, all participants were told that their opinion would make an impact in who got hired for this job. Since these instructions were kept constant between the two groups, we should not expect to find significant differences between the two groups impact scores. This also serves as a possible future direction for interest research. Instead of using a control group design, it would be interesting to see the result of using a 2x2 factorial design and manipulated the instructions as well as the examples. In this case we would expect that participants' impact scores would differ based on the instructions they received. Additionally, if this indeed does serve to influence participant's impact scores, what effect would this have on the general interest scores? Would the variance accounted for in the increase in impact scores be added to the variance accounted for by competence and meaningfulness or would it just split the 9% of variance three ways instead of two ways? As Mitchell (1993) has asserted in the past, the value in researching a variable such as interest is not solely rooted in examining its

relationship to learning. It is interests multidimensionality that makes it a valuable tool in the classroom. Mitchell proposed that since interest is a construct with three dimensions it provided instructors with three ways to affect it. It is important to determine whether or not this is true.

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