AN ABSTRACT OF THE THESIS OF

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Implications for Trainers

Abstract approved:  

Joanne B. Engel

During the past fifteen years, Professor John Keller has developed a systematic, comprehensive model to motivate adult learners. Its major elements are Attention-Relevance-Confidence-Satisfaction (ARCS), and research with volunteers confirms that the strategies improve adult responses in learning settings.

Training in business and industry, however, often involves mandatory attendance by participants. According to research, such “captive” audiences “ought” to be more resistant to the learning process.

The purpose of this study, then, was to explore, first, whether Keller’s tactics produce different outcomes for mandatory rather than voluntary participants in short, one-time-only presentations, and second, whether prior interest mitigates the expected negative responses from mandatory attendees.

Teachers from poor rural school districts covered by a federal grant were the subjects. A presentation designed with Dr. Keller’s assistance was delivered to teachers of all grades. Responses indicating attendees’ post-presentation feelings about the
emotional impact and recognition of specific techniques were collected from eight locations. A literature survey that included the topics of attention, curiosity, adult learning theory, Keller’s design, and voluntary/mandatory participation provided information that assisted in interpreting the answers from the 196 attendees.

Distribution analysis revealed that pre-presentation responses were severely skewed; therefore, non-parametric statistics, Chi-Square and the Nomographic Test of Percentages, were used for analysis.

Chi-Square analysis between perceived level of mandatory attendance and post-presentation responses resulted in no significant associations, largely because of the extreme data skew. The Nomographic Test of Percentages between relevant pairs of percentages resulted in no-interaction findings. Attendees who were interested in the subject of drug education were not influenced by their mandatory/voluntary status.

Limitations of the nomographic scale precluded statistical analysis of comparisons that involved low interest, voluntary attendees, but in the population grouping that included seven of the eight sessions, many such unmotivated participants responded with high scores. Use of Keller’s strategies apparently overcame initial barriers.

Such a finding is comforting to trainers who routinely deal with mandatory attendees. Positive emotional and presumably learning outcomes are quite possible if the materials are designed with attendee Attention-Relevance-Confidence-Satisfaction in mind.
MANDATORY VERSUS VOLUNTARY ADULT LEARNERS: IMPLICATIONS FOR TRAINERS

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# TABLE OF CONTENTS

## INTRODUCTION
- Background and Setting 1
- Questions of Interest 6
- Definitions 7
- Theoretical Framework 7

## REVIEW OF THE LITERATURE
- Attention 8
- Curiosity 18
- Adult Learning Theory 24
- John Keller's Motivational Model for Education 29
- Mandatory/Voluntary Participation 37
- Summary of Literature Related to Questions of Interest 41

## METHODOLOGY
- Background 42
- Subjects 43
- Materials 46
- Presentation Procedures 48
- Research Design 50

## RESULTS OF RESEARCH
- Analysis of Data for First Question of Interest 54
- Analysis of Data for Second Question of Interest 60
- Anecdotal Comments 69

## CONCLUSIONS AND RECOMMENDATIONS
- Discussion of First Question of Interest 71
- Discussion of Second Question of Interest 74
- Materials Design 75
- Recommendations 76
- Conclusion 77

## BIBLIOGRAPHY

## APPENDICES
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ford's Model of Component Functions of Person-in-Context</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Relationship between Performance Efficiency and Extent of Positive Affect and Arousal Level</td>
<td>16</td>
</tr>
<tr>
<td>3</td>
<td>Dick and Carey Model of Instructional Design Process</td>
<td>26</td>
</tr>
<tr>
<td>4</td>
<td>Keller Model of Adult Learner Motivation</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>Frequency for Pre-Presentation Question <strong>Require</strong> for All Population Groupings</td>
<td>56</td>
</tr>
<tr>
<td>6</td>
<td>One Standard Deviation Error Bars for Post-Presentation Questions</td>
<td>58</td>
</tr>
<tr>
<td>7</td>
<td>Frequency for Pre-Presentation Question <strong>Interest</strong> for All Population Groupings</td>
<td>62</td>
</tr>
<tr>
<td>8</td>
<td>Critical Value for High <strong>Require</strong>/High <strong>Interest</strong> and High <strong>Require</strong>/Low <strong>Interest</strong> on Nomographic Scale 1</td>
<td>67</td>
</tr>
<tr>
<td>9</td>
<td>Observed Value for High <strong>Require</strong>/High <strong>Interest</strong> and High <strong>Require</strong>/Low <strong>Interest</strong> on Nomographic Scale 2</td>
<td>68</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gagne's Internal Processes and Their Corresponding Instructional Events</td>
<td>30</td>
</tr>
<tr>
<td>2. Theoretical Foundations of Keller's ARCS Model</td>
<td>31</td>
</tr>
<tr>
<td>3. Keller's ARCS Model</td>
<td>34</td>
</tr>
<tr>
<td>4. Keller's Motivational Design Model</td>
<td>35</td>
</tr>
<tr>
<td>5. Characteristics of Participating School Districts</td>
<td>45</td>
</tr>
<tr>
<td>6. Summary of Statistical Analyses of Data</td>
<td>53</td>
</tr>
<tr>
<td>7. Frequency, Mean, Standard Deviation and Skewness for Require Question</td>
<td>57</td>
</tr>
<tr>
<td>8. Frequency, Mean Score, Standard Deviation and Skewness for Post-Presentation Questions</td>
<td>59</td>
</tr>
<tr>
<td>9. Frequency, Mean, Standard Deviation and Skewness for Interest Question</td>
<td>63</td>
</tr>
<tr>
<td>10. Anecdotal Comments from Post-Presentation Questionnaires</td>
<td>70</td>
</tr>
</tbody>
</table>
LIST OF APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Letter Offering Presentation - No Prior Phone Contact</td>
<td>92</td>
</tr>
<tr>
<td>B. Letter Offering Presentation - Prior Phone Contact</td>
<td>94</td>
</tr>
<tr>
<td>C. Gateway Workbook Table of Contents</td>
<td>96</td>
</tr>
<tr>
<td>D. Newspaper Article Handout</td>
<td>99</td>
</tr>
<tr>
<td>E. In-Service Certificate</td>
<td>101</td>
</tr>
<tr>
<td>F. Pre-Presentation Questionnaire</td>
<td>103</td>
</tr>
<tr>
<td>G. Post-Presentation Questionnaire</td>
<td>105</td>
</tr>
<tr>
<td>H. John Keller's Course Interest Survey</td>
<td>107</td>
</tr>
<tr>
<td>I. Bohlin's List of Questions</td>
<td>112</td>
</tr>
<tr>
<td>J. Means and Standard Deviations from Bohlin's Research</td>
<td>114</td>
</tr>
<tr>
<td>K. Human Subjects Applications and Acceptance</td>
<td>116</td>
</tr>
<tr>
<td>L. Motivational Strategies and Script</td>
<td>121</td>
</tr>
<tr>
<td>M. Personal Communication with Dr. John Keller</td>
<td>125</td>
</tr>
<tr>
<td>N. Scales for the Nomographic Test of Percentages</td>
<td>127</td>
</tr>
</tbody>
</table>
MANDATORY VERSUS VOLUNTARY ADULT LEARNERS:
IMPLICATIONS FOR TRAINERS

Chapter 1
Introduction

Background and Setting

"Gaining attention" has continuously been important to those concerned with how humans learn. "Attention... is the taking possession by the mind, in clear and vivid form, of one of what seem (sic) several simultaneously possible objects or trains of thought. Focalization, concentration, of consciousness are of its essence" (James, 1890, pp. 403-404). Sir William Hamilton conducted "attention" research in 1859, as did Shumann, Watt, Pillsbury, Geissler and Dallenback and Titchener in the early 1900's (Boring, 1970, p. 3). Lashley's work in 1929 was the first where "attention" was identified as a major element in animal discrimination learning (McIntosh, 1970). As Behaviorism gained favor in the 1930's, "attention" as a subject of study declined. "It was considered a mental function not suitable for research" (Gregory, 1987, p. 59).

Approximately thirty years later, interest in the subject revived, especially after Broadbent's 1958 publication, Perception and Communication, and the rise of interest in how a brain processes information. Keele (1973) stated that human ability to deal efficiently with information depends upon "alertness - in ordinary terms, whether or not he is 'paying attention'" (p. 135). Gagne began his list of instructional events with "gaining attention" (1985). "Without attention to tasks, learning doesn't take place
(Okey, 1991, p. 199).” In recent years, the concept of “attention” has defined the core of much contemporary thinking; it “may even be the main feature distinguishing the cognitive approach from earlier Behaviorist conceptualizations” (Eysenek, 1982, p. 8).

Teaching models from many writers present “gaining attention” as an element of effective presentation but “procedures for influencing motivation are never presented with the detail or precision of the procedures to facilitate concept acquisition” (Keller, 1983a, p. 387). Keller suggests this lack of detail comes from the assumption that instruction of good quality will naturally motivate. “Unfortunately, this assumption has been found to be only partly true...if instruction is not appealing, learners do not complete the activities or only participate minimally; both reactions reduce the numbers of trainees who learn and apply the concepts being taught” (p. 388).

Building on earlier theories, Keller constructed a model and continues to research strategies to correct this omission. Conclusions from this research claim that use of his Attention-Relevance-Confidence-Satisfaction (ARCS) model (1983a, 1983b, 1983c, 1987, 1992b) creates adult learner motivation and involvement.

Keller identified the “Attention” (A) element of his model as the first and continuing requirement for adult learning. He defines “attention” as “capturing the interest of learners; stimulating the curiosity to learn” (1992a, p. 3). His three strategies for gaining attention include 1) Perceptual Arousal; 2) Inquiry Arousal; and 3) Variability (1992a). Keller (1983d) described the need for an emphasis on attention
in a presentation at a Dutch conference on Instructional Technology:

At one level it is fairly easy to gain attention. A dramatic statement, a sharp noise, a 'pregnant' pause, all of these and many other devices are used. However, getting attention is not enough. The real challenge is to sustain it, to produce a satisfactory level of attention throughout the course. To do this, we have to respond to the sensation-seeking needs of students (Zuckerman, 1971), and arouse their basic curiosity (Berlyne, 1965). Ultimately, the best way to fight boredom and indifference is to stimulate their curiosities so that the instructor can spend more time directing attention than getting it (p. 9).

Keller also has collaborated in developing surveys aimed at assessing the overall impact of his strategies (Keller & Subhiyah, 1989a, 1990a). Other researchers have investigated additional applications for the ARCS model and modified his evaluation tools to fit additional situations; Bohlin (1990), for example, modified one of Keller's surveys in order to evaluate strategies for specific instructional methods. Validation of Keller's model and surveys, as well as work modifying his model, has been done with volunteers, or in courses of more than one day's duration (Bohlin, 1990; Personal Communication, Roger Bohlin, April 1, 1993; Keller, 1983b; Visser & Keller, 1990).

Attendance at training done in business and industry, however, is often not voluntary. The Regulations of the Office of Federal Contract Compliance Programs for Non-Government Contractors {41 CFR 60.21(a)} (1984), the regulations on communication with employees about hazardous chemicals (29 CFR 1910.1200(h)) (Moretz, 1990, p. 46) and the Drug-Free Workplace Act of 1988 (Gaffin & Nail, 1990), for example, all require companies to train managers, employees, or both.
Such mandatory training often occurs as a one-time-only session each year; time allocated may be a few minutes or several days. Initial participant attitudes often range from neutral to negative. Geber (1990), the Associate Editor of Training, states:

In truth, (workplace) trainers who must do their work under the constraints of federal or state regulations face difficulties that the rest of the training community never encounters. In many cases, they must use the regulations as guidelines to prepare training ...under nearly impossible deadlines. And if the deadlines aren’t met, there is always the threat of sanctions...such as fines or revocation of a license — that could shut down a plant (pp. 49-50).

Some research indicates that mandatory participants at such training have different, less positive, responses to learning strategies than do volunteers. Writers concur that humans have an “innate” need to feel that they are engaging in activities of their own volition (Klein & Freitag, 1992; Knowles, 1989; Stipek, 1988; Wlodkowski, 1985). Discussion on several subjects including mandatory continuing education programs for adults (Edwards & Green, 1983; Feldman, Osburn & Campbell, 1987), mandatory course participation (Johnson & Morris, 1981-1982), forced compliance situations (Festinger & Carlsmith, 1959; Gaes, 1986; Joule, 1991), and organizational change (Kirkpatrick, 1985: Munnelly, 1987) usually conclude that voluntary participation is “preferred” over mandatory participation and that participants show more favorable outcomes when some level of choice is offered.

High participant interest in a subject, however, often mitigates the possible
negative effects of mandatory attendance. Richey (1986) states that motivating factors such as interest and attitude of the learners have strong effects. "Democrats typically pay little attention to Republican flyers, regardless of the polished design" (p. 50). Bloom (1976) claims that when students enter a learning task with high personal interest, "they should learn it more rapidly and to a higher level of attainment or achievement than will students who enter the learning task with lack of enthusiasm and evident disinterest" (p. 74).

These writers do not, however, examine the impact of course design or motivational techniques on participant outcomes. For trainers, the impact of these two elements is crucial. If voluntary participation is crucial to positive learning outcomes for adults, then efforts at designing curriculum that motivates are wasted. Conversely, if the hostility presumably caused by mandatory attendance can usually be overcome with sufficient attention to curriculum design, captive audiences present a less negative posture. The question for trainers, then, is how well mandatory attendees respond to Keller's motivational strategies.

Books or articles describing direct research specific to the effects of required attendance at very short, one-time-only training sessions with adults were not available at the time of this writing. Keller has participated in studies related to captive audiences, (Keller, Goldman, & Sutterer, 1978; Klein & Keller, 1990) but not under the circumstances of concern in this study. He is not personally conducting research
related to the impact of his model on adult captive learners, and he has no knowledge of
other research on the topic (Personal Communication, April, 1, 1993).

Keller does not, however, ignore the problems that a mandatory audience might
present. The current ARCS model does not specifically address differences in attitudes
of participants, but Keller advocates audience analysis to determine appropriate
activities. "Never try to motivate an audience that is already motivated; just get on with
the instruction and do not de-motivate them" (Keller, 1987, p. 4). Keller also describes
the possible complications created by non-volunteer learners. He states, "In preparing
to meet with a captive audience the presenter might face hostility and risk being a
scapegoat for the audience's irritation" (Keller, 1987, p. 4).

Questions of Interest

The effect of Keller's attention strategies with mandatory learners in very short,
one-time-only session is the focus of this study. The research questions are:

1. Do Keller's "attention" strategies result in significantly
different responses for voluntary versus mandatory
participants in very short, one-time-only training sessions?

2. Does a learner's prior interest in the subject modify the
results of the analysis done in Number 1?
Definitions

Attention. "Focusing one's cognitions upon those things that are changing, novel or motivating" (McKeachie, 1986, p. 72).

Curiosity/Interest. "The arousal state that leads to exploration, play and creativity" (Ellis, Koran and Loren, 1991).

Voluntary attendee. A participant who attends an event without outside coercion.

Mandatory attendee. A participant who attends an event with outside coercion.

Short, one-time-only. A training session presented in one continuous program lasting less than two hours.

Theoretical Framework

The theoretical framework for this study includes a review of the literature related to:

1. attention;
2. curiosity;
3. adult learning theory;
4. John Keller's ARCS Model for Learner Motivation; and
5. mandatory/voluntary participation in learning situations.
Chapter 2
Review of the Literature

Attention

Definition

A succinct, comprehensive definition of "attention" remains difficult because the word has come to mean so many different things. "Attention" is one aspect of physiological "arousal," a "hypothetical construct that governs alertness, wakefulness and activation" (Anderson, 1990). Berlyne (1970) incorporates this physical aspect into his more comprehensive description. He claims that attention is: 1) attentiveness or the degree to which a person responds to its external environment; 2) degree of concentration, and 3) psychochemical changes in sense organs and to parts of nervous system. Grabe (1986) adds vigilance, search, and analysis by synthesis. In simpler terms, attention may be energy, capacity, effort, resources and fuel (Britton, Glynn, Meyer & Penland, 1982). Thompson and Bettinger (1970) state one of the most succinct versions: "an organism is said to attend to a stimulus when it makes a behavioral or perceptual response to that stimulus" (p. 368).

Physiology of Attention

Physiological "attention" is an "investigatory reflex" (Birke & Archer, 1983, p. 7), a "general alerting function, where the learner's posture and general muscular tone assume a state of readiness to receive stimulation" (Gagne, 1985, p. 310), or an orientation reaction that includes "EEG desynchronization, vegetative changes
associated with activity of the sympathetic nervous system, increases in skeletal muscular tension and processes in sense organs that make for improved sensitivity" (Berlyne, 1965, p. 253). This physiological "attention" results from the reaction of several brain parts. Running into the brain stem from just above the spinal cord, the reticular formation first alerts and arouses the cortex and then projects its nerves downwards to activate muscles. Stimuli of many kinds, physical, emotional, or cognitive, prompt these impulses.

In addition to the reticular formation, the hypothalamus, which regulates the body's endocrine and autonomic nervous systems, determines state of attention through the body's metabolism, mood, blood pressure, water conservation, heart rate, pupil size, muscular contraction, salivation and other stress responses. Because the hypothalamus is a neural structure, any stimulus, including psychological ones (e.g., thought, memory, expectation) that affects the hypothalamus has the potential of affecting these endocrine and autonomic-nervous-system processes (Reeve, 1992). Usually such stimulation causes behavior change, and performance is "predictably related to arousal" (Evans, 1989, p. 100).

**Information Processing and Selective Attention**

"Attention is a major part of the process whereby the situation is changed into an experience" (Merriam & Caffarella, 1991, p. 72). It results in part from physical arousal but is not only a biological process. Ford (1992) theorizes that every living
system contains four sets of functions: 1. biological functions; 2. transactional functions, such as sensory-perceptual actions; 3. governing (cognitive) functions; 4. arousal functions.

This fourth group controls management of energy production, distribution and use and includes: 1) attention and consciousness arousal (i.e., energizing of cognitive functions); 2) activity arousal (energizing of transactional functions); and 3) emotional arousal (energizing and regulating arousal patterns in contexts involving prototypical adaptive problems and opportunities. These functions interrelate constantly, as shown in Figure 1.

Attention and consciousness arousal do not automatically cause obvious response, even for the person aroused. Arbib and Hesse (1986) state that consciousness acts a monitor, not a "director of action" (p. 77). Ford (1992) explains that "the general subjective experience of 'consciousness' indicates that the nervous system is sufficiently activated to carry out its information collection and self-construction functions, as opposed to a state of being unconsciousness" (p. 49). Following such activation, relevant neural circuits facilitate the use of information in organized patterns of thought, perception and action, usually outside the awareness of the individual (Ford, 1992). The body moves in ways to expose itself to different aspects of the stimulus (Zajonc & Marcus, 1984). Individual factors such as intelligence, personality,
Figure 1  Ford's Model of Component Functions of Person-in-Context (Ford, 1981)
cognitive style, anxiety, skill level and age influence the ability initially to focus and then maintain attention over long periods of time (Davies, Jones and Taylor, 1984; Derryberry & Rothbart, 1984; Preiss & Wheeless, 1990).

Information about how exactly this process works is limited. Behaviorism dominated psychology and learning theory for thirty years from the 1930's to the 1960's. "Attention" to a Behaviorist was "a controlling relation - the relation between a response and a discriminative stimulus. When someone is paying attention, he (sic) is under the special control of the stimulus. We detect the relation most readily when receptors are conspicuously oriented but it is not essential" (Skinner, 1953a, p. 124). Because Behaviorists were "uncomfortable" with the concept of internal information processing (Maitlin, 1988, p. 7), little research in this area occurred until the late 1950's (Maitlin, 1988; Trabasso & Bower, 1968). Further, because of the "hundreds of billions of brain cells, "the research that has occurred so far leaves us a long way from understanding the whole ensemble" (Arbib & Hesse, 1986, p. 78).

Several theories of information processing exist (Davies, Jones, & Taylor, 1984, p. 434), but two currently dominate. The "bottleneck" or serial theory claims that messages are filtered and must rely on the limited capacity of short-term or working memory (Gagne, 1985; Inglis, 1983); depending on the theorist, this occurs either early or late in processing (Berlyne, 1965; Broadbent, 1958; Cherry, 1953; Deutsch, 1953;
Kahneman, 1973; Moray, 1969; Triesman, 1969). Weiskrantz (1968) compares the process to that of a wireless receiver; “out of a very large set of possible signals, the receiver limits its selection to a very narrow range” (p. 239). This filtering occurs due to level of pertinence (Norman, 1968) or valence (Tolman, 1932), level of likeability of person or event (Bassett & Smythe, 1979), goals and contexts (Ford, 1992), quickness of stimulus change (Gagne, 1985), predictive value (Lieberman, 1990), changes in emotion state (Izard, 1984), or need for cognitive stimulation (White, 1961). When more than one stimulus must be processed at the same time, performance deficits occur (Schneider, Dumais & Shiffrin, 1984).

“Bottleneck” researchers used mathematical models from the beginning to determine the speed and capacity of these filters. “In certain settings, one can measure the degree of attentiveness...the scanning speed or switching rate...the relative allocation of attentiveness to competing {stimuli}” (Swets, 1984). Humans apparently attend to stimuli in short bursts averaging about seventeen seconds (Bassett & Smyth, 1979, p. 53). Seven chunks of information are processed in one-eighteenth of a second, or 126 chunks in one second. Over seventy years of life and sixteen hours in a day, humans process 185 billion chunks; “most people find (this number) tragically insufficient” (Csikszentmihalyi, 1988, p. 18).

“Information sharing” theorists like Neisser, Navron, La Berge, Logan, Posner,
Shiffrin, Dumais, and Schneider, and Moray claim that a living organism can attend to unlimited information (Navron, 1985; Schneider, Dumais & Shiffrin, 1984); “the primary process is a multiple activity, somewhat analogous to parallel processing in computers, which constructs crudely formed ‘thoughts’ or ‘ideas’ on the basis of stored information ” (Neisser, 1966, p. 304). According to Neisser (1966), an organism pays attention to one thing at a time, but “keeps in touch” with the overall situation through peripheral attention. Lack of practice and low skill level allegedly lead to research results that support “bottleneck” theories (Logan, 1970). Vernon (1962) states that an untrained observer might see only five or six dots, but a trained one would see eight, having a wider “span of apprehension”.

The accuracy of either theory is not currently verifiable. Johnston and Dark (1986), reviewing the literature on selective attention, state: “the empirical literature...does not discriminate cleanly between the two general classes of theory. Indeed, it is probably not possible to decide empirically between them” (p. 70).

Optimal Stimulation of Attention

However processing occurs, living creatures act in a manner that forces the environment to increase the amount of stimulation available to them, especially after primary needs are satisfied (Deci, 1975). “The nervous system oscillates for information, that is, for the variable, the contrasting and the least expected...if none is to be had, perhaps it invents it” (Platt, 1961, p. 410). Zuckerman (1971), the author of the
Sensation Seeking Scale, states that sensory, social and thrill-seeking behavior all result from the need for change, variety and intensity in stimulation. Even the Behaviorists agree. Skinner (1953a) observed that infants are reinforced by stimulation from the environment (like a rattle), even without primary reinforcement.

This need for stimulation may originate in the central nervous system (Fiske & Maddi, 1961; Hebb, 1949; Leuba, 1955) or in a psychological interpretation of external stimuli and how they differ from a standard (Berlyne, 1969; Dember & Earl, 1957). Organisms learn to cope with stimulation, information and challenge at a certain rate; for each task, there is an optimal level (Berlyne, 1969; Fiske & Maddi, 1961; Vitz, 1969). Too much or too little stimulation causes behavioral inefficiency, daydreams, concentration on aches and pains, lethargic feelings, irritability, restlessness, and in extreme cases, inability to function (Berlyne, 1966; Buck, 1988; Fiske, 1961; Vernon, 1962).

Hebb (1949) stated that an inverted “U” diagram best displayed the basic view of how arousal, whether emotional, physiological or intellectual works. (Figure 2) Personality characteristics mediate the specifics of this model. Eysenek (1982) claims that extroverts require much more stimulation to be comfortable than do introverts.
Figure 2: Relationship between Performance Efficiency and Extent of Positive Affect and Arousal Level

Hebb, 1949
Methods of Stimulating Attention in the Classroom

Classrooms for both adults and children are frequently described as dull and passive (Grabe, 1986). To counteract this atmosphere, words on a blackboard in color or large letters, lecture points emphasized in a loud voice, special costumes or novel beginnings, all alleviate homogeneity (Biehler & Snowman, 1982). Good and Brophy (1984) suggest that teachers themselves vary voice quality and facial expressions, type of presentation and type of questions asked. Further, student attentiveness should be constantly monitored, with learners “accountable for their involvement” (Grabe, 1986, p. 73). Teachers pay more attention to certain areas of the classroom, and students who sit there are therefore more attentive and achieve at higher levels (Dunkin & Biddle, 1974).

The need to stimulate attention by using such techniques has been known by the business advertising community for many years. Mandall (1984) states “the best of advertisements or commercials are useless if nobody sees them” (p. 442). For the past twenty years, the Journal of Advertising has listed “Information Processing” as a major subject heading for articles (1991, p. 67). Mandall (1984) lists size of ad, position, font, illustration, sound effects, music and establishing shots as major concerns for those seeking to capture attention. Attention getting devices should gain the consumer's interest, create in that person a desire for the product, and then ask the consumer to take action, a sequence very similar to that advocated by Keller.
Curiosity

Definition

As with attention, a definitive definition of curiosity remains elusive, even to those most familiar with its elements. Berlyne stated in 1965 “when we start out to inquire into a complex form of human motivation like curiosity, we find ourselves faced with a bewildering array of variables” (p. 163). Thirty five years later, Ellis, Koran and Loran (1991) mirror Berlyne’s concerns:

Curiosity is the arousal state that leads to exploration, play and creativity; is not a homogeneous phenomenon but rather it implies a need for novelty, an avoidance of apparent and superficial explanations and a tolerance of the unknown; is a broadly conceived exploratory behavior; is information gathering responses including looking, smelling, tasting, listening and touching that are coordinated with movement of the body or parts of the body; is the desire to learn or know about anything (pp. 6-7).

In spite of this complexity, educators widely use the four-part definition of curiosity listed in Maw and Maw (1968). A curious person is one who: “1) reacts positively to new, strange, incongruous or mysterious elements in his environment by moving towards them or manipulating them; 2) exhibits a need or a desire to know more about himself and/or his environment; 3) scans his surroundings seeking new experiences; 4) persists in examining and exploring stimuli to know more about them” (p. 2).

Theories of Curiosity

After years of study, no clear determination as to the source of curiosity exists.

It is obviously an internal process (Berlyne, 1966), and the valid instruments necessary to measure it do not even now exist (Harty & Beall, 1985).
Classic drive theory provides one explanation for curiosity. Skinner (1953b) claimed that "we may plausibly argue that a capacity to be reinforced by any feedback from the environment would be biologically advantageous." Hull, a major "drive" theorist, stated that "curiosity drive-strength is assumed to increase with the intensity of the drive stimulus and the degree of conflict between the symbolic meaning-responses" (Berlyne, 1960, p.165). Curiosity does follow a classic drive theory pattern of arousal, exploration and reduction (Berlyne, 1960), but it often occurs in situations where homeostatic or physical drives are not present. Skinner (1953a) stated that "some forms of stimulation are positively reinforcing although they do not appear to elicit behavior having biological significance." Harlow's (Harlow, Harlow, and Meyer, 1969) monkey studies during the 1950's demonstrated that the animals solved puzzles without any reward or reduction of any homeostatic drive; the tendency to explore or manipulate "is innate" (p. 26). Maslow (1970), after working with Harlow's monkeys and Thorndike's cats "became fascinated with both groups' need to know" (p. 203).

A combination of external and internal elements often stimulates curiosity. Berlyne, a major theoretical source for Keller's work, and a major researcher/writer in the field believed that curiosity is a function of both the internal state of the organism (specifically the limbic brain) and of external events, such as surprisingness, change, doubt, ambiguity, incongruity and uncertainty. Furthering Berlyne's work, Buck (1988) states that "all of these situations would be expected to cause small changes in arousal
and would be pleasant" (p. 140). Berlyne (1965) found that certain external
characteristics that he called “collative variables”, such as novelty, paradox, incongruity
and complexity, stimulated curiosity.

Berlyne (1965) also distinguished between perceptual and epistemic curiosity,
the former being a sensory level reaction and selective attention, the latter being
information seeking and problem-solving behavior that “occurs as a result of the
stimulation of curiosity ”(Keller, 1983a, p. 399). The latter is the more promising in
terms of academic achievement. This function is often limited by methods of
instruction design. Punishing people for exercising their curiosity, as when they give
wrong answers, inhibits future exploration and original thinking. Berlyne (1965) and
Keller (1978) both theorize that people must be comfortable taking the “risk” of
curiosity. Risks that are too high result in both lower achievement motivation and
lower curiosity (Keller, 1983a, p. 400).

External stimulation is not essential in all cases; acquiring stimuli could occur
from external sources or “from a symbolic pattern of our own construction” (Berlyne,
1966, p. 353; Toates, 1983, p. 57). Boredom as well as novelty may drive curiosity
(Inglis, 1983, p. 81). Csikszentmihalyi (1988) claims that cognitive activity is in itself
satisfying and, if controlled, leads to peak experiences or “flow”.

These findings would seem to support the Cognitive theorists who claim
incongruity, complexity and surprise as major elements in information processing
theory (Stipek, 1988, p. 57). “Animals are primarily information-processing systems that use previously encoded knowledge to impose upon their environment certain *a priori* interpretive assumptions” (Inglis, 1983, p. 72). White introduced the concept of “mastery,” or “competence motivation” or the need to understand oneself and the environment (Weiner, 1986, p. 33.) Voss and Keller state that “exploration can be thought of as the organism’s effort to maintain an individual rate of cognitive structuring that corresponds to the amount of change, elaboration and consolidation of cognitive structures per time unit (Ellis, Koran and Loran, 1991, p. 335). Festinger (1957) identified specific benefits of cognitive activity; he found that most people faced with resolving cognitive dissonance became more consistent, integrated and logical.

Some theorists attempt to include both drive theory and information processing into their constructs. “I argue that gathering information is the dominate behavioral activity for any animal living in a stochastic environment and that behavior directly related to need reduction should be explained as a sub-set within a theory designed primarily to account for stimulation-seeking behavior” (Inglis, 1983, p. 72).

Individual differences based on elements beyond basic origins impact the process of either drive-reduction or information processing. The relationship between age and curiosity has received some attention. “There is a hint that the development of curiosity may have an early critical period in which it is stimulated or restricted based on the mother infant relationship...the general thinking that curiosity decreases with age
is not well supported" (Ellis, 1991, p. 27). In contrast to the beliefs of earlier times (Deutsch, 1960, p. 50), the impact of age on curiosity appears to be less tied to degree of curiosity and more to the amount of energy available for pursuing it (Camp, Rodrigue, & Olson, 1984). Thorndike (1935) claimed that loss of curiosity has more to do with the appeasement of special curiosities over time than of any "large decrease in the fundamental inner urge for new experiences in general" (p. 84). In addition, "the difficulty expected in learning at late ages is in part due to a sensitiveness to ridicule, adverse comment and undesirable attention" (Thorndike, 1928, p. 124).

Discussion of impact of age or other individual differences on the development and maintenance of curiosity is missing from current theories. Research hints that factors such as ethnic origin, intelligence, achievement motivation, sex and prior structured learning experiences impact on curiosity, "sometimes in surprising ways (Harty & Beall, 1984, p. 427)."

Methods of Stimulating Cognitive Curiosity

Specific actions by outside sources often impact curiosity levels in humans. Epistemic curiosity is aroused by "thematic probes" (Skinner, 1953) or questions. In one study, Berlyne (1969) found that questions related to content of a class asked prior to the material being presented aroused curiosity and increased retention of material related to the stated questions. Students recalled surprising statements more frequently
than those not thought of as surprising (Berlyne, 1969). Necka (1989) suggests that educators stimulate curiosity by not avoiding questions, allowing open questions, temporarily letting important questions remain unanswered, showing incompleteness in existing knowledge, and showing developmental trends in human knowledge.

Other strategies also reportedly increase curiosity. Situations with intensity, meaningfulness and variation all increase human stimulation (Fiske & Maddi, 1961). Studies on color and noise are inclusive, but variation in presentation, and stimulation of cognitive conflict and fantasy appear to validate their positive impact on curiosity (Stipek, 1988, p. 57). Surprise takes place when a student is presented with a phenomenon that violates expectations derived from existing beliefs, a phenomenon that prior training and experience have led him or her to regard as improbable or impossible. "Magicians use it all the time and teachers can use it to best advantage as well" (Vidler & Levine, 1980, p. 273). The importance of creating discrepant events is to enable students to strengthen their own cognitive organization of the environment...as students reduce the discomfort of conflict, the relief provides the reinforcement for learning (Vidler and Lawlor, 1976).

Setting effects appear to have a particularly strong enhancing as well as deleterious effect on curiosity behaviors and their development. "Children do not have to be taught to be curious, but they may have to taught, as by institutionalization, not to be curious" (Fiske & Maddi, 1961, p. 43). Formal or traditional settings appear to have
a negative impact on curiosity, whereas the scant information on informal ... settings indicates a more positive effect. Based on these findings, many teachers and schools now seek to “loosen up the patterns of instruction toward greater intellectual and personal freedom” (Ericksen, 1974, p. 70).

**Adult Learning Theory**

Gaining attention is the critical first step in all theories of learning and memory, whether for adults or children (Ormond, 1990). “The importance of attention for learning theory lies in the fact that all theories which use stimuli as the predictive antecedents of response represent the responses as occasioned by the signal” (Mostofsky, 1970, p. 15).

According to many theorists, the participation and attention of adults is attracted by somewhat different elements from those that attract children. Cross (1981) claims that aging, life phases, and developmental stages, as well as part-time and voluntary participation all provide the context in which curriculum for adults should be crafted. Rogers (1986) states that non-adults are “taught as if they were largely or completely ignorant of the subject being studied, without relevant experiences, unable to be relied upon to control their own learning, having little or nothing to contribute to the learning process” while adults are treated as “capable, experienced, responsible, mature and balanced people” (p. 17). Houle (1961) defined adult learners as goal-directed, activity-oriented, or learning-oriented. Adults are aware of the need for proficiency and
consciousness (Merriam, 1987). They are more problem-centered than subject-centered, more interested in the present than the future. They are also more experienced, more goal-directed, and more self-directed (Knowles, 1980, pp. 44-45).

These attributes strongly influence adult instructional theories. Formulas purporting to meet adult learning needs vary in detail and emphasis. One major category, Instructional Systems Design (ISD) includes formal, step-by-step models. Reigeluth (1983) claims Ausabel’s (1968) advanced organizers, Bruner’s (1961) discovery learning and Skinner’s (1968) programmed instruction as predecessors of this approach. Based in Behaviorism, information processing theory, educational psychology, and cognitive engineering, ISD models strive to produce organizational effectiveness through observable behavior change (Rosenberg, 1982). Richey (1986) lists four critical elements of ISD formats. Their content is based on field study, the structure and design are based on theory and research, measurement of outcomes is part of the process, and technology is used to “develop the most effective, efficient, cost effective intervention possible” (p.15). Dick and Carey (1985) present a typical systems design approach, as seen in Figure 3.

Romiszowski’s (1981) model collapses the process into four levels: 1) analysis of the course system; 2) determination of instruction needed to reach goals; 3) preparation of instructional events; 4) identification of the exact behaviors and
Figure 3. Dick & Carey Model of Instructional Design Process (Dick and Carey, 1985)
mental processes that will result in the appropriate learning step. Verduin's (1980) theory requires that "psycho-philosophical and sociological factors" be analyzed by the curriculum designer in determining goals and methods. Nadler's (1982) Critical Events model emphasizes needs assessment "beyond the opinions of the designer" as well as constant feedback during all phases of design, development and implementation.

Teaching strategies for ISD models include a variety of formal techniques to enhance learning. Thorndike, whose 1930's theory of Connectionism included analysis of adults as separate from children, stated that "teachers (of adults) are urged to be more than policemen and examiners; more than tellers and demonstrators, more than captains or bosses" (p. 138). Royer (1968) suggests mnemonic techniques, instructional analogies, and concrete advance organizers (p. 108). Stimulus cueing, the use of images and visuals, schemata modification and cognitive monitoring increasingly appear in ISD materials (Pintrich, Cross, Kozma & Mckeachie, 1986).

In contrast, those who accept a Humanist or Existential orientation would define adult education in terms of inner growth and development (Darkenwald, 1982, p. 39). Knowles' (1970) schematic for self-directed learning offers an activity designed to enhance relationship building "between the teacher, the learner and fellow learners" (p. 33). The model includes self-assessment, translating learning needs into objectives,
selecting effective strategies, and collecting and evaluating evidence of accomplishment" (Langenbach, 1988, p. 170). Knowles (1980) summarizes the principles of adult teaching derived from many learning theories. Among them are:

1) the learner should be active rather than passive; 2) adult drive to learn is important but not in the same way as with food deprivation; 3) the perceptual features of the problem are important conditions of learning; 4) learning is culturally relative; 5) the group atmosphere of learning (competition vs. cooperation, authoritarianism versus democracy, individual isolation versus group identification) will affect satisfaction in learning as well as the products of learning (pp. 61-62). Tough’s (1978) Essential Elements for Self-Directed Learning include determining purposes for learning, “deciding to begin,” choosing a method (self, group or leader, one-to-one, or “non-human resource”), engaging in learning activities, and then evaluating the advantages and disadvantages of each.

The Critical Theorists, with Friere (1970), Miezerow (1991) and Brookfield (1991) the best known, require that adult education include transformation of perspective. “Radical adult educators would find inadequate a definition of adult education that did not include raising people’s consciousness of the social and political contradictions in their culture” (Darkenwald, 1982, p. 39).

Until recently even extensive descriptions of adult curriculum development under any of the models did not include major treatment of “gaining attention.” Many
early theories briefly mentioned “gaining attention” but did not explain how this was to be done (Bloom, 1976; Cooley & Lohnes, 1976; Porter & Lawlor, 1968; Reigeluth & Merrill, 1979). Gagne (1985) however, included “gaining attention” as the first of the nine instructional events. This model is summarized at Table 1.

Richey (1986) describes four major attention-getting aspects for any instructional sequence; “primarily focusing techniques of a perceptual nature...(they) aid in the sensory reception of information” (p. 152). Wlodkowski (1992) strongly emphasizes learner attention, interest and involvement in his suggestions for enhancing learning. Frequent response opportunities, personal accountability emphasis, variety of presentation styles and active and clear introductions, connections and endings lead to “flow,” the total absorption that gives no time to worry about what happens next; reaching this "flow" state in each student is the teacher’s goal (Wlodkowski, 1992).

John Keller's Motivational Model for Education

General Theory. “John Keller and R.J. Wlodkowski alone have presented effective plans for improving learner motivation; of the two, Keller's is more research and systems-driven, and more generic” (Keller, 1983c, p. 11). Keller designed his motivational model to be used with all learning theories, developing specific strategies to improve learner arousal and retention. Based in the research on expectancy and value, Keller identifies specific theoretical predecessor to his synthesis. This is presented at Table 2.
Table 1

Gagne’s Internal Processes and Their Corresponding Instructional Events

<table>
<thead>
<tr>
<th>Internal Processes</th>
<th>Instructional Event</th>
<th>Action Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reception</td>
<td>1. Gaining attention</td>
<td>Use abrupt stimulus change</td>
</tr>
<tr>
<td>Expectancy</td>
<td>2. Informing learners of the objectives</td>
<td>Tell the learners what they will be able to do after the learning</td>
</tr>
<tr>
<td>Retrieval to Working Memory</td>
<td>3. Stimulating recall of prior learning</td>
<td>Ask for recall of previously learned material</td>
</tr>
<tr>
<td>Selective Perception</td>
<td>4. Presenting the stimulus</td>
<td>Display the content with distinctive features</td>
</tr>
<tr>
<td>Semantic Encoding</td>
<td>5. Providing learning guidance</td>
<td>Suggest a meaningful organization</td>
</tr>
<tr>
<td>Responding</td>
<td>6. Eliciting performance</td>
<td>Ask learners to perform</td>
</tr>
<tr>
<td>Reinforcement</td>
<td>7. Providing feedback</td>
<td>Give informative feedback</td>
</tr>
<tr>
<td>Retrieval and Reinforcement</td>
<td>8. Assessing performance</td>
<td>Require additional learner performance with feedback</td>
</tr>
<tr>
<td>Retrieval and Generalization</td>
<td>9. Enhancing retention transfer</td>
<td>Provide varied practice and spaced reviews</td>
</tr>
</tbody>
</table>

Gagne & Briggs, 1979, p. 166
Table 2

Theoretical Foundations of Keller's ARCS Model (1992b)

### VALUES AND MOTIVES

Needs Hierarchy (Maslow, 1954)

Achievement Motivation (Atkinson, 1974, McClelland, 1976)

Future Orientation and Perceived Instrumentality (Raynor, 1974)

Competence Motivation (White, 1959)

Reinforcement Value (Rotter, 1966, 1975)

Fear of Failure and Anxiety (Atkinson, 1974)

Curiosity and Arousal (Berlyne, 1965)

### EXPECTANCY AND SUCCESS

Locus of Control (Rotter, 1966)

Attribution Theory (Weiner, 1974)

Personal Causation (deCharms, 1976)

Generalized Expectancy for Success (Fiebel & Hale, 1978)

Learned Helplessness (Seligman, 1975)

Self Efficacy (Bandura, 1977)
Synthesizing this research, Keller developed his own macro-model of motivation, learning and performance, as seen in Figure 4.

Eventually, this model and his assessment of the research led to a motivational model that contained **Attention** and **Relevance**. Keller (1983b) separated these two in order to “make a distinction between a set of variables...that are concerned primarily with attention and arousal versus other motives such as need for achievement and perceived utility” (p. 6). The elements **Confidence** and **Satisfaction** completed his model, abbreviated as ARCS, displayed at Table 3.

The process used to integrate these ARCS elements into curriculum design is shown in Table 4.

Keller’s strategies for improving attention or interest address perceptual and epistemic curiosity, as well as trait and state situations. He includes suggestions for print as well as oral presentation. Keller claims that many instructors or writers design extremely interesting openings and then do not carry or sustain interest throughout the session. Keller (1983b) recognizes, however, the extra time and effort using such strategies require. He advised that motivational techniques should meet certain logistical requirements; the strategies should: 1) not require too much time; 2) not detract from the learning objectives; 3) fall within the time and money constraints of development and implementation aspects of the instruction; 4) be acceptable to the audience; and, 5) be compatible with the delivery system, including the instructor’s personal style.
Figure 4: Keller Model of Adult Learner Motivation (1987a)
Table 3
Keller's ARCS Model (1992b)

**Categories and Subcategories**

**Attention**

A.1. Perceptual Arousal
A.2. Inquiry Arousal
A.3. Variability

**Relevance**

R.1. Goal Orientation
R.2. Motive Matching
R.3. Familiarity

**Confidence**

C.1. Learning Requirements
C.2. Success Opportunities
C.3. Personal Control

**Satisfaction**

S.1. Natural Consequences
S.2. Positive Consequences
S.3. Equity

**Process Questions**

- What can I do to capture their interest?
- How can I stimulate an attitude of inquiry?
- How can I maintain their attention?

- How can I best meet my learner's needs? (Do I know their needs?)
- How and when can I provide my learner's with appropriate choices, responsibilities and influences?
- How can I tie the instruction to the learner's experiences?

- How can I assist in building a positive expectation for success?
- How will the learning experience support or enhance the students' beliefs in their competence?
- How will the learner's clearly know their success is based on their efforts and abilities?

- How can I provide meaningful opportunities for learners to use their newly acquired knowledge/skill?
- What will provide reinforcement to the learner's successes?
- How can I assist the students in anchoring a positive feeling about their accomplishments?
<table>
<thead>
<tr>
<th>Phases and Activities</th>
<th>Process Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEFINE</strong></td>
<td></td>
</tr>
<tr>
<td>1. Audience motivation analysis</td>
<td>• What are the audience's motivational attitudes toward the course to be offered?</td>
</tr>
<tr>
<td>2. Motivational objectives</td>
<td>• What do I want to accomplish with respect to the motivational dynamics of the audience?</td>
</tr>
<tr>
<td>3. Motivational criterion measures</td>
<td>• How will I determine whether I have accomplished my motivational objectives?</td>
</tr>
<tr>
<td><strong>DESIGN</strong></td>
<td></td>
</tr>
<tr>
<td>1. Generate potential strategies</td>
<td>• How many possible strategies are there that might accomplish the motivational objectives?</td>
</tr>
<tr>
<td>2. Select strategies</td>
<td>• Which strategies seem to be most acceptable for this audience, instructor and setting?</td>
</tr>
<tr>
<td>3. Integrate strategies</td>
<td>• How do I combine the instructional and motivational components into an integrated design?</td>
</tr>
<tr>
<td><strong>DEVELOP</strong></td>
<td></td>
</tr>
<tr>
<td>1. Prepare motivational materials</td>
<td>• How do I locate or create motivational materials to achieve the objectives?</td>
</tr>
<tr>
<td>2. Enhance existing instruction</td>
<td>• How will I rework the instructional material to improve the motivational appeal?</td>
</tr>
<tr>
<td>3. Developmental test</td>
<td>• How can I get feedback as to whether these motivational strategies are likely to work?</td>
</tr>
<tr>
<td><strong>PILOT</strong></td>
<td></td>
</tr>
<tr>
<td>1. Implement with target population</td>
<td>• How do I prepare for and conduct a pilot test with representatives of the target population?</td>
</tr>
<tr>
<td>2. Evaluate effects</td>
<td>• How can I detect the expected and unexpected motivational effects of the course?</td>
</tr>
<tr>
<td>3. Certify or revise</td>
<td>• How do I determine whether the course should be revised or go &quot;on-line&quot;?</td>
</tr>
</tbody>
</table>
To formally test the validity both of his model and the suggestions for implementation, Keller (1989b) designed and presented two training sessions for two different groups of teachers. All members of both groups had volunteered to participate. He sought reactions from attendees with an early version of his Course Interest Survey (Appendix H).

One group responded warmly to Kelley's techniques, but participants from the other group were much less enthusiastic. Keller (1983c) explained this difference in terms of the second group having had almost no experience with in-service training, and therefore, "these teachers were starting from 'scratch' in terms of orienting themselves toward a productive experience in the workshop and toward the specific processes of systematic development" (p. 9).

Other research on adult learning motivation utilizing Keller's model appears to support Keller's techniques (Bohlin, 1990; Visser & Keller, 1990), but none describe comparison to control groups. Participants in these studies were either paying students or members of a group that needed assistance in solving work problems. Both studies were done with volunteer subjects.

Keller continues to modify his model based on specific situations and applications (1987; 1992b; Keller & Subhiyah, 1990). He refined his strategy lists based on the work of Kopp, Malone, McCombs and Wlodkowski. Much of his current focus appears to be presenting additional illustrations of the use of his strategies.
Mandatory/Voluntary Participation

“Captive learners” are currently more the rule than the exception for both adults and children. Misanchuk (1982) lists all elementary and high school students as captives, most college students because of the requirements of college degrees, and many adults in the workplace.

Adult educational theorists, however, continue to stress the advantages of learner participation being voluntary. Darkenwald (1979) listed five principles of learning that are particularly applicable to adult education, the first being that “persons learn best in a free environment” (p. 85). Davies (1981) outlines Theory X and Theory Y instructional styles; Theory X emphasizes control, direction and threats of punishment as major tactics, while Theory Y focuses on consultation, participation and permissiveness. The two styles both have their appropriate uses, but Davies clearly considers Theory Y preferable. Wlodkowski (1985) states “there is not much chance for enjoyable learning when adults feel coerced toward learning goals that have grave outcomes...by providing choice, security and removing the pressure of serious learning consequences, we increase the range and probability that stimulation will become enjoyable and exciting for the learner (p. 143).”

The possible benefits to employers of participants feeling that their involvement is voluntary are significant. Those providing training to adults in the workplace seek primarily “transfer of training”, the day-to-day use of the skills and knowledge learned
in the classroom (Broad & Newstrom, 1992). Experts claim that mandatory participation has a negative impact on this process. Broad and Newstrom (1992) list “optional attendance” and “high belief in the value of training” as two of the characteristics necessary for such transfer. Kirkpatrick (1985) states that people differ in their willingness to participate in team events; forcing them to do so defeats the purpose of team building. Mezirow (1991), Brookfield (1991) and Schor (1980), major proponents of the Critical Theory school of educational theory, stress freedom from coercion as a part of the ideal learning condition. Saint (1974) cites a study of executives, some of whom were required to attend certain training and others who were given the choice of participation. “The type of needs, the kinds of experiences sought and the degree of involvement in the process of learning were found to be different” (p. 215).

Complicating the situation, many adults perceive the process of learning negatively. All children want to learn in order to master their environment, but because of “evaluative procedures, teacher-controlled learning and lock-step pacing of tasks, this drive decreases” (Eccles & Wigfield, 1985, p. 203.) “People do not like to feel controlled or manipulated and a perception of helplessness can be highly aversive ...(this feeling) could be responsible for the children’s loss of interest in (learning)” (Lieberman, 1990, p. 259). Knowles (1980) states: “threat and punishment have variable effects on learning, but they can and do commonly produce avoidance
behavior...an autocratic atmosphere produced by a dominating teacher who controls direction via intricate punishments produces in learners apathetic conformity, various and frequently devious kinds of defiance, scapegoating or escape” (p. 73). Internal damage to self concept may also occur; the learner may come to believe that the instructor is most responsible for achievement and that the student is a “puppet or pawn in the game of learning” (Wlodkowski, 1985).

If mandatory attendance is required, personal freedom within the learning setting may overcome initial resistance; both attitude change and skill level may improve faster than in situations of no such choice (Knowles, 1989). “Human beings are capable of making significant personal choices within the constraints imposed by heredity, personal history and environment...the force of a person who is free to act can bring about change for the betterment of one's life and humanity in general” (Ellias & Merriam, 1980, p. 118). Instructional system designers Reigeluth and Stein (1983) theorized that “the effectiveness, efficiency and appeal of instruction will increase under conditions of learner control and suggested that informed and motivated students should be given the opportunity to select and sequence instructional content and strategies” (Klein & Keller, 1990, p. 140). Research findings support this conclusion (Aist; 1987; Gaes, Kalle, & Tedeschi, 1978; Johnson & Morris, 1981; Perlmutter & Monte, 1977; Stotland & Lindstrom, 1964).
A few research studies do not support the premise of automatic benefits of freedom of choice, and two of those cases are Keller's own work. Prior to formal development of the ARCS model, Keller, Goldman and Sutterer (1978) hypothesized that students with more control would perform better. Although their data supported some parts of the hypothesis, no relationship could be established between such freedom and academic performance (p. 419).

A second Keller study not utilizing the ARCS model focused on the impact of student control in a seventh grade setting. Results were "no treatment effect" when students were given control over instructional strategy on a computer (Klein & Keller, 1990). The discussion of that research suggests that "the effort to isolate a specific feature of learner control may have resulted in treatments in which there were too many similarities in the overall degree of learner control" (p. 145). Nonetheless, Keller (1984) included "Personal Control" as one aspect of Confidence within his model.

Additional information about adult response to mandatory learning situations comes from the negative and somewhat hostile reactions to mandated professional education in the United States. Because the public has demanded more accountability and protection (Tucker & Huerta, 1987, p. 5), half of all licensed professionals are now subject to mandatory continuing education. In spite of its prevalence, many professionals continue to charge that such education does not ensure improved performance and has extremely negative implications for the personal freedoms of the
professionals involved (Cervero, Rotter, & Dimmick, 1986; Kenny, 1985; Rockhill, 1981; Scanlan, 1985). Voluntary programs are considered to be more effective, even though full professional participation is more difficult to achieve.

Summary of Literature Related to Questions of Interest

Related to the questions of interest, the literature review suggests the following:

1. Impact of motivational strategies on mandatory versus voluntary adult learners: research is unclear as to the impact of mandatory attendance on the learning potential of adults. Theorists in adult learning generally claim that being “required” to attend “ought” to create a serious barrier. Too few formal research studies that assess the impact of mandatory participation on learning or attitude have been completed for such a conclusion to be warranted. Similarly, research exploring the outcomes of use of motivational learning strategies for learners has focused on positive responses from those where the techniques were used. No comparative studies with groups where such techniques were not used have been reported.

2. Impact of prior learner interest on effects of mandatory attendance: research has demonstrated that if adults are interested in a subject, they often seek out information to satisfy their curiosity. Presumably, then, if attendees are interested in a subject, they will respond positively to presentations on that subject, even if attendance is mandatory. If interest is low, then the design and presentation of material may be critical to positive responses to material.
Chapter 3
Methodology

Background

The Gateway Drug Education Grant from the United States Drug Education was awarded to the School of Education at a state university in the Pacific Northwest on October 1, 1991. The two-year grant stipulated that approximately $100,000 be used to provide information about alcohol, tobacco and anabolic steroids to teachers in the third, sixth and ninth grades in the one hundred poorest school districts in a Northwest region.

Over the grant's two year span, the Gateway team (a principle researcher and three graduate assistants) analyzed responses and resources and then designed, developed, and implemented a program that met the federal requirements. Initial investigation revealed that teachers within the region received a great deal of excellent information about student drug use; health or physical education teachers in most schools devoted substantial time and resources to the subject.

In spite of this effort, educators in the field of substance abuse spoke to the Gateway team about the need for more effective, comprehensive ways to deliver anti-drug information. To address this concern, a group of more than sixty teachers from grades K-12 had developed the 700-page Alcohol and Drug Abuse Prevention Education (ADAPE) curriculum. The thrust of this curriculum was to introduce
teachers of all grades to the concept of infusion, a process where facts about one subject are integrated or overlaid on another. Having math students compute the blood alcohol level of a person of a particular weight would be one example of this method.

One copy of the complete curriculum was sent to the superintendent of every school district in the region. Through discussion with state administrators and teachers, the Gateway team learned that in most districts, teachers were not aware that the curriculum existed.

Based on this lack of awareness, the Gateway team determined that on-site presentations about this new tool would be the best use of the grant money. During the first year of the grant, the team developed scripts and techniques for these presentations, wrote a two-hundred page workbook to introduce the curriculum, and developed a twenty-minute video that could be used as a lead-in after the Gateway grant ended. During the second year of the grant, team members made presentations to schools and/or distributed Gateway materials to all one-hundred poor rural school districts. The on-site presentations were the focus of the present study.

**Subjects**

The one-hundred poor rural school districts were offered the free presentation regarding the ADAPE curriculum. Initial calls to county coordinating agencies established what drug education programs currently existed in each district. If one or more formal drug programs already were in place, the Gateway team sent a packet
including the Gateway notebook, the introductory video, and a letter offering the free presentation to the superintendent (see Appendix A). If no such formal programs existed in that region, superintendents of each district were contacted by phone to determine interest. In many cases, the decision to provide the presentation was made immediately. In some situations, especially where superintendents or district drug coordinators did not return phone calls, follow-up letters were sent (see Appendix B).

Approximately sixty of the one-hundred school districts were contacted by phone. Fifteen invited the Gateway team member to present the program. Three of the fifteen were used to pilot the script and materials developed by the team; eight sessions were analyzed for this study. The other four were not included due to shortness of time actually allotted. No district contacted initially by letter requested the on-site presentation.

The Gateway grant focused on third, sixth and ninth grade teachers, but because of the size of the districts involved, superintendents or their representatives invited teachers from all grades. Seven of eight sessions included teachers and superintendent/principals from an individual school district. The Nelson District was the only one to include high as well as grade school teachers. The presentations to General and Cleary Districts included teachers as well as administrators, drug educators, teachers aides and other support staff. Characteristics of the participating schools are shown at Table 5.
Table 5

Characteristics of Participating School Districts

<table>
<thead>
<tr>
<th>District</th>
<th>Number of Students</th>
<th>Number of Teachers Employed</th>
<th>Number of Participants</th>
<th>Location of Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nelson</td>
<td>847</td>
<td>58</td>
<td>54</td>
<td>School Library</td>
</tr>
<tr>
<td>Clearly</td>
<td>221</td>
<td>13</td>
<td>28*</td>
<td>School Room</td>
</tr>
<tr>
<td>General</td>
<td>548</td>
<td>60</td>
<td>58*</td>
<td>State Park</td>
</tr>
<tr>
<td>Harlow</td>
<td>453</td>
<td>31</td>
<td>24</td>
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</tr>
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<td>Tucker</td>
<td>90</td>
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</tr>
<tr>
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<td>265</td>
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</tr>
<tr>
<td>Miller</td>
<td>382</td>
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</tr>
<tr>
<td>Barton</td>
<td>178</td>
<td>20</td>
<td>6</td>
<td>School Room</td>
</tr>
</tbody>
</table>

*=administrators, teachers aids, other support staff, staff from additional schools
Materials

Teachers received two types of materials during each of the eight sessions. Drug content information included three items:

1) the Gateway workbook that introduced the ADAPE curriculum. This book provided theoretical background about infused curriculum, recent statistics about alcohol, tobacco and anabolic steroids, ADAPE lessons and other aids to make use of the book easier (Appendix C);

2) a recent newspaper article related to student drug use (Appendix D); and

3) an in-service certificate, given at the end of the session (Appendix E).

Research study materials distributed during each session included a pre-and post presentation questionnaire for each teacher. A sign-in sheet was used by leaders who had made attendance mandatory.

Pre-presentation questions were:

Q1) To what extent were you required to attend this session?

Q2) What is your interest in drug education?

Q3) Have you done homework on the topic of drug education prior to attending this session?

Q4) Do you see any value to attending workshops related to this topic?

Q5) What did you think you are going to learn from this session?

(Appendix F)
These questions were drawn from the two formal Questions of Interest. The scale for each of the first four questions was a Likert, a common tool where attitude is the focus of the study. Because "this kind of scaling assumes only that individual items are monotonically related to the attitude being measured, and that the sum of the item scores is linearly related to the attitude, it is clear that ...there are no unwarrantable assumptions" (Klein, 1986, p. 113). A Likert scale is by nature ordinal rather than interval in nature; it is not possible to know if "equal distance" of attitude exists between numbers for each member of a group. Using such a scale defines the statistical tools that are available for analysis (Siegel, 1956).

Range of response was one to five; instructions on the questionnaire noted that "1" was low and "5" was high. Space for narrative responses to the fifth question, "What did you think you are going to learn from this session?" was provided.

To assure a match between pre and post-questionnaires, the seven post-presentation questions were printed on the back of the pre-presentation questionnaire. The post-presentation questions were:

Q1) Instructor makes me feel enthusiastic about subject.

Q2) Class captures my attention.

Q3) Instructor uses humor.

Q4) Instructor makes me feel curious about the subject matter.

Q5) Instructor does unusual or surprising things.
Q6) I get a chance to actively participate.

Q7) Interesting variety of teaching techniques are used. (see Appendix G)

These post-presentation questions were developed by Bohlin (1990) as a revision of John Keller's Course Interest Survey (see Appendix H &I ). One of Bohlin's questions was eliminated because of duplication of content. Bohlin administered his instrument over a four-month period to groups of adults, primarily teachers, voluntarily involved in graduate level continuing education for a variety of subjects. Instructional design for these classes was based on Keller's ARCS model (Table 3). Test-retest reliabilities of the instrument over a two-week period was \( r = 0.69 \). Means and standard deviations for each item (Appendix J) mostly fell in the "slightly" to "very positive" effect range.

**Presentation Procedures**

Because human subjects were involved, a formal application to the Oregon State University Human Subjects Committee was submitted (see Appendix K). The study was approved, subject to this statement being read at the beginning of each session:

Thank you for participating in this training session provided by the Gateway Drug Education Project at Oregon State University. We want you to know that completion of the questionnaires is voluntary, and the program today will not change based on your completion of the form. We are, however, trying to discover better methods for presentation of adult seminars and we would encourage you to complete the questionnaires.

Superintendents requested programs of no longer than sixty minutes; in order to
have enough time to present the important information about the ADAPE curriculum, Gateway team members recognized that few motivational techniques could be included. Those techniques selected, therefore, needed to be as effective as possible. While the Gateway team assumed that the teachers would be motivated by the quality of the ADAPE lessons, they also were concerned that many audience members would be non-volunteers or have low interest in drug education.

A draft script was constructed based on Keller's Motivational Design Model (Table 4). John Keller examined that script and made direct suggestions about its motivational elements. (Personal Communication, J.M. Keller, April, 1993).

The Keller script was used for three pilot sessions under the grant, a total of approximately thirty teachers. Pre-presentations questions revealed a mix of mandatory and voluntary attendees, although the mandatory category was the larger of the two. Both mandatory and voluntary participants responded with high scores on the post-presentation questions. For this reason, both Pre and Post Questions were retained.

Only one content change in this original script was made. Because of the increasingly obvious variation in possible environments, the inclusion of motivational segments from the Gateway team video could not be assured for all presentations. For that reason, the Gateway video was omitted in the final script (Appendix L). None of the sites analyzed in this study included the video element.

As with other research utilizing Keller's model, the issue of whether to divide
the available presentations into Intervention and Non-Intervention (control) groups was crucial to the nature of conclusions that could be drawn. Because the Gateway team believed that use of the motivational strategies would enhance the effectiveness of the training, it was decided that all sessions would utilize the Keller script. In addition, all sessions were to be conducted by the same trainer; this limited the impact of personality on the responses from the trainees.

Each session was forty-five to sixty minutes long. All sessions were presented by an experienced trainer who commonly trains in stressful environments and logistics. The Human Subjects statement was read to each group, and they were then asked to complete the pre-presentation questionnaire. At the end of each session, participants were asked to respond to the post-presentation statements and return them to the researcher. In-service certificates were distributed at the end of the session.

Research Design

Addressing the formal Questions of Interest requires comparisons between pre-presentation questions and post-test responses. The first step in this process is determining whether the distribution of the responses to each question is normal. The focus of analysis is response "skewness" or concentration at one end of the response scale (Rowntree, 1981). The alpha three, the average of the cubed deviations from the mean, divided by the cube of the standard deviation, is the test most commonly used for this purpose. The determination of normality can be made using graphical or numerical
displays of the response patterns.

Depending on the "skewness" of the data, comparisons between pre and post-presentation questions are made for either the relationship between responses or the independence of various sub-groups. If responses are normally distributed, either correlational relationship of scores, t-tests for independence, regression or analysis of variance (ANOVA) tools provide information relevant to the Questions of Interest.

Where response patterns are non-normal or skewed and where scales are nominal or ordinal, non-parametric tests (Chi-Square, Spearman Rank Correlation Coefficient, Kendall Rank Correlation Coefficient, Mann-Whitney U Test, Nomographic Tests of Percentages) are used to provide information about the issues (Siegel, 1956). Rank-sum, non-parametric tests like the Mann-Whitney U Test, the Spearman Rank Correlation Coefficient and the Kendall Rank Correlation Coefficient utilize rankings of scores rather than actual responses to determine relationships or independence between responses. (Hamberg, 1979; Siegel, 1956). If data includes many ties in the scores, if the range of responses is very restricted, or if the research design does not include natural binomial classifications, then Chi-Square or Nomographic techniques are the tests least impacted by these factors (Siegel, 1956).

The relationships between responses using these non-parametric tests are "associative". The truncation of possible responses (1-5), and the ordinal, rather than ratio or interval scale would lead to the "associative" (Oppenhiem, 1966; Stevens,
1951). Associations were judged to be significant under the following commonly accepted pattern (Rowntree, 1981, p. 170):

- .9 to 1 = very strong, very high association.
- .7-.9 = strong, high, marked
- .4-.7 = moderate.

Table 6 presents a chart of appropriate statistical tests to be used in the analysis of the data from this study.
Table 6  
Summary of Statistical Analyses of Data

<table>
<thead>
<tr>
<th>STATISTICAL ANALYSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distribution of Responses</td>
</tr>
<tr>
<td>1. Each pre-presentation scaled question</td>
</tr>
<tr>
<td>2. Each post-presentation scaled question</td>
</tr>
<tr>
<td>3. Each coded category for narrative responses to pre-presentation Q5</td>
</tr>
</tbody>
</table>

### Statistics Appropriate to Response Patterns

<table>
<thead>
<tr>
<th>Normal</th>
<th>Skewed</th>
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<tbody>
<tr>
<td><strong>Association of Scores</strong> (Pearson's Product-Moment Correlation)</td>
<td><strong>Association of Scores</strong> (Chi-Square, Spearman Rank Correlation Coefficient, Nomographic Test of Percentages)</td>
</tr>
<tr>
<td>Pre-presentation question with pre or post-presentation scores of interest</td>
<td>Pre-presentation question with pre or post-presentation scores of interest</td>
</tr>
<tr>
<td>and/or</td>
<td>and/or</td>
</tr>
<tr>
<td><strong>Independence of Groups</strong> (Fisher's t-test)</td>
<td><strong>Independence of Groups</strong> (Chi-Square, Mann-Whitney U Test, Nomographic Test of Percentages)</td>
</tr>
<tr>
<td>Pre-presentation question with pre or post-presentation scores of interest</td>
<td>Pre-presentation question with pre or post-presentation scores of interest</td>
</tr>
<tr>
<td>and/or</td>
<td>and/or</td>
</tr>
<tr>
<td><strong>ANOVA or Regression</strong></td>
<td><strong>ANOVA or Regression</strong></td>
</tr>
</tbody>
</table>
Chapter 4
Results of Research

Two hundred and four questionnaires were returned by participants. Of these, eight participants did not complete any questions on one side of a questionnaire; these questionnaires were not included in the data since no comparisons between pre and post answers could be made. Seven participants answered some, but not all, questions. Responses from these partially completed questionnaires were included in the analysis. In all, one hundred and ninety six questionnaires were analyzed.

Analysis of Data for First Question of Interest

"Do Keller's "attention" strategies result in significantly different responses for voluntary versus mandatory participants in very short, one-time-only training sessions?" was the first question of interest. Answering this question required comparison of responses to the first pre-presentation question ("To what extent were you required to attend this session?"), coded as Require, to responses for all post-presentation questions.

Distribution of Responses

Based on informal scanning, General District's responses appeared to be markedly different from those of other locations. Responses for all related questions were analyzed, therefore, by three population groupings: 1) all locations (A population grouping); non-General locations (NonG population grouping); and General District (G population grouping).
As Figure 5 and Table 7 indicate, responses from the first pre-presentation question from all population groupings, displayed as pie charts, frequency tables and skewness factors (the degree to which answers are clustered on one end of a scale) displayed skewness toward the high (4-5) end of the scale, as well as the differences between General District responses and those of all others.

Seven question comprised the post-presentation survey; they were coded as Enthusiasm, Attention, Humor, Curious, Unusual, Participate and Techniques (Appendix G). Each of the three populations, A, NonG and G, were analyzed for means, displayed by bar graphs, numerical frequency and skewness tools (see Figure 6, Table 8). Responses to these questions were less skewed and more normally distributed.

Comparison Between Require and All Post-Presentation Question Responses

Chi-square analysis, an approximation of the Fisher's t-test, was performed between Require and all post-presentation questions for three population groupings, A (all attendees), NonG (attendees not from General District), and G (attendees from General District). Recoding of responses for Require to High (5) and Low (1-4) and all post-presentation questions to High (4-5) and Low (1-3) enhanced associative figures. Results were as follow:

A population: No p-values of .05 significance or better were revealed. The highest p-values were between Require and Curious \( p \leq .2040 \) (1 df) and between Require and Unusual \( p \leq .2040 \) (1 df). Other comparisons ranged
Figure 5

Frequency for Pre-Presentation Question **Require** for All Population Groupings
(Recoded to High (5) and Low (1-4))

- **All Locations**
  - N = 196
  - High Require: 82%
  - Low Require: 18%

- **NonGeneral Locations**
  - N = 138
  - High Require: 89%
  - Low Require: 11%

- **General Locations**
  - N = 58
  - High Require: 64%
  - Low Require: 36%
Table 7
Frequency, Mean, Standard Deviation and Skewness for Require Question

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<th></th>
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<td><strong>Score</strong></td>
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<td>5</td>
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<td><strong>Stand Dev</strong></td>
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<td><strong>.668</strong></td>
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<tr>
<td><strong>Skew</strong></td>
<td><strong>-2.472</strong></td>
<td><strong>-3.798</strong></td>
</tr>
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</table>
Responses from All Locations

Responses from Non General Locations

General District Responses

Key
Post1 = Enthusiasm  Post 5 = Unusual
Post2 = Attention  Post 6 = Participate
Post 3 = Humor  Post 7 = Techniques
Post 4 = Curious

Figure 6

One Standard Deviation Error Bars for Post-Presentation Questions
Table 8

Frequency, Mean, Standard Deviation and Skewness for Post-Presentation Questions

Population A: 196 Questionnaires

<table>
<thead>
<tr>
<th>Response</th>
<th>Enthusiasm (Post1)</th>
<th>Attention (Post2)</th>
<th>Humor (Post3)</th>
<th>Curious (Post4)</th>
<th>Unusual (Post5)</th>
<th>Participate (Post6)</th>
<th>Techniques (Post7)</th>
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<tbody>
<tr>
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<td>Stand. D</td>
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<td>.963</td>
<td>.995</td>
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<td>1.001</td>
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<td>-.072</td>
<td>-.019</td>
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</table>

Population NonG: 138 Questionnaires

<table>
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<tr>
<th>Response</th>
<th>Enthusiasm (Post1)</th>
<th>Attention (Post2)</th>
<th>Humor (Post3)</th>
<th>Curious (Post4)</th>
<th>Unusual (Post5)</th>
<th>Participate (Post6)</th>
<th>Techniques (Post7)</th>
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Population G: 58 Questionnaires

<table>
<thead>
<tr>
<th>Response</th>
<th>Enthusiasm (Post1)</th>
<th>Attention (Post2)</th>
<th>Humor (Post3)</th>
<th>Curious (Post4)</th>
<th>Unusual (Post5)</th>
<th>Participate (Post6)</th>
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<td>.966</td>
<td>1.046</td>
<td>1.046</td>
<td>1.070</td>
<td>1.060</td>
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<tr>
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<td>-.057</td>
<td>-.029</td>
<td>.324</td>
<td>.324</td>
<td>.335</td>
<td>.335</td>
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</table>
from $p \leq .3800$ (1 df) to $p \leq .9920$ (1 df). Therefore, for this group, level of mandatory attendance did not predict motivational response (i.e. enthusiasm) or recognition of instructional strategies (i.e. unusual techniques).

**NonG population:** Significant associations were found between **Require** and **Curious** ($p \leq .0116$ (1 df)) and between **Require** and **Unusual** ($p \leq .0116$ (1 df)). Other comparisons ranged from $p \leq .1521$ (1 df) to $p \leq .7191$ (1 df). This means that the presentation invoked more curiosity and contained more unusual techniques for voluntary than for mandatory attendees.

**G population:** No $p$-values of .05 significance or better were revealed. The highest $p$-value was between **Require** and **Enthusiasm** ($p \leq .1783$ (1 df)). Other comparisons ranged from $p \leq .6856$ (1 df) to $p \leq .9347$ (1 df). Therefore, for this group, level of mandatory attendance did not predict motivational response (i.e. enthusiasm) or recognition of instructional strategies (i.e. unusual techniques).

**Analysis of Data for Second Question of Interest**

"Does a learner's prior interest in the subject modify the results of the analysis done in Number 1?" was the second question of interest. This answer required use of the Nomographic Test of Percentages (based on Chi-square) because the assumptions required for regression analysis were not met by the data.
Distribution of Responses

Responses for the second pre-presentation question were analyzed by the three population groupings: 1) all locations (A population grouping); non-General locations (NonG population grouping); and General District (G population grouping). Pie charts, frequency tables and skewness factors displayed skewness toward the high (4-5) end of the scale, as shown in Figure 7 and Table 9.

Analysis for Main Effects

Answering the second question of interest required gathering information about the interaction between Require and Interest for all three population groupings: A (all attendees), NonG (attendees not from General District), and G (attendees from General District). In order to clarify relationships, responses for Require were recoded to High (5) and Low (1-4), responses to Interest were recoded to High (4-5) and Low (1-3), and responses to all seven post-presentation questions were added together and recoded as High (22-35) and Low (1-21). This combined score is titled Combined for this analysis.

In order to explore the issue of Interest as a moderator variable of Require, determining associations between Require and Combined, and Interest and Combined the two “main” effects is the first step of the process.

No significant associations between Require and Combined at p-level ≤ .05 were found for any population. This means that the fact of mandatory attendance had no impact on how attendees responded to the presentation.
Figure 7

Frequency for Pre-Presentation Question Interest for All Population Groupings
[Recoded to High (4-5) and Low (1-3)]

All Locations
N = 196

NonGeneral Locations
N = 138

General Locations
N = 58
Table 9

**Frequency, Mean, Standard Deviation and Skewness for Interest Question**

<table>
<thead>
<tr>
<th>Score</th>
<th>Number</th>
<th>Score</th>
<th>Number</th>
<th>Score</th>
<th>Number</th>
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<td>82</td>
<td>5</td>
<td>58</td>
<td>5</td>
<td>22</td>
</tr>
</tbody>
</table>

Total 196 138 58

Mean 4.087 4.116 4.017

Stand Dev. .97 .944 1.034

Skew -.985 -1.016 -.898
Comparing Interest to Combined had nearly opposite results; for A and NonG population groupings, Interest associated significantly at .05 level (p = .0001 with 1 df for both populations). For General District, Interest associated significantly at the .10 level of significance (p = .0597 with 1 df). This means that those with high interest responded positively to the presentation, whether or not they were mandatory attendees.

Analysis for Interactions

The third step involved determining interactions between pairs of percentages, based on Oppenheim's Nomographic Test of Percentages. This test, like regression for normal data, allows two or more factors at a time to be compared to one dependent variable. Major features of this test include: 1) determination of a critical value and an observed value; 2) the observed value is based on the size of the denominators of two percentages; and 3) the critical value is based on a Chi-Square distribution. Two Nomographic Scales (Appendix N) were then used to determine the correlation coefficient and p-value of significance for each population grouping. Use of these scales is obviously less precise than computer analysis because small differences in values are difficult to determine. In addition, the sizes of N₁ and N₂ determine the base critical value; similar percentages may not be equally significant if the N₁ and N₂ denominators are very different in size.

Interactions between the following pairs of percentages for each population were computed:
1) High Require/High Interest on Combined and High Require/Low Interest on Combined.

2) Low Require/High Interest on Combined and Low Require/Low Interest on Combined.

3) High Interest/High Require on Combined and High Interest/Low Require on Combined.

4) Low Interest/High Require on Combined and Low Interest/Low Require on Combined.

As an example of this Nomographic process, computations for the comparison of High Require/High Interest and High Require/Low Interest for A (all locations) population grouping were: Of the 159 attendees with High Require responses, 115 also marked High Interest scores; adding all post-presentation scores together indicated that 65 of those 115 High Require/High Interest attendees (56.52%) fell into the High Combined category. Of the 159 attendees with High Require responses, 44 marked Low Interest scores; adding all post-presentation scores together indicated that 25 of those 44 (56.81%) High Require/High Interest attendees fell into the High Combined category.

Scale One of the Oppenheim Test of Percentages was used to determine the “critical value” for the two denominators. The critical value of these two percentages
(56.52% vs. 56.81%) is approximately .13 (N₁ = 159; N₂ = 116) (Figure 8).

Scale Two of the Oppenheim Nomographic Test of Percentages was used to calculate the "observed value" between the two percentages. The observed value between 56.52% and 56.81% is approximately .02 at p =.05 (Figure 9).

Because .02 is not beyond .13, no significant difference exists between attendees with High Require/High Interest scores and those with High Require/Low Interest scores. Mandatory attendance was not a factor in determining High Combined scores; level of interest alone apparently determined the outcome.

Results of comparing the four sets of interactions listed on page 66 for each of the three population groupings were:

Comparisons between 1) High Require/High Interest on Combined and High Require/Low Interest on Combined or 3) High Interest/High Require on Combined and High Interest/Low Require on Combined: No significant differences between pairs of percentages at p-level ≤ .05 were found for any population grouping. This means that mandatory attendance and level of interest did not interact to cause higher or lower responses related to motivation or recognition of instructional techniques.

Comparisons between 2) Low Require/High Interest on Combined and Low Require/Low Interest on Combined or 4) Low Interest/High Require on
Figure 8

Critical Value for High Require/High Interest and High Require/Low Interest on Nomographic Scale 1
Figure 9

Observed Value for High Require/High Interest and High Require/Low Interest on Nomographic Scale 2

Chart 2
Combined and Low Interest/Low Require on Combined: No comparisons of these percentages were possible due to the very low numbers of attendees within categories.

Anecdotal Comments

A few participants in NonG population wrote positive comments on their post-presentation questionnaire, and a few from General District referred to the negative environmental conditions. Because these comments (Table 10) were not solicited, they were not coded or analyzed.
Table 10

Anecdotal Comments from Post-Presentation Questionnaires

NonG Population

1. It was hot! (Miller)
2. Good presentation (Buxton)
3. Very good presenter. (Buxton)
4. I don't feel the instructor should be judged on her in-service. The topic is vital, and
   info we receive is vital. Therefore, the way it is presented should not concern
   us. (Buxton)
5. The information is a very necessary part of education and the materials are great.
   They will be used. (Buxton)
6. Well done. I enjoyed the information. (Buxton)

G Population

1. I do not feel that this program should be presented outdoors during a barbecue. It is
   much more appropriate for indoors/other times. Too many distractions.
2. Because of traffic and cooking noise and distortion of voice caused by microphone,
   it was difficult to hear.
3. This course would be better if it were taught inside. Good effort.
4. Could not hear instructor very well due to highway noise.
5. I will appreciate the book of information and lessons. The picnic area was a poor
   place for a presentation - too much traffic noise and the microphone was not the
   best - your voice was distorted.
6. I think you are a good teacher. I think the park environment hindered. It's not
   personal.
7. Time and site of presentation was not in the instructor's best interest.
8. Difficult time to be presenting anything - the material captures my attention - the
   material makes me curious about the subject matter - I chose not to participate
   other than this - interesting variety of teaching techniques were used in the book
   are good- I think you are a good sport and this is good material given the
   audience! I will use this in my health curriculum.
Chapter 5
Conclusions and Recommendations

Based on the research design described in Chapter Three, and the results of that design, described in Chapter Four, the following conclusions about the two Questions of Interest from Chapter One are warranted.

Discussion of First Question of Interest

"Do Keller's “attention” strategies result in significantly different responses for voluntary versus mandatory participants in very short, one-time-only training sessions?" was the first question of interest. Review of results from all population groupings indicates that mandatory status was not the determining factor in predicting attendee response.

NonG (locations other than General District) showed the highest percentage of mandatory participation with a Mean Score of 4.796 (Table 7) and the most positive responses to post-presentation questions (Table 8). Non-mandatory attendees from the seven Non-General locations were more curious and recognized more unusual or surprising things than did mandatory attendees, but their responses between Require and Enthusiasm or Attention were not significantly different from those of non-volunteers.

Based on these patterns, participants in at least seven of the eight locations included in this study appear not to have been negatively influenced by their required attendance; Keller's strategies either enhanced their positive feelings about the subject,
or did not, in Keller's words, “de-motivate them”. Participants who were physically and emotionally comfortable with the setting and content of the presentation responded positively.

General District, the eighth location, contained a smaller percentage of mandatory attendees (Table 7), but responded with lower scores on post-presentation questions (Table 8), in spite of the use of the same Keller motivational script. General District Mean Scores for post-presentation questions were at least .5 lower than A (all location) population grouping, and nearly one full response category below NonG (locations other than General District). More than in other sessions, being required to attend had apparently a negative impact on participants.

This difference between population groupings in the post-presentation reactions may have been caused by the extreme differences in the environment between General District and that of all other locations. The context of Require or mandatory was different for General District than for any other group of attendees.

The seven NonG presentations occurred during a school day. Three were conducted between three and four o'clock; teachers appeared tired, and they talked of other duties to fulfill, but, based on conversations, such in-service sessions were common and teachers were attentive listeners. The other four presentations were part of in-service days or afternoons; again teachers appeared accustomed to such meetings.

General District's setting was totally unlike those other sessions. The
presentation occurred on the Thursday before school started, from 11AM to 2PM on a sunny day, in a state park the size and location of a rest area. Participants drove as far as seventy miles for the one-hour ADAPE session, were fed hamburgers and soda, and sent home.

Based on the anecdotal comments on General District questionnaires (Table 10), including one Require scale that had been extended to “10” and then darkly circled, this group also considered the environment and logistics of the session to be unfavorable. Attendees complained of background noise and fumes, inability to hear, and the general negative logistics for the presenter. No other group made such comments. All of these negative factors impacted the trainer as well, even though she frequently teaches in unusual settings; "teaching in Hell" was her reaction. Under such emotional and logistic pressure, the lower scores from General District were virtually assured. To paraphrase Keller, the trainer became the scapegoat for the audience's irritation.

The General District population grouping, therefore, was “required” to attend the ADAPE session in much different ways than the other teachers. The experience was neither apparently customary or convenient for the majority of the General District participants. The same number of Keller motivational strategies that had produced high post-presentation scores in NonG presentations much less impact in this setting; although no comparisons between Require and post-presentation questions for General District occurred at p-level of .05 or above, the highest association did occur between
Require and Enthusiasm (p-value .1783 at .05 significant level with 1 degree of freedom). Simply using Keller techniques did not assure success where mandatory attendance was felt to be so onerous.

Discussion of Second Question of Interest

"Does a learner's prior interest in the subject modify the results of the analysis done in question of interest #1?" was the second question of interest. Participants from all population groupings claimed high interest in drug education and high value for sessions such as the ones presented by the Gateway team (Figure 7 & Table 9). For all three population groupings, Interest did associate significantly with high responses on post-presentation questions, although at different levels of significance.

The second question of interest does not, however, concern the relationship between mandatory attendance or interest level on post-presentation responses; it involves the interaction of the two. Results indicate that for all populations, Interest did not mitigate the impact of Require on attendee responses. Attendees who were already interested in the subject appear not to have been concerned about the mandatory or voluntary impetus for their attendance.

Although statistical computation between comparisons was not possible where Low Require/Low Interest attendees were involved, some of these attendee did respond with High responses on the combined post-presentation questions. From A population grouping, four out of the seven Low Require/Low Interest responded in the High range;
all of those were from General District. In spite of the horrendous environment, some reluctant, uninterested participants found the material interesting and/or motivating.

Low Interest/High Require responses showed similar encouraging results. This was the second group for which no Nomographic Test of Percentages could be computed. For A population grouping, only 12 of 44 Low Interest/High Require attendees responded with High Combined scores, but in NonG, 18 out of 31 Low Interest/High Require participants responded in the High range on Combined. In the seven NonG sessions, 18 people who came because they were required to, and who had little interest in the topic found the Keller-based script and presentation interesting.

These two non-statistical comparisons make it clear that appropriate use of the Keller motivational strategies does make a difference in the reactions and responses of adult learners, even with low interest, coerced attendees. In more favorable environments the impact is greater, but use of more attention-getting and relevancy strategies compensate for even “training in Hell” situations.

Materials Design

From all population groupings the post-presentation questions formed two clusters (Figure 6). Post-presentation questions that elicited responses about feelings after the presentation generally received higher (4 or 5) responses from participants than those questions that queried the incidence or effectiveness of specific training techniques. Low scores on these last four post-presentation questions suggest that high
(4 or 5) responses on the last four post-presentation questions required an attendee being able to identify specific features of the presentation, such as whether the person found humorous or unusual any of the techniques used. For a variety of reasons, participants may have not been able to think of specific instances of such techniques.

Recommendations

Further research on the effectiveness of the ARCS model with mandatory learners of high or low interest in the subject should include the following considerations:

1. In addition to questions about mandatory attendance, a pre-presentation question probing the learner's attitude about being at that session at that time and day should be included in pre-presentation questions.

2. Intervention vs control group research designs should be employed to more definitively determine the effectiveness of the ARCS model with both voluntary and mandatory attendees.

3. Size of group, time of day, and environment in general should be controlled to enhance comparisons among different sessions. (Comparisons of responses in especially difficult environments would be most interesting.)

4. Skill of the trainer may have had a significant impact on results. Use of different trainers with the same script would provide contrast, and could lead to curriculum building tools that would motivate regardless of trainer skill.
5. Measures of actual utilization of the curriculum presented would provide critical information about the behavior motivation impact of Keller's strategies on participants.

Conclusion

Training for adults often occurs in mandatory settings, situations were trainers may expect negative responses from a hostile, captive audience. These expectations create daunting barriers for those whose mission is to assist transfer of training into day-to-day operations. Based on the tests performed in this study, careful design of curriculum positively impacts response to presentations even when the audience is required to attend and has low interest. Trainers need have fewer fears about audience motivation. Much more research on Keller's methods and applications is required, but, as this study indicates, some mandatory attendees respond just as positively as do voluntary attendees if Attention-Relevance-Confidence-Satisfaction are built into the curriculum design and presentation.
Bibliography


APPENDICES
APPENDIX A
Letter Offering Presentation-
No Prior Phone Contact
March 1993

Dear Principal/Head Teacher:

You have just received a copy(ies) of *Teachers Making a Difference in Student Drug Use*, for your third and sixth grade teachers which summarizes information about the "Gateway" drugs, tobacco, alcohol and anabolic steroids. Also included is an introductory videotape.

These materials are provided by the "Gateway" team at Oregon State University as part of the Gateway Drug Awareness Education Program. This program, funded by the United States Department of Education under the Drug Free Schools and Communities Program, provides materials and training for teachers, counselors and school personnel.

In Oregon, this money provides updated drug/alcohol information to third, sixth and ninth grade teachers in 100 rural school districts, many with high levels of poverty.

Support for the new Drug Abuse Prevention Education (ADAPE) curriculum is the major basis for the materials, videotape and accompanying workshop. The Oregon State Department of Education has provided each school district with a copy.

Even though the materials you've just received are meant to be self-contained and "stand-alone," a 1.5-2 hour workshop introducing and simplifying the use of the ADAPE curriculum is available to your staff. Presentation sites will be coordinated initially through ESD's. However, we are also willing to make less formal arrangements by clustering school districts or coming specifically to your school for a separate presentation.

The attached form allows you to indicate interest in a workshop as well as order more notebooks.

Please contact Sharron Noone at 737-4910 with comments or for additional information.

Sincerely,
APPENDIX B
Letter Offering Presentation-
Prior Phone Contact
June 3, 1993

Superintendent
School District
000 Main Street
City, OR

Dear Superintendent;

After having tried to reach you several times by phone, this letter seemed to be the easiest alternative for getting information to you. I am the grant manager for an U.S. Department of Education Drug Free Schools Act, the Gateway Drug Education Program. We are charged with providing services to rural schools with very high poverty levels.

The Gateway Project offers these rural districts an in-service that previews the Alcohol and Drug Abuse Prevention Education Curriculum (ADAPE) published last year by the Oregon Department of Education. We provide up to a 90 minute in-service at each school at no cost on prearranged days between now and October 1, 1993. Our U.S. Department of Education grant specifies third, sixth and ninth grade teachers, and for those grades we provide free workbooks. Other teachers are welcome to come but copies for them must be reproduced at school expense.

I have included a form for with relevant information and a stamped, self-addressed envelope. Should you have questions or comments, feel free to contact me at any time at ... Thanks for the assistance.

Sincerely,

Sharron Noone
Grant Manager
APPENDIX C
Gateway Workbook Table of Contents
Teachers
Making a Difference
in Student Drug Use

The Infused Curriculum Approach to the "Gateway" Drugs - Alcohol, Tobacco and Anabolic Steroids

Gateway Drug Project
Oregon State University
Corvallis, Oregon

Note: This program interfaces with the State of Oregon Alcohol and Drug Abuse Prevention Education (ADAPE) K-12 Infused Lesson Guide

The contents of this workbook were developed under a grant from the U.S. Department of Education. However these contents do not necessarily represent the policy of the U.S. Department of Education and endorsement by the federal government should not be assumed.
# Index

Introductory Letter: Joanne Engel, Ph.D. .......................... 2

The Why's and How's of Infused Curriculum .................. 3 - 8

## Articles

"Can one teacher really fight the war on drugs?"

"Kappan Special Report on Drugs"

**Tobacco**

*"The deadliest killer of all*" ........................................ 9-11

**Alcohol**

*"The age at which they start is decreasing"* .................. 12-14

**Anabolic Steroids**

*"Compulsive about altered body image"* ......................... 15-18

Introduction to ADAPE Curriculum ............................... 19-20

Skill/Concept Lesson Index ......................................... 21-38

**Sample Lessons**

- Easy on the Teacher (11 Lessons) ......................... 40
- Fun-Fun-Fun (12 Lessons) ................................. 41
- Getting the Most for the Time (11 Lessons) ............ 42

**Resources For Class Presentations** ........................... 43-49

**Bibliographies** .................................................. 50-62

- Alcohol
- Anabolic Steroids
- Tobacco
- Drug Education
APPENDIX D
Newspaper Article Handout
Drug use up among 8th-graders

ANN ARBOR, Mich. — Drug use is on the rise among young teens, according to a University of Michigan study released yesterday.

A survey of 18,600 eighth-graders in 160 schools nationwide found a small increase last year in the use of marijuana, cocaine, crack cocaine, LSD and other hallucinogens, stimulants and inhalants.

The eighth-graders were included in the survey of 50,000 eighth-, 10th- and 12th-graders, funded by the National Institute on Drug Abuse and done by University of Michigan social psychologists Lloyd Johnston, Patrick O'Malley and Jerald Bachman.

The researchers also found that eighth-graders in 1992 were less likely to view cocaine or crack cocaine as dangerous than students in 1991.

Johnston said that in late 1990, national attention turned away from drug abuse and to such things as the Gulf War and the presidential election. Since then, the issue has never really returned to prominence, said Johnston.

"Drugs were a front-page issue for 10 or 20 years and then it settled into a hole," Johnston said. "But each new wave of youngsters needs to learn about them all over again. No one is around to tell them."

The study found that LSD use continued to rise. Among high school seniors surveyed last year, LSD use rose to its highest level since 1985. More than 5 percent said they used it once in the last year, compared with 4.4 percent in 1985.

The use of LSD among eighth-graders in the last year rose from 1.7 percent to 2.1 percent.

"LSD may be a prime example of generational forgetting," Johnston said. "It was perhaps the first drug in the epidemic of the past 25 years to decline as a result of concerns about its consequences. Today's youngsters don't hear what an earlier generation heard — that LSD causes bad trips, flashbacks ... and brain damage. ... Young people today are not as likely to know about the dangers of the drug."

Despite the shrinking numbers of adult cigarette smokers nationwide, smoking did not decline significantly in any of the three grade levels last year. Johnston cited advertising as a major reason.
APPENDIX E
In-Service Certificate
has completed a Workshop on the State of Oregon Alcohol and Drug Abuse Prevention Education Curriculum presented by The Gateway Drug Project

Sharron Noone
APPENDIX F
Pre-Presentation Questionnaire
Please answer the following questions, based on your own feelings

"1" is low - "5" is high

1. To what extent were you required to attend this session?

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

2. What is your interest in drug education?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

3. Have you done homework on the topic of drug education prior to attending this session?

<table>
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<th>3</th>
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<th>5</th>
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</table>

4. Do you see any value to attending workshops related to this topic?

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<tr>
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<th>3</th>
<th>4</th>
<th>5</th>
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</thead>
</table>

5. What did you think you are going to learn from this session?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
APPENDIX G
Post-Presentation Questionnaire
<table>
<thead>
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<td>1. Instructor makes me feel enthusiastic about subject:</td>
<td></td>
</tr>
<tr>
<td>2. Class captures my attention:</td>
<td></td>
</tr>
<tr>
<td>3. Instructor uses humor:</td>
<td></td>
</tr>
<tr>
<td>4. Instructor makes me feel curious about the subject matter:</td>
<td></td>
</tr>
<tr>
<td>5. Instructor does unusual or surprising things:</td>
<td></td>
</tr>
<tr>
<td>6. I get a chance to actively participate:</td>
<td></td>
</tr>
<tr>
<td>7. Interesting variety of teaching techniques are used:</td>
<td></td>
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</table>
APPENDIX H
John Keller's Course Interest Survey
COURSE INTEREST SURVEY

John M. Keller and Raja Subhiyah
Florida State University
307 Stone Building
Tallahassee, Florida 32306-3030

COPYRIGHTED MATERIAL

Contact author for permission and scoring information before using.
INSTRUCTIONS

1. There are 34 statements in this questionnaire. Please think about each statement in relation to the instructional materials you have just studied, and indicate how true it is. Give the answer that truly applies to you, and not what you would like to be true, or what you think others want to hear.

2. Think about each statement by itself and indicate how true it is. Do not be influenced by your answers to other statements.

3. Record your responses on the answer sheet that is provided, and follow any additional instructions that may be provided in regard to the answer sheet that is being used with this survey. Thank you.
1. The instructor knows how to make us feel enthusiastic about the subject matter of this course.
2. The things I am learning in this course will be useful to me.
3. I feel confident that I will do well in this course.
4. This class has very little in it that captures my attention.
5. The instructor makes the subject matter of this course seem important.
6. You have to be lucky to get good grades in this course.
7. I have to work too hard to succeed in this course.
8. I do NOT see how the content of this course relates to anything I already know.
9. Whether or not I succeed in this course is up to me.
10. The instructor creates suspense when building up to a point.
11. The subject matter of this course is just too difficult for me.
12. I feel that this course gives me a lot of satisfaction.
13. In this class, I try to set and achieve high standards of excellence.
14. I feel that the grades or other recognition I receive are fair compared to other students.
15. The students in this class seem curious about the subject matter.
16. I enjoy working for this course.
17. It is difficult to predict what grade the instructor will give my assignments.
18. I am pleased with the instructor's evaluations of my work compared to how well I think I have done.
19. I feel satisfied with what I am getting from this course.
20. The content of this course relates to my expectations and goals.
1 (or A) = Not true
2 (or B) = Slightly true
3 (or C) = Moderately true
4 (or D) = Mostly true
5 (or E) = Very true

21. The instructor does unusual or surprising things that are interesting.
22. The students actively participate in this class.
23. To accomplish my goals, it is important that I do well in this course.
24. The instructor uses an interesting variety of teaching techniques.
25. I do NOT think I will benefit much from this course.
26. I often daydream while in this class.
27. As I am taking this class, I believe that I can succeed if I try hard enough.
28. The personal benefits of this course are clear to me.
29. My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this class.
30. I find the challenge level in this course to be about right: neither too easy not too hard.
31. I feel rather disappointed with this course.
32. I feel that I get enough recognition of my work in this course by means of grades, comments, or other feedback.
33. The amount of work I have to do is appropriate for this type of course.
34. I get enough feedback to know how well I am doing.
APPENDIX I
Bohlin's List of Questions
### Bohlin Restatement of Keller Course Interest Survey Questions

<table>
<thead>
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<th>Item</th>
<th>Description</th>
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<td>A1.</td>
<td>Instructor makes me feel enthusiastic about subject.</td>
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<tr>
<td>A2.</td>
<td>Class captures my attention.</td>
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<tr>
<td>A3.</td>
<td>Instructor uses humor.</td>
</tr>
<tr>
<td>A4.</td>
<td>Instructor makes me feel curious about subject matter.</td>
</tr>
<tr>
<td>A5.</td>
<td>Instructor does unusual or surprising things.</td>
</tr>
<tr>
<td>A6.</td>
<td>I get a chance to actively participate.</td>
</tr>
<tr>
<td>A7.</td>
<td>Interesting variety of teaching techniques are used.</td>
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Bohlin, 1990, Table 1
APPENDIX J
Means and Standard Deviations from Bohlin's Research
Means and Standard Deviations of Responses For Each "Attention" Item in Course Interest Survey Subscales

<table>
<thead>
<tr>
<th>Item</th>
<th>Attention Mean</th>
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<td>8</td>
<td>4.51</td>
<td>.64</td>
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</tbody>
</table>

Key: 1 = very negative effect
      2 = slightly negative effect
      3 = no effect
      4 = slightly positive effect
      5 = very positive effect

n = 161
APPENDIX K
Human Subjects Application and Acceptance
APPLICATION FOR APPROVAL OF THE OSU INSTITUTIONAL REVIEW BOARD (IRB)
FOR THE PROTECTION OF HUMAN SUBJECTS

Principal Investigator* Indi Engel, Ph.D

Department: Education Phone 737-5989

Project Title: Impact of Keller's Attention Strategies on Voluntary vs. Mandatory Adult Learners in a One-Time Short-Term Training Situation.

Present or Proposed Source of Funding: Department of Education Drug Free Schools Grant

Type of Project: __ Faculty Research Project

Type of Review Requested: __ Exempt __ Expedited __ Full Board

The Oregon State University Institutional Review Board (IRB) for the Protection of Human Subjects is charged with the responsibility of reviewing, prior to its initiation, all research involving human subjects. The Board is concerned with justifying the participation of subjects in research and protecting the welfare, rights and privacy of subjects.

All material, including this cover sheet, should be submitted IN DUPLICATE to the Research Office, AdS A312. Please call x7-0070 if you have questions. The following information must be attached to this form with each item identified and addressed separately. If the application is returned without review, it will not be accepted.

1. A brief description (one paragraph) of the significance of this project in lay terms.

2. A brief description of the methods and procedures to be used during this research project.

3. A description of the benefits (if any) and/or risks to the subjects involved in this research.

4. A description of the subject population, including number of subjects, subject characteristics, and method of selection. Justification is required if the subject population is restricted to one gender or ethnic group.

5. A copy of the informed consent document. The informed consent document must include the pertinent items from the "Basic Elements of Informed Consent" and must be in lay language.

6. A description of the methods by which informed consent will be obtained.

7. A description of the method by which anonymity or confidentiality of the subjects will be maintained.

8. A copy of any questionnaire, survey, testing instrument, etc. (If any) to be used in this project.

9. Information regarding any other approvals which have been or will be obtained (e.g., school districts, hospitals, cooperating institutions).

10. If this is part of a proposal to an outside funding agency, attach a copy of the funding proposal.

Signed ___________ Engel, Ph.D. Date 6-13-93

*NOTE: Student projects and theses should be submitted by the major professor as Principal Investigator.

9-92
1. Significance
Attention of a participant is essential in order for learning to occur. Theorists in adult education have developed and successfully tested several strategies to gain attention and then motivate juvenile and adult learners. John M. Keller, the most recent and comprehensive of these writers, presents a model with four components, Attention, Relevance, Confidence and Satisfaction (ARCS). He suggests several strategies, all research grounded, for creating each of the components in an educational or training session. The three for Attention are Perceptual Arousal, Inquiry Arousal and Variability. Keller and all those researching his theories used volunteers to develop and test his model. In education and training settings, however, participation is often not voluntary. My project explores whether these attention-gaining strategies work differently for mandatory as opposed to voluntary attendees in adult education settings.

2. Methods
I am the grant manager for the Gateway Drug Education Project, funded by an U.S. Department of Education (USDE) Drug-Free Schools grant. We provide updated alcohol/drug information to third, sixth and ninth grade teachers in the one-hundred poorest school districts in Oregon. As part of services under the grant, I contact superintendents, offering short workshops that introduce and explain the State of Oregon Alcohol and Drug Abuse Prevention Education (ADAPE) curriculum. These sessions last 75-90 minutes, are presented on-site, and are scheduled for the convenience of the school district. All participating third, sixth and ninth grade teachers receive a free project notebook; districts must make copies for others at their own expense. Each district also receives a twenty-minute video that introduces the ADAPE curriculum. Superintendents who decline the workshop offer receive notebooks and video tape by mail.

All teachers sign-in upon arrival to a session since verification of attendance is required by the USDE. After they have done so, we ask all participants to complete Questionnaire 1. They do so anonymously. (Appendix A). Subjects are not required to complete the questionnaire.

At the end of the session, participants are asked to complete Questionaire 2. This is also completed anonymously and voluntarily, but coded to match the first questionaire.

3. Benefits
All subjects participating in the sessions receive a certificate of in-service training for Alcohol/Drug Education, which most districts perceive to be a benefit to the individual teacher and to the district.
Risks
None. Attendees complete Questionnaires 1 and 2. The sessions contain no activities that appear to be of physical, mental or emotional risk.

4. Description of Subjects
All participants are teachers from the one-hundred poorest rural school districts in Oregon. The majority will be third, sixth and ninth grade teachers, since the USDE grant stipulates service for that group. Superintendents decide whether to schedule the sessions, and teachers may or may not be required by the superintendent to attend. Members of the Gateway team have no prior knowledge of who will attend any session. The number of subjects in the study is unknown, since many districts have not yet responded to telephone or letter invitations. The maximum response rate is 300. We expect 30%, based on present level of response.

5., 6., 7. Informed consent
Provisions for informed consent and confidentiality are as follow:

a. No names will be included on either Questionnaire 1 or 2.

b. I will read the following statement at the beginning of each session:

Thank you for participating in this training session provided by the Gateway Drug Education Project at Oregon State University. We want you to know that completion of the questionnaires is voluntary, and the program today will not change based on your completion of the form. We are, however, trying to discover better methods for presentation of adult seminars and we would encourage you to complete the questionnaires.

8. Copy of the Questionnaire
See Appendix A and B.

9. Approvals Required
None.

10. Outside Funding Agency Grant
See attached.
June 24, 1993

Principal Investigator:

The following project has been approved for exemption under the guidelines of Oregon State University's Committee for the Protection of Human Subjects and the U.S. Department of Health and Human Services:

Principal Investigator: Jodi Engel

Student's Name (if any): Sharron Noone

Department: Education

Source of Funding: US Department of Education

Project Title: Impact of Keller's Attention Strategies on Voluntary vs. Mandatory Adult Learners in a One-Time Short-Term Training Situation

Comments:

A copy of this information will be provided to the Chair of the Committee for the Protection of Human Subjects. If questions arise, you may be contacted further.

Mary E. Henn
Sponsored Programs Officer

cc: CPHS Chair
APPENDIX L
Motivational Strategies and Script
### Use of Keller Attention Strategies in Gateway Drug Seminars Presentations

#### Strategy

**Perceptual Arousal**
1. Are there references to specific people?

2. Are general principles or ideas illustrated with concrete examples or visualizations?

3. Are complex ideas or relationships among concepts made more concrete by use of analogies or metaphors?

4. Are items in a series presented in list format?

5. Are step-by-step procedures or relationships between concepts made more concrete by use of flow charts, diagrams, cartoons, or visual aids?

**Inquiry Arousal**
1. Is a sense of inquiry stimulated by presenting a problem which the new knowledge or skill will help solve?

2. Is curiosity stimulated by provoking mental conflict?

3. Is a sense of mystery evoked by describing unresolved problems which may or may not have a solution?

4. Are visuals used to stimulate curiosity or create mystery?

#### Presentation

1. Use of name of specific Oregon teacher that use the materials.

2. Discussion of newspaper articles of specific situations with rural children and the increase in drug use among younger children.

3. Peter Shoshin story at the end about infused curriculum being like an apple a day from his grandmother.

4. Board list of statistics on drug abuse in Oregon.

5. Indexes of materials, list of competencies.

1. Series of questions at the beginning that address the role of the classroom teacher in drug abuse, and the problem of how to comply with expectations from self and others.

4. Workbook, copies of newspaper articles, flip chart, blackboard.
(JUGGLE BALLS) Does anyone here know how to juggle? (IF YES, HAVE THEM DEMONSTRATE; IF NO, CONTINUE)

In reading and talking to teachers, I realized that juggling more and more subjects is a big part of what is happening in schools today. Does that seem to be the pattern here?

I am here today to discuss how to add another subject to the content of what you teach without having to juggle another subject in an already full day.

What do you see as the classroom teachers role in combating drug abuse? (BOARD ANSWERS)

(IF THEY SEE SOME ROLE) Ask: what do you see as the major challenge to the classroom teacher's fulfilling that role and making an impact? (BOARD ANSWERS)

(IF THEY SEE NO ROLE) Ask: how do you think drug education should be addressed (BOARD ANSWERS)

More and more, teachers K-12 are encouraged by the government to include the no-use drug message in everyday teaching situations - not just in Here's Looking at You 2000 or with DARE but in the actual text of their lesson plans.

How do you see yourselves being able to do that most easily? (BOARD ANSWERS)

Today we are here to talk about the State of Oregon Alcohol/Drug Curriculum, a set of lessons to be infused into the regular school day. We hope at the end of our time together that you will see how easy using these lessons can be, how your skills as teachers make the inclusion of the no-use message effective and how much fun you and students can have. Using infused curriculum is not an addition to the school day, it is an overlay.

First let's talk about you and what drug use looks like among your students in this district.

How do your perceptions compare to the article in the April 13 paper (HAND-OUT). (DISCUSSION)

What are the statistics on Oregon drug use among 8th and 11th graders
approx 15% 9-14 year olds use tobacco

25-35% of 8th graders use alcohol, and while use is declining, age of use is becoming younger

2% of students use steroids, especially in high school boys

Introduction of the Gateway Project - Introduction to the Gateway Guide and its sections on gateway drugs. - definitions of gateway drugs - (COPY OF WORKBOOK FOR EACH STUDENT)

All of these factors converge in the schools, partially because of the impact on education. Discuss each drug and impact - REFER TO GATEWAY GUIDE.

A growing number of people feel that you, the classroom teacher are some of the best people to offer the no-use message. You have the prior relationship, you have the skills at teaching and involving the students and the quality of the education you provide ultimately is impacted by children who use these drugs.

How to best provide tools for teachers to do this in an already full day was the challenge. In 1992, the Oregon Department of Education published this document, the Alcohol and Drug Abuse Prevention Education Infused Curriculum. (COPY OF THE BOOK). As is made clear in the Gateway Guide, infused curriculum provides tools for teachers to include the no-use message in their day.

Let's spend the rest of the time we have together looking at the ADAPE curriculum itself, and then the kinds of help the Gateway Guide gives you in using these lessons.

Review of ADAPE - hands on

Review of Gateway Guide - hands on

Peter Shoshin, tells the story of his grandmother's apple tree and how she insisted that he eat one every day. When questioned, she said, no the apples were not magic, but small consistent doses of good things are the key to good health. That's what the infused approach to drug education is - small consistent doses of good things that make for good health.
APPENDIX M
Personal Communication with
John Keller
Personal Communication with John Keller

4/21 John Keller agreed to look at my current script and analysis and give me suggestions. I faxed him the material and he made the following suggestions:

1. Use a question at the beginning about the role of school teachers in drug education. Board that information. (Included in script)

2. Follow that with a question about the challenges of meeting that role for the teacher who wants to make an impact. Use that as a lead-in for the role of the infused curriculum and the Gateway Program. (Included in script)

3. We talked about the problems with the space being so different in each setting. We collaborated on the decision to use a large piece of poster board for each location and then date and location it at the end of each session for a record of what went on there. (This was used in the pilots, but finding a secure, convenient place for the board to stand during the presentation proved too difficult - as often as not, the board fell over!)

4. If I had the time, he thought that creating a scenario about the teacher whose story is included in the Gateway workbook would be useful - ask the teachers how they would have solved the same situation and then direct them to the solution that she used in the article. (Because of the severe time limitations, this was not included in the script)

John wants a copy of what we come up with at the end.
APPENDIX N
Scales for the
Nomographic Test of Percentages
Chart 2